



Communication to promote and support physical distancing for COVID#19 prevention and control

Title	Communication to promote and support physical distancing for COVID#19 prevention and control
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Publication Date	2023-10-09
Publisher	Cochrane Collaboration
Repository DOI	10.1002/14651858.CD015144



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Communication to promote and support physical distancing for COVID-19 prevention and control.
Cochrane Database of Systematic Reviews 2023, Issue 10. Art. No.: CD015144.
DOI: [10.1002/14651858.CD015144](https://doi.org/10.1002/14651858.CD015144).

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TABLE OF CONTENTS

ABSTRACT	1
PLAIN LANGUAGE SUMMARY	3
BACKGROUND	5
OBJECTIVES	6
METHODS	6
RESULTS	9
Figure 1.	10
Figure 2.	14
Figure 3.	16
Figure 4.	18
Figure 5.	20
Figure 6.	23
Figure 7.	26
Figure 8.	28
Figure 9.	30
Figure 10.	32
Figure 11.	34
Figure 12.	36
Figure 13.	38
Figure 14.	40
Figure 15.	42
Figure 16.	44
Figure 17.	46
Figure 18.	48
Figure 19.	50
Figure 20.	52
Figure 21.	54
Figure 22.	56
Figure 23.	58
Figure 24.	60
Figure 25.	62
Figure 26.	66
Figure 27.	68
Figure 28.	70
Figure 29.	72
Figure 30.	74
DISCUSSION	75
AUTHORS' CONCLUSIONS	82
ACKNOWLEDGEMENTS	83
REFERENCES	84
CHARACTERISTICS OF STUDIES	104
ADDITIONAL TABLES	125
APPENDICES	131
CONTRIBUTIONS OF AUTHORS	259
DECLARATIONS OF INTEREST	260
SOURCES OF SUPPORT	261
DIFFERENCES BETWEEN PROTOCOL AND REVIEW	261
INDEX TERMS	261

[Rapid Review]

Communication to promote and support physical distancing for COVID-19 prevention and control

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Editorial group: Cochrane Consumers and Communication Group.

Publication status and date: New, published in Issue 10, 2023.

Citation: Ryan RE, Silke C, Parkhill A, Virgona A, Merner B, Hurley S, Walsh L, de Moel-Mandel C, Schonfeld L, Edwards AGK, Kaufman J, Cooper A, Chung RK, Solo K, Hellard M, Di Tanna GL, Pedrana A, Saich F, Hill S. Communication to promote and support physical distancing for COVID-19 prevention and control. *Cochrane Database of Systematic Reviews* 2023, Issue 10. Art. No.: CD015144. DOI: [10.1002/14651858.CD015144](https://doi.org/10.1002/14651858.CD015144).

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ABSTRACT

Background

This review is an update of a rapid review undertaken in 2020 to identify relevant, feasible and effective communication approaches to promote acceptance, uptake and adherence to physical distancing measures for COVID-19 prevention and control. The rapid review was published when little was known about transmission, treatment or future vaccination, and when physical distancing measures (isolation, quarantine, contact tracing, crowd avoidance, work and school measures) were the cornerstone of public health responses globally.

This updated review includes more recent evidence to extend what we know about effective pandemic public health communication. This includes considerations of changes needed over time to maintain responsiveness to pandemic transmission waves, the (in)equities and variable needs of groups within communities due to the pandemic, and highlights again the critical role of effective communication as integral to the public health response.

Objectives

To update the evidence on the question 'What are relevant, feasible and effective communication approaches to promote acceptance, uptake and adherence to physical distancing measures for COVID-19 prevention and control?', our primary focus was communication approaches to promote and support acceptance, uptake and adherence to physical distancing.

Secondary objective: to explore and identify key elements of effective communication for physical distancing measures for different (diverse) populations and groups.

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Search methods

We searched MEDLINE, Embase and Cochrane Library databases from inception, with searches for this update including the period 1 January 2020 to 18 August 2021. Systematic review and study repositories and grey literature sources were searched in August 2021 and guidelines identified for the eCOVID19 Recommendations Map were screened (November 2021).

Selection criteria

Guidelines or reviews focusing on communication (information, education, reminders, facilitating decision-making, skills acquisition, supporting behaviour change, support, involvement in decision-making) related to physical distancing measures for prevention and/or control of COVID-19 or selected other diseases (sudden acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), influenza, Ebola virus disease (EVD) or tuberculosis (TB)) were included. New evidence was added to guidelines, reviews and primary studies included in the 2020 review.

Data collection and analysis

Methods were based on the original rapid review, using methods developed by McMaster University and informed by Cochrane rapid review guidance.

Screening, data extraction, quality assessment and synthesis were conducted by one author and checked by a second author. Synthesis of results was conducted using modified framework analysis, with themes from the original review used as an initial framework.

Main results

This review update includes 68 studies, with 17 guidelines and 20 reviews added to the original 31 studies.

Synthesis identified six major themes, which can be used to inform policy and decision-making related to planning and implementing communication about a public health emergency and measures to protect the community.

Theme 1: Strengthening public trust and countering misinformation: essential foundations for effective public health communication

Recognising the key role of public trust is essential. Working to build and maintain trust over time underpins the success of public health communications and, therefore, the effectiveness of public health prevention measures.

Theme 2: Two-way communication: involving communities to improve the dissemination, accessibility and acceptability of information

Two-way communication (engagement) with the public is needed over the course of a public health emergency: at first, recognition of a health threat (despite uncertainties), and regularly as public health measures are introduced or adjusted. Engagement needs to be embedded at all stages of the response and inform tailoring of communications and implementation of public health measures over time.

Theme 3: Development of and preparation for public communication: target audience, equity and tailoring

Communication and information must be tailored to reach all groups within populations, and explicitly consider existing inequities and the needs of disadvantaged groups, including those who are underserved, vulnerable, from diverse cultural or language groups, or who have lower educational attainment. Awareness that implementing public health measures may magnify existing or emerging inequities is also needed in response planning, enactment and adjustment over time.

Theme 4: Public communication features: content, timing and duration, delivery

Public communication needs to be based on clear, consistent, actionable and timely (up-to-date) information about preventive measures, including the benefits (whether for individual, social groupings or wider society), harms (likewise) and rationale for use, and include information about supports available to help follow recommended measures. Communication needs to occur through multiple channels and/or formats to build public trust and reach more of the community.

Theme 5: Supporting behaviour change at individual and population levels

Supporting implementation of public health measures with practical supports and services (e.g. essential supplies, financial support) is critical. Information about available supports must be widely disseminated and well understood. Supports and communication related to them require flexibility and tailoring to explicitly consider community needs, including those of vulnerable groups. Proactively monitoring and countering stigma related to preventive measures (e.g. quarantine) is also necessary to support adherence.

Theme 6: Fostering and sustaining receptiveness and responsiveness to public health communication

Efforts to foster and sustain public receptiveness and responsiveness to public health communication are needed throughout a public health emergency. Trust, acceptance and behaviours change over time, and communication needs to be adaptive and responsive to these changing needs. Ongoing community engagement efforts should inform communication and public health response measures.

Authors' conclusions

Implications for practice

Evidence highlights the critical role of communication throughout a public health emergency. Like any intervention, communication can be done well or poorly, but the consequences of poor communication during a pandemic may mean the difference between life and death.

The approaches to effective communication identified in this review can be used by policymakers and decision-makers, working closely with communication teams, to plan, implement and adjust public communications over the course of a public health emergency like the COVID-19 pandemic.

Implications for research

Despite massive growth in research during the COVID-19 period, gaps in the evidence persist and require high-quality, meaningful research. This includes investigating the experiences of people at heightened COVID-19 risk, and identifying barriers to implementing public communication and protective health measures particular to lower- and middle-income countries, and how to overcome these.

PLAIN LANGUAGE SUMMARY

How can we communicate better with people and communities about measures which help to prevent and control COVID-19?

Key messages

- During a pandemic, governments and other authorities need to clearly communicate with the public about how people can keep themselves safe. This communication needs to be based on trust and well-planned. People and communities affected by the pandemic need to be involved in planning and delivering the communication. The communication should reach all people across the community, including those who have trouble reading and writing, people who speak languages other than the community's dominant language, and people who face other types of disadvantage. Clear communication can improve how well people are able to follow measures to keep themselves safe.

- This review identified six themes which can guide best-practice approaches to public health communication during a pandemic. These themes are:

- 1) Strengthening public trust and countering misinformation;
- 2) Two-way communication involving communities so that people have input into how communication can best happen;
- 3) Development of and preparation for public communication by considering who the audience is and how different people's needs within the community can be met;
- 4) Public communication features, including how and when messages are delivered to communities;
- 5) Supporting behaviour change at individual and population levels;
- 6) Fostering and sustaining receptiveness and responsiveness to public health communication over time.

- The review findings can help governments and other authorities make decisions about public health communication during a pandemic. The findings are relevant to COVID-19 and future public health emergencies. The findings can be applied across different countries and different emergency situations.

- Some gaps in the research were found through this review. These included: communication with people who are at higher risk of getting severely sick or dying from COVID-19; communication in lower- and middle-income countries; and communication in settings known for social inequalities. Further research in these areas may help increase knowledge and improve practices related to pandemic communication.

What are physical distancing measures?

The term 'physical distancing measures' describes ways to reduce the spread of diseases such as COVID-19 by reducing physical contact between people. Physical distancing measures include contact tracing, avoiding crowds, isolating, quarantine, and measures to reduce transmission in schools and workplaces.

What did we want to find out?

We wanted to find out which ways of communicating with the public are best to increase people's understanding and use of physical distancing measures to protect themselves and limit the spread of COVID-19 and other similar diseases. We also wanted to find out whether there were ways of communicating that worked better for certain groups in the community, including people who experience disadvantage.

What did we do?

This review is an update of a review conducted in 2020. The 2020 review included primary studies (qualitative and quantitative) and secondary sources (review studies and guidelines).

During the searches for this update, we looked for guidelines or review studies examining communication about physical distancing measures for preventing and/or controlling COVID-19 or selected other infectious diseases. We compared and summarised the results of included studies and guidelines, together with the findings from the 2020 review.

What did we find?

This review has 68 included studies (guidelines, reviews and primary studies [studies undertaken by researcher(s) which collect original data]). This update added 17 guidelines and 20 reviews (which are considered secondary research) to the original 2020 review.

We identified six main themes related to planning and implementing communication about physical distancing during a pandemic.

These themes can inform policy and decision-making around pandemic and public health emergency communication. These themes are: 1) Strengthening public trust and countering misinformation; 2) Two-way communication; 3) Development of and preparation for public communication; 4) Public communication features; 5) Supporting behaviour change at individual and population levels; 6) Fostering and sustaining receptiveness and responsiveness to public health communication.

What are the limitations of the evidence?

This update focused on reviews and guidelines. Typically, these represent the best available evidence but, in this update, were mainly rated as having low or moderate quality. Because of studies' different designs, the quality ratings are not meant to be used as a hierarchy (ranking) of evidence.

A strength of this review is that major themes and findings came from diverse sources, including primary studies, reviews and guidelines. Often, similar findings were reported across different study types, populations and settings. The findings from this updated review also build on those of the 2020 review, adding to the main findings and filling major gaps. Having similar findings across different study types, and adding new information through this update, increases our confidence in the findings even though most of the included studies are of low or moderate quality. However, since searches for new evidence last occurred in 2021, it is likely that further relevant evidence now exists.

How up-to-date is this evidence?

This evidence is up-to-date until August 2021.

BACKGROUND

This review update explores the ways in which communication by governments, health organisations, clinicians and community groups have promoted and supported physical distancing to prevent and control COVID-19. It provides a comprehensive update to a published rapid review that was commissioned by the WHO European Office in 2020 to answer an urgent question: 'What are relevant, feasible and effective communication approaches to promote acceptance, uptake and adherence to physical distancing measures for COVID-19 prevention and control?' (Ryan 2021a).

Completed in June 2020 (with evidence current up to 1 May 2020), Ryan 2021a was produced against a backdrop of global uncertainty, fear and confusion. Little was known about transmission, treatment or the potential to vaccinate against the new virus. One of the few certainties was that strict physical distancing measures – isolation, quarantine, contact tracing, crowd avoidance, and work and school measures (Izadi 2021; WHO 2019) – would form the cornerstone of the public health response to COVID-19. The need to physically distance to reduce the risk of infectious disease transmission has been known since the earliest civilisations (Vitello 2022) and the need for effective public health communication to underpin these actions has not abated. As the findings of this review attest, the role of effective public health communication in supporting the early and ongoing uptake and adherence to physical distancing measures by billions of people around the world was, and remains, vital. As COVID-19 remains a public health priority and there has been huge growth in research related to COVID-19 over recent years, it is important that governments, public health agencies and decision-makers have access to an updated synthesis of available evidence in order to help inform and guide communications related to the pandemic.

This review update identifies and explores relevant and timely evidence on the complex and multi-layered task of communicating with diverse and disparate audiences about what is known and unknown, and the steps people need to take to reduce risk and protect public health over the course of a pandemic. In doing so, this review update highlights key information and implications for policy-makers and governments to consider when planning, implementing and revising how and when to enact physical distancing measures for COVID-19 control over time. These findings can also inform evidence-based planning and responsiveness to future pandemics and global health crises. As the evidence confirms, the need for clear and effective public communication remains a constant.

Weighing up the evidence over time: what have we learnt

This review update reinforces the original rapid review findings (Ryan 2021a), which underlined the need for:

- Clear, accurate and timely public information and actionable messages that are consistently updated.
- Information about risk and what people needed to do to minimise risk both in the immediate and longer terms.
- Public information conveying consistent messages expressed in clear and understandable language shared via multiple sources and dissemination pathways.

- Accessible information tailored to local contexts to enhance reach, relevance and acceptability and to ensure that the needs of diverse, vulnerable and disadvantaged communities are met.
- Community engagement to inform tailoring of messages to groups within populations – ensuring appropriateness to local contexts and using community feedback to improve reach and relevance.
- Practical support and access to essential services (e.g. food, medicines, financial support) alongside public information and communication in order to enable people to adhere as closely as possible to physical distancing measures.

The 2020 rapid review drew on rapidly emerging information on COVID-19 alongside evidence from influenza, SARs, MERs and other infectious outbreaks (Ryan 2021a). Since that time, there has been a deluge of COVID-19 research. This review update, with evidence current up to 18 August 2021, includes 17 new guidelines and 20 new reviews that, taken together, fill several previous evidence gaps and add to our understanding of communication needs, practices and impacts over the short and longer terms.

Key findings in this current review update that build on the previous findings, centre on the need to:

- Build and maintain trust in public agencies, which in turn supports individual and community receptiveness and adherence to ongoing public health communications.
- Proactively identify and counter misinformation that continues to sow confusion and mistrust, fuel conspiracy theories and undermine/counter public health communications at local and global levels.
- Involve communities at all stages of the pandemic response to improve the dissemination, accessibility and acceptability of communications about preventive public health messages.
- Monitor changes in attitudes and behaviours over time that influence individual and community willingness and ability to accept and adhere to physical distancing measures.
- Deliver consistent, actionable and coordinated public communications that clearly outline what is known and unknown (acknowledging uncertainty) and is responsive to changes over time.
- Address multiple equity issues and challenges to ensure information and communication are tailored for and appropriate to diverse audiences, including hard to reach, vulnerable and marginalised groups (see Appendix 1 for comprehensive list).
- Actively work to foster and sustain public receptiveness and responsiveness to public health communication over time.

Focus on equity and community engagement

Equity has emerged as a key theme across the WHO's COVID-19 key findings and policy briefings (WHO 2023), the Lancet's Commission on Lessons for the Future of the COVID pandemic (Sachs 2022), the Cochrane Convenes global evidence summit (Cochrane 2020) and the International Red Cross's Trust, Equity and Local Action - Lessons from the COVID-19 pandemic to avert the next global crisis (IFRC 2023). The consensus amongst leading health experts, sociologists and economists is that COVID-19 increased existing inequalities and created additional urgent policy and healthcare issues in need of redress around the world.

It is clear that inequalities influence the degree to which individuals and populations are able to accept and adhere to preventive measures. Accordingly, the importance of public communication that recognises and is designed to counteract inequalities can't be overstated. This is critical to supporting community-level uptake of physical distancing measures – particularly as the effects of the pandemic disproportionately affect the poorest and most vulnerable.

In recognition of this, this review update identifies key elements of effective communication for physical distancing measures for diverse populations and groups, and applies a more consistent equity lens across the evidence. It highlights the role of community involvement, feedback and interactive engagement to inform and refine communication approaches, content and delivery over time. It is essential that information, as well as practical supports, are tailored to meet the specific needs of diverse communities, particularly underserved, vulnerable and disadvantaged groups.

Navigating pandemic fatigue and looking ahead: why this review is important

Communicating clearly with people and populations about why physical distancing measures are needed and how they can adhere to them has been a critical and consistently challenging component of COVID-19 prevention and control globally. This updated review addresses this identified need for further understanding of effective public health communication approaches. Three years into the pandemic, people's lives, livelihoods and forbearance have been tested beyond measure. Pandemic fatigue has set in, bringing a fresh set of challenges for effective public health communication.

Late in 2022, WHO Director Tedros Adhanom Ghebreyesus and US President Joe Biden made respective statements that the end of COVID-19 was in sight (United Nations 2022) and that the pandemic was now over (Berger 2022). In part, these declarations reflected less about actual case numbers and mortality rates and more about the political, economic and social status quo. It is increasingly clear that people, communities and governments across the globe collectively yearn to put COVID-19 --- and the immeasurable losses from illness, isolation, closures and lost opportunities that come with it -- firmly out of sight and out of mind.

Universal COVID-19 fatigue makes the task of public health communication ever more challenging, but no less critical. The evidence in this rapid review update has direct implications for policy-makers and governments to consider when planning, implementing and revising physical distancing measures for COVID-19 control over time, and in the real-world conditions we now find ourselves in. The findings may also have relevance in helping to inform and guide policy-makers and others when planning communications in relation to future disease outbreaks and public health emergencies.

It adds another important piece to the emerging picture of what worked and what did not in preventing the spread of COVID-19. The evidence on the role of public health communication in the pages that follow can inform our thinking on critical issues beyond physical distancing measures. It can also shape our response to the ongoing challenges of COVID-19, and our preparedness for the future global health challenges that lie ahead.

OBJECTIVES

This review update builds on the existing rapid review commissioned by WHO to address the question: 'What are relevant, feasible and effective communication approaches to promote acceptance, uptake and adherence to physical distancing measures for COVID-19 prevention and control?'

Therefore, the *primary* focus of this review update is communication approaches to promote and support acceptance, uptake and adherence to physical distancing – and not the effects of physical distancing *per se*.

A *secondary* objective, introduced in this updated version, is to explore and identify key elements of effective communication for physical distancing measures for different (diverse) populations and groups. This included, where appropriate, differential consideration or analysis of countries according to income levels (e.g. upper and middle income compared with others); or of target groups within populations (e.g. lower socioeconomic status, lower health literacy), underserved groups (e.g. people experiencing homelessness), culturally and ethnically diverse groups (e.g. migrants and refugees), specific age and demographic groups; and included consideration of the prevalence of COVID-19 within populations over time (e.g. communication during peak times (surge/wave) versus that during lower prevalence periods).

METHODS

The original rapid review (Ryan 2021a) and this updated review used methods based closely on rapid response methods developed and used by McMaster University (Wilson 2018) and informed by Cochrane rapid review methods guidance (Garrity 2021; Tricco 2020).

A protocol was developed and made publicly available before the updating process began (Ryan 2021b). Please refer to this for detailed methods, a brief summary of which is provided here. Any changes to the methods from those described in the protocol are noted.

Please also see Table 1 for a list of abbreviations used throughout the review.

Eligibility criteria for this review update

Types of study design

We had planned to consider eligible studies in two phases (refer to Appendix 2 for details):

- *Phase 1* (synthesised evidence sources; focusing on COVID-19, SARS, MERS, influenza, Ebola (EVD), or TB): guidelines (country-specific, global or regional), systematic reviews (intervention reviews, qualitative syntheses, mixed-methods reviews).
- *Phase 2* (primary studies; focusing on COVID-19 *only*): single studies on COVID-19 if there were gaps in the evidence derived from guidelines or reviews (i.e. primary studies that provided new knowledge not found in identified synthesised evidence sources), including observational studies, controlled trials, qualitative studies (any empirical method (i.e. based on observation or measurement of phenomena)), mixed-methods research.

At the screening stage, we identified a large volume of synthesised evidence (i.e. guidelines, systematic reviews) eligible for inclusion. We, therefore, decided to stop screening at Phase 1 and formulate this update as an overview of synthesised evidence sources.

Population and context

Consistent with the original rapid review (Ryan 2021a), studies focussing on physical distancing measures for prevention and/or control of COVID-19 or other selected infectious diseases (SARS, MERS, influenza, EBV or TB) were included. We focused on communication to promote physical distancing measures outside healthcare settings, i.e. measures put in place in community settings, including workplaces and schools. All countries were eligible, irrespective of income level or geographic location.

Types of intervention

To be included, studies must have focused on the intersection between communication and physical distancing measures. Communication with individuals, organisations, communities and/or systems was included.

Physical distancing measures (contact tracing, isolation, quarantine, crowd avoidance, school and work measures) were defined based on WHO definitions for pandemic influenza control (WHO 2019); see Table 2 for definitions.

Communication in the context of physical distancing was defined as that undertaken for one or more of the following purposes (Hill 2011; Kaufman 2017; Ryan 2014):

- Information/education.
- Reminding.
- Facilitating communication or decision-making.
- Enabling communication.
- Acquiring skills.
- Supporting behaviour change.
- Being supported.
- Involving the community in decision-making for the promotion of physical distancing.

The following were excluded:

- Methods of enhancing community ownership of non-pharmaceutical intervention (NPI) measures.
- Personal support (e.g. individual psychosocial support).
- Strategies for minimising risks/harms to individuals/communities, without a focus on communication of physical distancing measures (e.g. informing individuals about the importance of 'flu' vaccination in the context of the COVID-19 pandemic).
- Implementation and/or effects of physical distancing measures, without an identifiable communication element (e.g. effectiveness of physical distancing measures themselves).
- Modelling of effectiveness scenarios (e.g. effectiveness of quarantine at preventing viral transmission).
- Mobile/digital health applications without an explicit focus on physical distancing measures and related communication.
- Knowledge of pandemic risks and/or risk perceptions without a focus on physical distancing measures.
- Public/consumer information materials on physical distancing.

Types of outcome(s)

We sought qualitative and quantitative data on outcomes for individuals and communities, broadly aligned with the following major categories:

- Acceptance;
- Uptake;
- Adherence;
- Feasibility and related outcomes.

Studies were not excluded based on outcomes sought or outcome measures reported.

Search methods for identification of studies

An Information Specialist (AP) designed and ran all searches, which were informed by a content expert, independently peer reviewed and updated from the original 2020 search methods designed to identify all relevant physical distancing measures. Previous keyword choices had been peer-reviewed by Robin Featherstone (then Information Specialist, Cochrane Evidence Production & Methods Directorate) and Andrew Booth (University of Sheffield).

Electronic databases

For the original rapid review (Ryan 2021a), we searched electronic databases from inception to 1 May 2020. For this review update, we searched the MEDLINE, Embase and the Cochrane Library databases from 1 January 2020 to 18 August 2021:

- Cochrane Central Register of Controlled Trials (CENTRAL; 2021, Issue 8), in the Cochrane Library (Appendix 3);
- Embase Classic (1947 to 2021 week 33) (Appendix 4); and
- MEDLINE via Ovid (1946 to 18 August, 2021) (Appendix 5).

Please refer to Table 3 for all search details.

All records were downloaded to an Endnote library. Duplicates from the previous publication's search (Ryan 2021a) were removed from the database records. As when undertaking the original review, the Cumulated Index to Nursing and Allied Health Literature (CINAHL) and PsycINFO were assessed before the searches were conducted. Both were judged as not having sufficiently unique references and, so again, were not searched in this update.

Guidelines

The eCOVID19 Recommendations Map (<https://covid19.recmmap.org/>; eCOVID-19 RecMap) team supplied us with spreadsheets of all the organisational guidelines screened for the COVID-19 Living Catalogue of Guidelines in November 2021.

Other searches

Reference lists of key studies were searched, together with searches for citing articles about key studies. Key informants were also consulted for additional sources of relevant evidence.

For studies available but not yet peer-reviewed (e.g. MedRxiv), the lack of peer review was noted in the quality assessment. For pre-prints included in the original review, we checked the publication status and verified the data extracted against any subsequently published peer-reviewed articles.

We also searched a range of online databases and grey literature (see [Table 3](#)). Relevant keywords were chosen for each of the websites. Full search terms and strategies for the online databases and grey literature are available from the authors upon request.

At the time of publication, approximately 24 months had elapsed since running searches for this update. We did not update the searches to identify more recently available evidence as it was beyond our resourcing to do so. This high-level synthesis draws on a very large volume and range of literature related to COVID-19 as well as other selected diseases, with the purpose of informing current public health communications and future pandemic preparedness planning. The methods and approach adopted are therefore different to usual Cochrane review methods but tailored to providing a rigorous review of evidence for decision-makers.

Screening

Decision rules operationalising the selection criteria were developed and refined iteratively by two review authors (RR, CS). One author (RR) screened all titles and abstracts for eligibility. All records identified as potentially relevant were retrieved for full-text assessment. A second reviewer (CdMM) independently checked 20% of excluded records.

Two review authors (RR, CS) screened all full-text articles, with discrepancies resolved by discussion to reach consensus.

We handsearched the list of guidelines from eCOVID-19 RecMap. One author (RR) screened titles, and two authors (RR, CS) screened full-text copies of all potentially-relevant guidelines to determine eligibility.

Studies excluded at the full-text screening phase for this update are reported in [Characteristics of excluded studies](#), with reasons for exclusion. Full-text studies excluded from the original review are available at opal.latrobe.edu.au/articles/dataset/Studies_excluded_from_Ryan_et_al_2021/20436261.

We did not exclude studies based on the language of the publication. All potentially eligible non-English language abstracts progressed to full-text assessment, and methods were translated to determine eligibility, where possible.

As part of Phase 1 screening, included guidelines and reviews were mapped systematically against major themes identified in the original review by a single reviewer (RR) and checked by a second reviewer (CS, BM, CdMM, LS). All six themes were well-populated with evidence, and major gaps that had been identified in the original review were addressed by the addition of more recent evidence (school and work measures; measures for vulnerable populations including those at heightened risk of severe disease; communications related to alterations of public health measures). Accordingly, screening was halted at Phase 1, and primary studies were not considered further in the review.

Inclusion of ongoing or unpublished studies

We assessed studies identified as pre-prints in the original rapid review, identifying one ([Atchison 2020](#), cited April 3, 2020) subsequently published in 2021. The published and pre-print versions were cross-checked, and while several small changes were

identified in the 2021 publication, none affected data extracted from the pre-print version.

Data collection and analysis

Data extraction and quality assessment

Data were extracted from included studies by one author (RR) and verified by a second author (CS, BM, CdM, LS), including quality assessments. Included studies were appraised using established tools (for guidelines, AGREE II ([Brouwers 2010](#)); for systematic reviews, AMSTAR (original tool) ([Shea 2007](#))). Where available from reliable databases, quality ratings were extracted directly, with acknowledgement of the assessment source.

For studies identified from handsearching of eCOVID-19 RecMap, the eCOVID-19 Rec Map Critical Appraisal Team critically appraised eligible guidelines independently in duplicate using the AGREE-II tool. Inter-rater item differences of 3 points or greater were flagged as a conflict. All conflicts were resolved through discussion with the help of the critical appraisal coordinator, as needed.

We did not contact the study authors to request more information related to missing data. In the protocol, we noted that any such efforts would concentrate on primary research studies ([Ryan 2021b](#)). Given that our methods for selecting studies changed during the review, this step was no longer a priority. We did, however, contact authors of forthcoming reviews (protocols) that were judged as eligible for inclusion. We requested access to the review (if completed) and/or information about the likely timing of the full review becoming available.

Review Manager (RevMan) was used to collate and report all elements of the review using a flexible review format. Data tables, once verified, were added to RevMan directly as [Appendix 6](#). Other review information and data was entered into RevMan by one reviewer (RR) and checked for accuracy by a second reviewer (AV, CS).

Data synthesis

Data were systematically extracted and tabulated in the first instance to transparently and consistently present key features and findings of the included evidence, including quality assessments, in a structured way ([Campbell 2020](#)). Data were extracted, and findings mapped to each component of the review question (e.g. acceptance, adherence). There was then a second translational step to identify the communication purpose and how this might affect interpretation of the study findings ([Campbell 2020](#)).

For the original review, included studies were mapped to each component of the review question and grouped for analysis. In the analysis, we considered population features, intervention characteristics (i.e. characteristics of the communication intervention or issue), and contextual factors or implementation issues. Data were standardised by identifying major thematic categories. We used modified framework analysis ([Ritchie 1994](#)) for analysing data in the original review, informed by methods described in [Tricco 2017](#) (primarily Chapter 4). Findings from both qualitative and quantitative research were analysed concurrently, and six themes were identified (see [Appendix 7](#)).

These themes provided the guiding framework for synthesising newly identified evidence in this update, allowing for new categories to emerge through the analysis.

The quality of studies informing each section of findings was systematically assembled and presented alongside the thematic findings in all cases. We also identified and discussed any limitations of the assembled evidence and potential biases in the review process.

At the protocol stage (Ryan 2021b), we planned to investigate and identify key elements of effective communication for physical distancing measures for different (diverse) populations and groups. Data on these features (e.g. income levels, population features such as socioeconomic status) were collected and systematically assembled and used to inform the development of themes (e.g. identification of findings related to particular groups at a disadvantage and/or who may require specific consideration related to communication, such as migrants and refugees). We also sought to identify communication approaches targeting individual members of the public and report these separately from community-level (public health) communication.

At each stage of synthesis (identifying major thematic categories and subcategories of data, analysing the findings and considering other factors such as intervention and population features), we developed clear decision rules to ensure consistency across the author team. Training and support were provided by the original author team members.

A single reviewer (RR), with work checked by a second reviewer (CS, AV), undertook each synthesis step. At least one senior member of the original author team (RR, SH) was involved in the oversight or conduct of the review at all stages of synthesis (for all data) to ensure consistency and accuracy of the data and analyses.

In addition, members of the review team provided key input at critical points of the synthesis. For example, input from co-authors was sought upon preliminary development of the themes for this update. Co-authors' feedback critically shaped the scope and language of themes and subthemes as well as the structure and order of the findings.

We planned to explore the possibility of quantitative outcomes for statistical analyses. However, none were identified in the data for this update.

RESULTS

Description of studies

Results of the search

Searches of databases and grey literature sources identified 6845 records after deduplication. Screening of titles and abstracts identified 1517 records for full-text screening. At this stage, the decision was taken to include only synthesised evidence sources (reviews and guidelines) in this review update. As a result, 1355 primary studies were excluded from the full-text assessment. A total of 162 records were identified as systematic reviews or guidelines for full-text screening.

Screening of a further 412 records in eCOVID19 RecMap identified 151 guidelines for full-text assessment.

In total, 313 (162 + 151) reviews and guidelines were assessed for eligibility in full text. Of these, 267 were excluded. Seven studies are outstanding (5 awaiting classification, 2 awaiting translation), with two ongoing at the time of searching and screening; see [Figure 1](#).

Figure 1. PRISMA flow diagram to illustrate our study selection process for this update

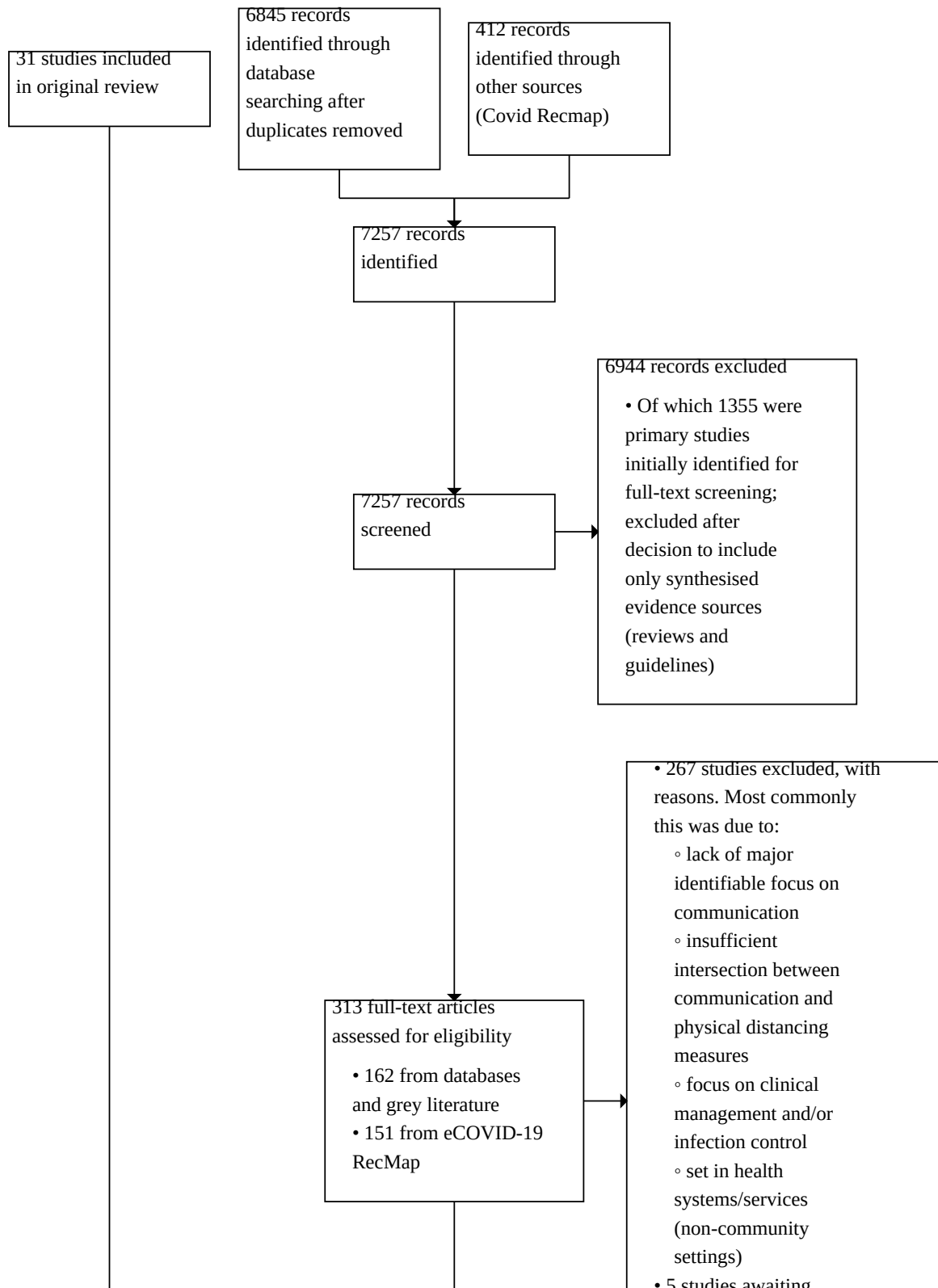
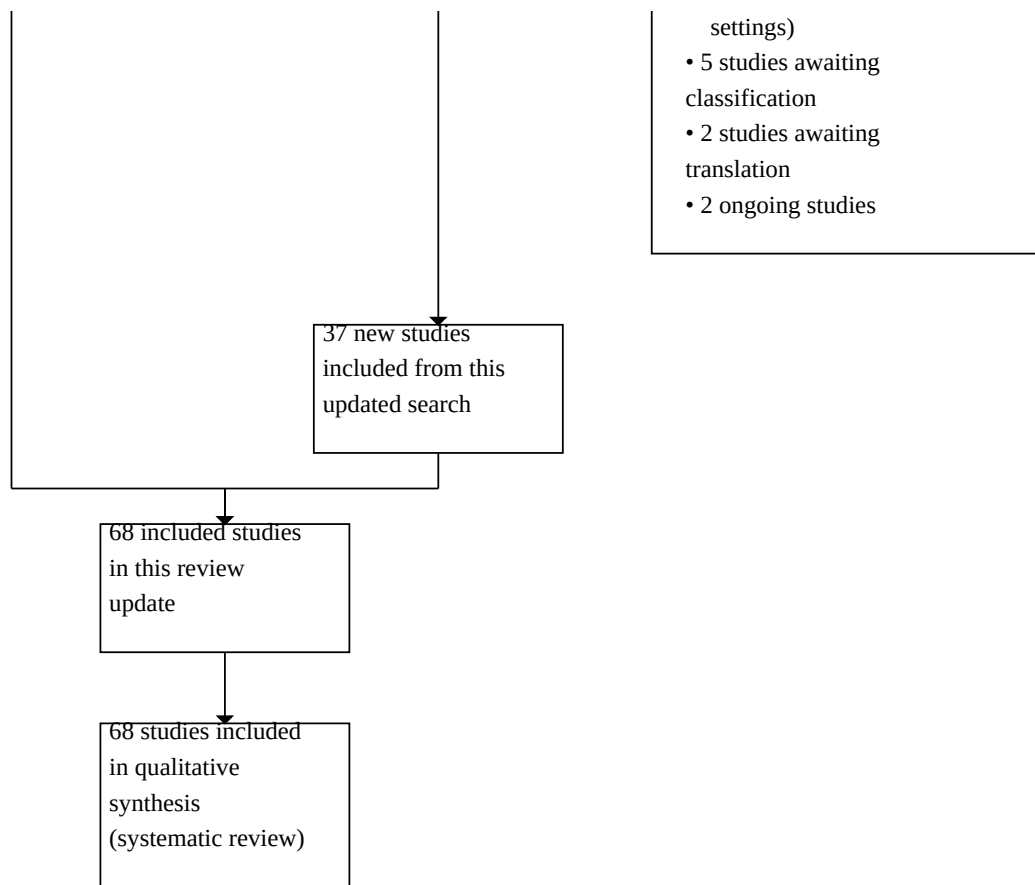


Figure 1. (Continued)



The current review update includes 68 studies. Of these, 31 were from the original rapid review (Ryan 2021a). We added 37 new studies (17 guidelines and 20 reviews) in this updated version. One included review was empty (Moya-Salazar 2021) and so is not reported further.

Of the reviews included, five (1 from the original review (Eaton 2020) and 4 newly included (Berg 2021; Majid 2020; Mobasseri 2020; Noone 2021)) were scoping, rather than systematic, reviews. These were included as it was judged that they contributed relevant, important evidence, for instance, communication issues related to unique population groups (older people Mobasseri 2020), health authorities' considerations of modes for pandemic communication with the public (Berg 2021), or identification of determinants of physical distancing behaviour uptake and adherence related to communication about these measures (e.g. beliefs, knowledge, skills) (Lunn 2020).

Included studies are summarised in data tables (see Appendix 6), reporting all relevant information for each of the included studies as an updated map of evidence addressing the review objectives previously presented in Ryan 2021a. Each study's data table presents the following information:

- Study characteristics.
- Study findings.

- Results of quality assessment.
- Mapping and translational steps. These were undertaken as part of the synthesis of results and represent intermediate steps, translating the study findings to communication purpose and the review's objectives.

Disease context

The original rapid review included 31 studies conducted during the COVID-19 era and those on selected infectious diseases (influenza, SARS, MERS, EBV and TB). All the 17 primary studies (12 cross-sectional surveys, one randomised controlled trial (RCT), one cohort study and three qualitative studies) focused on COVID-19. For the 14 systematic reviews and guidelines, synthesised evidence was based on studies of pandemic influenza, particularly related to the 2009 H1N1 pandemic influenza outbreak (n = 7), EVD (2), SARS (2), TB (2) and MERS (1).

Of the 37 systematic reviews and guidelines added to this review update, 31 focussed on COVID-19; the remaining six drew on research that was not COVID-19-specific, but the research was explicitly conducted in the context of the current pandemic outbreak.

Geographic location and income level

Geographically, included studies were spread across the world and from all continents. For details, please refer to [Appendix 6](#).

However, most included studies (48/68) were drawn either exclusively or predominately from high-income countries (according to World Bank classifications), with only nine from low- and middle-income countries. Of these, several focused on EVD (largely from countries in West Africa; Congo, Guinea, Liberia, Senegal and Sierra Leone) or TB (including Ethiopia, India, Indonesia, Malawi, South Africa, Peru and selected higher-income countries). Several guidelines and reviews (n = 10) included evidence drawn from several countries across income brackets, and many sought studies or evidence from a range of countries.

Target of communications

In the original review, much of the evidence was directed at the population level and focused on public pandemic risk messaging, including information to the public or specific groups within populations to promote physical distancing measures.

In this update, we again planned to attempt to identify communication approaches targeting individual members of the public and report these separately from community-level (public health) communication. However, most included studies again dealt with general, community-level communication (approximately three quarters; 72%). We did find, however, that in newly identified studies, a number (10 guidelines and reviews) focused on communication with specific vulnerable groups. Three guidelines specifically focused on vulnerable groups ([ECDC 2020a](#); [ECDC 2020b](#); [WHO 2021](#)), while other guidelines and reviews included a general population scope but specifically identified vulnerable groups within this ([PHAC 2021](#); [PHAC 2022](#); [Sopory 2021](#)); or focused on one or more groups requiring tailored communication (e.g. non-English speaking groups and EVD survivors ([Gilmore 2020](#)), vulnerable groups ([Cardwell 2021](#)), older adults and/or those with comorbidity or of lower socioeconomic status ([Mobasserri 2020](#); [Regmi 2021](#))). Themes in the data relating specifically to vulnerable groups were identified in our analysis.

In the protocol ([Ryan 2021b](#)), we planned to investigate and identify key elements of effective communication for diverse populations and groups, including countries according to income level; target groups within populations (such as those based on socioeconomic levels); health literacy; hard(er)-to-reach groups; culturally, linguistically and ethnically diverse groups; and any other relevant features, such as age. We also aimed to identify populations defined by COVID-19 prevalence over time (e.g. communication during peak times (surge/wave) versus that during lower prevalence periods).

We extracted all such information where available, and identified these groups and information relevant for shifting public health measures in the presence of changing COVID-19 levels within communities in our analysis. Findings related to these groups were identified naturally in the data. Findings related to specific groups and changing requirements of public health communication over time are reflected throughout the thematic results.

Excluded studies

Studies excluded based on title and abstract screening were checked by a second reviewer: of the 4918 studies excluded at the preliminary screening stage, 984 (20%) were checked by a second reviewer. In total, 10 studies were queried, and half (5) were re-included in the group of primary studies to be assessed in full text as phase 2 citations (no longer considered eligible for inclusion in this update). These checks indicated a high level of agreement between reviewers about selection decisions, and that potentially-relevant studies were unlikely to have been mistakenly excluded by a single reviewer conducting title and abstract screening.

Studies excluded at the full-text screening stage are reported with reasons in [Characteristics of excluded studies](#). Studies were more often excluded because they lacked an identifiable focus on communication; had insufficient intersection between communication and physical distancing measures; focused on clinical/infection control; or were set primarily in health systems or services (non-community settings).

Studies screened in full text and excluded from the original review are not reported here but are available at: https://opal.latrobe.edu.au/articles/dataset/Studies_excluded_from_Ryan_et_al_2021/20436261.

Quality of included studies

An overview of the quality ratings of included studies (original review and this update) is provided in [Table 4](#), with a more detailed breakdown of ratings provided in [Table 5](#). A detailed quality assessment can be found for each study within the data tables provided in [Appendix 6](#). We report quality assessments of studies contributing data to each theme and subtheme in the results, to convey an indication of the volume, type and quality of the evidence underpinning all findings. However, the quality assessments are not intended to be used as a hierarchy of evidence, as this was neither possible nor appropriate with the mix of included research (i.e. qualitative and quantitative, primary and synthesised evidence sources). Rather, this information on quality is provided with the aim of informing interpretation and implementation of the findings.

The quality of the included studies varied. Half (34/68) of all included studies were rated as of high or moderate quality based on the tools applied. This means that shortcomings in the design and/or conduct of many included studies are present and that findings should be interpreted with recognition that limitations in the assembled research exist.

Results of the synthesis

Themes identified in the framework analysis

From the synthesis of the data, six major themes emerged. These were derived from the six themes originally identified by [Ryan 2021a](#) that served as a guiding framework for the synthesis ([Appendix 7](#)), but were substantially adapted on the basis of newly included evidence and based on feedback by the wider author team. The ordering of the themes was also modified based on decisions by the team after considering the themes and subthemes emerging from preliminary analysis.

Evidence assembled in this update addressed a number of key knowledge gaps identified in the original review and added

significantly to the findings in several key areas. This included the need for ongoing communication over time during a pandemic, particularly to reflect changes to risk and to public health measures; the requirements for tailoring and flexibility of public information and communication; the need to explicitly and carefully consider the needs of vulnerable groups within communities; and the need for systems to support the critical role of community engagement in mounting an effective public health communication response.

Original themes were therefore substantially modified by the inclusion of new findings emerging through the framework analysis. For instance, data previously contributing to and synthesised under a theme of physical distancing measures in schools and workplaces (original theme 6) were judged as aligning to findings within other major themes. A new major theme, on sustaining and maintaining public health communication and behaviour change, emerged with the inclusion of new evidence, and themes were re-organised to reflect a more intuitive progression of communication purposes - from building public trust through communication, engagement of communities in pandemic response and communications, through to the more specific elements (timing, content and tailoring) of public health communications and the maintenance of these and preventive behaviours over time.

The six major themes emerging from the data with newly-included evidence are as follows:

- Theme 1 Strengthening public trust and countering misinformation: essential foundations for effective public health communication;
- Theme 2 Two way-communication: involving communities to improve the dissemination, accessibility and acceptability of information;
- Theme 3 Development of and preparation for public communication: target audience, equity and tailoring;

- Theme 4 Public communication features: content, timing and duration, delivery;
- Theme 5 Supporting behaviour change at individual and population levels;
- Theme 6 Fostering and sustaining receptiveness and responsiveness to public health communication.

Findings of the synthesis

Public information and risk communication during the response to a pandemic are essential and critical components of the public health response to an outbreak. The evidence assembled to date again highlights that communication between authorities and governments and the public can be done well or poorly. To be most effective at promoting uptake of and adherence to protective measures, such as physical distancing measures, communication needs to be based on trust and planned ahead of time, engage communities meaningfully, and incorporate several key features including those related to content, timing, tailoring and reach within communities.

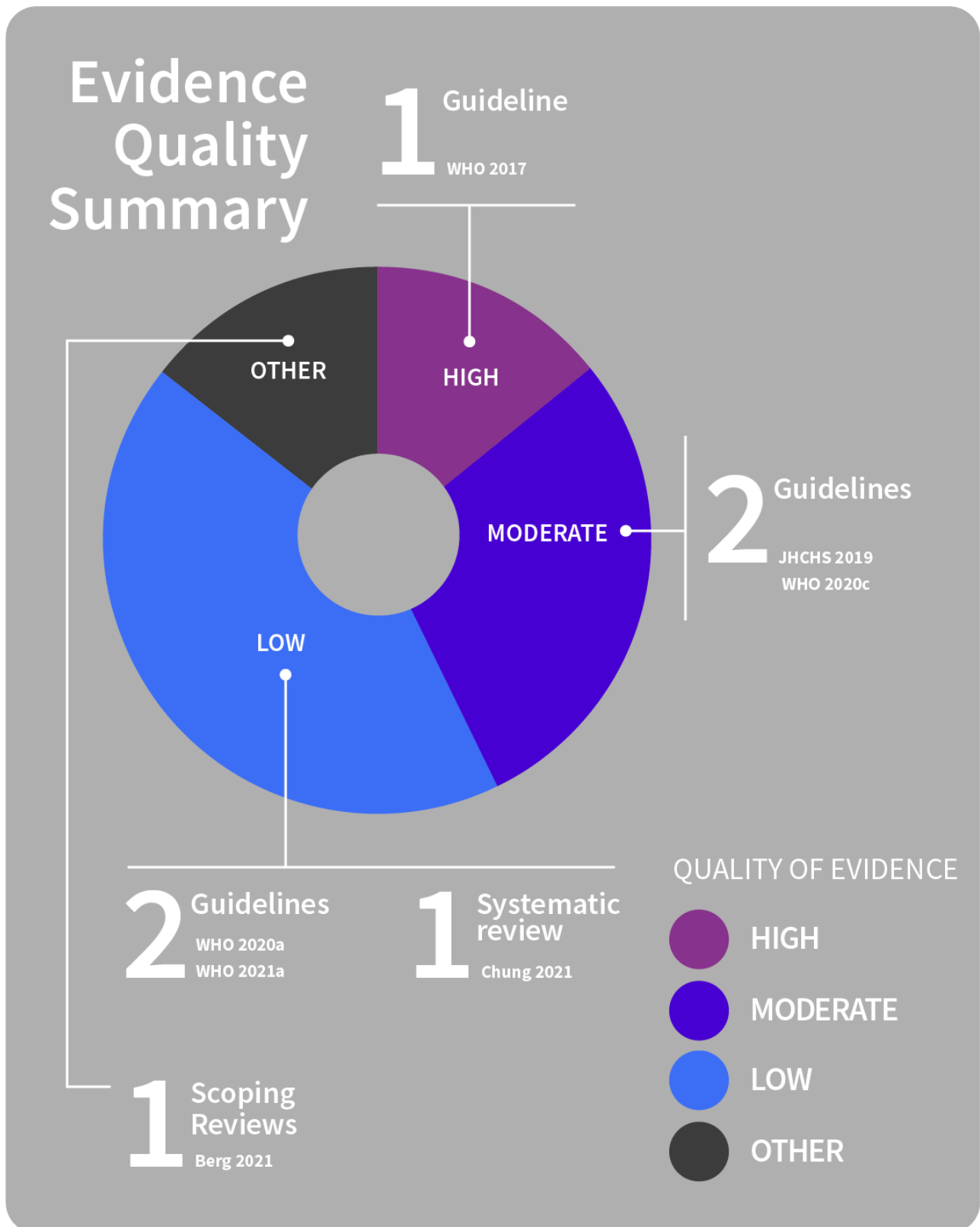
The findings of this update are organised under six major themes, within which subthemes emerging from the evidence are identified. The quality of the evidence on which the findings are based is also provided to aid with interpretation of the findings within each theme.

Theme 1: Strengthening public trust and countering misinformation: essential foundations for effective public health communication

Public trust in the authorities is an essential component of communication.

See [Figure 2](#) for a summary of evidence quality for these findings.

Figure 2. Public trust



Public trust is an essential element of effective communication before, during and after a pandemic outbreak (Berg 2021; JHCHS 2019; WHO 2017). The need to build and maintain public trust

is mentioned directly or implied by several of the findings of this review, as it can be built or eroded by the approaches to

or consequences of physical distancing or the communication approach taken.

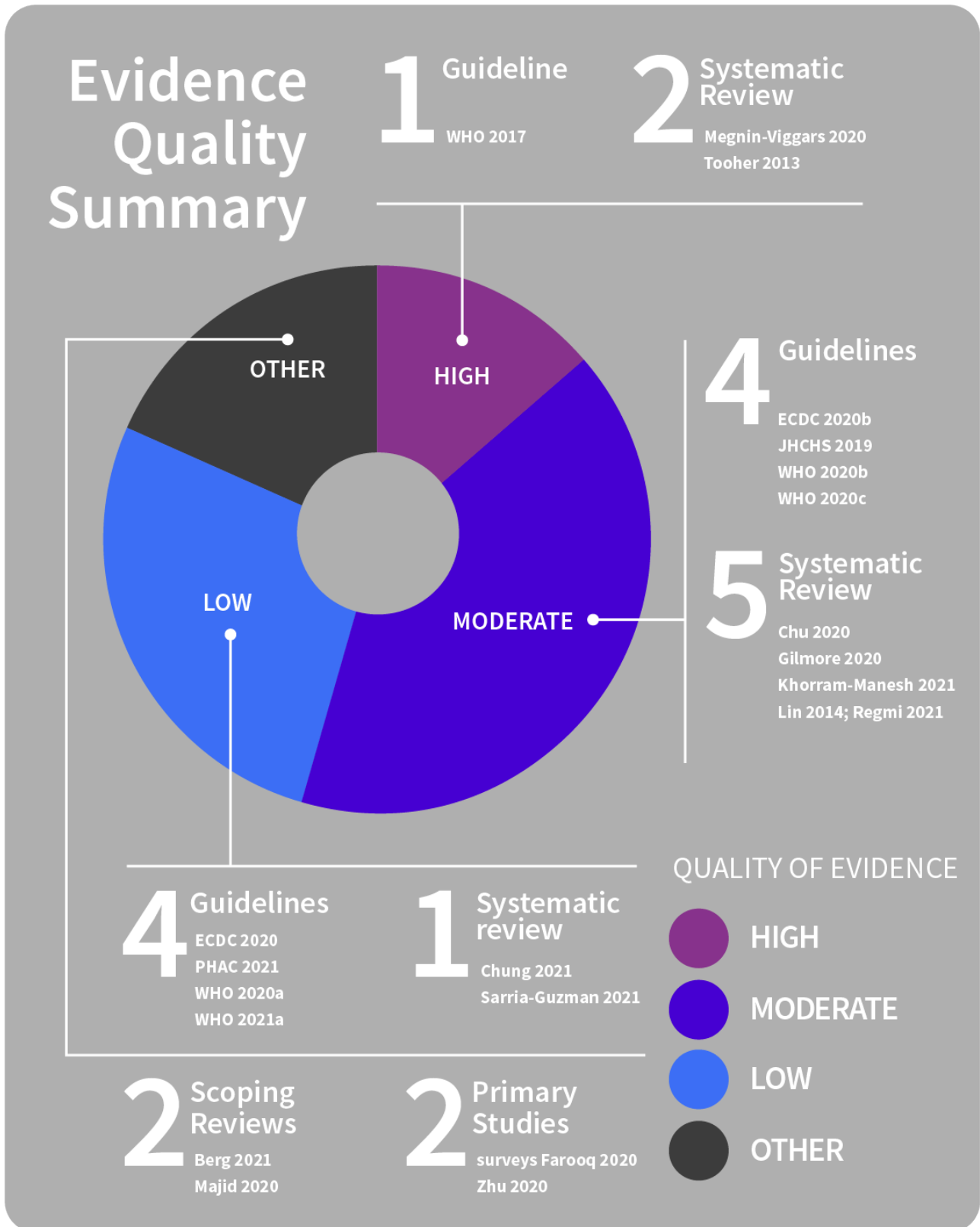
Ideally, public trust in authorities is established and consolidated prior to an outbreak, or prior to introduction of or changes to public health measures (Berg 2021; WHO 2020a; WHO 2021a), but this is not always the case. Governments and authorities need to be mindful that building and maintaining trust amongst the

population is essential when planning communication related to a pandemic (Chung 2021; WHO 2020c; WHO 2020a; WHO 2021a), as this is critical for promoting adherence to public health advice and increasing the effectiveness of preventive measures (WHO 2020c).

Facilitators of public trust

See [Figure 3](#) for a summary of evidence quality for these findings.

Figure 3. Facilitators of public trust



Several factors positively influence people’s trust of public health messaging and consequently, their adoption of and adherence to preventive behaviours.

Providing clear, timely and consistent (i.e. not conflicting or contradictory) information about risk, physical distancing measures and rationale for the measures that is accessible and

disseminated widely through different media and channels helps to build public trust (Berg 2021; Chu 2020; Chung 2021; ECDC 2020b; Farooq 2020; Gilmore 2020; JHCHS 2019; Majid 2020; Megnin-Viggars 2020; PHAC 2021; Regmi 2021; Sarria-Guzman 2021; WHO 2017; WHO 2020a; WHO 2020b; WHO 2020c; WHO 2021a).

Findings also show:

- Conflicting information from different levels of government, or between governments and authorities, needs to be avoided as this undermines public trust.
- Governments and authorities need to regularly communicate epidemiological data to the public to build trust, particularly as measures change over time (WHO 2021a).
- To build and sustain trust, communication from the authorities needs to clearly and transparently convey what is known and what is not (uncertainty), as well as the commitment to base decisions on the best available scientific knowledge at any time (ECDC 2020; Majid 2020; PHAC 2021; WHO 2020a; WHO 2020c).
- As the pandemic continues, so does uncertainty. Clear, consistent public health communication that acknowledges this

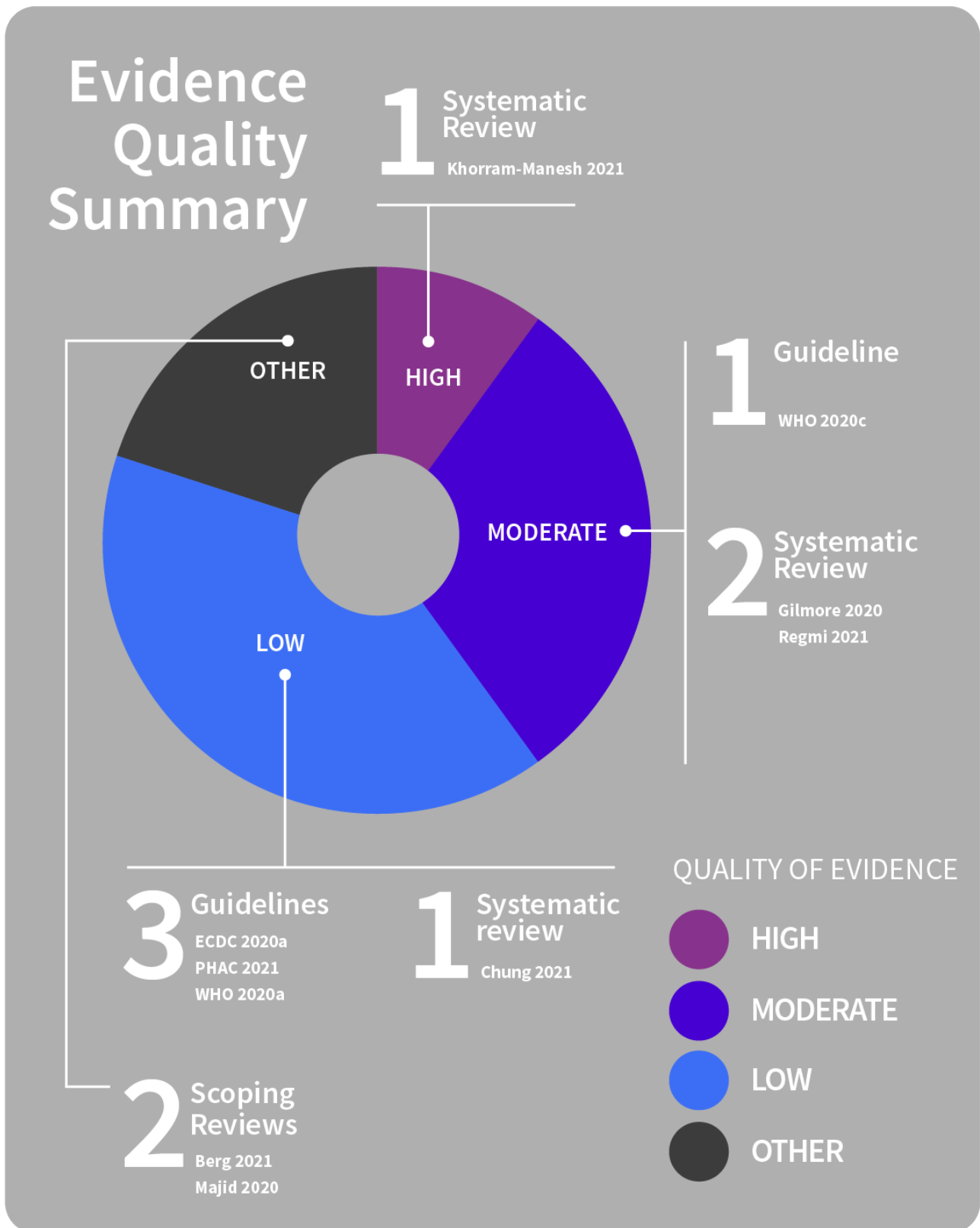
can help to mitigate the negative impact of uncertainty, without undermining trust (Chung 2021; Majid 2020; WHO 2020c).

- Trust in information sources may also be associated with more accurate knowledge of risk and adoption of protective behaviours (Berg 2021; Regmi 2021; WHO 2021a). Promoting person-centred, community-led approaches may increase trust and social cohesion, so improving the feasibility of implementing preventive measures and adherence to them (WHO 2020c; WHO 2021a).
- Higher trust in the ability of governments and public officials to work to control a pandemic outbreak and to ensure protection of privacy and personal information are also associated with greater likelihood of the recommended actions (e.g. engagement with contact tracing) being willingly engaged with, and adopted, by the community (Berg 2021; Chung 2021; Farooq 2020; JHCHS 2019; Khorram-Manesh 2021; Lin 2014; PHAC 2021; WHO 2017; Zhu 2020).

Barriers to public trust

See [Figure 4](#) for a summary of evidence quality for these findings.

Figure 4. Public trust barriers



In addition to recognised contextual, social, and financial barriers to preventive behaviours, erosion of public trust is also key and can negatively influence people’s uptake of and adherence to

preventive messaging and measures. These include conspiracy beliefs or mistrust of government or other organisations (Chung 2021; Gilmore 2020; Megnin-Viggars 2020; WHO 2020c); mistrust

or worries about accuracy of information reported by the media, including social media (Gilmore 2020; Majid 2020); and worsening inequalities, with the pandemic affecting the poorest and most vulnerable disproportionately (ECDC 2020a; WHO 2020c; see Appendix 1 for a comprehensive list of people identified as vulnerable during COVID-19).

Findings also show:

- Public health messaging that includes overstatements or exaggerations, that fosters fear, appeals to authority, repeats myths or misinformation (even where the aim is to counter with factually accurate information), or relies heavily on statistical

information is generally less trusted and therefore less effective at promoting adherence to preventive measures (PHAC 2021).

- Information that challenges or contradicts misconceptions, and is communicated from a trusted source, may reduce misconceptions if the communication is coherent (Majid 2020; Regmi 2021; WHO 2020a).
- Frequent, drastic changes in reporting may be perceived as inaccurate by the public and lead to a loss of trust (Majid 2020), as may the reporting of inaccurate information (Berg 2021; Majid 2020).

Identifying and addressing misinformation

See Figure 5 for a summary of evidence quality for these findings.

Figure 5. Misinformation

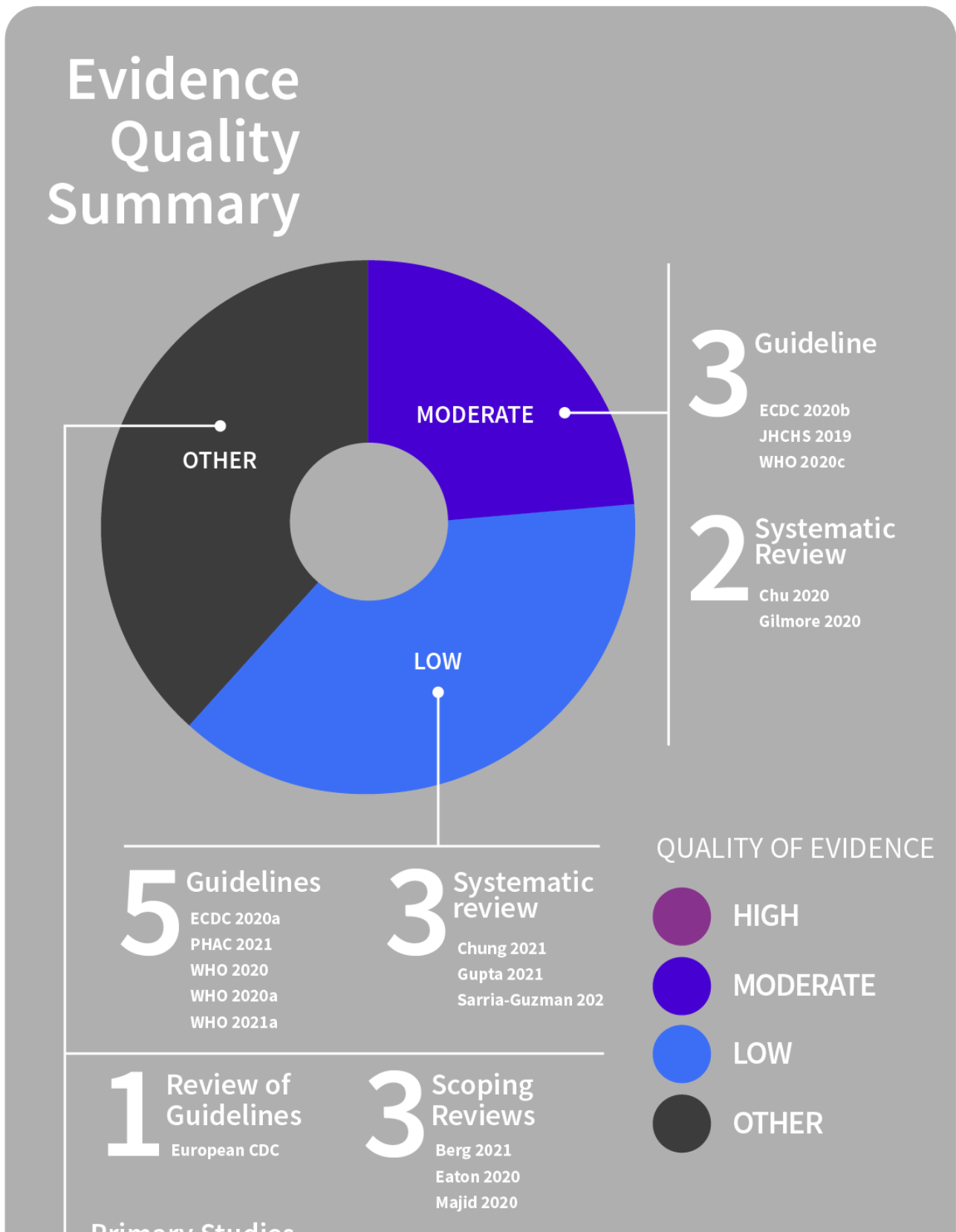


Figure 5. (Continued)



Identifying sources of misinformation

During pandemics, both accurate and inaccurate information spread quickly. It is not yet clear how communities navigate between accurate knowledge that promotes protective behaviours and inaccurate information that does not (Majid 2020).

Commonly accessed information sources may contribute to the spread of misinformation, fears, rumours, and misconceptions about required preventive measures and pandemic risks throughout the general public. This can negatively affect people’s adoption of preventive measures and prevent people from seeking medical care (ECDC 2020b; Gupta 2021; Majid 2020; WHO 2020a).

Misinformation from different sources can circulate alongside accurate information. This may be due to:

- a lack of access and availability of accurate information (forcing people to seek alternative, less reliable sources of information);
- inadequacy of information from reliable sources to support informed decisions regarding adoption of preventive measures; or
- conflicting or contradictory public health messages (Majid 2020; Sarria-Guzman 2021).

Even where members of the public are knowledgeable about an outbreak, many also actively seek information from diverse sources (Eaton 2020; Kwok 2020; Majid 2020; Meier 2020; Qazi 2020; Sarria-Guzman 2021). Public access to information sources is a determinant of use. While perceived trustworthiness may also influence frequency of use, high exposure (frequency of use) to a particular information channel does not necessarily correspond with high levels of trust in information received via the channel. For example, use of online sources and social media platforms is high and growing, but trust in these channels is typically low, whereas traditional media and government sources are used less frequently despite being regarded as trustworthy (Kwok 2020; Majid 2020; Qazi 2020; WHO 2020c). Other research suggests that, in some studies, communication by traditional media is seen as alarmist and inaccurate, exaggerating or sensationalising risk information (Berg 2021; Majid 2020).

Some sources, specifically social media, may be more prone to spreading inaccurate information or misinformation about pandemic risks than others. Countering this (misinformation, rumours and contradictory messages) spread via social media remains problematic for health authorities (Berg 2021). Additionally, people may not verify information they receive via

social media or their social networks (Berg 2021; Majid 2020; Sarria-Guzman 2021).

Addressing misinformation

- Proactive monitoring for rumours and misinformation is essential. It is critical that health authorities and the media adopt co-ordinated strategies to identify and counter misinformation, as this may otherwise spread rapidly and negatively affect adherence to preventive measures (Berg 2021; Majid 2020; PHAC 2021; Sarria-Guzman 2021; WHO 2020; WHO 2020a; WHO 2020c).
- Ongoing public health messaging built on clear, accurate, and consistent information is needed to proactively build trust, clarify misconceptions and address misinformation (ECDC 2020b; Gilmore 2020; Majid 2020; PHAC 2021; WHO 2020a; WHO 2020c).
- Co-ordinated management of misinformation and information overload is needed as these may otherwise grow in the absence of available or accessible information or in the presence of conflicting messages (Majid 2020). For example, different health agencies or levels of government might actively work together to address common issues and use consistent messaging.
- Providing the right information at the right time, to the right people via trusted, credible channels (e.g. community and faith leaders) is critical in helping to build public understanding and consensus about behaviours, such as physical distancing, to mitigate risk (Chu 2020; ECDC 2020a; Gilmore 2020; Gupta 2021; Majid 2020; PHAC 2021; WHO 2020c; WHO 2021a).
- Strengthening the capacity for local and national media to identify and address misinformation may help to ensure consistent messages are communicated (PHAC 2021; WHO 2020c). Building trusted relationships between authorities and the mass media, or authorities engaging effectively with social media, may also build trust (Berg 2021).

Misconceptions may be more common amongst those with less trust of the government or authorities; therefore, community leaders, healthcare providers, the media and government all play an important role in communicating accurate, consistent information about disease and required health protection measures during a pandemic (Chung 2021; Majid 2020; Regmi 2021). Introducing information that contradicts misconceptions may be helpful, but this depends on the source and format of the information and on the level of trust people have in the source. Such information may help to counteract the negative effects of misconceptions on behaviours. However, it requires more cognitive

work from people to process information at a higher level to inform their decisions and behaviours. This may delay the adoption of protective behaviours or increase the adoption of ineffective behaviours, lead to information overload and negative emotional states (Majid 2020).

Additionally, putting in place mechanisms to monitor, address misinformation and rumours, and respond to questions or feedback from the public (e.g. mass and social media, hotlines), is important in order to monitor how knowledge, beliefs, practices and behaviours change (Gilmore 2020). Public communication/information needs to be updated after analysis of public risk perceptions and adjusted in response to help promote uptake of public health advice and reduce mental health issues (Gilmore 2020; Regmi 2021; WHO 2020; WHO 2020a; WHO 2020c; WHO 2021a).

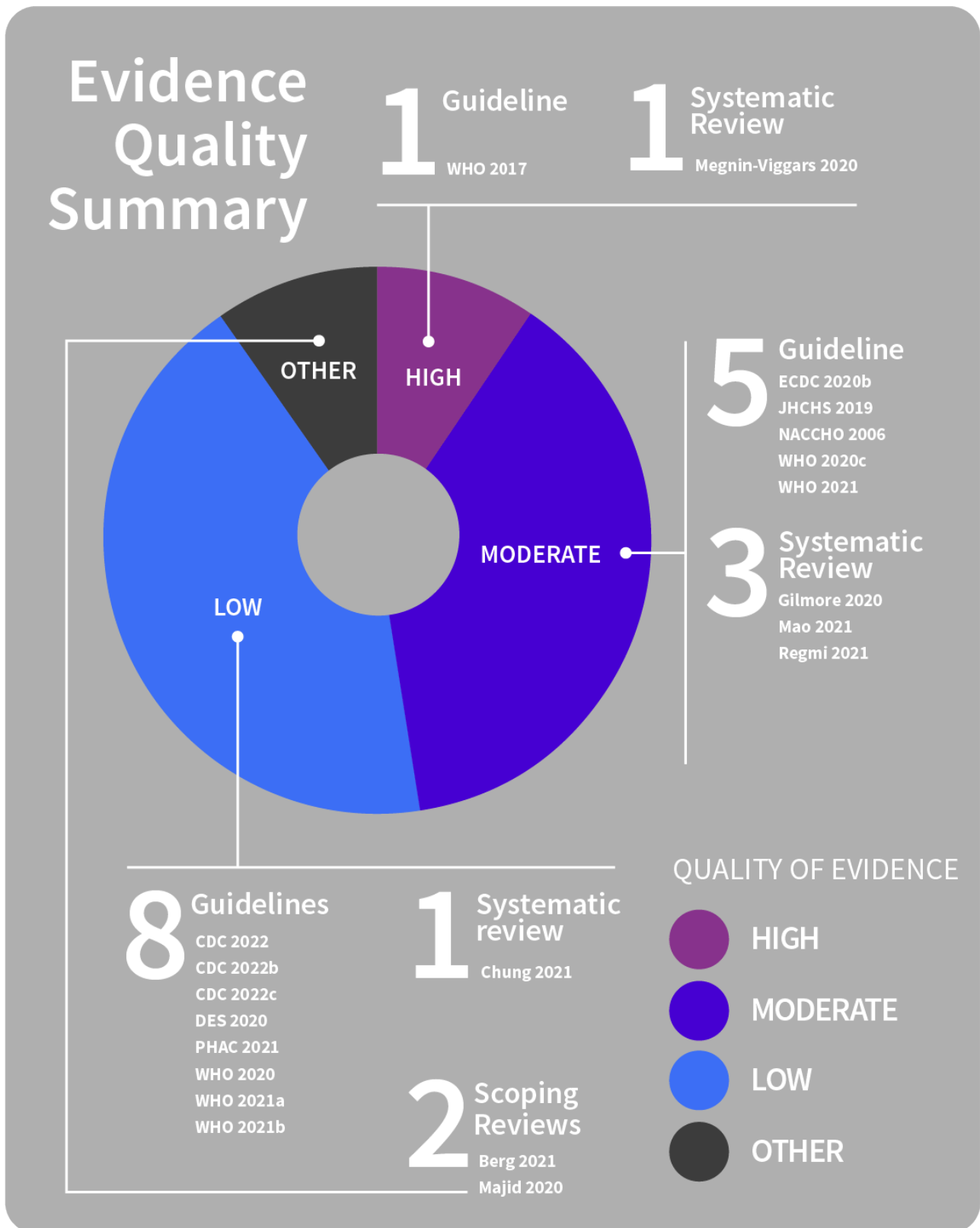
Part of the role of such a system may be to identify or monitor for areas of uncertainty, inaccuracy or misinformation, as well as common questions in the public realm. This may in turn help to identify opportunities to address misinformation and allow the delivery of tailored communications (WHO 2017; WHO 2020; WHO 2020a; WHO 2021a).

Theme 2: Two-way-communication: involving communities to improve the dissemination, accessibility and acceptability of information

Community involvement is key in response planning, dissemination and reach of messages.

See Figure 6 for a summary of evidence quality for these findings.

Figure 6. Community involvement in messaging



During a public health emergency, communication of information and advice is a critical public health intervention. The public, healthcare providers and other stakeholders all require trustworthy

and accessible (language and literacy level) information to be available in a timely way in order to be able to protect their own and others' health (PHAC 2021).

Physical distancing uptake, feasibility, acceptability and adherence are influenced by an array of cultural, geographic and economic factors. These include structural features (e.g. social context, living conditions, resources and services), traditions, sociocultural norms, the need for social interaction and access to space. Perceived norms are an important factor but vary across countries, as do other factors such as carer responsibilities (e.g. lower levels of distancing because of caring duties outside the home) (WHO 2020c; WHO 2021b).

Community involvement is needed to address barriers and to promote acceptability and adherence to preventive measures (WHO 2020c; WHO 2021b), and might be based on the two-way participatory partnership approaches used successfully in past outbreaks (ECDC 2020a; WHO 2020c).

Working with the community is key to understanding local contexts (people's needs, concerns, attitudes and beliefs, and barriers to implementing measures) and identifying localised solutions (CDC 2022b; Megnin-Viggars 2020; WHO 2020; WHO 2021). Without community involvement, misinformation, confusion and mistrust can undermine public health efforts (WHO 2020c).

Involving the community helps to ensure an informed and appropriate person-centred response by:

- Gathering information on knowledge and behaviours (e.g. preferred information sources and formats) (CDC 2022b; Megnin-Viggars 2020; PHAC 2021; Regmi 2021; WHO 2020; WHO 2020a; WHO 2020c; WHO 2021);
- Developing (designing) and implementing appropriate messaging related to measures (information, education, communication) (Gilmore 2020); and
- Tailoring the supports needed to follow public health measures (PHAC 2021; Regmi 2021).

Community involvement is also critical for identifying the ways people might respond in a crisis that are different from those that were predicted (NACCHO 2006). Community trust is built from sustained two-way community engagement that is evidence-based, communicated via trusted sources, and is responsive to community feedback (i.e. monitoring knowledge, beliefs and practices/beliefs and changes over time, and adapting course as needed) (ECDC 2020b; Gilmore 2020; JHCHS 2019; PHAC 2021; WHO 2017; WHO 2020c; WHO 2021a). However, this requires structures and processes to be in place (e.g. participatory governance, mechanisms for involving communities in policy and intervention design). This may be a key consideration for organisations when planning pandemic preparedness processes and structures (WHO 2020c).

Findings also show:

- Two-way community engagement is most effective if started early, if it is ongoing as information changes, and occurs through multiple channels. This can help to promote better understanding of the sociocultural context in which disease prevention and control efforts are needed (Gilmore 2020; WHO 2020a; WHO 2020c).
- Community involvement is needed in all stages of local COVID-19 responses: planning, design, implementation, monitoring, and evaluation (WHO 2020c; WHO 2021a).

- Planning and decision-making related to introduction or adjustment of public health measures needs to be undertaken collaboratively with local and regional leadership with the aim of balancing community needs and the benefits of measures against potential harms (CDC 2022; CDC 2022a; CDC 2022b; Gilmore 2020; PHAC 2021; WHO 2021a).
- If stricter measures are needed, the impact of these need to be balanced against the positive and negative effects for the community, as a whole and for individuals. If measures are lifted, implications for transmission must be well understood, and adequate health systems and measures put in place to minimise risk to vulnerable people (WHO 2021a).
- Incorporating community members into planning, response and monitoring activities of pandemic management teams is needed, with plans widely disseminated within communities to promote support (Gilmore 2020; WHO 2020c).

Strengthening and support of authorities for community involvement is needed by providing guidance and tools for best practice community engagement; developing strategies to address stigma/discrimination, pandemic fatigue and to build trust; and by co-ordinating efforts to manage the infodemic and build health and digital literacy (WHO 2020c). Capacity and local solutions to control the pandemic and mitigate the impacts also need to be supported through mentoring, technical support and resource sharing with local groups. Explicitly recognising local expertise and ensuring it is central to community engagement efforts (building on existing relationships and established trust) is key. Considerations need to include identifying required skills in different contexts (e.g. participatory approaches, facilitation and co-ordination, data collection/analysis); assessing the need for technical support and capacity building (including training and training resources (adaptable to culture, language, format, accessibility); and strengthening capacity for local and national media to identify and address misinformation (WHO 2020c)).

Additionally, community engagement and dialogue can strengthen alternate channels for communication (e.g. local networks, community leaders). This can improve the reach of important preventive messages, including to groups most affected by the pandemic (e.g. vulnerable and underserved groups) (CDC 2022b; JHCHS 2019; Mao 2021; NACCHO 2006; PHAC 2021; WHO 2017; WHO 2020; WHO 2021). It can also underpin mechanisms for providing meaningful feedback from the community to authorities about the relevance and value of communications in order to improve subsequent communications and information (ECDC 2020; Mao 2021; WHO 2020; WHO 2020a; WHO 2020c; WHO 2021; WHO 2021a) and to monitor knowledge, beliefs and behaviours (Berg 2021; Chung 2021; ECDC 2020b; Gilmore 2020; WHO 2021a), prevention barriers (ECDC 2020b; Majid 2020) and address rumours, misinformation and queries (WHO 2020a).

Promising models might aim to build local capacity by working with community leaders to promote appropriate behaviours, as well as signposting, practical instructions, and linking behaviours to social norms (ECDC 2020b). Disseminating information (including about COVID-19 prevention and when to seek care), addressing concerns and promoting dialogue on specific needs of groups, such as those with lower literacy, visual, intellectual or other impairments may also be useful (WHO 2021). Community champion schemes, where volunteers are provided with the most recent information (including infographics in community languages) on COVID-19 to

share with their community (Mao 2021), or working with local community networks to build capacity and train local leaders may also be beneficial (WHO 2021a).

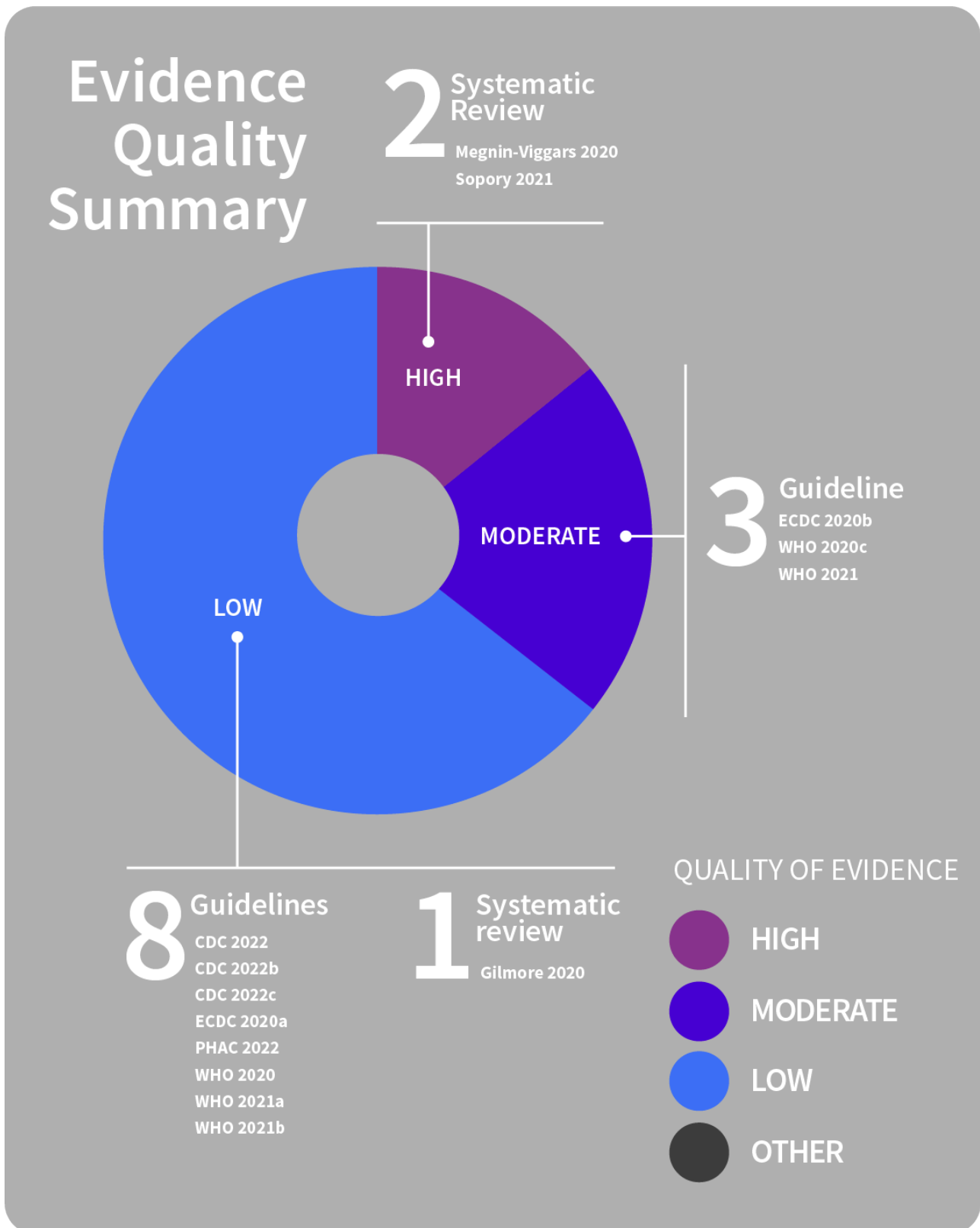
Specific settings, such as schools (defined inclusively here to mean kindergarten to high school, early childhood education settings, institutes of higher education), need to engage effectively with their local communities (staff, parents/guardians and other partners (e.g. health centres)) to plan preventive measures, ensure that diverse community needs are taken into account and work collaboratively (with state, tribal, local health and other officials) to

implement guidance (CDC 2022; CDC 2022a; CDC 2022b). Ongoing engagement to provide information to diverse groups within school communities, and to ensure ongoing two-way communication and support mechanisms are in place, adapted as circumstances change, is essential for managing school settings (DES 2020).

Community involvement underpins effective tailoring of measures and communications.

See Figure 7 for a summary of evidence quality for these findings.

Figure 7. Community involvement in tailoring



Public health measures and the communications related to them must be flexible and responsive over time; calibrated to local setting and context (e.g. intensity of community transmission);

reviewed regularly; adapted to the local community; and tailored to the characteristics of the intended audience (e.g. socioeconomic

status, gender, age, caregiving responsibilities) (PHAC 2021; WHO 2020).

Interventions to directly control COVID-19 need to be balanced with strategies to limit short- and long-term impacts on health and socioeconomic well-being (e.g. those arising from loss of income, loss of services) that might arise from restrictions. Unintended negative impacts of measures need to be identified and managed alongside policies to maintain essential services (healthcare, essential goods, income, human rights) (WHO 2020).

Findings also show:

- Communication on preventive measures needs to be developed with communities in whom the measures are to be enacted or adjusted, so promoting uptake of measures that fits with local community needs, including those of diverse groups (CDC 2022; CDC 2022a; CDC 2022b; ECDC 2020b; Megnin-Viggars 2020; PHAC 2021; WHO 2020c; WHO 2021a). This is critical so that people understand their risk and can access actionable information to make informed decisions about how to reduce their risk (ECDC 2020b; WHO 2020; WHO 2020a).
- Key information needs to be conveyed to the community through clear, simple language and messages that encourage information sharing, focus on actionable messages about what people can (rather than what they cannot) do, and emphasise personal responsibility and the role of each person in preventing disease and saving lives (ECDC 2020b; PHAC 2021; WHO 2020; WHO 2021).
- Lack of appropriate tailoring can undermine messages and the uptake of or adherence to public health measures. These include lack of contextual/cultural understanding (e.g. social norms, traditions, customs, and beliefs pervasive within the specific context); lack of engagement with appropriate actors; inconsistent and confusing messaging

and/or misinformation; lack of trust in government, media and organisations; inadequate training, support structures, resources or incentivisation; unclear responsibilities; and weak infrastructure or broader contextual conflict (e.g. poverty) (ECDC 2020b; Gilmore 2020).

Lack of, or insufficient, tailoring of communications and protective measures can also mean that vulnerable groups are not adequately considered in decision-making (see Appendix 1 for list of vulnerable groups in the context of COVID-19). There is a need for recognition and acceptance that imposing quarantine on vulnerable groups (e.g. poor, people experiencing homelessness) requires greater modification of standard processes and awareness that greater harms (psychological, social and financial) are possible (Sopory 2021).

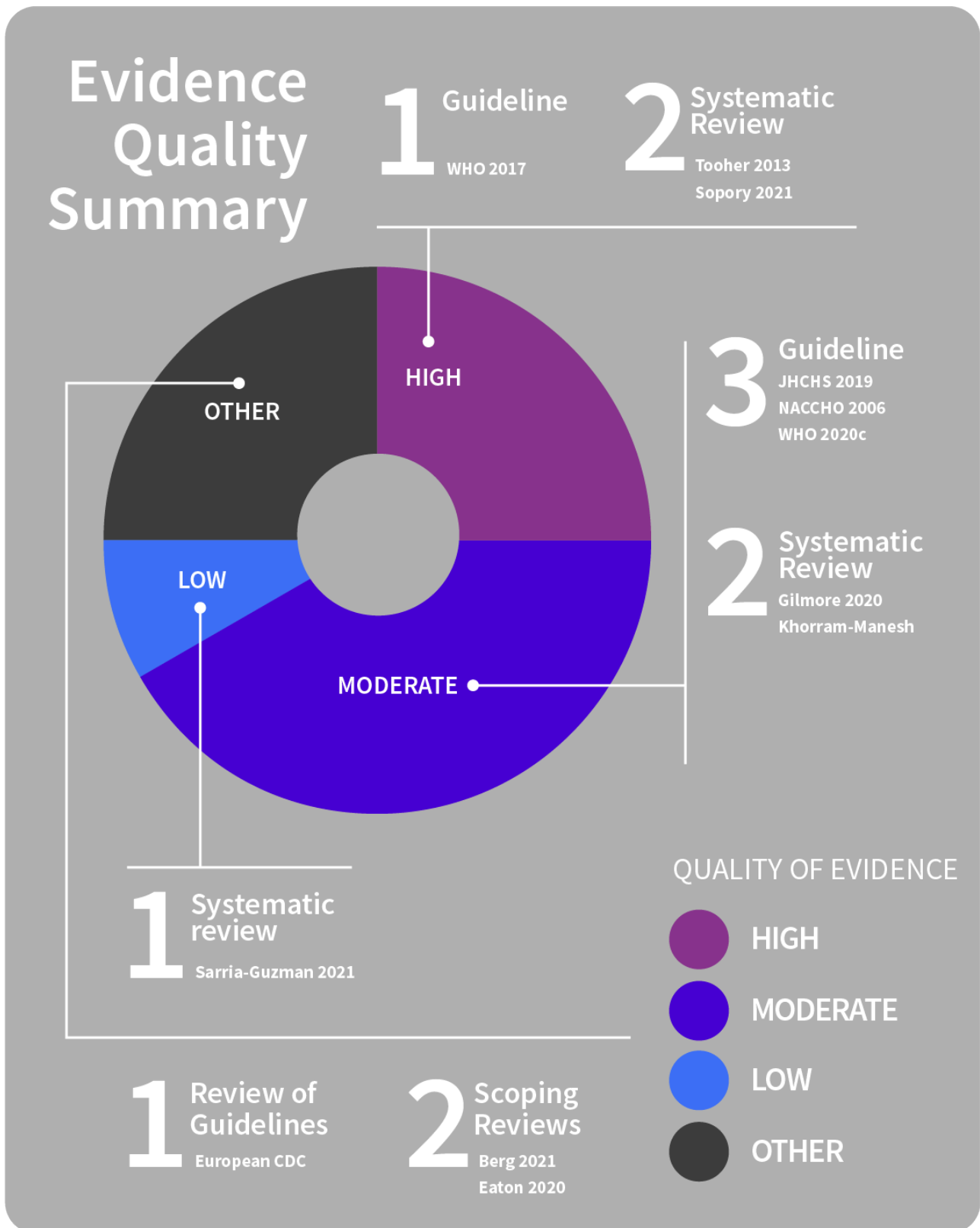
Community engagement may help to identify people who are vulnerable (those with less agency to comply with physical distancing measures) and their range of specific needs (CDC 2022; PHAC 2021; WHO 2020c; WHO 2021). Deliberate efforts to ensure that vulnerable people are represented and engaged throughout the planning, communication and implementation of protective health measures are needed (CDC 2022; CDC 2022a; CDC 2022b; ECDC 2020a; Sopory 2021; WHO 2020c; WHO 2021a). This helps to ensure the acceptability, sustainability and effectiveness of chosen approaches; to avoid unintended effects (harms) (ECDC 2020a); and enable information sharing and feedback on the relevance and value of communications to help address inequalities (ECDC 2020a; PHAC 2021).

Theme 3: Development of and preparation for public communication: target audience, equity and tailoring

Target audience and setting for communications

See Figure 8 for a summary of evidence quality for these findings.

Figure 8. Communication audience and setting



Public communications about physical distancing measures must take into account the context, settings, and different audiences in a population because these factors influence adherence (Berg

2021; Khorram-Manesh 2021; Sopory 2021). This does not mean that different messages (i.e. saying different things) need to be communicated: rather, it means that communication has to be

planned to take into account the complexity of any audience and the groups within one population (Gilmore 2020; Sopory 2021). Decisions about implementing physical distancing measures, and communicating with the public about pandemic health threats and the importance of behavioural mitigation measures need to consider that the strategies themselves and the communications about them (e.g. delivery mode) must be appropriate to context and setting (Berg 2021; ECDC 2020g). Including in communications details specific to communities, such as information about for who, when, where, and how measures are to be implemented are critical elements (Khorram-Manesh 2021).

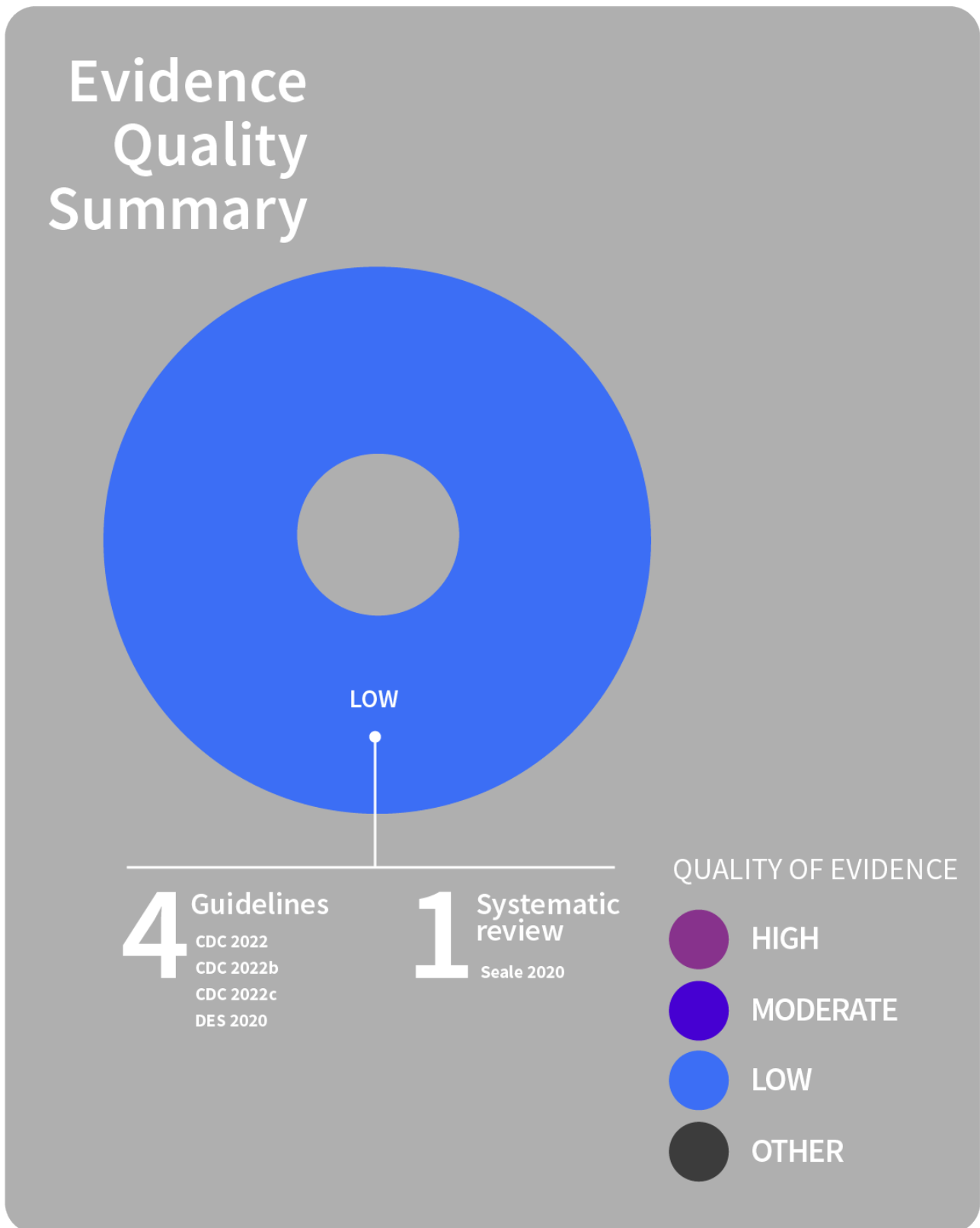
Comprehensive risk communication strategies, informed by knowledge of the affected community, are therefore needed, alongside strategic planning efforts to ensure that:

- The diverse needs of different groups within a population can be met (Sopory 2021);
- Different audiences can be targeted (Eaton 2020; ECDC 2020g; Gilmore 2020; JHCHS 2019; NACCHO 2006; Tooher 2013); and
- Information is sufficient to support informed decisions regarding adoption of preventive measures (Sarria-Guzman 2021).

Example: schools as a setting for pandemic communication

See Figure 9 for a summary of evidence quality for these findings.

Figure 9. School settings for pandemic communication



To support safety within schools, a significant shift is required behaviourally, with all members of the community playing their part to keep everyone safe (e.g. respecting physical distancing

practices and minimising social contact). A clear rationale for the measures needs to be widely communicated from schools to the school community, so that people understand the reasons for

the measures and the risks involved. Key public health advice messages conveying clear and actionable information need to be communicated and reinforced throughout the school community so that people are aware of what to do to protect themselves and others, of the need to adhere to measures as schools re-open, and of the need to continue to observe preventive measures, including as measures change, to support schools to stay open (CDC 2022a; DES 2020; Seale 2020).

There is a need for frequent, easy-to-understand communication and training for staff (CDC 2022a; CDC 2022b). Communication from schools to families and to staff is required, using clear, accessible communication materials and channels; in a language, literacy level and format that accommodates diverse audiences, including staff members, families and children, people with disabilities, and those with limited proficiency in the dominant community language (CDC 2022; CDC 2022a; CDC 2022b).

In schools and early childhood education services, in particular, layered preventive approaches (i.e. multi-faceted measures such as physical distancing together with mask wearing and good ventilation) may be needed to keep students and staff safe, as physical distancing may not always be possible. Information about these measures and their role in protecting the health of students and staff needs to be clearly communicated within schools and to the wider school community (CDC 2022; CDC 2022a). The benefits and importance for students of in-person learning mean that safely returning to classrooms is a priority. Implementing layered prevention strategies is therefore key to protecting all, rather than excluding students from in-person learning (CDC 2022a).

Implementation of layered preventive approaches needs to be developed and supported with an understanding of the community's needs (CDC 2022; CDC 2022a). Each school district and school needs to have a plan in place to protect students, teachers, staff and families (CDC 2022; CDC 2022a) that considers social and behavioural factors that might influence transmission risk and the feasibility of different prevention strategies in the school community (CDC 2022a).

Such plans might include:

- Signage in highly visible locations, and communication with students and staff (via social media and email) to inform them

of prevention strategies, including physical distancing (CDC 2022b);

- Physical markers to remind cohorts or individuals to maintain an appropriate distance in communal areas (e.g. tape on floor, wall signs)(CDC 2022);
- Behavioural techniques such as modelling and reinforcing desired behaviours, and using approaches such as picture schedules, timers, visual cues, and positive reinforcement to help children to adjust (CDC 2022). Staff and students could also be provided with virtual training on prevention strategies, policies and procedures (CDC 2022b).

A range of support is needed to assist schools to implement prevention strategies and communicate effectively about them. This might include strategies such as staff training, age-appropriate information posters with key health messages, and communication guidance. For students, parents and school communities, support might include information provided via different channels; and, for schools more broadly, might include strategies such as a webpage for transparent information sharing, or an educational department team to support schools with information and requests (DES 2020).

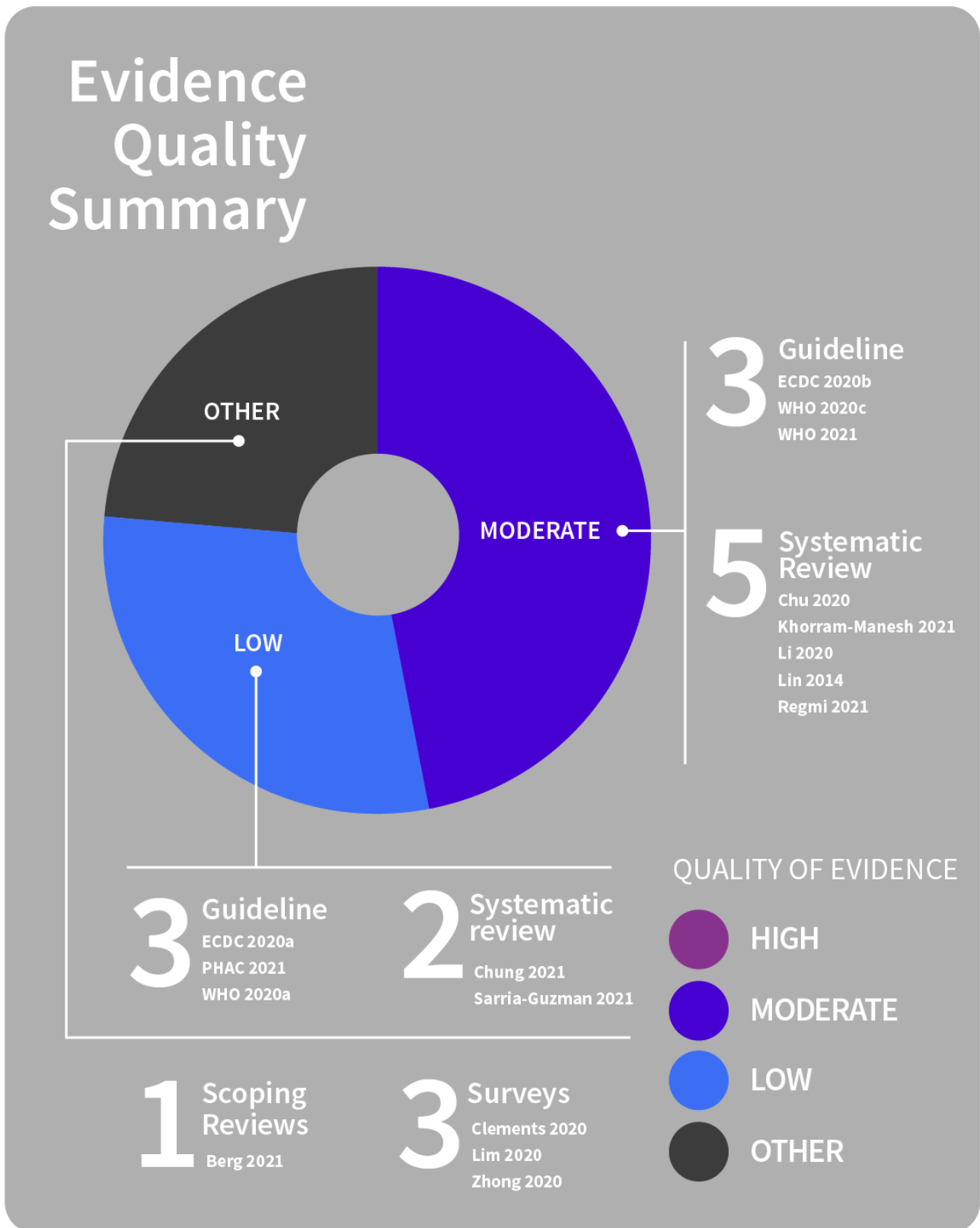
A staff member or office should be given responsibility for responding to COVID-19 concerns and notifying teachers, staff and families of students who were close contacts as soon as possible after notification of a positive case (CDC 2022a; CDC 2022b). Schools need to encourage families to monitor children for symptoms of an infectious illness and report new cases to the school and to public health authorities (CDC 2022a; CDC 2022b). Schools also need to provide information about when people should stay home and when they can safely return (CDC 2022; CDC 2022a; CDC 2022b).

The ongoing nature of the pandemic means that schools need to be flexible and prepared to provide continuity of learning and teaching, as a contingency for future closures. This includes being prepared to communicate with students, teachers and staff, and to promote communication between them, should the need arise in response to public health advice (DES 2020).

Tailoring of communications

See [Figure 10](#) for a summary of evidence quality for these findings.

Figure 10. Communication tailoring



Tailoring of public health communications plays a critical role in reaching and informing more of the community, including those for whom information access may be unequal (Berg 2021;

ECDC 2020a; Khorram-Manesh 2021; PHAC 2021; Sarria-Guzman 2021; WHO 2021). Clear, structured communication of reliable health information can also be tailored to people experiencing

information overload and to manage the infodemic, and to build digital health literacy (Lim 2020; WHO 2020c).

Recognising population groups who are more likely to be non-adherent to preventive measures can help public health policy-makers to identify target populations for pandemic prevention and education efforts. Public health education may be more effective if it targets groups more at risk of low knowledge and risky behaviour (Clements 2020; Lin 2014; Sarria-Guzman 2021).

Acceptance, uptake, and adherence to physical distancing measures are also determined by personal characteristics such as socioeconomic status, ethnicity, culture, age, and gender (e.g. men tend to leave the house to socialise more often than women; risk may be more common in those with fewer resources) (Berg 2021; Lim 2020; WHO 2020c). Surveys undertaken during the COVID-19 pandemic, for example, indicate that knowledge, attitudes, and preventive practices towards COVID-19 may be lower amongst younger people (up to 29 years) and amongst those with lower incomes (Clements 2020; Zhong 2020). Public health communication strategies that specifically target particular groups may therefore help to provide actionable information that people can use to protect their health (Berg 2021; Li 2020). Collaboration between health authorities and communities, using trusted spokespeople, may help improve the tailoring and accessibility of communications (Berg 2021; PHAC 2021).

Findings also show:

- Particular groups within the community may lack adequate knowledge about emerging diseases and that the information provided to them may be inadequate to meet their needs. Therefore, there is a need for communication strategies and

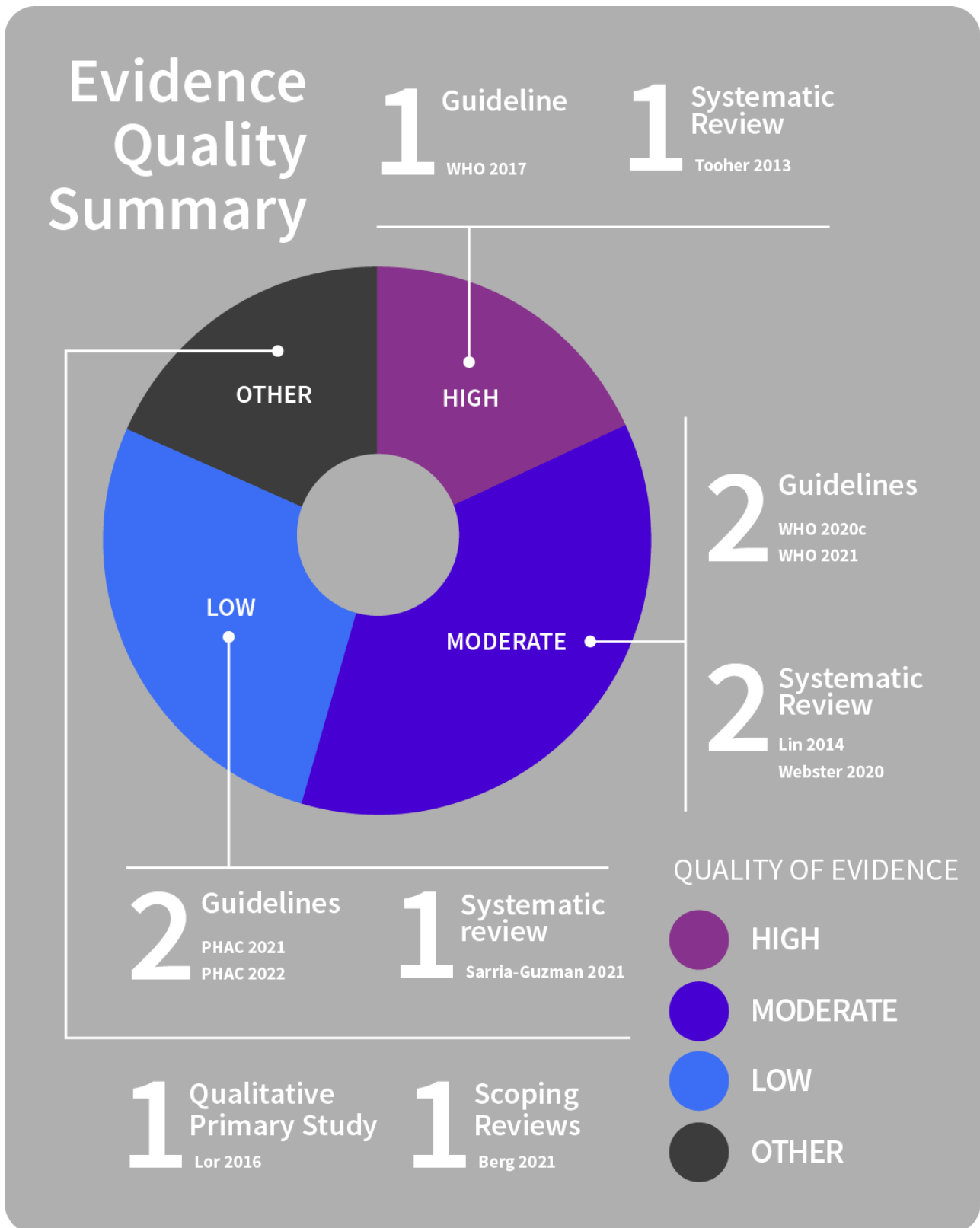
information that are specifically tailored to target different groups (Berg 2021; Li 2020; PHAC 2021; Regmi 2021; Sarria-Guzman 2021).

- Tailoring might include developing communication campaigns collaboratively with community members, altering the communication mode (e.g. community radio, mailouts, posters), and considering whether messaging from familiar or trusted individuals (e.g. Elders, First Nations physicians) may be appropriate (PHAC 2021).
- Information delivery needs to be adjusted (e.g. sign language for people with disabilities or visual communication (e.g. infographics) for people with low literacy) (ECDC 2020b; WHO 2021) to ensure accessibility (ECDC 2020b), provided via a range of formats, follow accessibility standards (written in clear, non-technical language) (Berg 2021; Chung 2021; WHO 2020a; WHO 2020c), and be disseminated through several channels (mass media, digital, written) (ECDC 2020b; PHAC 2021). Communicators must also be appropriately skilled and trained (Berg 2021; PHAC 2021; WHO 2020a).
- Pretesting tailored messages for acceptability and accuracy of understanding is needed with members of the intended audience, with awareness that some people within the community may not be able to access or use standard resources (PHAC 2021). Working to ensure that messages are both appropriate (acceptable) and effective (accurately understood) (Chu 2020; ECDC 2020a; WHO 2020c), is key (see also theme 2 on community engagement).

General equity considerations in communication

See [Figure 11](#) for a summary of evidence quality for these findings.

Figure 11. Equity in communication



Several factors influence community awareness of public health messages related to a pandemic, which, in turn, influences acceptance, uptake and adherence (Lin 2014; Lor 2016; Webster

2020). Public health communications intending to inform populations about pandemic disease and physical distancing measures need to take account of such factors to ensure that

communication is as equitable and achieves as much reach as possible within communities. The need to communicate comprehensively and clearly to a population, as well as to specific groups within the community, arises because knowledge and adoption of preventive behaviours are not evenly distributed. In doing so, the groundwork is laid to help to ensure the greatest possible uptake of and adherence to preventive measures and so mount a consistent pandemic response (Berg 2021; Lin 2014; Lor 2016; PHAC 2021; WHO 2021).

Many inequalities exist and can importantly influence acceptance, uptake, and adherence to preventive measures and the correct use of measures (PHAC 2021). Some are structural or societal inequalities, which need to be addressed through political or societal decisions to support physical distancing measures, such as the provision of financial support to those unable to work, particularly for those from disadvantaged or vulnerable groups. However, the importance of public communication which deliberately recognises and plans to counteract inequalities cannot be overstated, as this is critical for community-level uptake of physical distancing measures, and the effects of the pandemic thus far are known to disproportionately affect the poorest and most vulnerable (Sarria-Guzman 2021; WHO 2020c; WHO 2021).

Communications must also be designed and adapted to reach those groups who are less likely or less able to take up preventive measures, or who are less likely to be reached by traditional public health communications, so that information and communication inequalities are not amplified (Berg 2021; PHAC 2021; PHAC 2022; Tooher 2013; WHO 2017).

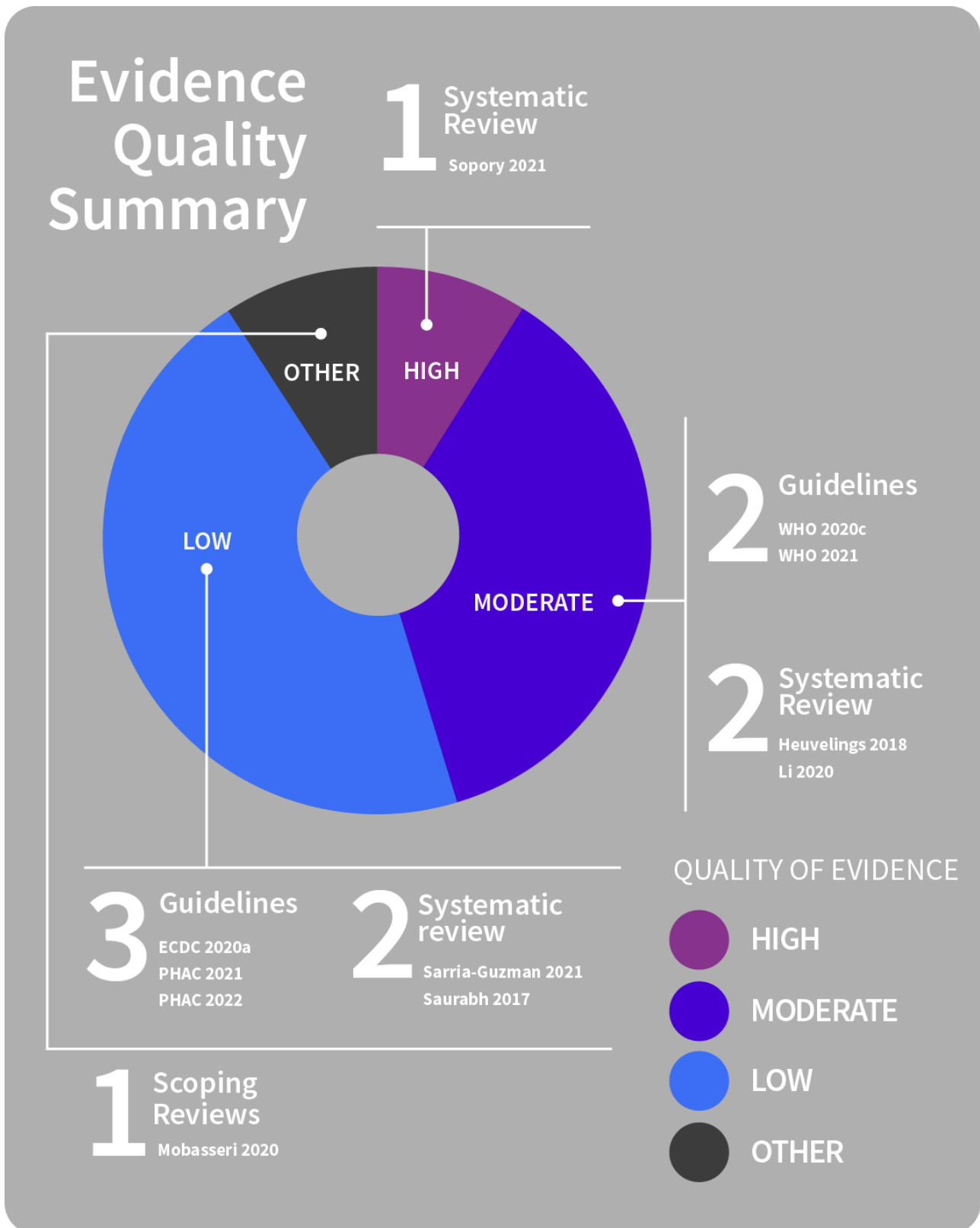
Equity issues for specific population groups

As well as general equity considerations, there are several imbalances commonly identified in the literature (underserved and vulnerable populations, those speaking languages other than the community's dominant language, people with lower educational levels and those for whom physical distancing may be particularly difficult to reconcile with cultural practices). Such inequities need to be explicitly recognised and addressed when planning and implementing physical distancing measures (PHAC 2021; WHO 2020c).

- **Underserved and vulnerable populations**

See [Figure 12](#) for a summary of evidence quality for these findings.

Figure 12. Equity: underserved and vulnerable populations



There is a need for policy responses that actively recognise, and address, the challenges particular to specific groups within the population, and that allow a more comprehensive approach

to addressing shared challenges and needs (ECDC 2020a; Mobasseri 2020; Sarria-Guzman 2021; Sopory 2021). Public health communication planning that includes consideration of diverse

audiences and how to reach groups not easily engaged through traditional communication channels is more likely to reach more of the community. This includes prioritising communication and support for those who are most vulnerable and who have different needs to the general public. Public health communication approaches may need to be more flexible to meet these needs (ECDC 2020a; Li 2020; PHAC 2021; PHAC 2022; Sopory 2021; WHO 2020c; WHO 2021).

Public health messages need to be developed with mindfulness that there are people in the community who may not be able to access or use standard resources (ECDC 2020a; PHAC 2021; WHO 2020c). As an example, contact tracing for underserved groups may be improved by using community health workers from the same migrant community, or peers amongst people who use drugs, and is likely to be both highly acceptable and feasible to implement (Heuvelings 2018). While contact tracing has enormous potential to reduce disease cases, successful implementation relies on trust and the provision of appropriate (culturally-sensitive) messages (Saurabh 2017). Similarly, use of contact tracing apps or other digital technologies needs to be based on consideration that people within the population have differential access to devices to support app usage (e.g. older devices may not run, older people may not have access to or familiarity with the technology,

neither Internet access nor digital literacy are uniform across the community) and that this can further marginalise vulnerable people within the community (e.g. those who are older, poorer or in remote regions, those with auditory or visual impairment who cannot access all online materials) (ECDC 2020a; Khorram-Manesh 2021; Mobasser 2020; Sarria-Guzman 2021; WHO 2020c; WHO 2021).

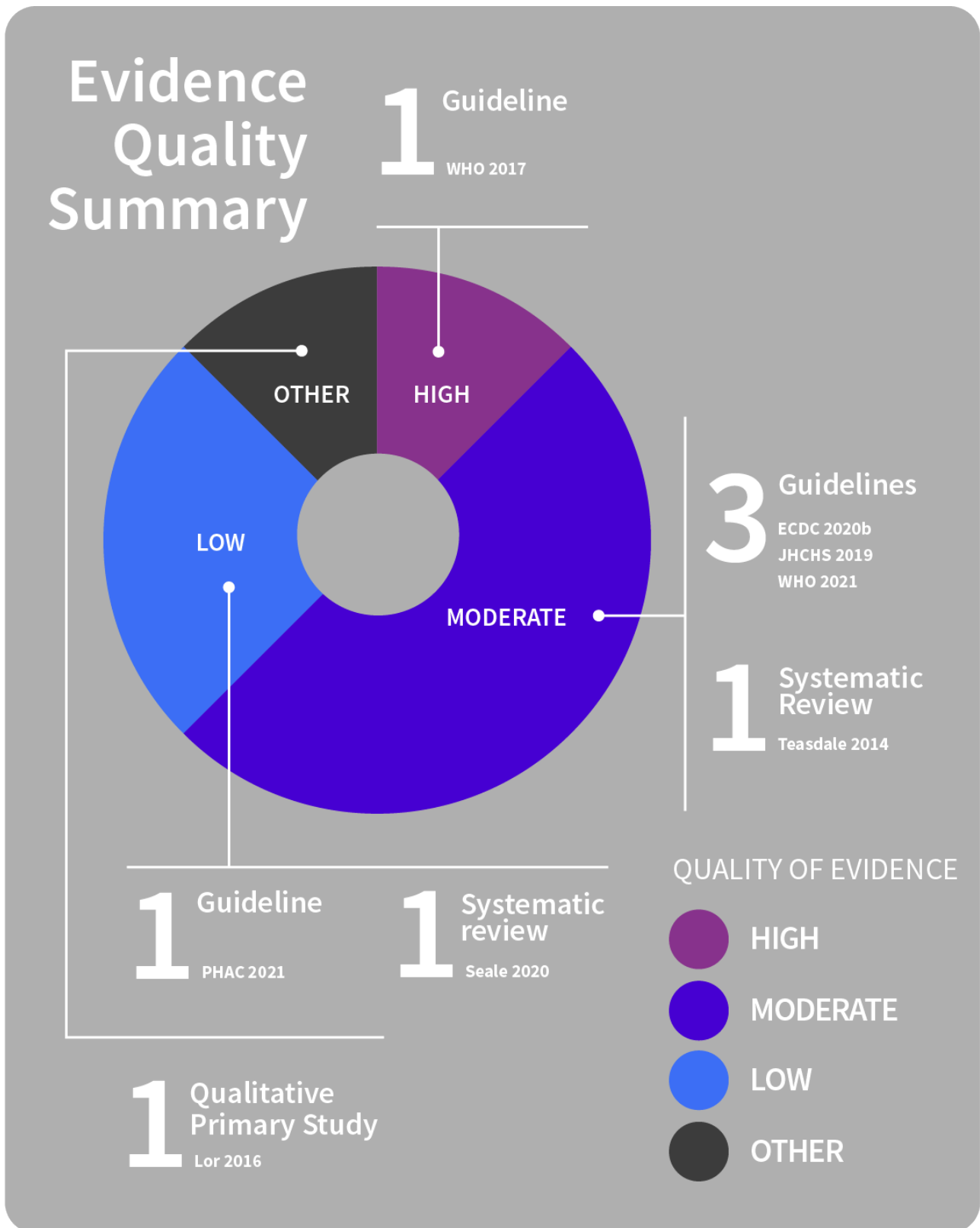
Public health information must be appropriate and accessible, at suitable literacy and comprehension levels for people with intellectual disability or cognitive impairment, and adapted for communication through multiple channels to ensure that people with disabilities receive adequate public health information and services to protect their health (WHO 2021).

For people with disability, mechanisms to enable communication with health professionals to raise concerns or questions about protective measures is needed, and appropriate monitoring processes need to be in place so that people with disabilities who may not be able to voice their concerns during isolation are protected from harm (WHO 2021).

- **Cultural barriers**

See [Figure 13](#) for a summary of evidence quality for these findings.

Figure 13. Equity: cultural barriers



Physical distancing for most people within a community is challenging, due to limitations on contact with family, friends, and others. Within some households and some cultural groups, physical

distancing may be particularly unacceptable due to the limitations placed on interactions regarded as both socially and culturally

necessary. This might include caring for sick family members or funeral duties (Lor 2016; Seale 2020; Teasdale 2014).

Remote islands and isolated communities (e.g. First Nations, Inuit and Metis communities) have additional issues to consider and require tailored approaches to reduce risk and to communicate about these (e.g. tailored based on culture, geography, social determinants of health). For instance, remote communities may not be exposed to the same level of communications as urban areas (PHAC 2021.)

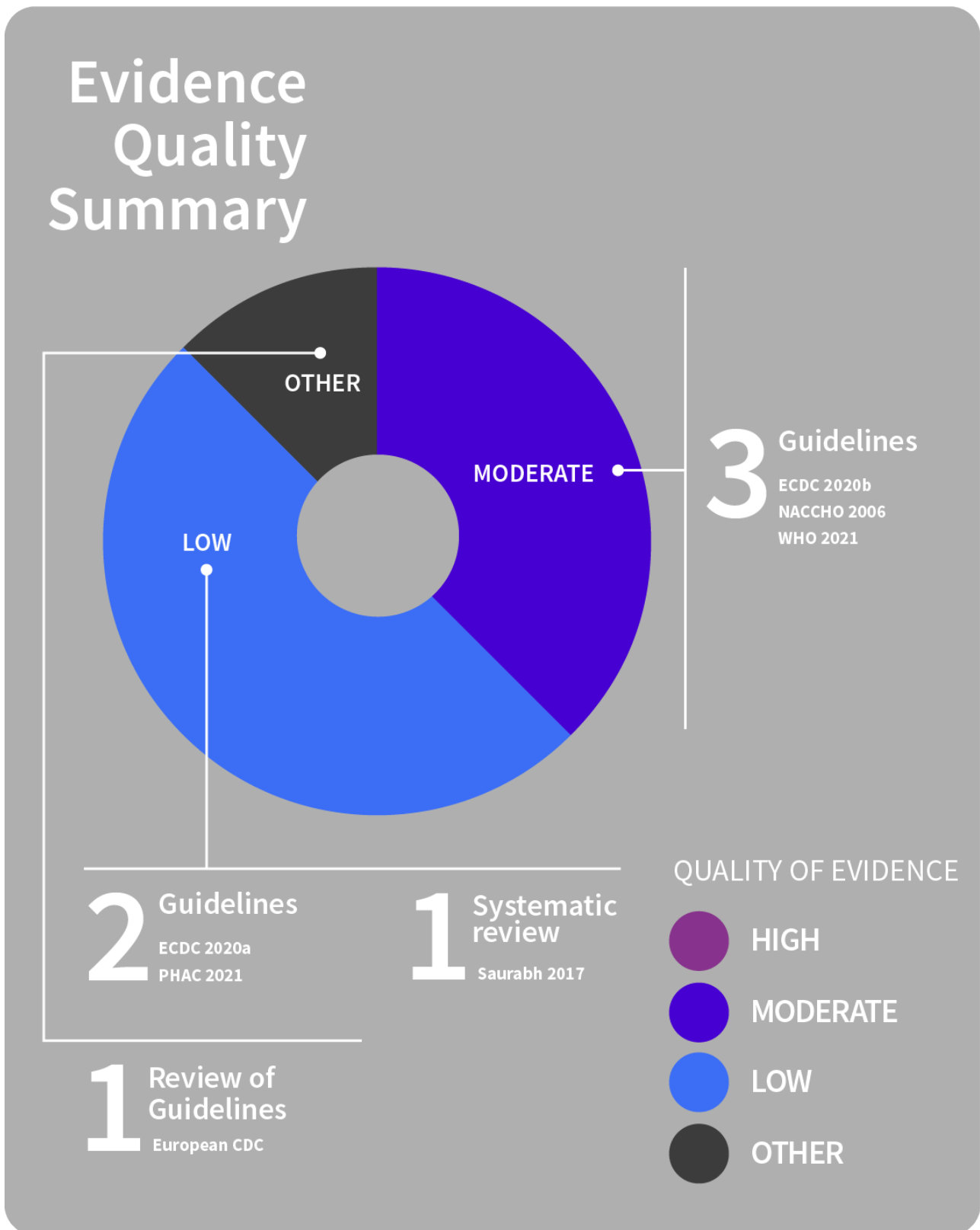
Disseminating actionable information on physical distancing measures, and on coping strategies and support services available

may support acceptance, uptake and adherence to measures, but such information needs to be culturally appropriate (ECDC 2020b; WHO 2021). Community involvement may help to identify factors such as cultural and literacy needs of diverse population groups (e.g. people housed within migrant and refugee centres; people in remote areas) and in developing appropriate and accessible public health messaging (ECDC 2020b; JHCHS 2019; Lor 2016; PHAC 2021; WHO 2017). Ideally, such messages should also be pretested for cultural appropriateness (PHAC 2021).

- **Community languages**

See Figure 14 for a summary of evidence quality for these findings.

Figure 14. Equity: community languages



Ensuring that information is communicated in a non-technical language, in the main languages within a population, is imperative, as is translation to official and Indigenous community languages.

Planning how to target different audiences, such as those speaking minority languages, including languages understood by irregular migrants is also critical (ECDC 2020a; ECDC 2020b; ECDC 2020g;

NACCHO 2006; PHAC 2021; WHO 2021). Lack of readily available information in people's own languages may otherwise increase fear and anxiety (ECDC 2020b).

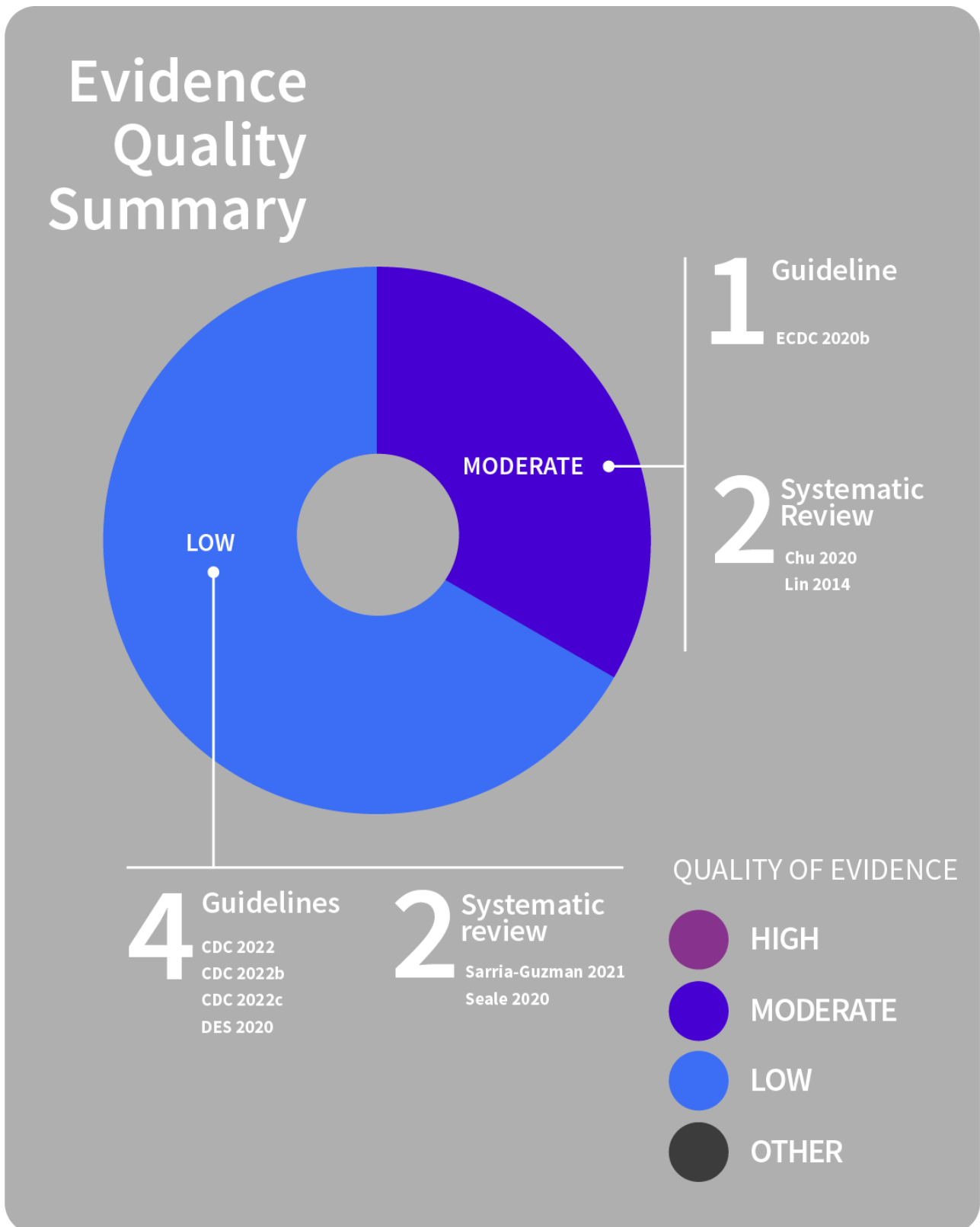
Engaging and educating communities (including via community leaders, religious groups and mass media) to promote awareness of accurate, accessible information in affected communities may be

key to improving acceptance and uptake of behavioural measures (ECDC 2020b; NACCHO 2006; Saurabh 2017).

- **Educational inequality**

See [Figure 15](#) for a summary of evidence quality for these findings.

Figure 15. Equity: educational inequality



People with higher levels of education tend to be more informed about pandemic risks, suggesting that health communication messages need to be better tailored to those at lower educational

levels in order to reduce inequalities across and within populations (Lin 2014). In general, the most marginalised communities (lower

educational and income levels) are the most affected by pandemic outbreaks (ECDC 2020b; Sarria-Guzman 2021).

The link between knowledge and uptake of preventive behaviours has been highlighted by work on influenza, amongst other diseases, and by surveys on COVID-19: higher knowledge is associated with a higher likelihood of adherence to preventive measures. Alternative approaches to enhance information uptake, such as visual communication (i.e. infographics or photos), may help overcome literacy barriers, while communicating via written information may help to improve accessibility (particularly in areas of low connectivity) (ECDC 2020b; Sarria-Guzman 2021).

Educational settings also have a critical role in promoting equity in learning and health (CDC 2022; CDC 2022a; CDC 2022b). School closures, for instance, may negatively impact nutrition (e.g. restricted access to school nutrition programs) and disrupt learning (Seale 2020).

Some groups are also at heightened risk of experiencing severe disease (DES 2020), which means that in-person learning may pose

a greater risk (CDC 2022; CDC 2022a; CDC 2022b). Careful and collaborative planning is required when implementing preventive measures to ensure that equitable access to education is promoted and maintained, and that staff and students at heightened risk of severe disease are supported to engage in learning and/or continue working or studying remotely to reduce exposure to risk (CDC 2022; CDC 2022a; CDC 2022b; DES 2020).

Authorities and school curricula must recognise and act to mitigate learning and health inequalities, including adopting communication strategies to address communication inequalities; providing tailored support to disadvantaged groups (CDC 2022; CDC 2022a; Chu 2020; DES 2020) and working to connect people with resources (e.g. stable housing, healthy food) or services that help to meet their needs (CDC 2022b).

Theme 4: Public communication features: content, timing and duration, delivery

Content of public information and communication

See Figure 16 for a summary of evidence quality for these findings.

Figure 16. Information and communication content

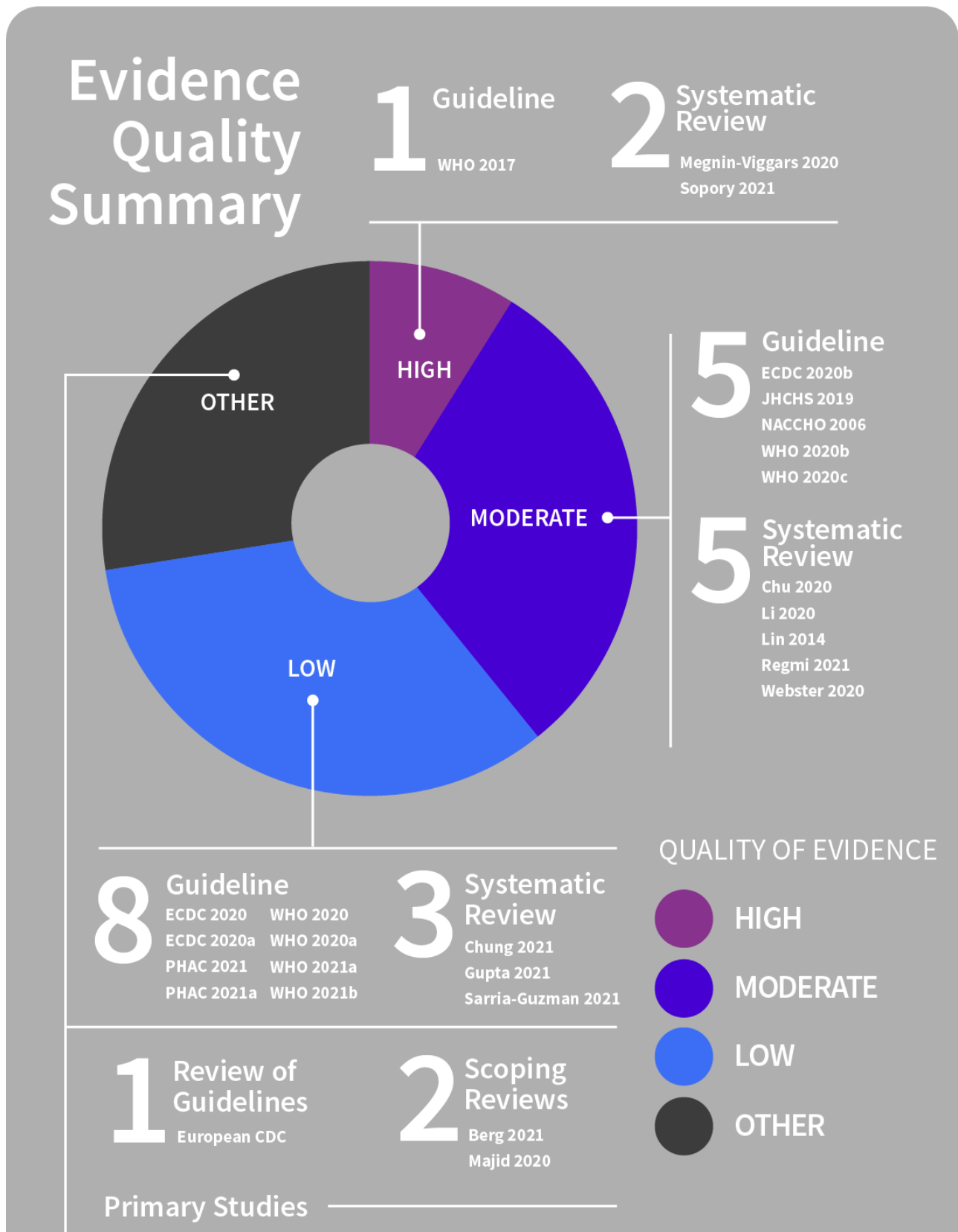


Figure 16. (Continued)



To improve uptake and adherence to physical distancing measures, public health authorities need to communicate comprehensive, clear and consistent information to the public (Chu 2020; ECDC 2020; ECDC 2020a; ECDC 2020b; Gupta 2021; Li 2020; Lin 2014; Megnin-Viggars 2020; PHAC 2021; PHAC 2021a; Regmi 2021; Sopory 2021; Webster 2020; WHO 2020; WHO 2020a; WHO 2020b; WHO 2020c; WHO 2021a; WHO 2021b) that includes a clear and accurate rationale for the required measures (i.e. why the measure is needed and what is involved), how to comply, and the services available to support the measures, including how to access available support services (Burnet 2020; Burnet 2020a; Chung 2021; ECDC 2020; JHCHS 2019; Li 2020; Majid 2020; Megnin-Viggars 2020; NACCHO 2006; Regmi 2021; Sarria-Guzman 2021; Sopory 2021; Webster 2020; WHO 2017; WHO 2021b). Such information must be accessible and timely and provided prior to the implementation of the measure in order to improve acceptability and adherence (Chung 2021; Sopory 2021; WHO 2021b). Any changes to measures over time must also be clearly communicated (PHAC 2021; PHAC 2021a; WHO 2020a; WHO 2020c).

Findings also show:

- Risk messages written in clear, non-technical terminology are needed (ECDC 2020; PHAC 2021; WHO 2020; WHO 2021a; WHO 2021b).
- Jargon or technical language needs to be kept to a minimum or avoided (Berg 2021; Chu 2020; ECDC 2020a; ECDC 2020b; PHAC 2021; Sopory 2021; WHO 2017; WHO 2020a; WHO 2020c; WHO 2021a).
- Agencies need to communicate to encourage knowledge of, adherence to, and correct use of measures (PHAC 2021; Sarria-Guzman 2021).
- Members of the public need clear, practical information about the behaviours they are required to undertake (Burnet 2020a; ECDC 2020b; ECDC 2020g; Lin 2014; Webster 2020) and how the measures will work (Berg 2021; Chu 2020; ECDC 2020b; Megnin-Viggars 2020; Sarria-Guzman 2021). This is so that individuals

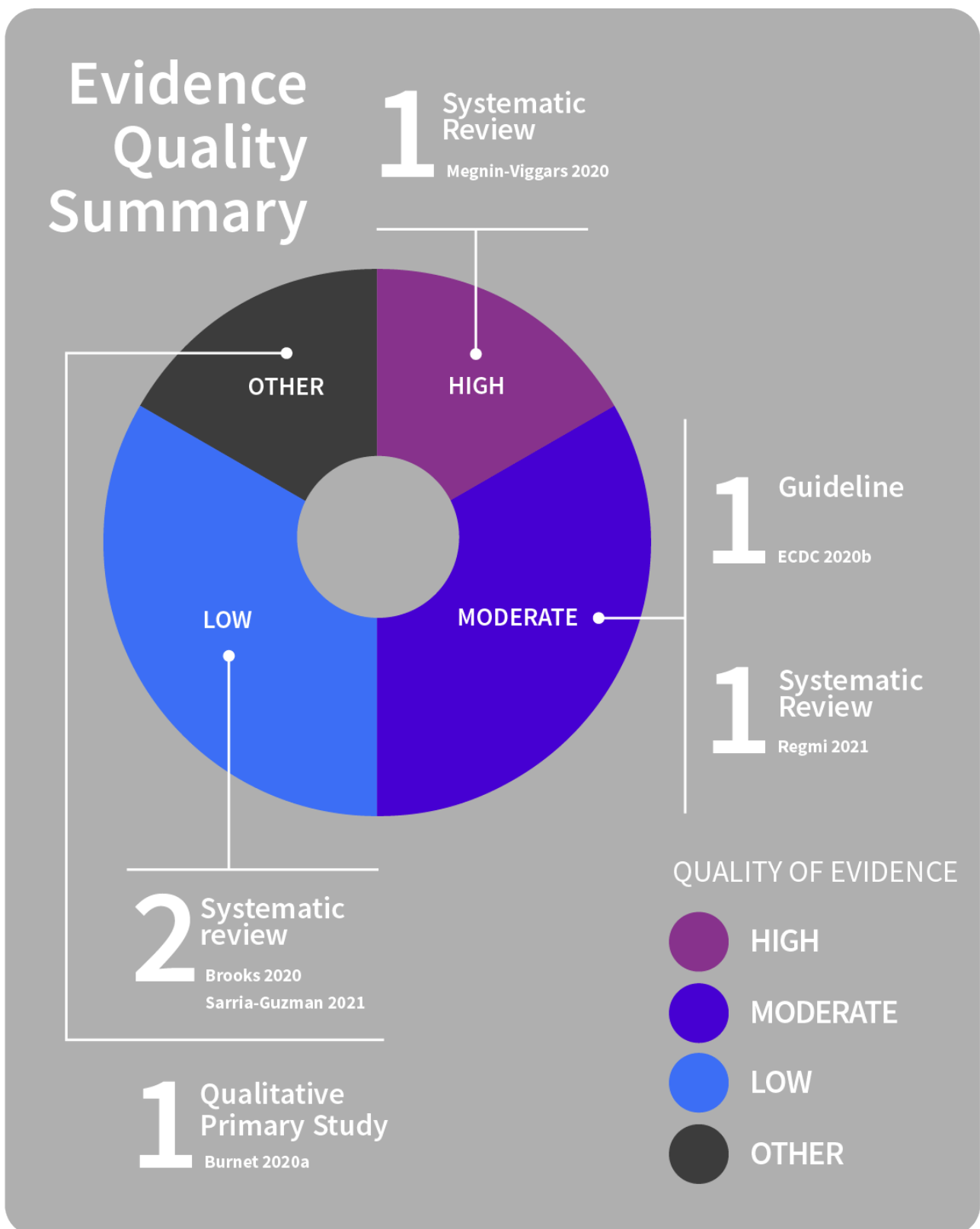
and communities are clear about what they can and cannot do within the measures.

- Communicating with empathy to the public and acknowledging difficulties associated with following public health advice is critical.
- Clearly and openly acknowledging uncertainty and what is being done to obtain information with the aim of saving lives at a given point in time is also important, particularly for an emerging disease (Chung 2021; ECDC 2020; Majid 2020; WHO 2017; WHO 2020a).
- Technical epidemiological information may be explained more easily using visualisations (ECDC 2020); or statistical information might be more accessibly described in words, e.g. using real-life stories to convey risks and the importance of following public health advice (PHAC 2021; PHAC 2021a). Since communicating visually (e.g. graphics, images, colours) can significantly influence the reach and reception of messages, public communication might occur via several modes and include visual information (Berg 2021).
- Public health communications might encourage people to enact the required changes (ECDC 2020g) and promote specific actions individuals can take to protect their health (Farooq 2020; Kwok 2020; Lohiniva 2020; NACCHO 2006; WHO 2017; WHO 2020). Communication strategies aiming to increase self-efficacy (promote specific actions that individuals or communities can take to protect their health) and ensure that there is sufficient information for people to do so, may foster readiness to change and so promote positive behavioural changes that align with the required public health measures (Berg 2021; Kwok 2020; Li 2020; Lim 2020; Majid 2020; Megnin-Viggars 2020; Regmi 2021; Sarria-Guzman 2021; WHO 2020c; WHO 2021a).

Inadequate or insufficient information is related to poor acceptance and other outcomes.

See Figure 17 for a summary of evidence quality for these findings.

Figure 17. Inadequate or insufficient information effects



The perceptions and experiences of individuals undertaking self-isolation and quarantine are fundamentally affected by their access to clear information (Burnet 2020a; Regmi 2021). A qualitative

study of adults undertaking quarantine for COVID-19, for instance, indicated that better information and knowledge was needed about required self-isolation and quarantine measures. This

includes information to clearly distinguish between self-isolation and quarantine measures and other physical distancing measures (Burnet 2020a).

Lack of information (e.g. in people's own languages), contradictory (inconsistent) or confusing information or information that is difficult-to-find about what can and cannot be done while in isolation/quarantine, or required from contact tracing systems, is related to non-adherence (Brooks 2020; Burnet 2020a; Megnin-Viggars 2020). Further, a lack of information, communication

and support may have negative psychological effects on the acceptability of such measures (Brooks 2020; ECDC 2020b; Megnin-Viggars 2020), can lead people to be unclear about actions to take and fearful of stigma (ECDC 2020b; Megnin-Viggars 2020), and may lead to risky behaviours (Sarria-Guzman 2021).

Emphasis of content on public more than individual health benefit may promote acceptance.

See Figure 18 for a summary of evidence quality for these findings.

Figure 18. Public versus individual health benefit

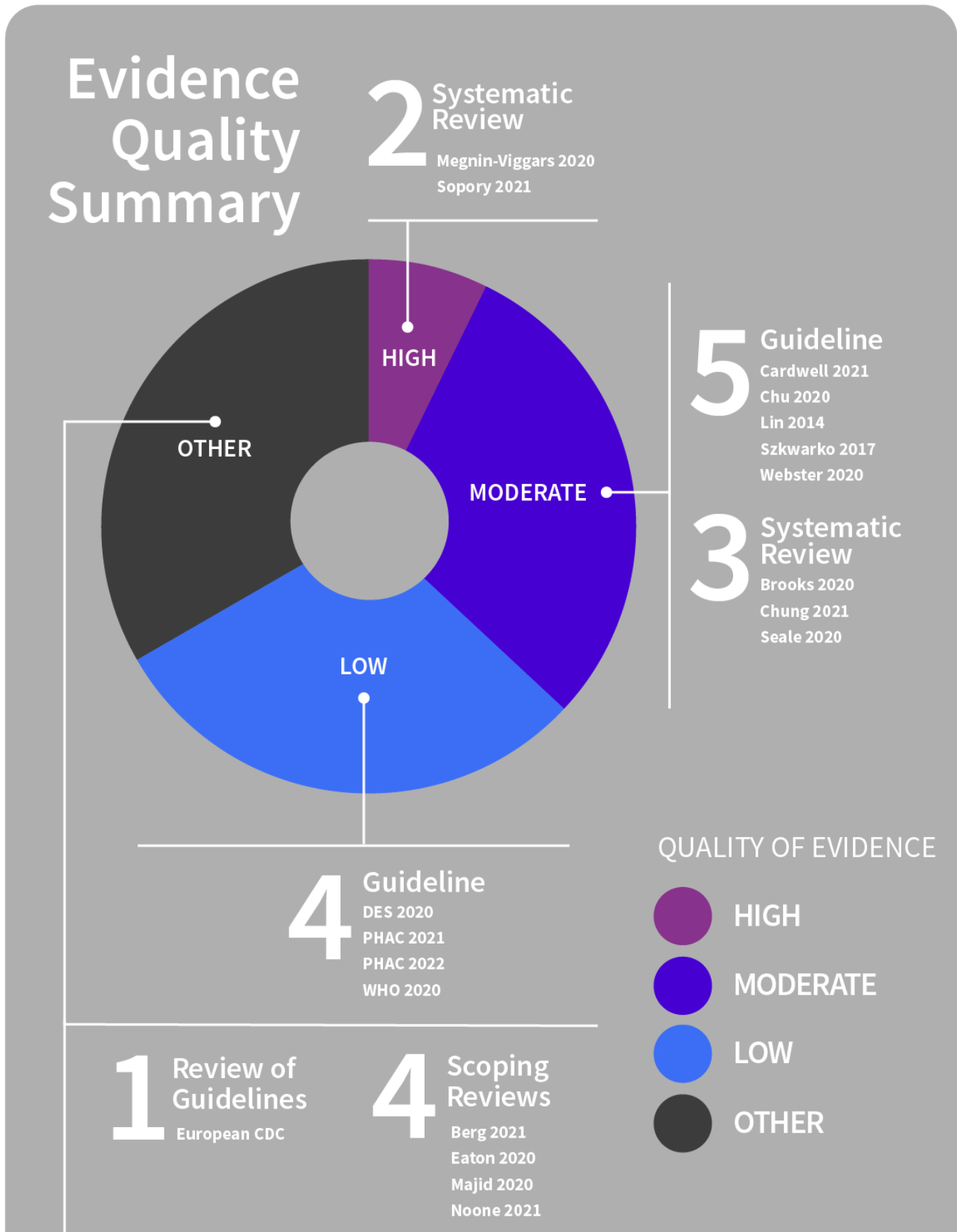
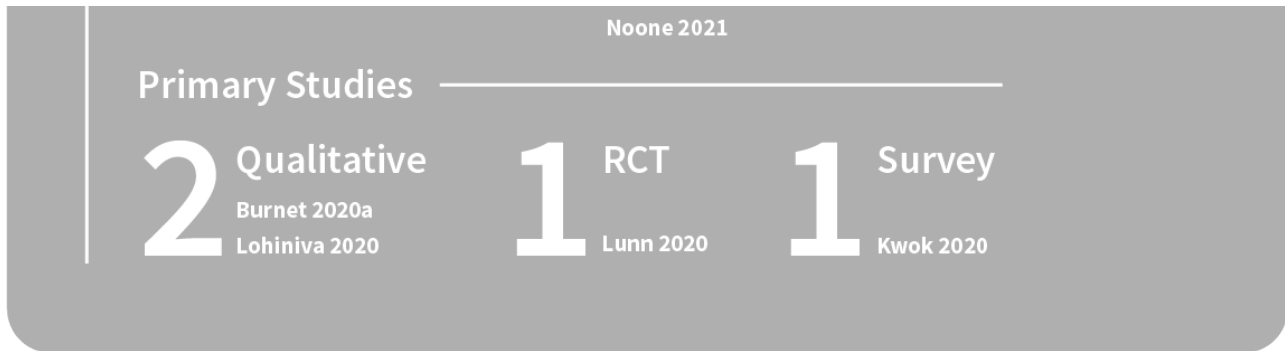


Figure 18. (Continued)



Communication emphasising public health benefits and the importance of physical distancing can promote acceptance. In a general sense, the public, including vulnerable groups (e.g. those who are homeless) accept the concept of restrictions (e.g. quarantine) as part of the outbreak response, for several reasons: from a sense of duty, civic-mindedness, and ethical concerns about the situation (Sopory 2021). When such measures are implemented, public communications might therefore actively promote solidarity, clearly reinforce the need for mutual community support and emphasise both the importance and the benefits of physical distancing measures for protecting public health, such as preventing transmission to others, especially those at higher risk (Cardwell 2021; Chung 2021; Eaton 2020; ECDC 2020g; Kwok 2020; Lin 2014; Lunn 2020; Megnin-Viggars 2020; Noone 2021; Seale 2020; Sopory 2021; Szkwarko 2017; Webster 2020).

Findings also show:

- Where uptake of physical distancing measures is voluntary (i.e. not mandated), messages stressing that the choice of quarantine or self-isolation is an altruistic one taken on behalf of the community, might be beneficial (Brooks 2020; Chu 2020; Webster 2020).
- Encouraging people to consider ways in which they can benefit others and contribute to keeping everyone in the community safe and saving lives may promote acceptability (DES 2020; PHAC 2022; WHO 2020) as, when people feel part of a community response, they may be more likely to adhere to measures; and this is especially so if they see others following the same measures (PHAC 2022).
- Authorities may work to promote altruism by developing culturally competent, context-specific strategies and by focusing

on care (i.e. expressing concerns, providing support), rather than on control or enforcement of restrictions (Chu 2020; Sopory 2021).

- To effectively motivate the public to comply with public health measures, feelings of collective responsibility in countering disease outbreaks, as well as perceived personal benefit, must outweigh barriers such as privacy concerns and mistrust (Megnin-Viggars 2020).
- Lowering perceived response costs and providing clear information about the severity of risks may also help to motivate members of the public to self-isolate (Chung 2021).
- The narrative tone of authorities' communications can affect people's emotional state (anxiety, uncertainty) and influence engagement and behavioural responses to risk mitigation messages. Narrative messages that elicit positive emotions may lead to better community engagement, but they may also undermine perceived seriousness of the threat (risk) (Berg 2021).
- Actions of authorities, including by the government, to control the spread of pandemic disease, and to support those undertaking physical distancing measures, might also be communicated to the public (Burnet 2020a; Lohiniva 2020).
- Modelling desirable behaviours to make them the social norm may also assist with uptake and adherence to measures (PHAC 2021).

Timing of communications and duration of measures

- **Knowledge and attitudes change over time.**

See Figure 19 for a summary of evidence quality for these findings.

Figure 19. Knowledge and attitudes over time

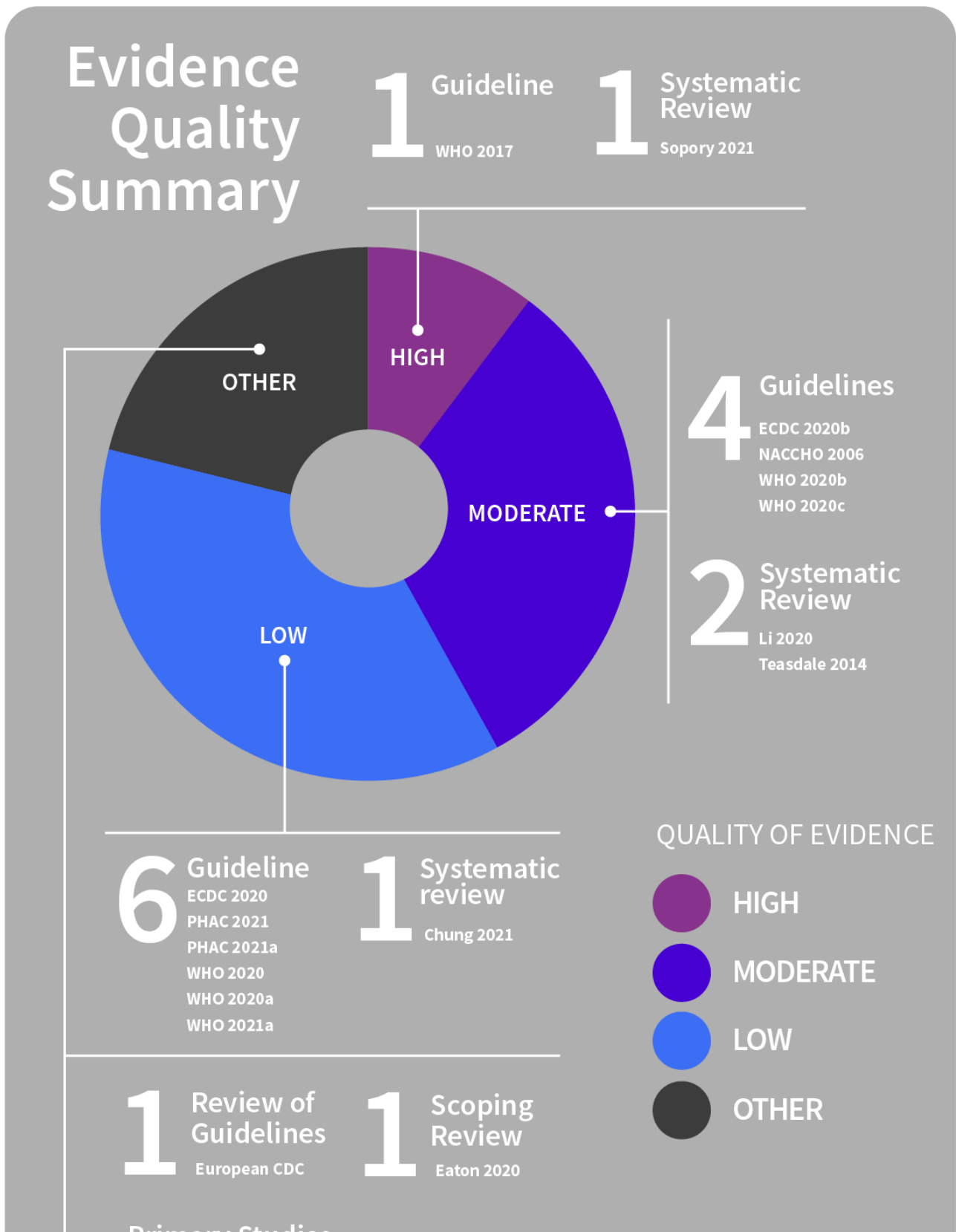


Figure 19. (Continued)



Public communication about public health measures is needed over the course of a pandemic outbreak. This includes immediate initial communications (as early as possible upon recognition of a pandemic) that are continuously updated over the outbreak, as new information becomes available, or the situation changes (pandemic status, impacts on essential services, actions being taken to address the outbreak, ways that people can protect themselves)([Chung 2021](#); [Li 2020](#); [PHAC 2021](#); [Sopory 2021](#); [WHO 2020a](#); [WHO 2021a](#)). Critically, information about public health measures must be up-to-date ([Chung 2021](#); [Li 2020](#); [PHAC 2021](#); [WHO 2021b](#)) to promote accurate public knowledge about required preventive measures and about how to adhere ([Eaton 2020](#); [ECDC 2020g](#); [NACCHO 2006](#); [WHO 2017](#); [WHO 2020](#); [WHO 2020a](#); [WHO 2021a](#)).

Public health communication about risk is important early in a pandemic. At this stage, perceived risk might be lower, but the disease is being transmitted, and communications at this early point can increase uptake and adherence to preventive measures ([Teasdale 2014](#); [Tooher 2013](#); [WHO 2020a](#)). Two surveys undertaken during the COVID-19 pandemic suggest that proactive government communication to increase public awareness early about disease outbreaks, risk reduction measures and protective behaviours creates earlier opportunities for individuals to take up physical distancing measures. Later communication of such critical information may represent missed opportunities for the public to engage with and take up preventive measures ([Kwok 2020](#); [Zhu 2020](#)).

Findings also show:

- Authorities must prepare to begin public communication early before the full picture is known and even if information is incomplete, and communicate openly about uncertainty (i.e.

manage uncertainty) and the degree of uncertainty ([WHO 2020](#); [WHO 2020a](#)).

- Public communication needs to include early and frequent announcement of the health threat. There is a need for this to be updated after analysis of public risk perceptions ([WHO 2020](#); [WHO 2020a](#)).
- Mechanisms to monitor public perceptions of risk and the response are needed throughout the pandemic to allow these to be quickly identified and addressed ([ECDC 2020a](#); [ECDC 2020g](#); [WHO 2020a](#); [WHO 2021a](#)).
- Engagement with community leaders and other stakeholders is also important for two-way information exchange over time, particularly because of ongoing uncertainties over the pandemic course ([WHO 2020c](#)).
- Public health messages additionally need to raise awareness that COVID advice is continually changing, in response to the evolving pandemic and might encourage individuals to assess their own risk (e.g. My COVID Risk tool) so that they are able to make an informed decision before they attend or host gatherings and take measures to stay safe, particularly if at higher risk of severe disease ([PHAC 2021a](#)). Such messages might aim to inform people to take preventive measures to protect their own health but also encourage high awareness of knowledge of symptoms and self-monitoring and provide clear instructions on when and how to isolate, seek medical attention and when to be tested if they suspect they might have COVID-19 ([ECDC 2020b](#); [ECDC 2020](#); [PHAC 2021](#); [PHAC 2021a](#); [WHO 2020](#); [WHO 2020b](#)).

Communicating duration and rationale for measures

See [Figure 20](#) for a summary of evidence quality for these findings.

Figure 20. Communicating duration and rationale

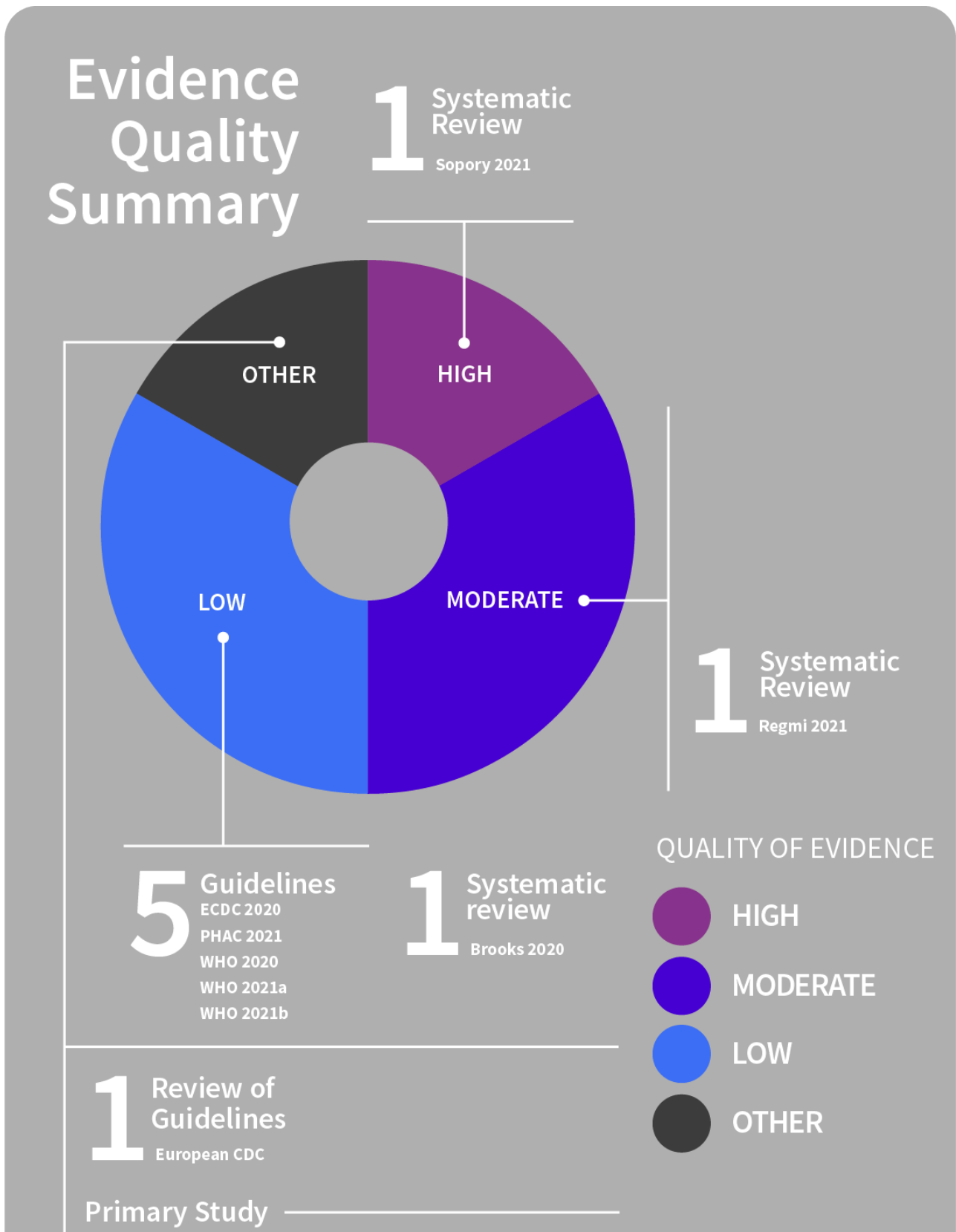


Figure 20. (Continued)



Public communications need to signal the duration of new required public health measures, or adjustment of existing measures, and clearly explain and justify the rationale for them before the measures are implemented or adjusted (ECDC 2020; PHAC 2021; Sopory 2021; WHO 2020; WHO 2021a; WHO 2021b).

For more restrictive physical distancing measures, such as quarantine or isolation, such communications may be the most critical. The psychological effects of quarantine (researched in health workers, and adults and children) appear substantial and varied, and may be long-lived. Duration is one of several stressors, and longer quarantine periods are associated with poorer mental health outcomes (Brooks 2020; Regmi 2021). Such negative psychological impacts might be minimised by isolating people for the shortest possible time. Duration needs to be based on evidence of incubation times (rather than arbitrary or indefinite time frames), and information about the rationale and guidelines (what is happening, and why) provided through clear, consistent communication (Brooks 2020; ECDC 2020; WHO 2020).

Results from a survey undertaken during the COVID-19 pandemic indicate that most people intend to maintain their self-isolation behaviours in the context of shifting endpoints for restrictions (irrespective of their own expectations of duration of physical distancing). However, unexpected extension of restrictions may lead to fewer people intending to increase, and more intending to decrease, adherence to self-isolation measures. Public health

messages may therefore need to consider the public’s expectations, as well as the pandemic context in which the measures occur, particularly where there is uncertainty in an emerging disease pandemic that may necessitate extension of restrictions (Briscese 2020; Regmi 2021).

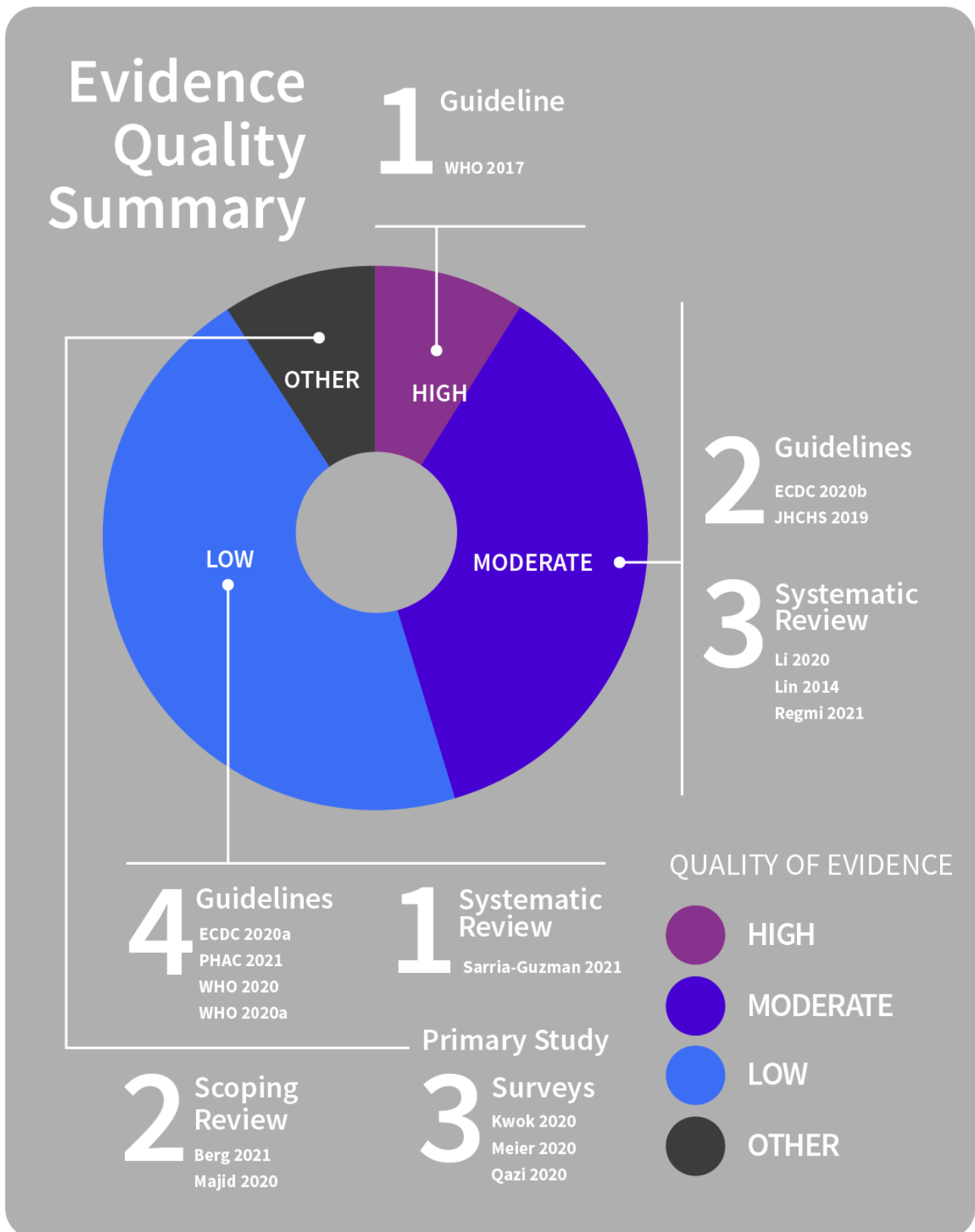
Public acceptance of physical distancing measures might therefore be facilitated by establishing and clearly communicating the anticipated end date (Brooks 2020; ECDC 2020g; WHO 2020).

Communication is also needed to convey that the measures may need to be continued and adjusted, or that some measures may be removed or reduced while others remain in place, and that ending or adjusting measures will require that a range of key criteria are explicitly considered to ensure public safety (ECDC 2020; PHAC 2021; WHO 2020). Such communication aims to transparently prepare public expectation for the possibility of changes, such as during the COVID-19 outbreak, when initial time frames for self-isolation measures were uncertain and restrictions may be extended depending on a range of factors such as current epidemiology (e.g. intensity of transmission), capacity of public health and healthcare systems, local context, and the social and economic impacts of measures (Briscese 2020; ECDC 2020; ECDC 2020g; WHO 2020).

Employing multiple delivery mechanisms

See Figure 21 for a summary of evidence quality for these findings.

Figure 21. Multiple delivery mechanisms



Several simple, practical measures may be used to reinforce and remind people of physical distancing measures. This includes

straightforward approaches such as use of visual cues and directional marking to support recommended distancing (e.g.

markings at appropriate distances for spacing as a reminder (e.g. in shops, clinics, school desks)), one-way flow to reduce number of contacts, signage to support preventive messaging (e.g. maintaining the greatest possible distance, do not enter if symptomatic), or noise reduction strategies to enable people to interact at a distance (avoiding close interaction) (PHAC 2021; WHO 2020). Visual communication and multilingual signage also need to be adopted (i.e. infographics with pictograms or photos) to help overcome literacy barriers and to reinforce communications about preventive measures (ECDC 2020b; PHAC 2021; WHO 2020).

Findings also show:

- Public information and education need to be credible, accurate and accessible, and disseminated in multiple ways. This might include adopting different formats (e.g. written information pamphlets, SMS messages and social media posts); and using a range of channels (e.g. traditional media (newspapers, radio, television), digital (e.g. videos, SMS, social media)), written information (e.g. government pamphlets), community groups and leaders (e.g. community faith leaders, community physicians) to aim for maximal community reach (Berg 2021; ECDC 2020a; ECDC 2020b; Li 2020; Majid 2020; PHAC 2021; Regmi 2021; WHO 2017).
- Providing consistent information and messages from multiple places (sources; e.g. community leaders plus social media plus traditional media) as part of an integrated communication strategy is more likely to be trusted and acted upon than information coming from a single source (ECDC 2020b; Lin 2014; WHO 2017).
- Establishing trusted lines of communication and using these channels to convey information to the public, is also key when planning risk communication efforts as trust is importantly linked to knowledge and protective behaviours (Berg 2021; JHCHS 2019; Majid 2020; Regmi 2021).
- Information exchange with family, friends, peers, and healthcare workers is often a primary information source. The role of trust in linking knowledge and behaviour also appears particularly important for healthcare workers, who may themselves provide relevant and timely information on risks and prevention measures (Majid 2020; Sarria-Guzman 2021).
- Building relationships between the media and health authorities may be key, as well as building trust in authorities before a pandemic emerges (Berg 2021; WHO 2017).

Even where individuals are well-informed, they receive and seek pandemic information through multiple formal and informal channels (e.g. traditional mass media, governmental sources; social media); and are not passive information recipients from a single source. Rather, most people actively seek information about the pandemic, community risks and required preventive actions, from a range of sources, selecting from amongst the total information they encounter (Berg 2021; Li 2020; Majid 2020). Information sources consulted are often diverse in format, language and target audience and include diverse disease, risk, transmission, prevention and aid topics (Majid 2020).

Research indicates that both formal (newspapers, press releases, educational messages) and informal (social media, online reviews

and family or peer views) information sources are used by the public and increase people's perceived understanding (Majid 2020; Meier 2020; PHAC 2021; Sarria-Guzman 2021). Surveys during the COVID-19 pandemic also indicate that source use varies considerably across countries, with social media platforms and websites most commonly used in some countries, while in others, more traditional sources (including television, newspaper/news applications) were most often accessed (Kwok 2020; Meier 2020; Qazi 2020). Other research indicates that information sources consulted by members of the public vary considerably across populations and that accessibility (ease of access) and availability of information are major determinants of people's choice of information sources (Kwok 2020; Majid 2020; Meier 2020; Qazi 2020; Sarria-Guzman 2021).

Digital technologies may assist in adapting some information and support services for vulnerable people. However, care is needed as lack of easy access to such technologies or familiarity with their use may otherwise further marginalise people from vulnerable groups (ECDC 2020a). Health agencies and governments therefore need to communicate effectively using a range of media or channels, to reach different parts of the community, including disadvantaged groups and those without Internet access (Majid 2020; Sarria-Guzman 2021).

No single approach (choice of information sources), therefore, appears suitable across all community groups or populations. Providing information via multiple sources appears critical, for instance, via traditional media sources such as newspapers and news broadcasts (radio, television), social media and written information together within an integrated strategy (ECDC 2020b; WHO 2017). However, it is critical to ensure that messages convey consistent information, and that sources are accessible and credible to the community. Overall, the communication strategy must aim to improve credibility, rather than creating confusion, as may be the case if inconsistent messages are communicated rapidly through multiple different channels (Berg 2021; ECDC 2020a; ECDC 2020b; Li 2020; Majid 2020; Regmi 2021).

Theme 5: Supporting behaviour change at individual and population levels

Acceptance, uptake and adherence to physical distancing measures during a pandemic requires behavioural change from individuals and entire communities. Knowledge of what is needed, why, and how to go about it is essential. The evidence also indicates several practical elements are required to directly support behaviour change in these circumstances, including direct support services and financial support, and that these need to be considered in any response that involves implementation of physical distancing measures. Differential types and levels of support may be needed across the community to help redress inequalities. Such considerations help to promote readiness for individuals and whole communities to receive and act on (implement) preventive behaviours.

Communication to influence social attitudes and norms

See [Figure 22](#) for a summary of evidence quality for these findings.

Figure 22. Social attitudes and norms

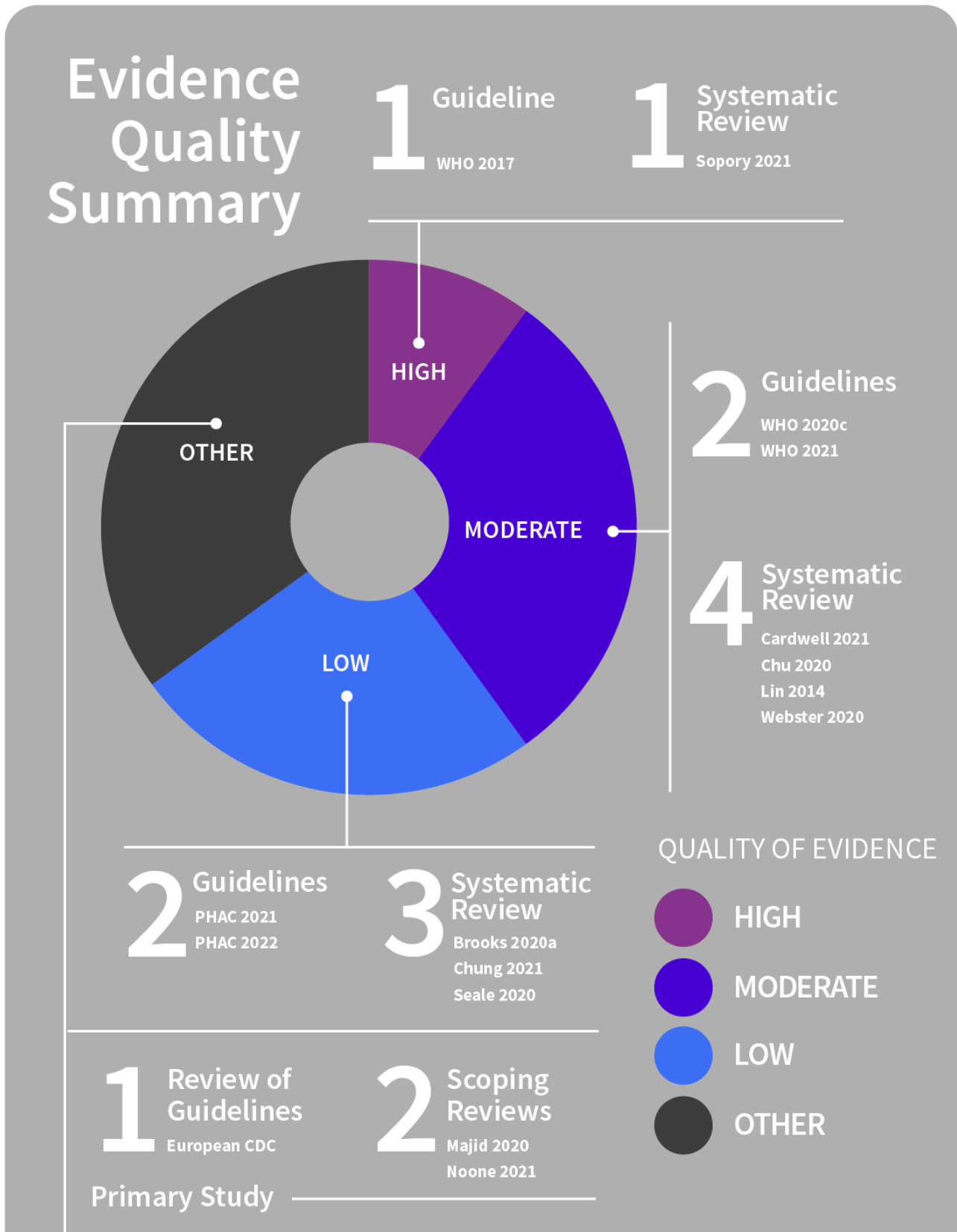


Figure 22. (Continued)



Public sentiment is key, necessitating communication that targets both individual and population levels to reinforce positive social attitudes and norms towards physical distancing. This relies on the public understanding the benefits and the potential harms of preventive measures (Sopory 2021; WHO 2021).

Sustained changes to behaviour, particularly over long periods, require communication targeted at multiple levels (i.e. not just to the individual), taking broader social and structural systems into account, and ensuring regular reiteration of messages over time (Chung 2021; Kwok 2020; Meier 2020).

Findings also show:

- Authorities/agencies need to proactively communicate in an accessible way when changes to individual or community-based measures are likely to occur and provide a rationale for the changes. Such transparent communication can improve adherence to public health measures as people understand the reasons for the measures, the effectiveness of the measures, and they can prepare for the changes to come into play (PHAC 2022).
- Communication which seeks to shift and/or reinforce social norms, such as strong social pressure to adhere to physical distancing measures, may be beneficial. Actively promoting solidarity, mutual community support, and a sense of altruism for adopting and adhering to physical distancing measures, may also have positive effects (Cardwell 2021; Chu 2020; Chung 2021; ECDC 2020g; Kwok 2020; Lin 2014; Majid 2020; Noone 2021; Seale 2020).
- Such communications, including those to specifically promote social connectedness amongst community members, may be more successful in improving uptake of and adherence to public health measures than communications targeting individual behaviour change alone (Majid 2020).

School measures

The importance of clear communication and good community understanding of the measures to be enacted is also apparent in relation to school and workplace closures, both of which may be employed in a pandemic, and both requiring support to promote adherence (Seale 2020).

Evidence indicates that school closures are generally accepted and taken up by parents if they perceive the measure to be beneficial, most often related to protecting health (community, child and household). Communicating effectively and consistently

with parents to ensure that they understand that both school closure and avoiding social contact are important, and why, crucially determines success (Brooks 2020a).

Where information from schools conflicts with public health advice, there can be negative effects on parental acceptance of closures (Brooks 2020a; Seale 2020). Parents may be unwilling or unmotivated to adhere to school measures if they do not understand the reasons for the measures or practical requirements, do not believe the closure will have any impact or benefit to the community (i.e. decrease infection risk), or do not feel that their children are at risk (i.e. low perceived risk) (Brooks 2020a; Seale 2020). Parental concerns may include uncertainty about the likely closure duration, unequal access to digital education (impacting education continuity), or economic impacts (e.g. lost parental income)(ECDC 2020g). If both schools and workplaces are closed during mass quarantine, parents may be able to provide home-based schooling. Adolescents may be able to learn remotely and independently if provided with web-based learning platforms and mobile connections (Chu 2020). However, parent-supervised schooling may be challenging for many and requires consistent information and support for parents from schools (Seale 2020).

Short school closures up to two weeks may be manageable by parents, but longer closures, such as those that may be required for mitigating the risk of pandemic waves, may be more challenging. Parents may also misunderstand the term “school closure” and associate this with “permitting out-of-home activities” i.e. the success of school measures may be undermined by compensatory contact between children out of school. Communication with the community is therefore needed to support school closures (e.g. via sports clubs), otherwise students may not understand that the advice to avoid contact is to prevent themselves from infecting others (Seale 2020). Childcare arrangements (outside home) also hold the potential to increase disease transmission. Families may need assistance with caring for children during closures or leave children to self-care (with attendant risks). Children in self-care may be more likely to engage in compensatory behaviours (e.g. visiting school friends or extended family) (Seale 2020). Public health officials might, therefore, consider how best to support parents to prevent this within communities (Brooks 2020a).

Communication to address stigma and lack of acceptance of public health messaging

See Figure 23 for a summary of evidence quality for these findings.

Figure 23. Stigma and lack of acceptance

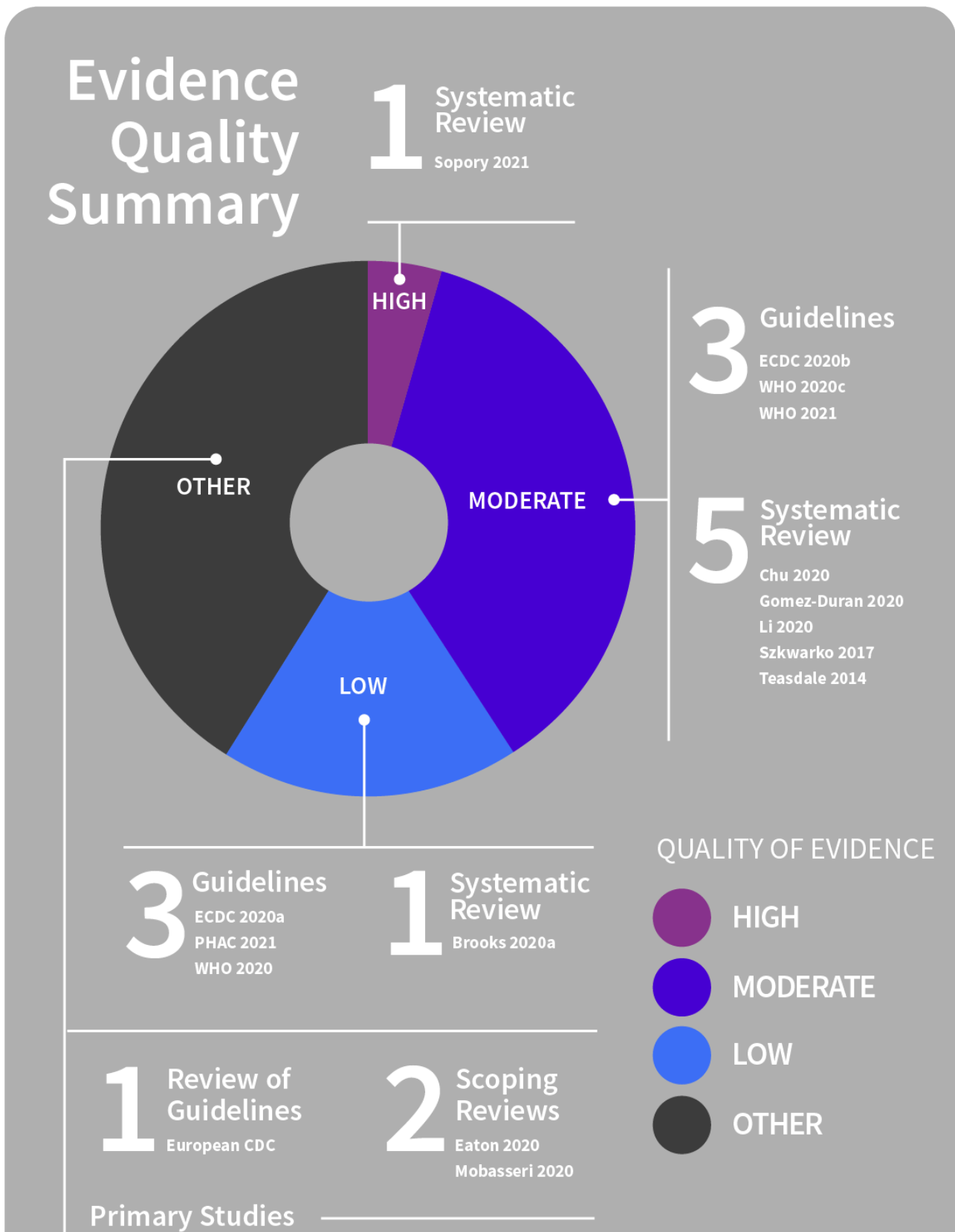


Figure 23. (Continued)



Stigma or discrimination may undermine the effectiveness of public health messages (Brooks 2020; Eaton 2020; ECDC 2020a; ECDC 2020b; Li 2020; PHAC 2021; Sopory 2021). Negative effects of perceived or actual stigma have been reported for adherence with contact tracing (Szkwarko 2017), quarantine (Brooks 2020) and physical distancing more generally (Eaton 2020; Lor 2016). This has occurred during the COVID-19 pandemic and previous outbreaks, such as influenza (H1N1), SARS and EVD (Brooks 2020; Burnet 2020; Burnet 2020a; Lohiniva 2020).

People in (or transitioning in or out of) quarantine, or those isolating, for instance, may feel shamed or blamed by public health communications, and so perceive a lack of support for continuing with the measures (Burnet 2020a). Those quarantining may experience social stigma or being publicly labelled as disease carriers, leading to mistrust, fear and avoidance by other people, and negative psychological impacts including distress, anxiety and other symptoms of mental illness (Chu 2020; Sopory 2021). Negative effects like these extend beyond the quarantine period (Chu 2020; Gomez-Duran 2020; Sopory 2021).

Such impacts negatively affect patients and healthcare workers and their families and, in some cases, whole minority or foreign population groups (Brooks 2020), particularly when people quarantined are from marginalised groups (Sopory 2021). For instance, people may believe the source of an infectious disease in a community to be solely related to a particular group (e.g. foreign nationals or people from abroad, or between racial and religious groups) (Chu 2020; Clements 2020; Farooq 2020). Stigma may also negatively affect those who are medically or socially vulnerable. During COVID-19, for example, negative views and age-related stigma led to a loss of public roles for older people and heightened

anxiety amongst older adults (Mobasser 2020). Such effects can slow or prevent enactment of measures to reduce disease spread (Brooks 2020; ECDC 2020a; PHAC 2021; WHO 2020; WHO 2020c).

Findings also show:

- To improve acceptance and adherence to measures, stigma related to physical distancing measures needs to be proactively addressed.
- Authorities and leaders need to monitor for and speak out against the stigmatisation of particular groups; implement quarantine measures proportionately to risk; and ensure the rights of those in quarantine (or transitioning in/out) are considered (ECDC 2020b).
- Authorities need to communicate with the community to improve knowledge and understanding, reinforce that everyone in the population is at risk of an emerging disease, and emphasise respect and each person's human rights (ECDC 2020b; Gomez-Duran 2020; Li 2020; PHAC 2021; WHO 2020; WHO 2020c; WHO 2021).
- Promoting factual reporting to combat misinformation, stereotypes, and stigmatisation by disseminating contextualised evidence-based information to the public may also be helpful (e.g. targeting fear/hostility for migrant workers, or quarantining healthcare workers) (Gomez-Duran 2020; WHO 2021).

Communication to positively influence more accurate perceptions of vulnerability and risk

See Figure 24 for a summary of evidence quality for these findings.

Figure 24. Perceptions of vulnerability and risk

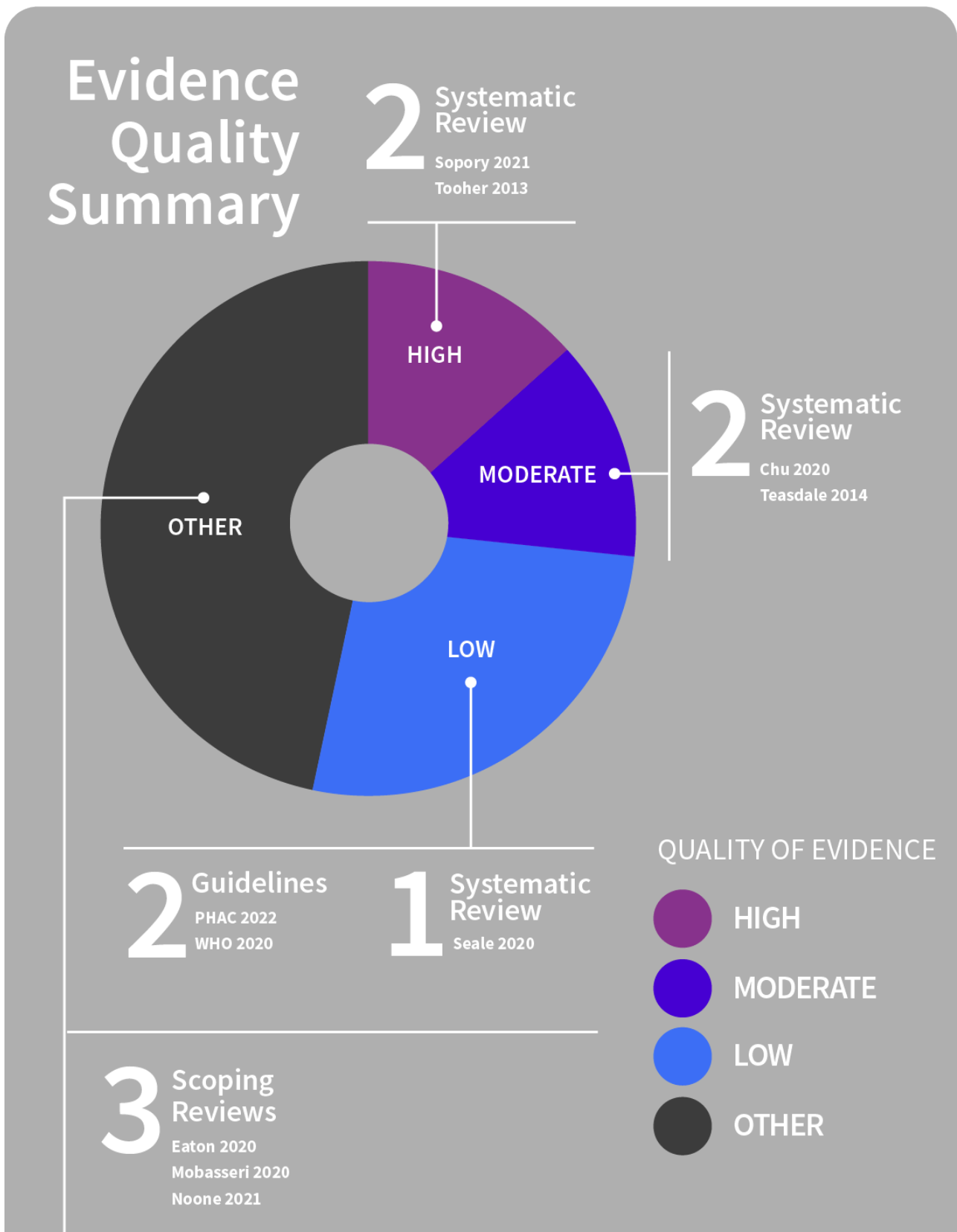


Figure 24. (Continued)



Public knowledge is essential for the implementation of physical distancing, but people’s views and perceptions of the measures and risk of disease (perceived personal vulnerability, transmission and severity of the disease) also influence their acceptance, uptake and adherence (Lohiniva 2020; Majid 2020; Noone 2021; Teasdale 2014; Tooher 2013). In pandemic situations, differences between intended (planned) and actual behaviours may be particularly critical and relate to people’s perceived infection risk (Chu 2020; Farooq 2020; Tooher 2013). For instance, people typically accept that an emerging pandemic risk creates risk to the community at large. However, some identify themselves as less vulnerable (e.g. than people with chronic illnesses, only ‘others’ are at risk), decreasing their own likelihood of adopting preventive measures (Chu 2020; Lohiniva 2020).

Findings also show:

- Public communication addressing common beliefs and concerns about the necessity and effectiveness of preventive measures, and attending to key barriers such as perceptions of personal vulnerability, is most likely to improve the adoption of measures (Lohiniva 2020; PHAC 2022; Roy 2020; Sopory 2021; Teasdale 2014).
- Communication to pointedly highlight the immediacy and susceptibility of people within the community to a pandemic risk may also be necessary, for example, targeting groups with little or no intention of taking up preventive measures (e.g. younger men), with the aim of improving uptake and adherence (Farooq 2020; Seale 2020).
- Communication strategies emphasising the likelihood of infecting vulnerable people or large numbers of people (anticipated regret) can help to motivate physical distancing by increasing people’s intention to be cautious in their own physical distancing behaviours (Lunn 2020; Noone 2021). It can also change people’s attitudes to be less accepting of marginal physical distancing behaviours in others (i.e. to adopt a more cautious attitude to physical distancing). Communications might therefore be most effective when emphasising the impact

of non-compliance with preventive measures on identifiable people and numbers of infections (Lunn 2020).

- Another option involves positively framing health messages (expressing advice in terms of maintaining well-being, rather than with a negative or vulnerable identity, avoiding infection), which may improve the perceived relevance of preventive measures to those who do not acknowledge that they are at risk of infection and so encourage adherence (and decrease stigma) (Lohiniva 2020; Seale 2020). In other cases, availability of guidelines (e.g. shielding guidelines to protect older adults) can be key to informing people’s decisions about preventive measures required (Mobasseri 2020).

During a pandemic, special measures may be enacted to protect vulnerable groups, including people at risk for severe disease (e.g. older people, those with underlying medical conditions); those with social vulnerabilities (e.g. refugees, migrant workers, people experiencing homelessness); those living in closed settings (e.g. detention centres, camps); and those more likely to be exposed occupationally (e.g. health workers, frontline responders) (WHO 2020).

Similarly, people who are at higher risk of severe disease might be encouraged to conduct their own personal risk assessment. This can inform whether additional measures (e.g. crowd avoidance) are needed to protect their health, and people may choose to enact additional measures even during periods of low(er) community transmission. Clear communication by public health authorities is needed about such additional measures in order to promote collective actions for the common safety of the community, including where there is a difference in the level of adoption of preventive measures required based on personal risk – that is, by emphasising that such decisions and behaviours (i.e. for individuals to protect themselves) are acceptable (PHAC 2022).

Essential services to support quarantine or isolation

See Figure 25 for a summary of evidence quality for these findings.

Figure 25. Provision of essential services

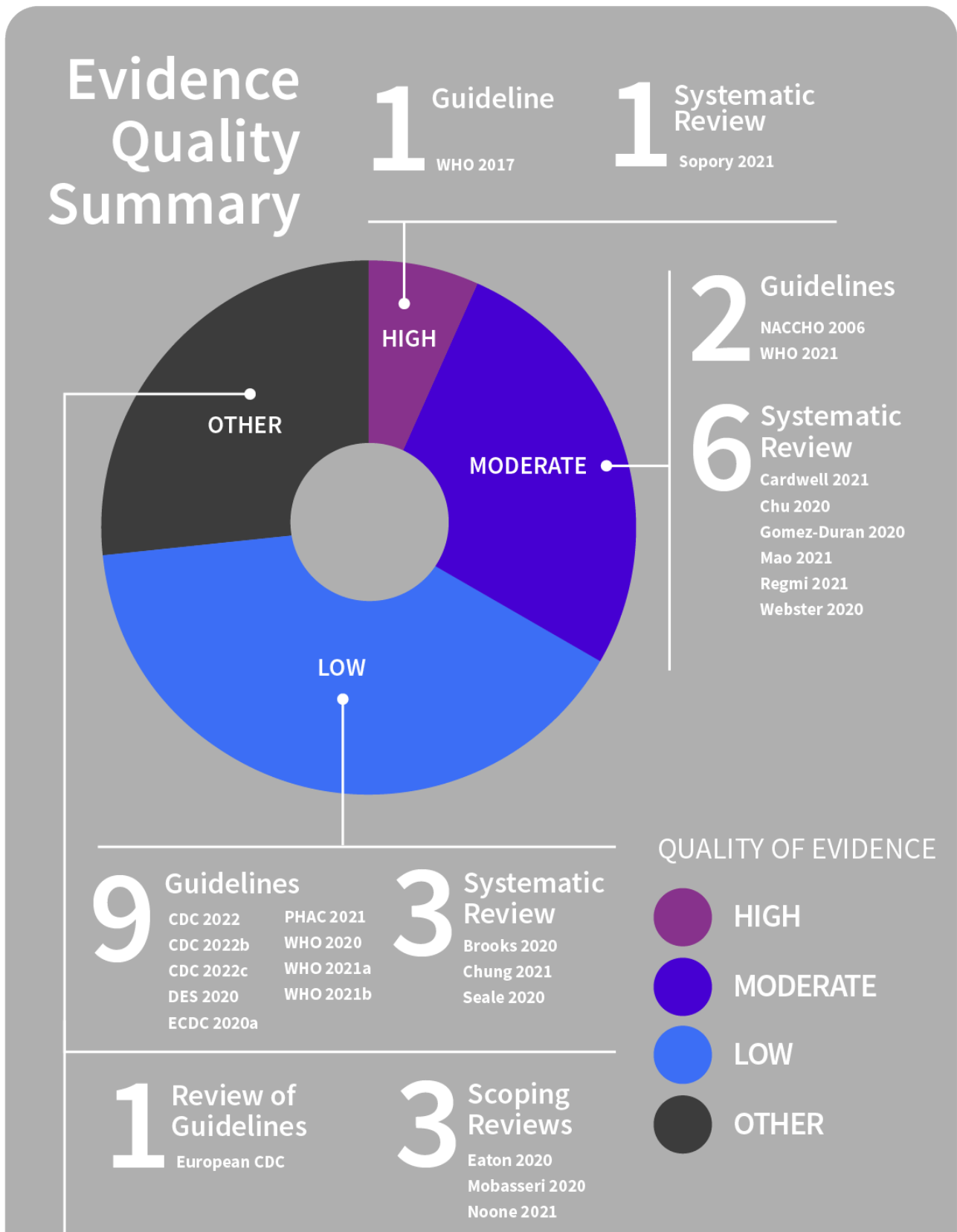
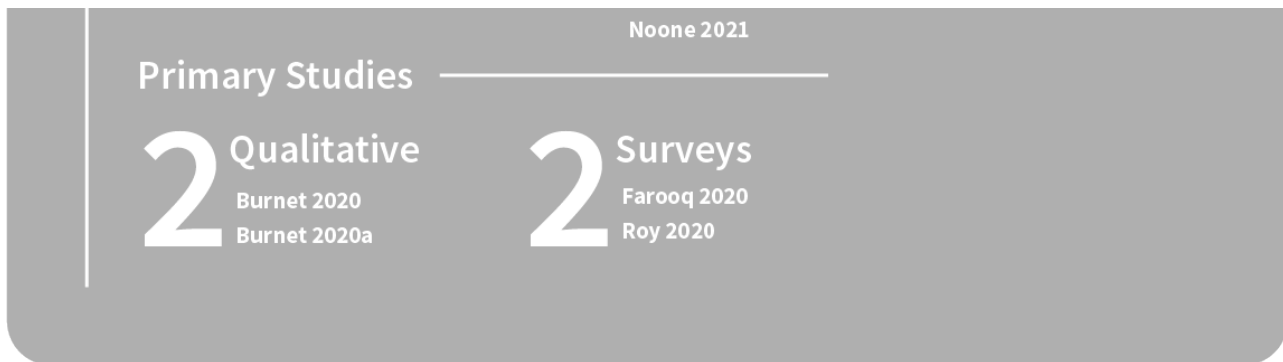


Figure 25. (Continued)



Supporting public preparedness

Public communication clearly acknowledging the difficulties of undertaking and adhering to restrictive measures is needed. Such communications might express concern for the public and reassure people that both moral and practical support will be available to help them to adhere to the required physical distancing measures (Burnet 2020; ECDC 2020g; Farooq 2020).

Information to support preventive measures needs to consider health literacy levels and other needs for tailoring (e.g. to ethnic minority groups, older people, remote communities), and include information on the impact of measures and how to address or reduce negative impacts (Cardwell 2021; Chu 2020; ECDC 2020a; PHAC 2021; Seale 2020; WHO 2020; WHO 2021).

Findings also show:

- Encouraging and supporting people to develop quarantine plans ahead of time (maintaining a supply of essential medicines, food and home supplies) to be prepared in case of restrictions may be beneficial (Burnet 2020; PHAC 2021).
- Ensuring people with disabilities have access to essential services and to care pathways that are easy to access, and that caregivers are considered part of the essential workforce and exempted from curfews and other restrictions that may affect their delivery of support or care is also essential (WHO 2021).
- Facilitating people with disabilities and their carers to make contingency plans for situations where the carer is sick or quarantined may also help to ensure continuity of care (WHO 2021).
- Planning for and informing the public about safe healthcare-seeking behaviours by disseminating information, including information about new pathways to services if unavailable through the usual routes during a pandemic, opening hours and precautions needed, is also critical (NACCHO 2006; WHO 2020; WHO 2021b).
- Access to healthcare may also be affected by reallocation of resources to the outbreak emergency and by widening health inequality in vulnerable populations (Chu 2020), or by a lack of access to reconfigured services (e.g. older people may lack access or knowledge of how to use services delivered by telemedicine or social contacts delivered remotely) (Mobasser 2020).

Support for restrictive preventive measures (quarantine, isolation)

Comprehensive support systems and services are needed for those undertaking restrictive measures, such as quarantine and isolation (Chung 2021; ECDC 2020g; WHO 2021a). This assists people to be as adherent as possible while reducing long-term physical and mental health effects (Cardwell 2021; Chu 2020; Chung 2021; Mobasser 2020; Seale 2020; Sopory 2021; WHO 2020), including people disproportionately affected by the pandemic and public health measures due to one or more vulnerabilities (ECDC 2020a; Sopory 2021; WHO 2021). Since measures such as mass quarantine can lead to several negative social consequences (Sopory 2021), and may worsen existing inequalities, a focus on reducing social inequalities needs to be prioritised for countries to build resilience and preparedness for future outbreaks (Chu 2020).

Support may vary in intensity (comprehensiveness) and target (generally or to specific vulnerable populations) (Cardwell 2021). Support systems and access to social services appear particularly critical for vulnerable groups, who may be disproportionately affected by some measures (e.g. mass quarantine) including people with medical vulnerability (i.e. people at higher risk of death or severe disease e.g. older people, people with underlying medical conditions), social vulnerability (i.e. vulnerable due to the public health measures put in place to control COVID-19 e.g. people with long-term physical, mental, intellectual or sensory impairments, people experiencing homelessness, ethnic minorities, irregular migrants), or overlapping or accumulating categories of vulnerability which create particularly challenging circumstances (Chu 2020; ECDC 2020g; Mobasser 2020; Noone 2021; PHAC 2021; Sopory 2021; WHO 2021; WHO 2021a). There is a need for policy responses that address the particular challenges faced by each type of vulnerable population (ECDC 2020a; WHO 2021), and recognition that intensified or tailored information and supports may be needed for some vulnerable groups (e.g. financial support, food, family violence support, culturally appropriate housing) (Chu 2020; Mobasser 2020; Regmi 2021). Clear acknowledgement and prioritisation of the needs of people from vulnerable groups is needed (ECDC 2020a; PHAC 2021; WHO 2021; WHO 2021a).

A critical purpose of support systems is to ensure access to essential supplies and services. This includes easily accessed food, water, medications, meaningful activities, and communication with social networks (including support lines) and specialist services (e.g. maternal and child health services, financial support and access to education for quarantined children) (Brooks 2020; Burnet 2020; Burnet 2020a; Chu 2020; ECDC 2020g; Seale 2020; Webster 2020; WHO 2021b).

Findings also show:

- Information about the availability of essential services (e.g. financial support, health services) needs to be communicated widely. Research clearly indicates that people must be well-informed about what services exist, who is eligible, how to access the services, and that the services themselves are easily accessed if needed (Burnet 2020; Burnet 2020a; Cardwell 2021; ECDC 2020g; WHO 2021a). Where people must rely primarily on family or friends for help, with little support from services, they feel vulnerable and this reduces adherence (Burnet 2020; Burnet 2020a; Cardwell 2021; ECDC 2020g; Webster 2020).
- Similarly, support services that are difficult to access may cause problems. For instance, difficulties accessing financial support or financial insecurity while in isolation causes distress and non-adherence, particularly for those of lower socioeconomic status (Burnet 2020a; Chu 2020; Sopory 2021), while negative outcomes (e.g. stigma, fear, loneliness) are worsened by inadequate supplies and inadequate information and communication (Cardwell 2021; Regmi 2021; Seale 2020).
- For people in quarantine or isolation, clear lines of communication (e.g. telephone or online services staffed by health professionals) are needed, should they develop symptoms (Brooks 2020; Burnet 2020; Burnet 2020a; WHO 2021b).

Support for mental health and well-being

During home-based isolation or quarantine, people are at higher risk of new or recurring mental health problems (Burnet 2020a; Chu 2020; Seale 2020; Sopory 2021), and mental health issues may affect people's ability to adhere to preventive measures (Brooks 2020; Burnet 2020a; ECDC 2020g). Long-term psychological impacts (Brooks 2020) may be exacerbated by the population's uncertainty about the pandemic and the (public health and/or population's) response to the pandemic (Burnet 2020a; Chu 2020; Regmi 2021). The need for community access to health and mental health services has been highlighted by several studies (Brooks 2020; Burnet 2020; Burnet 2020a; Chu 2020; ECDC 2020g; Roy 2020; Sopory 2021; WHO 2021), and might enable people to adhere to restrictive measures while reducing long-term physical and mental health effects (Brooks 2020; Burnet 2020; Burnet 2020a; Chung 2021; ECDC 2020g; Mobasser 2020; Seale 2020; Webster 2020).

There is also a role for volunteer organisations in supporting people to adhere to public health measures, and particularly to fill gaps in existing services and supports. Activities might include delivery of essential supplies and working to address unmet needs of community members. Similarly, there is a role for volunteer groups to feed back information on current or future community priorities (e.g. that clear advice is available as restrictions change, that community inequalities are addressed) (Mao 2021).

Facilities (e.g. out-of-home quarantine) should be disability-inclusive and consider the needs of women and children (WHO 2021; WHO 2021a). Limitations of online or digital technologies for vulnerable people and the potential for widening inequalities during the pandemic need to be recognised and contingencies planned (e.g. people without access to or knowledge of telephones or computers) (ECDC 2020a). This is important to ensure access so that COVID-19 is controlled in vulnerable populations (and, therefore, the rest of the community) (WHO 2021).

Support for workplaces

Employers and public health authorities working together to support employees if services (e.g. childcare or school) are unavailable during a pandemic may be beneficial, particularly if restrictions are longer than a few weeks in duration (Brooks 2020a; Eaton 2020; NACCHO 2006). Workplaces (administrators, managers, supervisors) may also beneficially promote tools and techniques for supporting staff with mental healthcare needs during a crisis. Measures may include training staff to help employees cope with grief, anger, exhaustion and fear (NACCHO 2006).

Support in schools (in educational settings, in workplaces)

Studies have also highlighted the need for support in school settings. Both students and staff require physical and mental health support, as well as clear information and communication (CDC 2022; CDC 2022a; DES 2020). Staff require support to work during the pandemic, education and training in preventive practices and policies, and proactive management of workload and mental health strain (CDC 2022; CDC 2022a). Administrators need to share information about available support services and provide a supportive environment for staff to manage job stress and build resilience (CDC 2022; CDC 2022a). Support and guidance for staff and teachers related to schools reopening is important, in order to support their own well-being and to equip them to support students (DES 2020). Comprehensive communication campaigns delivering messages of safety and well-being, access to information, and links to resources (e.g. guidance, support, psychological support services) may be helpful (DES 2020).

Provision is needed (in the form of flexible, non-punitive, supportive paid sick leave) which is clearly communicated to school staff, to ensure that workers do not attend work if sick and do not fear negative repercussions (loss of pay or employment) for absences (CDC 2022; CDC 2022a; CDC 2022b). Measures are also needed to ensure all staff understand the policy for returning to work after COVID-19 illness and for reporting related concerns (CDC 2022; CDC 2022b).

Additional supports may be required for children with special educational needs and educational disadvantage. Tailored supports for students and staff at higher risk (e.g. modified work or learning arrangements) may also be needed (CDC 2022; CDC 2022a; CDC 2022b; DES 2020).

Support for healthcare workers

Healthcare workers (HCWs) too are a particular group requiring support to undertake quarantine (the need for which may be acquired occupationally). Much of this literature is outside the scope of this current review, but those relating to the need for additional support for HCWs during a pandemic are highlighted briefly here.

High levels of distress, fear of infection, poor psychological outcomes, isolation and financial losses are common in the public undergoing quarantine. These same outcomes are also prevalent in healthcare workers in quarantine, with additional complexity because of their dual role as HCW and family member. Many HCWs have concerns for their family's safety based on their occupation, particularly of vulnerable family members and children, as in-home quarantine may expose their family to further risk. Additional

measures such as suitable accommodation (outside the family home) to help to lessen the risks to families and to address workers' concerns about infection risk may be necessary (Gomez-Duran 2020). These issues highlight the need for comprehensive support and information for HCWs in quarantine and for accurate information and better communication with the public about the need for and purpose of quarantine, to help mitigate poor outcomes and diminish stigma associated with quarantine (Gomez-Duran 2020; Sopory 2021). For people undertaking quarantine,

clear guidelines need to be provided on minimising infection risk at home and in quarantine, to help to minimise fear of infecting family members and uncertainty about effectively mitigating risk (Gomez-Duran 2020).

Essential services to address financial insecurity and socioeconomic disadvantage related to preventive measures

See [Figure 26](#) for a summary of evidence quality for these findings.

Figure 26. Financial insecurity and socioeconomic disadvantage

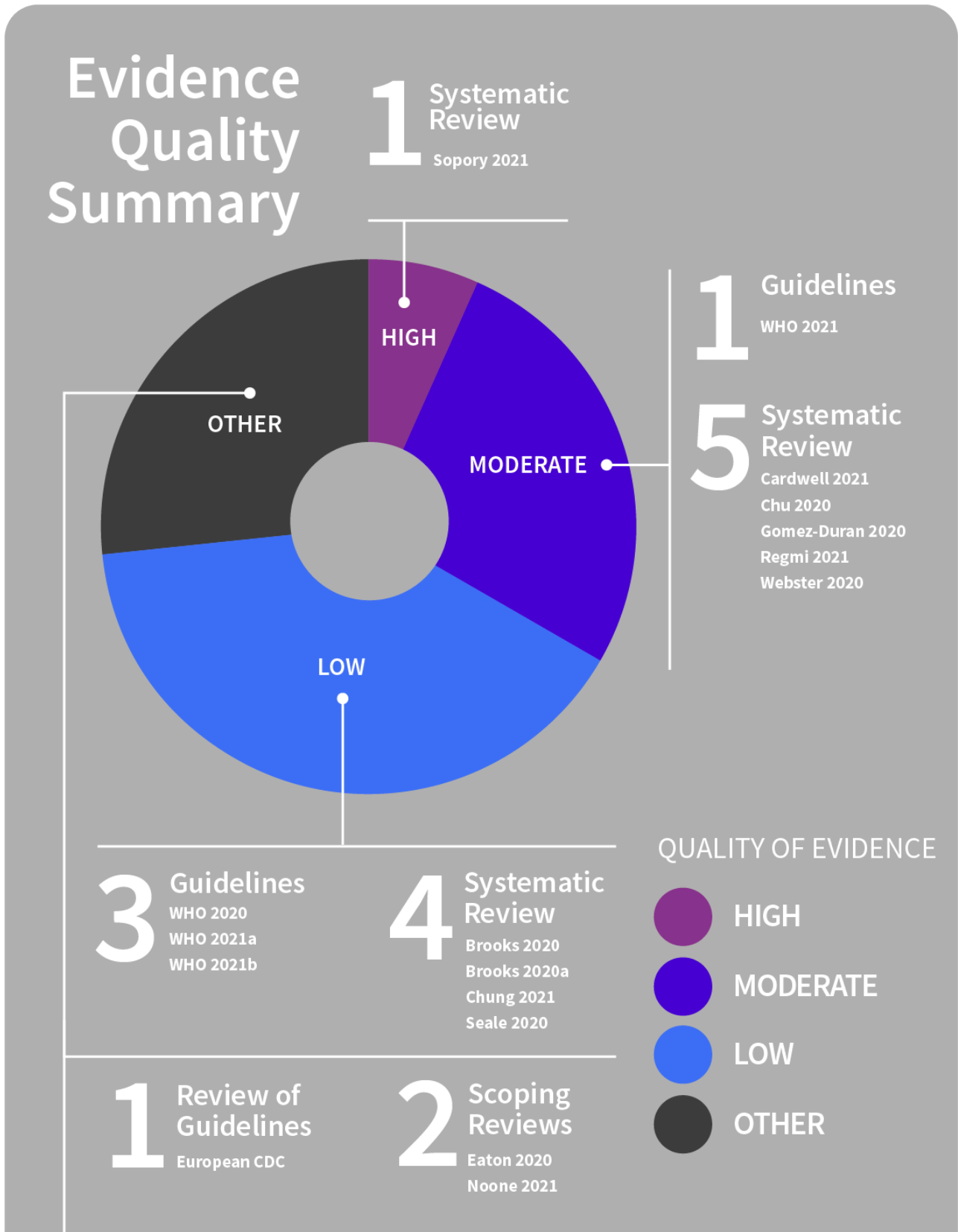
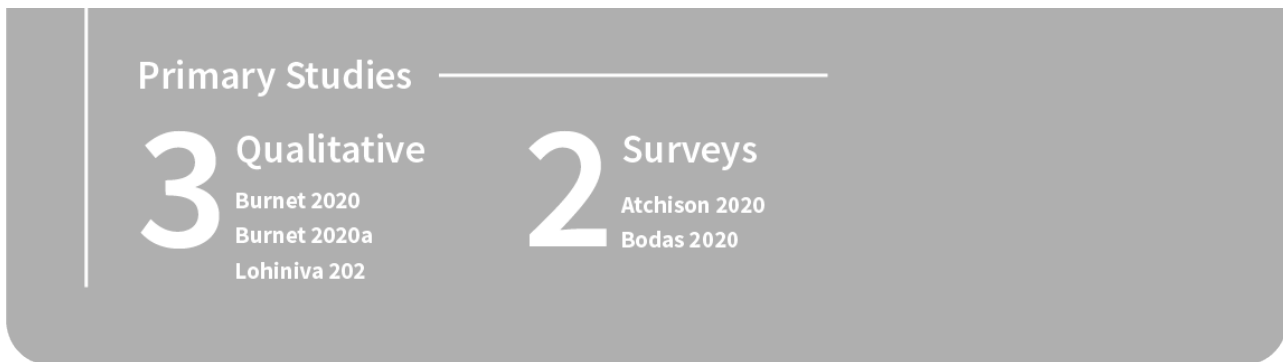


Figure 26. (Continued)



Economic effects of mass quarantine and other preventive measures can be profound on individuals and businesses, which can also affect the food supply chain and a range of industries. Financial losses or difficulties accessing financial support during and after quarantine are a common risk factor for psychological distress which may lead to non-adherence. Of major concern are impacts on employment (job security) and lost or reduced income across all income brackets, but particularly concerning those with lower household incomes or who work part-time, casually or are self-employed, not paid for time away from work, or unable to work from home (Chu 2020; Gomez-Duran 2020; Seale 2020). People may also take additional risks once quarantine/self-isolation is completed in order to survive financially (e.g. continuing to work in close contact with people despite a lack of physical distancing measures) (Burnet 2020a).

Many studies stress the importance of financial support in promoting adherence to physical distancing measures (Atchison 2020; Bodas 2020; Brooks 2020; Burnet 2020; Burnet 2020a; Chung 2021; ECDC 2020g; Gomez-Duran 2020; Noone 2021; Regmi 2021; Seale 2020). Measures to compensate people financially for losses (restricted income or employment), due to restrictive physical distancing measures, might be one way to promote adherence, and could take several forms. These include partial/full income replacement (during quarantine), flexible leave and payment arrangements, assurance of job security and economic recovery (at end of quarantine), and payment for housing and utilities (Bodas 2020; Burnet 2020; Burnet 2020a; Cardwell 2021; ECDC 2020g; Sopory 2021; WHO 2020). Healthcare workers are a particular case requiring support, including financial compensation, as financial losses are commonly reported and may increase psychological distress associated with the need to quarantine (Gomez-Duran 2020).

School and/or work closures also have financial implications which can negatively impact adherence (Eaton 2020). As parents may miss or reduce work when schools are closed, financial compensation might improve adherence to school measures (Brooks 2020a; Eaton 2020) and may also be necessary to improve acceptance, uptake and adherence to workplace measures (e.g. for people unable to work remotely) (Eaton 2020). Financial burden on families due to increased childcare and/or work absence during school closures affects adherence to a variable degree but may have particularly marked effects for people unable to work at home and for single-parent households (Seale 2020).

If stricter public health measures are implemented, this needs to be balanced against socioeconomic impacts. This is particularly important in settings highly dependent on daily wages and the informal economy, or where social disparities exist (WHO 2021a).

Socioeconomic inequalities may diminish the capacity of some groups within the population to take up and follow physical distancing measures, even where willingness to do so is high (Atchison 2020; Chu 2020; Lohiniva 2020; Regmi 2021; Seale 2020; WHO 2021b). Many studies stress that financial support or compensation for lost income is needed for people undertaking physical distancing measures, as cost is otherwise a barrier (Atchison 2020; Bodas 2020; Brooks 2020; Burnet 2020; Burnet 2020a; Chung 2021; Gomez-Duran 2020; Noone 2021; Regmi 2021; Seale 2020; Webster 2020).

In disadvantaged communities, fewer people may be able to comply with preventive measures. For example, few of those with the lowest household incomes may be able to work from home or to self-isolate. Issues, such as residing in high-density settings (e.g. slums, refugee camps), also commonly have an impact on capacity to adhere to physical distancing in economically disadvantaged communities (Atchison 2020; Eaton 2020; Seale 2020; Webster 2020). People from lower income backgrounds or with other disadvantage therefore need tailored financial assurance and assistance to be able to undertake protective measures (Atchison 2020; Chu 2020; Chung 2021; Gomez-Duran 2020; Lohiniva 2020; Webster 2020). People from such disadvantaged groups may be particularly vulnerable if the government delays financial support to those under quarantine who cannot work without travel (Chu 2020).

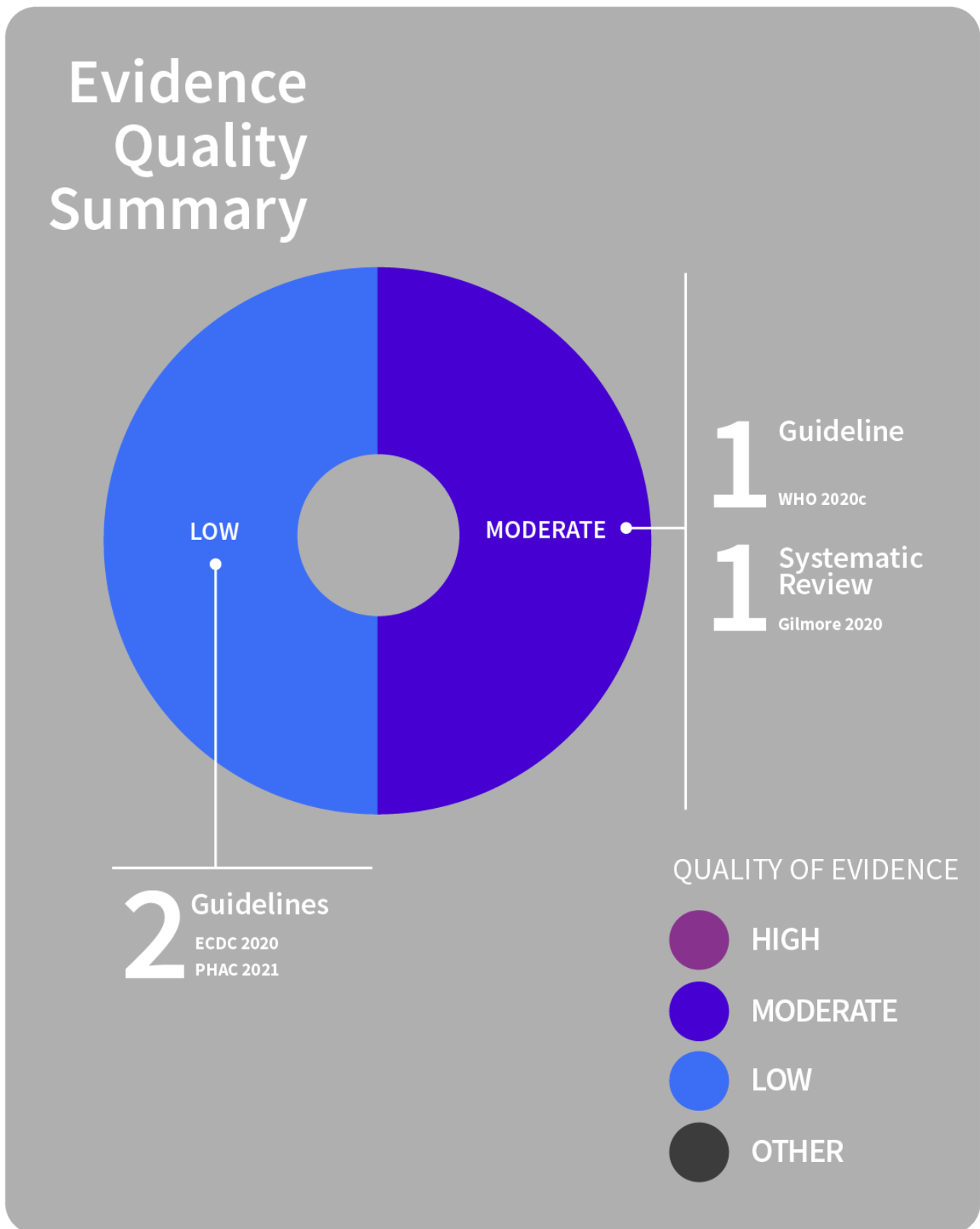
Negative effects of mass quarantine may also more heavily burden countries unprepared for public health emergencies. For instance, food insecurity may lead to panic buying in high-income countries, but to population-level famine in low-income countries; similarly, remote learning may be feasible in urban centres, but not for those living in poverty, or in remote areas with poor digital infrastructure. Interventions are, therefore, needed to address existing disparities, as well as those worsened by mass quarantine (Chu 2020; WHO 2021).

Theme 6: Fostering and sustaining receptiveness and responsiveness to public health communication

Pandemic fatigue as a barrier

See Figure 27 for a summary of evidence quality for these findings.

Figure 27. Pandemic fatigue



Around the globe, pandemic fatigue is increasing. As the pandemic continues into a fourth year, people are becoming less motivated

to adhere to recommended protective measures and, as a result, people's efforts to follow preventive measures may fall. Combined

with negative news and information overload, efforts to stay informed may also decrease over time, raising further challenges for effective public health communication.

Pandemic fatigue is expected to continue to grow with the continuation of the pandemic, which can increase transmission and undermine the effectiveness of public health measures (ECDC 2020; PHAC 2021; WHO 2020c). This also increases the likelihood that stricter measures may be necessary in future to control transmission (ECDC 2020), but implementing and enforcing such measures in the context of high levels of pandemic fatigue is likely to be increasingly fraught for health agencies and governments.

Pandemic fatigue can be influenced by several factors, including growing complacency coupled with lowered disease risk perceptions, increased socioeconomic and psychological impacts of the pandemic, and public health measures, stress of uncertainty, becoming used to living in a pandemic situation, and decreased trust and confidence in authorities' ability to control the pandemic (PHAC 2021; WHO 2020c).

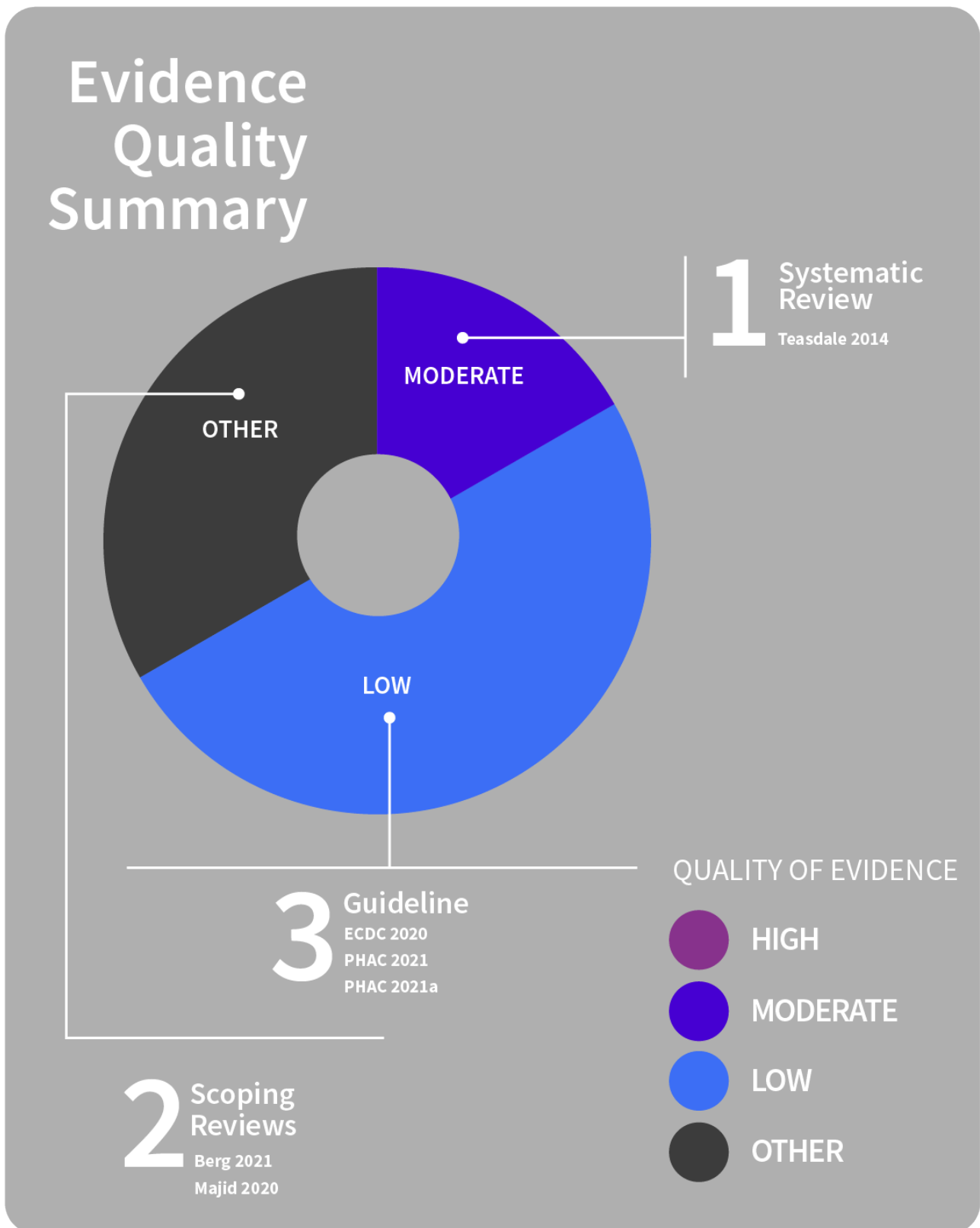
Findings also show:

- Addressing pandemic fatigue needs to be a key goal of risk communication activities, as engagement of the public is critical to the success of public health measures like physical distancing.
- Identifying creative ways to engage and motivate people by partnering with local groups and leaders (community members who have legitimacy and are able to represent and influence the community) improves motivation and engagement and therefore adherence to measures (Gilmore 2020; WHO 2020c).
- Since engagement of the public is critical to the success of public health measures, this is more likely to be achieved if the measures are clear, proportionate, transparent, and supported by quantified goals and epidemiological targets (ECDC 2020).

Changes in adherence, trust or acceptance over time

See [Figure 28](#) for a summary of evidence quality for these findings.

Figure 28. Changes over time



Public health communication is critical as public trust in health authorities and acceptance of/adherence to physical distancing measures change over time. These are related to perceptions

of crisis management, which in turn can affect people's risk perception and behavioural response (Berg 2021; Majid 2020).

Continuing public health communication is also critical, as how people assess risk during a pandemic and the effects on behaviour change over time (e.g. as numbers of articles on the pandemic declined), so too did willingness to adhere to measures such as physical distancing ([Majid 2020](#)).

Communications also change over the pandemic course, e.g. analysis of Twitter messages found these concentrated on instructional information in the early pandemic period but shifted to motivational messages to sustain behaviours in the longer term (focusing on the need to protect vulnerable populations) ([Berg 2021](#)). Qualitative research indicates that public anxiety is typically high when a new infection emerges but decreases over time. Diminishing anxiety over time can be influenced by people's views of communications: where people become sceptical about the information provided to them (e.g. mismatches between people's experience of the pandemic versus information released through official channels), communication may be viewed as unreliable, inconsistent, and alarmist, and lead people to disregard

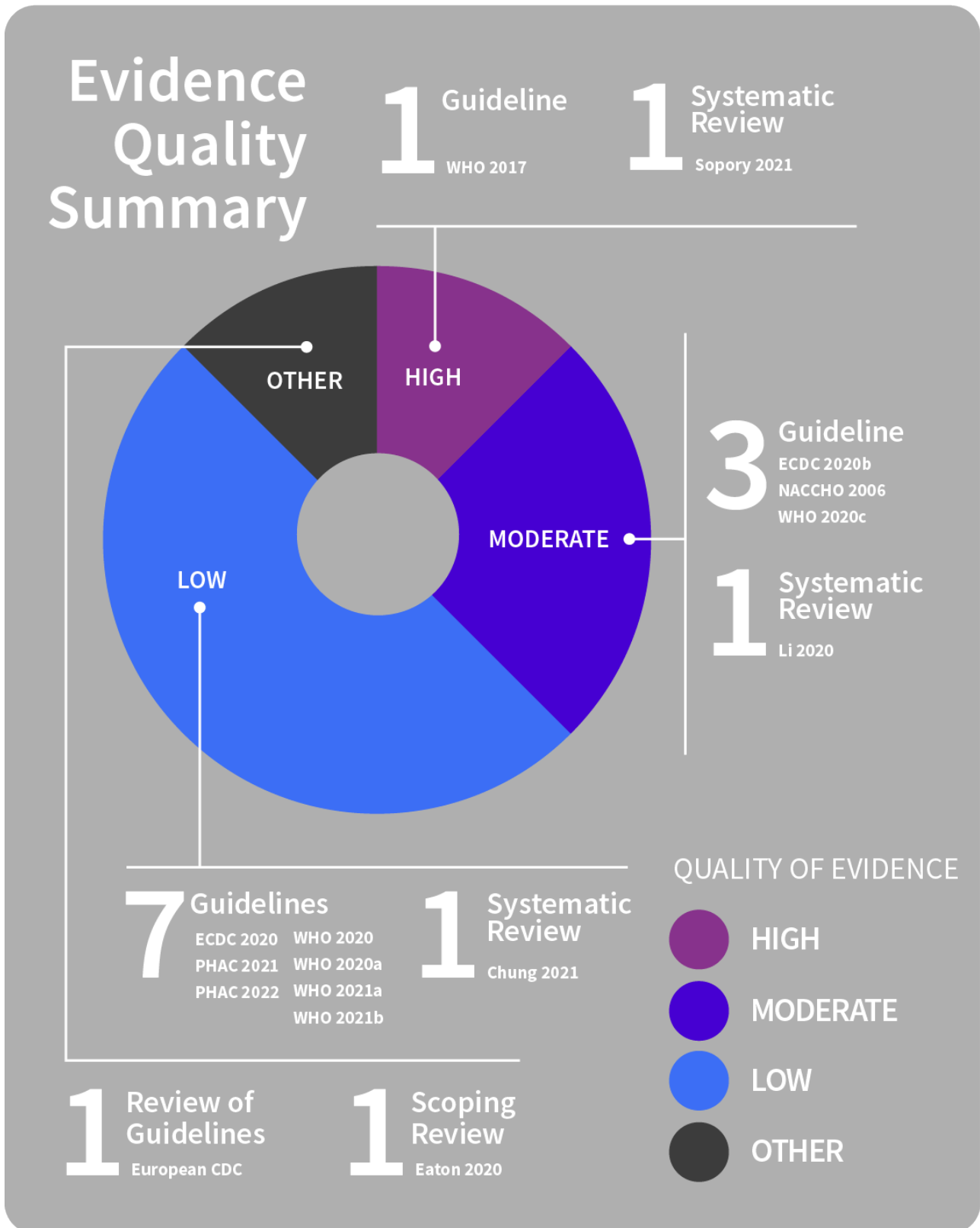
advice about preventive measures ([Teasdale 2014](#)). Such findings highlight the fluctuating nature of people's risk perceptions and understanding as they experience a pandemic over time.

- When public health measures change over time or temporarily (e.g. prior to religious or cultural festivals), flexible and up-to-date public health communication is key to providing guidance to the community about which measures apply, when, and how to protect themselves and others by mitigating the risk of disease transmission ([ECDC 2020](#); [PHAC 2021](#); [PHAC 2021a](#)).
- Authorities need to find the balance between epidemiological risk and social and economic risk; and to balance apparently conflicting messages to the public which, on the one hand, convey information about relaxation of measures over key time periods (e.g. end-of-year festivities) and, on the other, advocate for restrictions to minimise epidemiological risk ([ECDC 2020](#)).

Adaptive and responsive ongoing communication

See [Figure 29](#) for a summary of evidence quality for these findings.

Figure 29. Adaptive and responsive communication



Proactive, accessible public communication about public health measures is needed over the course of a pandemic outbreak. There is a need for continuous updating of messages as new information

becomes available, or the situation changes (pandemic status, impacts on essential services, when and how measures are being adjusted, rationale for changes, and when and how people can

protect themselves) (Chung 2021; ECDC 2020; Li 2020; PHAC 2022; Sopory 2021; WHO 2020; WHO 2020a). Communication needs to clearly explain what is known and what is uncertain, and be translated into languages appropriate to both the community at large and to people housed within centres for refugees or migrants (ECDC 2020b; WHO 2020a).

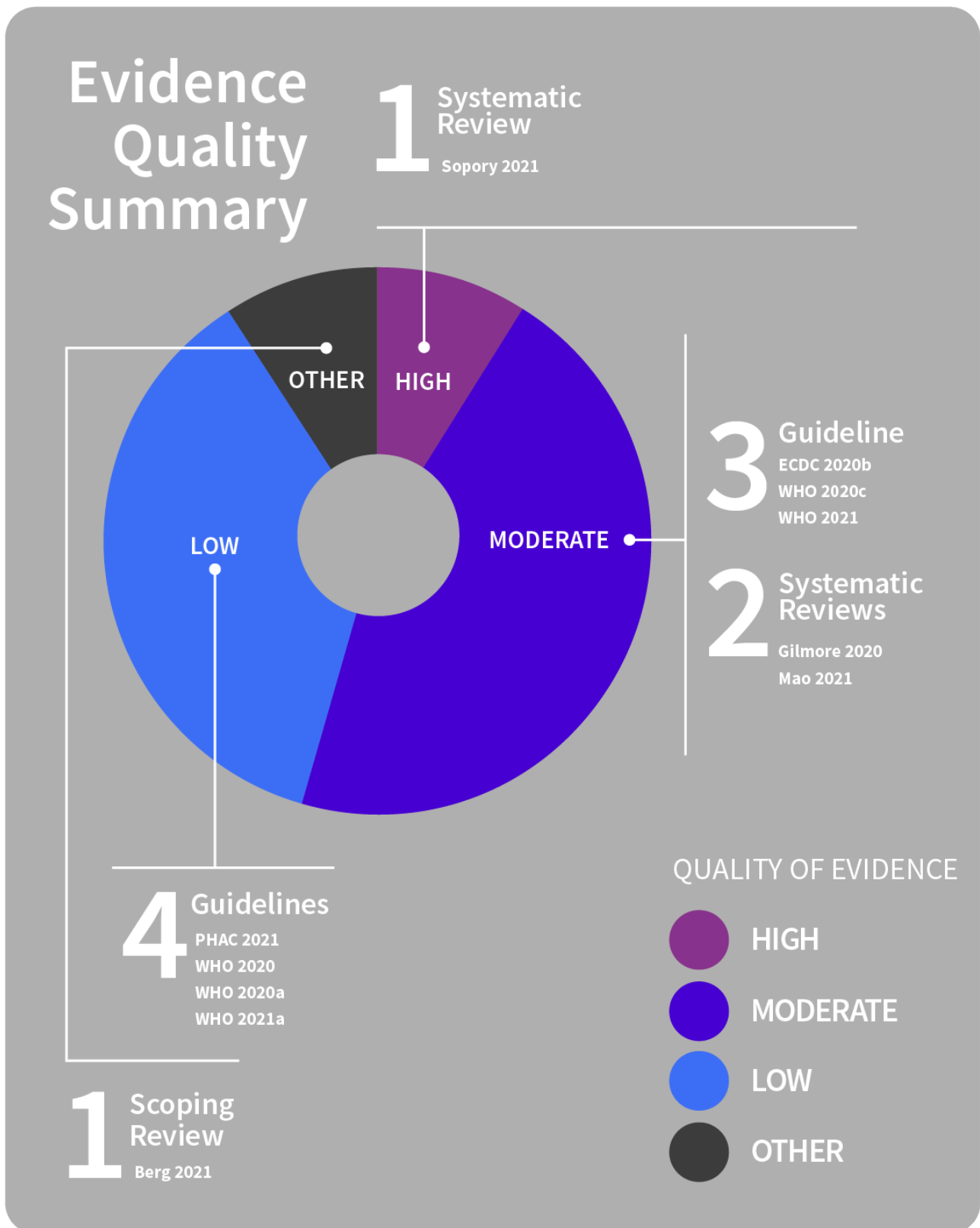
Critically, information about public health measures must be up-to-date (Chung 2021; Li 2020; PHAC 2021; WHO 2021b), to promote accurate public knowledge about required public health measures and about how to comply with them at any given point in

time (Eaton 2020; ECDC 2020g; NACCHO 2006; WHO 2017; WHO 2020; WHO 2020a; WHO 2021a). Mechanisms to monitor public perceptions of the outbreak and public health measures are also needed throughout the pandemic to allow these to be quickly identified and addressed (ECDC 2020g; WHO 2020; WHO 2020a; WHO 2021a).

Community engagement to sustain efforts

See [Figure 30](#) for a summary of evidence quality for these findings.

Figure 30. Community engagement for sustaining efforts



Health authorities need to work collaboratively with communities and trusted spokespeople to improve community trust, to ensure that messages are appropriately tailored to communities and reach

different groups over time as the pandemic response changes (Berg 2021; ECDC 2020b; PHAC 2021; Sopory 2021; WHO 2020; WHO 2020c; WHO 2021a).

Two-way public communication and engagement processes need to be ongoing, reassessed and modified over time as needed and as new information emerges (Gilmore 2020; Mao 2021; WHO 2020; WHO 2020a). When the local situation changes (i.e. changes in case numbers, situational assessment) and public health measures are changed in response, communities need to be regularly and fully informed, engaged and enabled prior to the changes occurring (WHO 2021a). Communication and support need to be planned and in place in advance of any introduction of or changes to public health measures, and communication (including messaging) about risk and/or social and behavioural changes occur regularly to keep the public informed about the situation (Gilmore 2020; WHO 2021a).

Such two-way engagement with communities can help to support and sustain required public health measures over time and so improve acceptability and adherence to measures (WHO 2020a; WHO 2020c; WHO 2021), address misinformation and rumours (WHO 2020a), and enable feedback on societal impacts of public health measures and communications that can be addressed or communications tailored towards (WHO 2021a). Effective communication and engagement processes may help to address both existing and emerging issues (e.g. pandemic fatigue, economic and social pressures, changing levels of trust) which impact uptake and adherence to public health measures (WHO 2020c).

DISCUSSION

Summary of main findings

Good public communication is a critical component of the public health response to a health emergency, such as a pandemic. This updated review draws on a substantial body of evidence (68 included studies) to provide expanded evidence on what good communication in public health emergencies might look like.

The assessed evidence stresses the importance of effective communication and engagement with the public in order to promote uptake and adherence to protective health measures, such as physical distancing. This has been well-recognised by health agencies around the world for some time. However, at this point in the COVID-19 pandemic, it is timely to reassess the evidence on pandemic communication and its role in mounting an effective community response. The need is clear for proper recognition, planning and resourcing for public health communication to ensure it is given attention now and in preparation for future pandemics, and considered alongside other implementation issues to protect public health.

Although this review focused on identifying effective communication strategies for physical distancing behaviours as a preventive health measure, the findings may also provide insights about effective public communication practices that can be applied to other protective measures and contexts. Many of the findings are unsurprising. For instance, the evidence indicates that the public need to be informed about how to protect themselves, and what they can and cannot do, in order to enact protective measures effectively. They also need practical supports to engage with, and adhere to, protective measures. Since preventive health measures change over the pandemic, with rising and falling waves of infection across communities, people also need to know how to protect themselves over time, as both risk and public

health measures change. Other findings from this review are more nuanced, for instance, highlighting the importance of public trust (in authorities and government) underpinning the public health response and the communications related to it; the need for tailoring of communications and support to local contexts; the importance of considering equity (and inequities that exist within communities) when planning and enacting public health measures; and the key role of two-way community engagement from the very beginning of the pandemic and over the subsequent weeks, months and years. These findings are comparable to several of the main recommendations arising from the recently-published World Disasters Report (IFRC 2023).

The assembled evidence was organised into six separate but interrelated themes, and subthemes within each. A summary of each is provided below and may inform approaches to and implementation of public health communication upon recognition of a public health emergency such as a pandemic outbreak, and throughout the emergency response.

Theme 1: Strengthening public trust and countering misinformation: essential foundations for effective public health communication

Public trust in the authorities is essential.

Building and maintaining public trust is an essential element of effective pandemic communication.

Efforts should be made by authorities to maximise public trust prior to an outbreak or introduction/changes to public health measures, to help promote adherence to preventive measures.

Facilitators of public trust

Factors that positively impact trust include:

- providing clear, timely and consistent information that is accessible and disseminated widely;
- transparently communicating about what is known and what is uncertain;
- communicating the commitment to base decisions on the best available scientific knowledge and regularly communicating epidemiological data;
- adopting person-centred community-led approaches;
- assuring protection of privacy and personal information.

Barriers to public trust

Factors eroding public trust include conspiracy beliefs; worries about accuracy of information reported; and worsening inequalities.

Public health messaging is less trusted when it:

- includes overstatements or exaggerations;
- fosters fear;
- appeals to authority;
- repeats myths or misinformation;
- relies heavily on statistical information;
- changes frequently or drastically over time.

Sources of misinformation

Misinformation can negatively affect preventive measure uptake. During pandemics, misinformation can spread quickly if there is:

- lack of ready access to accurate information (people then seek information from less reliable sources);
- inadequate information to support informed decisions about measures;
- conflicting/contradictory public health messages.

Some sources, specifically social media, are more likely to spread misinformation than others.

Addressing misinformation

It is critical that authorities and the media adopt co-ordinated strategies to identify and counter misinformation. Providing the right (clear, accurate, consistent) information at the right time, to the right people via trusted, credible channels is essential to clarify misconceptions.

Community leaders, healthcare providers and the media are all important for communicating consistent information about preventive measures.

Implementing mechanisms to monitor and address misinformation and respond to public questions/feedback is also key for:

- monitoring changes to knowledge, beliefs and behaviours; and
- informing future communication and information strategies i.e. tailored based on analysis of public risk perceptions, areas of uncertainty/inaccuracy or misinformation.

Theme 2: Two-way-communication: involving communities to improve the dissemination, accessibility and acceptability of information

Community involvement is key in response planning, communication and reach of messages.

Physical distancing uptake and adherence are influenced by many factors. Community engagement is key to understanding local context (people's concerns, attitudes, beliefs, barriers to protective measures) to ensure an informed, appropriate response. Without community involvement, misinformation, confusion and mistrust can undermine public health efforts.

Communities should be involved in all stages (planning, design, implementation, monitoring and evaluation) of local COVID-19 responses and aim to balance community needs and benefits of measures against potential harms.

Community engagement might entail sustained two-way involvement to design and implement communication strategies, alongside mechanisms for community feedback to monitor knowledge, beliefs and practices and adapt the course as required. This helps to build community trust but requires structures and processes to be in place. Similarly, tools and guidance are needed to strengthen community engagement, and build on existing trusted relationships.

Community involvement underpins effective tailoring of measures and communications.

Public health communication should be:

- flexible and responsive;
- calibrated to local setting and context;
- reviewed regularly;
- adapted to the local community;
- tailored to the intended audience.

Communication about preventive measures should be developed with communities in whom the measures are to be enacted.

Messages in clear, simple language are needed that:

- encourage information sharing; and
- focus on actionable messages (what people can do).

Absence of contextual tailoring of communication can mean vulnerable groups' needs are not adequately considered in decision-making.

Efforts to ensure that vulnerable people are engaged in developing and implementing response measures and communication are also needed.

Theme 3: Development of and preparation for public communication: target audience, equity and tailoring

Target audience and setting for communications

Public communications about physical distancing measures must consider the context, settings, and different audiences in a population, because these factors influence adherence.

Including details specific to communities, such as information about whom, when, where and how measures are to be implemented, are critical elements, so that information is sufficient to support informed decisions about preventive measures.

Tailoring communications

Public health communication tailoring is critical in reaching and informing more of the community, including those for whom information access is unequal.

Recognising population groups who are more likely to be non-adherent to preventive measures can help public health authorities to identify target populations for pandemic prevention and education efforts.

Information needs to be:

- adjusted for delivery e.g. sign language for people with disabilities;
- provided via a range of formats;
- accessible (follow accessibility standards (clear, non-technical terminology and language)); and
- be disseminated through several channels (mass media, digital, written).

Communicators must also be appropriately skilled and trained.

Tailored messages should be pre-tested with members of the intended audience, to ensure appropriateness (acceptability) and effectiveness (accurate understanding).

General equity considerations in communication

The need to communicate comprehensively and clearly to a population, as well as to specific community groups, arises because knowledge and adoption of preventive behaviours are not evenly distributed and a consistent pandemic response cannot otherwise be mounted.

Several factors influence community awareness of preventive messages which, in turn, influences behaviours. Public health communications need to account for these factors, and deliberately plan to address inequalities to ensure that communication is as equitable, and achieves as much reach, as possible.

Equity issues for specific population groups

So that information and communication inequalities are not amplified, communications and preventive measures must be designed, adapted and implemented to reach groups who are less likely or less able to take up measures (such as hard to reach/vulnerable populations or those facing cultural or language barriers or educational inequalities).

Theme 4: Public communication features: content, timing and duration, delivery

Content of public information and communication

To improve uptake and adherence to physical distancing measures, authorities need to communicate information to the public that is:

- comprehensive;
- clear; and
- consistent.

This needs to include:

- a clear, accurate rationale for the required measures;
- how to comply (what to do to protect health); and
- services available to support the measures.

Such information must be:

- accessible and timely;
- provided prior to the implementation of the measure(s); and
- clearly explain changes to measures over time.

Effective risk communication might occur via several modes and consider that:

- visualisations (e.g. graphics, images) may help to convey the meaning of technical epidemiological data and can significantly influence the reach and reception of messages (e.g. reaching people with lower literacy);
- statistical information might be more accessibly presented in words.

Information that is inadequate or insufficient, contradictory (inconsistent), confusing or hard-to-find negatively affects acceptance, acceptability and adherence to preventive measures.

Communicating with empathy to the public and acknowledging the difficulties of following public health advice is critical.

Emphasis of content on public health benefit may promote acceptance

Public communications may promote acceptability of and adherence to measures by developing culturally competent, context-specific strategies emphasising:

- public health benefits and importance of measures;
- altruistic nature of following prevention measures; or
- contribution to keeping everyone in the community safe (collective responsibility, social connectedness, solidarity).

Timing of communications and duration of measures

- **Knowledge and attitudes change over time.**

Communication about public health measures is needed throughout a pandemic, including:

- immediate initial communications (as early as possible), so that people can act to protect themselves even if information is incomplete;
- openly communicating about uncertainty over time; and
- continuously updating communications as new information becomes available.

Critically, information about public health measures must be kept up-to-date to promote accurate public knowledge about required measures and about how to adhere to protect health.

Public health messages also need to raise awareness that advice is continually changing, in response to an evolving pandemic.

- **Communicating duration and rationale for measures**

Public communications need to signal the duration of new preventive measures or adjustment of existing measures, and clearly explain and justify the rationale for them before measures change.

Public health messages need to consider public expectations, particularly where there is uncertainty that may require restriction extension. Unexpectedly extending restrictions can negatively affect adherence, whereas public acceptance might be promoted by communicating the anticipated end date, together with the message that measures may need continuation, but decisions will be based on public safety.

Employing multiple delivery mechanisms

Public information that is credible, accurate and accessible, and disseminated using a range of formats or channels (digital, mass media, written), to reach different parts of the community, including disadvantaged groups and those without Internet access, is required. Using trusted lines of communication to convey information to the public is also key.

Information provided from different sources is more likely to be trusted and acted upon than from a single source. Providing information via multiple credible sources appears key, but it is imperative that messages convey consistent information.

Several simple, practical measures can also be used to reinforce and remind people of physical distancing measures, including:

- visual cues (e.g. markings at appropriate distances for spacing);
- directional marking (e.g. one-way flow to reduce number of contacts);
- signage to support preventive messaging (e.g. maintain the greatest possible distance); or
- noise reduction strategies enabling people to interact at a distance.

Theme 5: Supporting behaviour change at individual and population levels

Uptake and adherence to physical distancing measures requires behavioural change from individuals and entire communities. Knowledge of what is needed, why, and how to go about it is essential, as is a range of supports, tailored to redress inequalities.

Communication to influence social attitudes and norms

Public sentiment is key and relies on the public understanding preventive measures' benefits and potential harms.

Communication targeting multiple (population and individual) levels, taking broader social and structural systems into account, and reinforcing positive social attitudes and norms towards physical distancing (e.g. strong social pressure to adhere) may be necessary to promote sustained behavioural changes.

Communication to address stigma and lack of acceptance of public health messaging

Stigma or discrimination may undermine the effectiveness of public health messages, slowing or preventing enactment of preventive measures.

Stigma needs to be proactively monitored and addressed. Disseminating contextualised information to the community to improve knowledge, counter misinformation, emphasise that an emerging disease places everyone at risk, and reinforce respect, may be helpful.

Communication to influence perceptions of vulnerability and risk

People's perceptions of preventive measures and risk (perceived personal vulnerability, transmission, severity) influence acceptance, uptake and adherence.

Regular public communication addressing common beliefs or concerns about the necessity and effectiveness of measures, and addressing key barriers (e.g. personal vulnerability perceptions) is most likely to improve adoption of measures. Communicating the immediacy and susceptibility of a risk, may also improve adherence.

Communication strategies may be most effective when emphasising the impact of non-adherence to preventive measures on identifiable people (e.g. vulnerable people) and numbers of infections.

Essential services to support quarantine or isolation

Public communication acknowledging the difficulties of adhering to restrictive measures is needed, together with reassurance that appropriate supports will be available.

Support systems must ensure easily accessed essential supplies and services, including food, water, medications and specialist services (e.g. financial support, mental health support).

Information about services and support needs to be communicated widely so that people are well-informed about:

- what services exist;
- who is eligible; and
- how to access services.

Information about supports should be tailored and consider health literacy levels, and needs of specific populations or vulnerable groups.

Supports should be easily accessed, as difficulty accessing support reduces adherence.

Financial insecurity and support

Financial losses due to the need for physical distancing measures are a common risk factor for psychological distress which can lead to non-adherence.

Implementation of preventive measures needs to be balanced against socioeconomic impacts, particularly in settings highly dependent on daily wages and the informal economy, or where social disparities exist.

Financial support is critical to promoting adherence to preventive measures and can take different forms (e.g. partial/full income replacement, flexible leave/payment). Cost is otherwise a major barrier.

People in disadvantaged groups need tailored financial assistance to undertake protective measures and are particularly vulnerable if financial support is delayed.

Theme 6: Fostering and sustaining receptiveness and responsiveness to public health communication

Pandemic fatigue as a barrier

Over time, pandemic fatigue negatively impacts adherence to preventive measures. Growing complacency, lowered risk perceptions and falling confidence in the authorities' ability to control the pandemic may contribute to fatigue, alongside socioeconomic and psychological impacts of the pandemic and public health measures.

Addressing pandemic fatigue should be a key goal of communication activities. Creatively engaging and motivating people through local partnerships may be beneficial, and more likely to be achievable if the measures are clear, proportionate, transparent and supported by quantified targets.

Changes in adherence, trust or acceptance over time

How people assess risk, their views of communications, and effects on behaviour fluctuate as they experience a pandemic over time.

When public health measures change, flexible, up-to-date public health communication is key to providing guidance about which measures apply, when, and how people can protect themselves and others.

Authorities need to find balance in communicating apparently conflicting public messages when measures change, i.e. on the one hand, conveying information about relaxation of some measures and, on the other, advocating for maintenance of certain restrictions to minimise risk.

Adaptive and responsive ongoing communication

Proactive, accessible public health messages should be continuously updated as new information emerges or the situation changes (e.g. essential service impacts), so that people know how to protect themselves at any given point in time.

Ongoing mechanisms to monitor public perceptions of the pandemic and preventive measures are also needed so that communications can be adjusted to community needs over time.

Community engagement to sustain efforts

Health authorities need to work collaboratively with communities and trusted spokespeople to maintain community trust, appropriately tailor messages and ensure community reach as the pandemic response changes.

Overall completeness and applicability of the evidence

This systematic overview provides evidence on the range of communication approaches to promote and support the use of physical distancing measures throughout a pandemic. Much of this evidence highlights the critical role of high-quality public information and communication during a public health emergency such as the COVID-19 pandemic. This requires planning, consistent messaging, continuous updating as information or public health measures change, and the involvement of communities as well as public health experts in planning and delivering communications.

The evidence assembled here can be used to inform decisions about how best to communicate (range of strategies and/or purposes), how to more successfully reach more people (to whom), and how to maximise the chances that public communications can effectively promote and support required preventive measures (what features make communication most effective). It consistently indicates that there are features of better public health communication that can be applied, irrespective of the type of communication itself, and which are key to the communication's effectiveness in promoting and supporting behaviour change by individuals and communities. The findings of this overview can therefore inform decisions about how best to frame the content, currency, timing and context for communications, in order to promote uptake and adherence to preventive measures.

The rapid spread of COVID-19 across the world has emphasised the necessarily interconnected nature of disease control and public health planning. The findings of this overview echo, and draw on, those of comprehensive pre-COVID-19 guidelines for pandemic preparedness (e.g. [JHCHS 2019](#); [NACCHO 2006](#); [WHO 2017](#)). They are also consistent with the findings of emerging reviews assessing the pandemic response to COVID-19 (e.g. [IFRC 2023](#), [IPMAC 2022](#); [Shergold 2022](#)). By drawing together evidence from across the globe, across guidelines and diseases, this overview helps to further consolidate these earlier lessons with more contemporary ones, and to provide guidance for future pandemic or public health emergency planning.

The addition of new reviews and guidelines in this update has strengthened and extended many of the findings of the original review, and has also filled many of the evidence gaps originally identified. For instance, this update includes substantial bodies of evidence on how to communicate and support vulnerable populations (defined inclusively) alongside the general public; the requirements of responsive public communication and support occurring over time as the pandemic waxes and wanes within communities; communication to promote and support school and workplace measures; proactively addressing stigma associated with physical distancing measures; and the role and importance of two-way community engagement. These were all areas identified as gaps in the original review.

Although this update adds a large body of evidence, a number of knowledge gaps are still evident. Persistent gaps include those on the role and implementation of financial incentives to promote adherence to measures (and, conversely, financial disincentives for failure to adhere), approaches which may be used by governments. Communication to promote uptake and adherence to contact tracing was relatively sparsely populated with evidence, but new findings did emphasise the need to ensure privacy and protection of personal information in the context of contact tracing systems. Evidence on communication related to some specific contexts (e.g. public transport) was not identified in the current update. However, many of the findings of this synthesis are applicable across diverse settings and populations and might offer lessons for effective communication in diverse contexts.

It is also important to note that at the time of publication of this update, approximately 24 months had elapsed since running searches for new evidence. The COVID-19 pandemic period has seen huge growth in the volume of related research and, although communication related to physical distancing is only one area of focus, there will undoubtedly have been further evidence to emerge since August 2021. We did not have the resources to update the searches for this review update, and this is a limitation that could be addressed by future reviews in this area. As it stands, however, this high-level synthesis draws on a very large volume and range of literature related to COVID-19 as well as other selected infectious diseases, and can inform both current and future planning for public health communications.

One further noted gap was the lack of research considering the impact of public communication on the pandemic by some public figures (e.g. researchers, decision-makers) and their subsequent stigmatisation or labelling as providing 'misinformation' through social media. Such potential harms for those involved in communicating with the public about the pandemic is an area where research would be valuable.

An issue emerging from the pandemic, and which remains a major gap in knowledge, relates to people at heightened risk due to COVID-19 (e.g. due to old age, frailty, chronic health conditions, immunosuppression). In the context of changing public health advice, for instance adjustment of public health measures in response to decreasing or increasing levels of community transmission, people in these groups have been required to maintain protective measures (e.g. isolation, face masks) to protect their health ([Ryan 2023](#)). Evidence assembled here addressed the needs of vulnerable groups at a general level, but did not identify evidence to inform more direct policies on how best to communicate with or support people from these groups, or

how to tailor information to enable informed decisions about the personal risk of COVID-19 for those at heightened risk. This is a major gap as people in these groups may remain isolated from the rest of the community for lengthy periods, and this is known to be associated with poor social and psychological outcomes (in addition to existing physical vulnerability to infectious disease).

While this synthesis highlights the importance of developing targeted public health messages that are tailored to specific communities and disseminated through multiple channels and formats, there was relatively less evidence on the use of diverse formats and tools to support pandemic communication. Some evidence suggests adaptations like the adoption of visual communication to overcome literacy barriers, or written information to improve accessibility of community information, may be beneficial. Finally, the original review noted a lack of evidence on the relative effectiveness of different community engagement approaches. This has been a gap in research noted for some time and, while the updated evidence assembled here does not provide a definitive answer, it does indicate a range of features of good practice for engagement approaches. This includes involving the community in two-way partnership-style dialogue on pandemic measures and the communications related to them; planning to engage the community in all decisions related to measures and communications (i.e. in planning, designing and implementing, and ensuring responsiveness to community feedback); the need to engage with the community over time; and to ensure diverse representation from community members (including people living with disability and from other vulnerable groups). These findings could guide decisions about how to more effectively engage with communities about public health measures and related communications.

New evidence has also been added in this update to expand what we know about communicating with a range of specific audiences. This includes vulnerable groups within communities, older people, and those from ethnically diverse backgrounds, including migrants and refugees. Included studies are drawn from countries across the world, although not all studies contributed evidence to all main findings. Again, as in the original review, there is a preponderance of studies undertaken in high rather than lower-income countries and this may limit the applicability of the evidence to the relatively wealthier parts of the world.

Quality of the evidence

This overview aimed to identify communication approaches, and their features, to promote and support the enactment of physical distancing measures. It includes guidelines, primary and secondary research, and qualitative and quantitative research as sources of evidence to address this purpose. Both qualitative and quantitative research was included. This approach can be useful as, for instance, qualitative findings can help to identify key issues for consideration, such as enablers or barriers to the adoption of particular communication strategies, or differences in the experiences of pandemic communication across different groups within communities.

However, the inclusion of both primary and secondary research of different designs does make it difficult to formulate concrete conclusions about the overall quality of the evidence. Although quality was assessed for each of the included pieces of research in this review, assessment was undertaken primarily to provide

review readers with an indication of the methodological strength of the research contributing to each of the main findings. These ratings are not intended to imply a hierarchy of evidence quality; nor to form the basis for further formal assessment of evidence certainty (for example, using the GRADE/GRADE-CERQual approach), as it was neither possible nor meaningful to do so with the evidence assembled here.

Instead, assessments of methodological quality are intended to assist with interpretation of the findings. More specifically, their purpose as reported, is to flag for readers the breadth of evidence contributing to each section of the results and to indicate that there may be limitations from a methodological perspective in the assembled research. For example, this update focused on synthesised (reviews and guidelines) forms of evidence as these often represent analyses of some (often large quantities) of the best available evidence in specific topic areas. However, even the synthesised evidence sources included in this review were of variable quality (mainly being rated as having low or moderate levels of quality).

One of the strengths of this review is that major themes and findings emerged from multiple data sources, and often with similar findings being reported or highlighted by both quantitative and qualitative data. This increases our confidence that the findings are coherent across different research designs, as well as across diverse populations and settings. Additionally, the findings from this update of the review are consistent with, and build on, those of the original rapid review undertaken in 2020. The update adds substantial evidence to the major findings from the original review and fills several major gaps. It has also added more detail and breadth to those findings already reflected in the original six themes. This increasing coverage and depth of the updated findings resulted in the original themes being substantially revised to more appropriately represent areas where there was a large amount of new information. Clear identification of the original themes and issues in the data, and a progressive building on these, additionally adds to our confidence that the findings of this update are coherent across diverse sources of evidence.

Potential biases in the review process

This version updates a rapid review of evidence. Our methods followed those of the original review ([Ryan 2021a](#)) and the publicly-available protocol ([Ryan 2021b](#)) closely, with any changes in approach noted.

The choice of methods for the original rapid review was made based on the need for the review to be undertaken quickly and pragmatically while ensuring a high-quality review from the process. Since the review question required consideration of evidence from multiple different study designs (i.e. qualitative and quantitative), our methods were informed primarily by the McMaster 30-day rapid response model ([Wilson 2018](#)), which is a model for synthesising evidence systematically across diverse types of evidence and disciplines. Methods were also guided by Cochrane rapid review methods ([Garrity 2021](#)).

Searching for relevant evidence was challenging due to the breadth of 'communication.' This came about because we deliberately used a comprehensive definition of communication from the outset; and because of the diverse ways in which communication could be operationalised in the literature. The different forms

of evidence eligible for inclusion in this review, and the huge volume of available research related to COVID-19, were also challenging. We searched widely for relevant studies, including electronic databases, grey literature sources, and citing literature from relevant papers. Nevertheless, it is possible that we failed to identify eligible papers and this may have had an effect on the findings.

Screening of studies for inclusion was also challenging. We developed decision rules to operationalise the selection criteria, and refined these iteratively in several rounds of study selection. While preliminary screening was undertaken by a single reviewer, our checks of this method indicated a high level of agreement when selecting studies based on titles and abstracts. All subsequent steps were undertaken by two review authors, with discussions to reach consensus about areas of uncertainty. In general, relevant physical distancing measures were clearly identifiable in papers and decisions about eligibility based on the measures were relatively straightforward. The most challenging aspect of screening was determining whether individual papers were clearly focused on one or more communication element, and where the threshold for inclusion lay. We collaboratively and iteratively refined selection based on communication elements, excluding studies without a major focus on communication, e.g. papers that mentioned communication but only in passing or as one small element of a much larger strategy or approach. This decision was reached in order to maintain the overview's focus on communication related to pandemic measures. While these decisions were undertaken by two authors working collaboratively to reach agreement, such decisions may be made differently by other researchers undertaking this review. While we made every effort to ensure consistent, transparent decisions about inclusion, it is possible that this introduced bias.

All data extraction (including quality assessment) and synthesis steps were undertaken by two authors to minimise errors or oversights. This is a strength of the review and important for quality assurance as the review included a large volume of descriptive information and data, without which there may have been errors or omissions introduced to the review.

Synthesis steps followed the reporting guidance of the SWiM guideline (Campbell 2020) as far as was possible, the aim of which was to transparently report and present data. Data were therefore tabulated to report information for each study in a consistent and structured way. Data were also translated at this stage to identify which question components were relevant, and to identify the communication purpose(s) of the study, and each study was mapped to one or more of the original six thematic categories to enable grouping for preliminary analysis and synthesis of findings. Preliminary analysis of the data according to the original thematic framework was undertaken, and then refined in consultation with the wider review team. All steps were undertaken by one author, and checked for accuracy by a second author. Errors are therefore unlikely to affect the findings in important ways, but, it is possible that another review team analysing the same data might develop different themes and/or highlight different major findings to those we have identified.

We planned at the outset of this review to use a staged approach to study selection (i.e. one that would enable systematic screening of primary as well as synthesised evidence sources). The breadth of communication as a topic area and massive growth in research

related to COVID-19 meant that we identified a high volume of primary studies from our searches (reflecting 18 months approximately of updated searches: from May 2020 to August 2021), alongside numerous reviews and guidelines. We therefore decided to focus on evidence drawn from synthesised sources for this update. It is possible that inclusion of the additional body of primary research may have allowed slightly more nuanced messages about communication to have emerged from the findings, or contributed to findings where gaps in the evidence still exist. However, given that many of the primary studies identified as potentially eligible for inclusion were fairly small surveys of very specific community population groups from diverse countries, it is not clear that the bulk of this research would have substantially changed (expanded or added depth to) the main findings of this overview.

Our searches for evidence for this update were undertaken up to August/September 2021 and, in the intervening period, research relevant to this review is likely to have become available or, in the case of guidelines, been updated. This too may have filled some of the gaps that still exist in this review, and may influence the major findings.

Considerations for decision-makers

This review focused on communication, broadly defined, in the context of a pandemic. The assembled evidence identifies a range of key features of public communication that may inform public health decision-making during a pandemic. It is important to be clear, however, that public communication happens within a broader, complex social and political environment, and the influence of these factors vary greatly across countries and regions globally (IFRC 2023). Such factors affect how physical distancing measures are enacted within communities, and have a complex relationship with many of the key findings of this review. For instance, factors such as financial and social inequalities can prevent the uptake of preventive public health measures by individuals, particularly under-served groups or whole communities, and it is therefore imperative that decision-makers consider the broader local context when implementing public health measures and the communications related to them.

The findings of this review describe a range of consistent features of public health communication to promote and support physical distancing measures that might improve acceptance, uptake and adherence to the measures. These communication features could be applied to public communications, and the preparatory work beforehand, as well as measures to sustain effects after the communication itself, irrespective of the type of communication or medium used, and may also help to inform public communications for other preventive measures. Incorporating these features can help to ensure that public communications have the best chance of success; that is, that they meet identified requirements for communication and avoid mis-steps that may otherwise occur.

From the review's findings, the main considerations for policy and decision-makers, in the fields of government, public health, and other healthcare organisations tasked with enabling such preventive measures, and working closely with communication teams, are as follows:

- Recognising and working to build and maintain public trust over time is critical, as this underpins the success of public health

communications, and therefore, the effectiveness of public health prevention measures.

- Two-way communication (engagement) with the public is needed over the course of a public health emergency: at first recognition of a health threat (despite existing uncertainties), and regularly as public health measures are introduced or adjusted. Engagement needs to be embedded at all stages of the response and inform tailoring of communications and implementation of public health measures over time.
- Communication and information must be tailored to reach all groups within populations, with explicit consideration of existing inequities and the needs of disadvantaged population groups, including those who are underserved, vulnerable, from diverse cultural or language groups, or who have lower educational attainment. Awareness that the implementation of public health measures may magnify existing or emerging inequities is also needed in response planning, enactment and adjustments over time.
- Public communication needs to be based on clear, consistent, actionable and timely (up-to-date) information about preventive measures, including the benefits (whether for individual, social groupings or wider society), harms (likewise) and rationale for use, and including information about supports available to help follow the recommended measures. Communication needs to occur through multiple channels and/or formats in order to build public trust and reach more of the community. Communication also needs to clearly convey uncertainties at any given point in time.
- Implementation of public health measures must happen alongside provision of practical supports and services (e.g. essential supplies, financial support). Information about available supports must be widely disseminated and well understood. Supports and communication related to supports and services require flexibility and tailoring to consider community needs and include vulnerable groups' needs. Proactively monitoring and countering stigma related to preventive measures (e.g. quarantine) is also necessary to promote and support adherence.
- Efforts to foster and sustain public receptiveness and responsiveness to public health communication are needed throughout a public health emergency. Recognising that trust, acceptance and behaviours change over time and that communication is required to be adaptive and responsive to meet changing needs is critical, alongside community engagement efforts to inform communication and public health response measures.
- Recognising the critical role of public trust is essential. Trust needs to be built and maintained over time in order to successfully communicate with communities about public health preventive measures.
- Two-way public communication (engagement) is needed from the earliest point where a health threat is first recognised and occurs regularly over time, to inform tailoring of communications and implementation of preventive health measures.
- Tailoring communication and information to reach all groups (including underserved, vulnerable, diverse cultural/language, lower education levels) and considering existing inequities is needed when planning and implementing the public health response.
- Public communication needs to be based on clear, consistent, actionable and timely (up-to-date) information about preventive measures, including the benefits (whether for individual, social groupings or wider society), harms (likewise) and rationale for use, and including information about supports available. Communication needs to occur through multiple channels and/or formats to build public trust and reach more of the community.
- Implementing public health measures together with practical supports (e.g. essential supplies, financial support) is critical. Ensuring the community knows how to access supports, and that supports and communication are flexible and responsive to different groups' needs is also key. Proactive monitoring and countering of stigma related to preventive measures (e.g. quarantine) is also needed to promote and support adherence.
- Efforts to foster and sustain public receptiveness and responsiveness to public health communication are needed throughout a public health emergency. Communication needs to be adaptive and responsive to meet changing needs, alongside community engagement efforts to inform communication and public health response measures.

These measures should be evaluated and adapted according to evidence of effectiveness, evidence of inequalities emerging, changing context and needs of whole or particular under-served populations.

AUTHORS' CONCLUSIONS

Implications for practice

From the review's findings, the main considerations for policy and decision-makers planning and implementing communication about a public health emergency and measures to protect the community are as follows:

Implications for research

The COVID-19 period has seen a massive growth in the volume of research, both primary and secondary, related to the pandemic. Research is needed to fill gaps in particular areas, with resources directed to conducting high-quality, meaningful research in these areas rather than to those where there is already an abundance of studies of variable scope and quality.

Based on the evidence assembled here, further research might usefully investigate gaps related to communication during public health emergencies:

- Exploration of the needs and experiences of people at heightened risk of a public health emergency such as COVID-19, who may need to continue to observe protective measures over prolonged time periods, alongside the majority of the community returning to life as usual.
- Investigation of the barriers particular to lower- and middle-income countries in relation to public communication and implementation of protective public health measures during an emergency (and over time), and how to address these barriers.
- Assessment of the role of good communication in promoting uptake and adherence to preventive measures in specific settings, particularly those with implications for known societal

inequities, such as access to healthcare, safe use of public transport and safe working environments and conditions.

- Research on the duration of effectiveness of the communication measures described, and of interventions to sustain their effectiveness over time as is needed in pandemic and other public health emergency situations.

ACKNOWLEDGEMENTS

Authors of the original review not contributing to this update: Dianne Lowe, Nami Nelson. The original review was commissioned by the WHO European Office in March 2020.

We are grateful to members of the eCOVID19 Recommendations Map (<https://covid19.recmap.org/>; eCOVID19 RecMap) team, for assistance with sharing a list of potentially-relevant guidelines to us for screening in this update; and to the eCOVID19 RecMap critical appraisal team who critically appraised eligible guidelines and shared the results of these appraisals.

We are also grateful to review and study authors who generously responded to requests for information or access to reports.

Finally, we would like to thank Simon Murray of fieldnotes.work for developing and creating the visual quality of evidence snapshots for our review findings.

Editorial and peer-reviewer contributions

Cochrane Consumers and Communication supported the authors in the development of this review. The following people conducted the editorial process for this review:

- Sign-off Editor (final editorial decision): Sascha Köpke, Institute of Nursing Science, University of Cologne, Medical Faculty and University Hospital Cologne, Germany;
- Managing Editor (selected peer reviewers, provided editorial guidance to authors, edited the article): Joey Kwong, Cochrane Central Editorial Service;
- Editorial Assistant (conducted editorial policy checks, collated peer-reviewer comments, supported editorial team): Lisa Wydrzynski, Cochrane Central Editorial Service;
- Copy Editor (copy editing and production): Anne Lethaby, Cochrane Central Production Service;
- Peer-reviewers (provided comments and recommended an editorial decision): Annemiek Hammer, VU University Amsterdam, The Netherlands (clinical review), Stella O'Brien (consumer review), Meryem Malik, Harvard University (clinical review), Jo Platt, Cochrane Evidence Production & Methods Directorate (search review), Chantelle Garritty, School of Epidemiology and Public Health, University of Ottawa (methods review), Robert Walton, Cochrane UK (summary version reviewer).

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* Indicates the major publication for the study

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CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Atchison 2020

Study characteristics

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Bekele 2020

Study characteristics

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Berg 2021

Study characteristics

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Bodas 2020

Study characteristics

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Briscese 2020

Study characteristics

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Brooks 2020

Study characteristics

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Brooks 2020a

Study characteristics

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Burnet 2020

Study characteristics

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Burnet 2020a

Study characteristics

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Cardwell 2021

Study characteristics

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CDC 2022

Study characteristics

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CDC 2022a

Study characteristics

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CDC 2022b

Study characteristics

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Chu 2020

Study characteristics

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Chung 2021

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Clements 2020

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DES 2020

Study characteristics

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Eaton 2020

Study characteristics

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ECDC 2020

Study characteristics

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ECDC 2020a

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ECDC 2020b

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ECDC 2020g

Study characteristics

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Farooq 2020

Study characteristics

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Gilmore 2020

Study characteristics

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Gomez-Duran 2020

Study characteristics

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Gupta 2021

Study characteristics

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Heuvelings 2018

Study characteristics

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JHCHS 2019

Study characteristics

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Khorram-Manesh 2021

Study characteristics

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Kwok 2020

Study characteristics

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Li 2020

Study characteristics

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Lim 2020

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Lin 2014

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Lohiniva 2020

Study characteristics

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Lor 2016

Study characteristics

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Lunn 2020

Study characteristics

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Majid 2020

Study characteristics

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Mao 2021

Study characteristics

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Megnin-Viggars 2020

Study characteristics

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Meier 2020

Study characteristics

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Mobasseri 2020

Study characteristics

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Moya-Salazar 2021

Study characteristics

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NACCHO 2006

Study characteristics

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Noone 2021

Study characteristics

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PHAC 2021

Study characteristics

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PHAC 2021a

Study characteristics

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PHAC 2022

Study characteristics

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Qazi 2020

Study characteristics

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Regmi 2021

Study characteristics

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Roy 2020

Study characteristics

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Sarria-Guzman 2021

Study characteristics

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Saurabh 2017

Study characteristics

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Seale 2020

Study characteristics

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Sopory 2021

Study characteristics

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Szkwarko 2017

Study characteristics

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Teasdale 2014

Study characteristics

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Tooher 2013

Study characteristics

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Webster 2020

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WHO 2017

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WHO 2020

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WHO 2020a

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WHO 2020b

Study characteristics

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WHO 2020c

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WHO 2021

Study characteristics

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WHO 2021a

Study characteristics

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WHO 2021b

Study characteristics

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Zhong 2020

Study characteristics

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Zhu 2020
Study characteristics

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Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
AASLD 2020	Primary clinical management/ pathway
Abbas 2021	No physical distancing focus
Adlhoch 2020	No communication focus
Allen 2020	No communication and physical distancing focus
Alom 2021	Primarily clinical management/ pathway; health system (not community)
Alvarez-Galvez 2021	No physical distancing focus
Amerio 2020	Non-systematic review/overview (commentary)
Andrikopoulos 2020	Non-systematic review/overview
Anglemyer 2020	No communication focus
Aniceto 2021	Non-systematic review/overview (commentary)
ANZICS 2020	Primarily clinical management/ pathway
ANZICS 2020b	No physical distancing focus
ASRM 2020	No communication and physical distancing focus
Barry 2013	No physical distancing focus
Bhaumik 2020	No communication focus
Bin 2021	Non-systematic review/overview; not intersection between communication and physical distancing
Bittencourt 2020	Primarily clinical management/pathway; health system (not community); no communication focus
Blasioli 2022	Non-systematic review/overview; not intersection between communication and physical distancing
Bokolo 2020	No communication and physical distancing focus
Bolcato 2020	No communication focus
Bonell 2020	Non-systematic review/overview
Boschiero 2021	Non-systematic review/overview; no communication focus

Study	Reason for exclusion
Bouznad 2020	Non-systematic review/overview
Braithwaite 2020	No communication focus
Brooks 2021	Health system (not community)
Busa 2021	Non-systematic review/overview; no physical distancing focus
Cachon-Zagalaz 2020	No communication focus
Carter 2021	No communication focus; no intersection between communication and physical distancing
CDC 2020	No communication focus
CDC 2020a	No communication focus
CDC 2020b	No intersection between communication and physical distancing; health system (not community); primarily clinical management/pathway
CDC 2020c	No communication focus
CDC 2020d	No communication and physical distancing focus
CDC 2020e	No communication and physical distancing focus
CDC 2020f	No communication focus
CDC 2020g	No communication focus
CDC 2020h	No communication focus
CDC 2020i	No intersection between communication and physical distancing
CDC 2020j	No communication focus
CDC 2020k	No communication focus
CDC 2020l	No communication focus
CDC 2020n	No communication focus
CDC 2020o	No communication focus
CDC 2020p	No communication and physical distancing focus
CDC 2020q	No communication and physical distancing focus
CDC 2020r	No communication and physical distancing focus
CDC 2020s	Primarily clinical management/pathway; no communication focus
CDC 2020t	No communication and physical distancing focus
CDC 2020u	No intersection between communication and physical distancing

Study	Reason for exclusion
CDC 2020v	No communication focus
CDC 2020w	No communication focus
CDC 2020x	Not research, communication toolkit sample
CDC 2021	No communication focus
CDC 2021a	No communication and physical distancing focus
CDC 2021aa	No communication and physical distancing focus
CDC 2021ab	No communication focus
CDC 2021ac	No communication and physical distancing focus
CDC 2021ad	No communication focus
CDC 2021ae	No communication focus
CDC 2021af	No communication and physical distancing focus
CDC 2021ag	No intersection between communication and physical distancing
CDC 2021ah	No communication focus
CDC 2021ai	No communication focus
CDC 2021aj	No communication and physical distancing focus
CDC 2021ak	No communication and physical distancing focus
CDC 2021al	Primarily clinical management/pathway
CDC 2021am	No communication and physical distancing focus
CDC 2021an	No communication and physical distancing focus
CDC 2021ao	No communication and physical distancing focus
CDC 2021ap	No communications focus; health care (not community)
CDC 2021aq	No communication focus
CDC 2021ar	No communication focus
CDC 2021b	No communication focus
CDC 2021c	No communication and physical distancing focus
CDC 2021d	No communication focus
CDC 2021e	No communication focus
CDC 2021m	No communication focus

Study	Reason for exclusion
CDC 2021n	No communication focus
CDC 2021o	No communication and physical distancing focus
CDC 2021p	Health system (not community)
CDC 2021q	No communication focus
CDC 2021s	Health system (not community)
CDC 2021t	No communication or physical distancing focus (cleaning)
CDC 2021u	No communication focus
CDC 2021v	Health system (not community)
CDC 2021w	No communication focus
CDC 2021x	No communication focus
CDC 2021y	No communication focus
CDC 2021z	No communication focus
Chackalackal 2021	No communication focus
Chan 2020	No communication focus
Chawla 2020	Primarily clinical management/pathway
Choukou 2021	No communication and physical distancing focus
Cobb 2021	No communication and physical distancing focus
Collins 2020	Non-systematic review/overview
Couto 2020a	Non-systematic review/overview
Daszak 2021	Non-systematic review/overview; no physical distancing focus
DEHS 2020	No communication and physical distancing focus
Deolmi 2020	Non-systematic review/overview
DES 2020a	No communication focus
DES 2020b	No communication and physical distancing focus
Desveaux 2021	Non-systematic review/overview
DFE 2021	No communication and physical distancing focus
Dhamija 2021	Primarily clinical management/pathway; no communication focus
DHCS 2021	No communication focus

Study	Reason for exclusion
DiLorenzo 2021	Primarily clinical management/pathway; no intersection between communication and physical distancing
Dos Santos 2020	No communication focus
Downes 2020	No intersection between communication and physical distancing
Dubey 2020	Non-systematic review/overview; no communication focus
EC 2020	No communication and physical distancing focus
ECDC 2020c	No communication focus
ECDC 2020d	No communication focus
ECDC 2020e	No communication focus
ECDC 2020f	No communication focus
Ekberg 2020	Non-systematic review/overview; no communication or physical distancing focus
EMSA 2021	No communication focus
Feiz 2020	Not systematic review/overview
Ferreira 2020	Non-systematic review/overview; health system (not community); primarily clinical management/pathway
Finset 2020	Non-systematic review/overview
Flores 2020	Non-systematic review/overview; no communication focus
Flumignan 2020	No communication and physical distancing focus; health system (not community)
Geerts 2021	No physical distancing focus; health system (not community)
Gelfand 2021	Primarily clinical management/pathway; no communication focus
Ghate 2020	No communication and physical distancing focus
Government Ireland 2021	No communication and physical distancing focus
Graber 2021	No communication focus
Greysen 2021	No communication and physical distancing focus; health system (not community)
Griffin 2021	Non-systematic review/overview
Hagan 2020	Non-systematic review/overview
Hamouche 2021	No communication focus; non-systematic review/overview
Hirt 2022	No communication focus
Honein 2020	No communication and physical distancing focus

Study	Reason for exclusion
Horcher 2021	Non-systematic review/overview; no communication focus
Hossain 2020	No communication focus
IASC 2020	No intersection between communication and physical distancing
Iezadi 2021	No communication focus
Imtiaz 2020	No communication focus
Jammu 2021	No communication focus
Jesus 2021	No communication focus
Johansen 2020	No communication focus
Kamposioras 2020	No communication focus; primarily clinical management/pathway
Kondylakis 2020	Not physical distancing focus
Kumar 2020	No communication focus
Kunzler 2021	No physical distancing and communication focus
Kurniawan 2021	No communication or physical distancing focus; primarily clinical management/pathway
Lal 2020	No physical distancing focus; non-systematic review/overview
Landewe 2020	No communication and physical distancing focus
Lebrasseur 2021	No intersection between communication and physical distancing
Leon Singh 2020	No communication focus
Lo 2020	No communication focus
Lotfi 2021	Non-systematic review/overview
Maldonado 2020	Non-systematic review/overview
Mastura 2020	Non-systematic review/overview
Matos 2020	No communication and physical distancing focus
Matras 2020	Primarily clinical management/pathway; no communication and physical distancing focus
Matterne 2021	No intersection between communication and physical distancing; non-systematic review/overview
Mendez-Brito 2021	No communication and physical distancing focus
Michie 2020	Non-systematic review/overview
Mikuls 2020	Health system (not community); no communication focus; primary clinical management/pathway
Ministry of Health	No communication focus

Study	Reason for exclusion
Miralles 2021	Non-systematic review/overview
Mistraletti 2020	No physical distancing focus; no intersection between communication and physical distancing
Morina 2021	No communication focus
Muhammad 2020	Non-systematic review/overview; no communication focus
Murphy 2021	Primarily clinical management/pathway; no physical distancing and communication focus
Nachega 2020	Non-systematic review/overview
Nagata 2021	Health impact assessment; not review of research
Najafizada 2021	No communication and physical distancing focus
Narla 2021	Primarily clinical management/pathway; no communication focus; health system (not community)
NICE 2020	Primarily clinical management/pathway; no physical distancing focus
Novak 2020	Health system, not community; no intersection between communication and physical distancing
NSW DoH 2020	No communication and physical distancing focus; no intersection between communication and physical distancing; health system (not community)
Nursalam 2020	No communication and physical distancing focus
O'Connell 2021	No communication focus
Ogunleye 2020	Non-systematic review/overview
Orchard 2021	No communication focus; primarily clinical management/pathway
Pahl 2021	No communication and physical distancing focus
Parajuli 2020	No intersection between communication and physical distancing
Parker 2020	No communication focus
Patel 2020	No communication focus
Patel 2021	Non-systematic review/overview
Perski 2021	No physical distancing focus; no intersection between communication and physical distancing
PHAC 2020	No communication and physical distancing focus
PHAC 2020a	No communication focus
PHAC 2020b	No communication focus
PHAC 2020c	No intersection between communication and physical distancing
PHAC 2021b	Not physical distancing, communication

Study	Reason for exclusion
PHAC 2021c	No communication and physical distancing focus
PHAC 2021d	No intersection between communication and physical distancing
PHAC 2021e	No communication focus
PHAC 2021f	No communication focus
PHAC 2021g	No intersection between communication and physical distancing
Pimenta 2020	No physical distancing focus
Polonsky 2021	No intersection between communication and physical distancing (protocol; focus on mental health outcomes not physical distancing)
Pourroy 2020	No communication and physical distancing focus; health system (not community)
Price 2020	No communication focus
Puspitasari 2020	No intersection between physical distancing and communication
Qazi 2021	No communication and physical distancing focus
Qi 2021	No communication and physical distancing focus
Rao 2020	No communication and physical distancing focus
RCP 2020	Primarily clinical management/pathway
Ribal 2020	No communication and physical distancing focus; primarily clinical management/pathway
Riggioni 2020	Primarily clinical management/pathway; no communication focus
Robertson 2020	No physical distancing and communication focus; health system (not community)
Robinson 2020	Primary clinical management/pathway; health system (not community); non-systematic review/overview
Rocha 2021	No communication focus
Ryan 2020	No communication focus
Saadatjoo 2021	No communication focus
Santos 2020	Non-systematic review/overview
Santos 2020a	Non-systematic review/overview; primarily clinical management/pathway; no communication and physical distancing focus
SCDPC 2020	No physical distancing focus and no communication focus
Schellack 2020	Non-systematic review/overview; no physical distancing and communication focus; primarily clinical management/pathway
Schoonees 2021	No physical distancing focus

Study	Reason for exclusion
Selman 2020	Non-systematic review/guidelines; no physical distancing focus
Sendzikaite 2021	Primarily clinical management/pathway; no communication focus
Serafini 2020	Non-systematic review/overview; no physical distancing focus
Sharma 2020	Non-systematic review/overview; no intersection between communication and physical distancing
Sheen 2020	No intersection between communication and physical distancing (poster, excluded based on abstract only)
Sheen 2020a	No communication focus; non-systematic review/overview (poster, excluded based on abstract only)
Silva 2021	No communication focus
Srikanth 2020	No intersection between communication and physical distancing
Stavridou 2020	No communication focus
Stawicki 2020	No intersection between communication and physical distancing
Stephen 2020	No communication and physical distancing focus
Stoilov 2020	No communication focus; primary clinical management/overview
Stojanovski 2021	No communication and physical distancing focus
Stratil 2020	No communication focus
Sullivan 2020	Primarily clinical management/pathway; no communication focus
Tabari 2020	Non-systematic review/overview; no communication focus; no intersection between communication and physical distancing
Tam 2020	Primarily clinical management/pathway; no communication focus
Tam 2021	Primarily clinical management/pathway; no communication focus
Taylor 2020	Non-systematic review/overview; lack of communication focus
TC 2020	No communication focus
Teegne 2021	Health system (not community)
Ting 2020	No communication and physical distancing focus
Tonin 2020	No communication and physical distancing focus; non-systematic review/overview
Tsao 2021	Lack of communication and physical distancing focus
Turner 2021	No communication focus; health system (not community)
UK HSA	No communication focus

Study	Reason for exclusion
Ul Haq 2021	No physical distancing focus
Vaezi 2020	Not systematic review/overview
Viero 2021	No communication focus
Wake 2020	Non-systematic review/overview; no interaction between communication and physical distancing
Wallace 2020	Non-systematic review/overview; no communication and physical distancing focus
Wang 2020	Non-systematic review/overview
WHO 2020d	No communication and physical distancing focus
WHO 2020e	No communication focus
WHO 2020f	No communication focus
WHO 2020g	No communication and physical distancing focus
WHO 2020h	No communication and physical distancing focus
WHO 2020i	No communication and physical distancing focus
WHO 2020j	No communication and physical distancing focus
WHO 2020k	No physical distancing focus
WHO 2020l	No intersection between communication and physical distancing
WHO 2020m	No communication and physical distancing focus
WHO 2020n	No intersection between communication and physical distancing
WHO 2020o	No communication and physical distancing focus
WHO 2020p	No communication focus
WHO 2020q	Communication not a focus
WHO 2021c	No communication focus
WHO 2021d	No communication and physical distancing focus; health system (not community)
Wilkinson 2020	No communication and physical distancing focus
Yazew 2021	No interaction between communication and physical distancing
Yu 2020	Primarily clinical management/pathway
Yuan 2021	No communication and physical distancing focus
Yue 2020	No intersection between communication and physical distancing
Zhang 2021	No communication and physical distancing focus

Characteristics of studies awaiting classification *[ordered by study ID]*
Adab-Corpa 2021

Notes	Requires translation from Spanish. English abstract suggests the review may be relevant.
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Dreyer 2020

Notes	Unable to locate full text for assessment
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Ghungrud 2021

Notes	Unable to locate full text for assessment
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Jun 2020

Notes	Requires translation from Chinese: English abstract indicates potential relevance although unclear if guideline or systematic review.
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Kang 2020

Notes	Cannot locate full text for assessment
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Odendaal 2020

Notes	Cannot identify full text for assessment
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Thomson 2021

Notes	Cannot locate full text for assessment
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Characteristics of ongoing studies *[ordered by study ID]*
Grimani 2021

Study name	Systematic review of effective communication strategies for infectious diseases population behaviour change
Starting date	Unclear
Contact information	Correspondence to Dr Aikaterini Grimani; aikaterini.grimani@wbs.ac.uk
Notes	Research questions:

Grimani 2021 (Continued)

Are messages focusing on protecting others effective in changing a defined list of behavioural outcomes compared with other messages/controls?

What behaviours (eg, social distancing, hand washing, face touching, using hygiene products, and so on) do messages about protecting others appear to affect positively?

What populations do messages about protecting others appear to affect positively?

Monteiro 2021

Study name	Systematic review on barriers and facilitators
Starting date	Unclear
Contact information	Correspondence to Dr Karla Morganna Pereira Pinto de Mendonça; karla-morganna@hotmail.com
Notes	This study aims to summarise and evaluate the evidence on barriers and facilitators to population-adherence to prevention and control measures in COVID-19 and other respiratory infectious diseases.

ADDITIONAL TABLES

Table 1. Abbreviations used in this update

AGREE II: Appraisal of Guidelines for Research & Evaluation II tool
AMSTAR: A Measurement Tool to Assess Systematic Reviews
BAME: Black, Asian and minority ethnic
CASP: Critical Appraisal Skills Programme
CCM: child contact management
CDC: Centres for Disease Control and Prevention
CHW: community health worker
COI: conflict of interest
CT: contact tracing
ECE: early care and education
ECDC: European Centre for Disease Prevention and Control
EEA: European Economic Area
ERC: emergency risk communication
EU: European Union
EVD: Ebola virus disease
FAQ: frequently asked questions
FTTIS: find, test, trace, isolate, support

Table 1. Abbreviations used in this update

GL: guideline

GOARN: Global Outbreak Alert and Response Network

GPS: global positioning system

H1N1: H1N1 influenza strain

HCW: health care worker

HIV: Human Immunodeficiency Virus

IFRC: International Federation of Red Cross and Red Crescent Societies

IHE: institute of higher education

LMIC: lower- and middle- income country

MERS: Middle Eastern respiratory syndrome

N/A: not applicable

NGO: non-government organisation

NICE: National Institute for Clinical Excellence

NIHR: National Institute for Health Research

NPI: non-pharmaceutical intervention

OECD: Organisation for Economic Co-operation and Development

PD: physical distancing

PH: public health

PHAC: Public Health Agency Canada

PHM: public health measures

PHSM: public health and social measures

PPE: personal protective equipment

PTSD: post-traumatic stress disorder

QES: qualitative evidence synthesis

QR: quick response

RCCE: risk communication and community engagement

RCT: randomised controlled trial

SAGE: Scientific Advisory Group for Emergencies

SARS: Sudden acute respiratory syndrome

SES: socioeconomic status

SIM: subscriber identity module

SMS: short message/ messaging service

SPI-B: Scientific Pandemic Influenza Group on Behaviours

SR: systematic review

Table 1. Abbreviations used in this update

TB: tuberculosis
THL: Finnish Institute for Health and Welfare
UAE: United Arab Emirates
UNICEF: United Nations International Children's Emergency Fund
WHO: World Health Organization

Table 2. Definitions of physical distancing measures considered by this review update

Contact tracing	The identification and follow-up of persons who may have come into contact with an infected person, usually in combination with quarantine of identified contacts.
Crowd avoidance	Measures to reduce virus transmission in crowded areas/mass gatherings, including restrictions on gatherings, and approaches for individual distancing in homes, shops, workplaces, public transport and public places.
Isolation	Reduction in virus transmission from an ill person to others by confining symptomatic individuals for a defined period either in a special facility or at home.
Quarantine	Isolation of individuals who contacted a person with proven or suspected viral illness, or travel history to an affected area, for a defined period after last exposure, with the aim of monitoring them for symptoms and ensuring the early detection of cases.
School measures	Closure of schools when virus transmission is observed either in the school or community, or an early planned closure of schools before virus transmission initiates.
Work measures, including closures	Measures to reduce virus transmission in the workplace, or on the way to and from work, by decreasing the frequency and length of social interactions. May include closure of workplaces when virus transmission is observed in the workplace, or an early planned closure of workplaces before virus transmission initiates.

Definitions of physical distancing measures taken from [WHO 2019](#)

Table 3. Search activities and dates

Database	Date searched
CAMARADES COVID-19 SOLES	24 Aug 2021
CDC	24 Aug 2021
Cochrane Library	18 Aug 2021
Cochrane study Registry COVID-19	24 Aug 2021
ECDC	24 Aug 2021
Embase Classic + Embase 1947 to 2021 August 18	18 Aug 2021
Epistemonikos COVID-19	25 Aug 2021
Google Scholar	18 – 25 Aug 2021

Table 3. Search activities and dates (Continued)

Health Systems Evidence	25 Aug 2021
Lit COVID	25 Aug 2021
Ovid MEDLINE(R) ALL 1946 to August 19, 2021	18 Aug 2021
MedRixv	31 Aug 2021
NICE	25 Aug 2021
PDQ Evidence	25 Aug 2021
PubMed	24 Aug 2021
WHO Global research on COVID-19	31 Aug 2021
Web of Science (citing references)	1 Sep 2021

Table 4. Overview of included studies and quality ratings (original review and this update)

	Guidelines	Systematic reviews	Primary studies
Original review (Ryan 2021a)	3	11	17
Cochrane update	17	20*	0
Total included	20	31*	17
	Quality (AGREE II):	Quality (AMSTAR):	Quality (design-specific tools):
	<ul style="list-style-type: none"> • 1 high • 6 moderate • 13 low 	<ul style="list-style-type: none"> • 4 high • 14 moderate • 12 low 	<ul style="list-style-type: none"> • 9 moderate • 8 low

* One included review was empty (Moya-Salazar 2021) and was therefore not assessed for quality or considered further in this update. AMSTAR ratings categorised as follows (scored out of 11): 1-4 low, 5-7 moderate, 8+ high-quality. AGREE II ratings categorised as follows (mean scores across 6 domains): < 40% low, 40 to < 70% moderate, 70%+ high-quality.

Table 5. Included studies and ratings of methodological quality

Physical distancing measure	Study ID (type of study)	Quality, assessment tool
Contact tracing	Chung 2021(SR)#	Low, AMSTAR
	Gilmore 2020(SR)#^	Moderate, AMSTAR
	Heuvelings 2018 (SR)*	Moderate, AMSTAR
	Khorram-Manesh 2021(SR)#	Moderate, AMSTAR
	Megnin-Viggars 2020(SR)#	High, AMSTAR

Table 5. Included studies and ratings of methodological quality (Continued)

	Saurabh 2017 (SR)*	Low, AMSTAR
	Szkwarko 2017 (SR)*	Moderate, AMSTAR
	Bodas 2020 (survey)#	Low-moderate
Isolation	WHO 2021(GL)#	Moderate, AGREE II
	Cardwell 2021(SR)#^	Moderate, AMSTAR
	Chu 2020(SR)#^	Moderate, AMSTAR
	ECDC 2020b(GL)#	Moderate&, AGREE II
	ECDC 2020a(GL)#	Low, AGREE II
	Mao 2021(SR)#	Moderate, AMSTAR
	Mobasseri 2020(scoping review)#	Low, AMSTAR
	Regmi 2021(SR)#	Moderate, AMSTAR
	Seale 2020(SR)#	Low, AMSTAR
	WHO 2020c(GL)#	Moderate, AGREE II
	Burnet 2020 (qualitative)#	Moderate, CASP
	Burnet 2020a (qualitative)#	Moderate, CASP
	Farooq 2020 (survey)#	Low
	Qazi 2020 (survey)#	Low
Quarantine	Brooks 2020 (SR)*^	Low%, AMSTAR
	Gomez-Duran 2020(SR)#^	Moderate, AMSTAR
	Lin 2014 (SR)*	Moderate, AMSTAR
	Sopory 2021(qualitative, SR)#^	High, AMSTAR
	Webster 2020 (SR)#^	Moderate, AMSTAR
	WHO 2021b(GL)#	Low, AGREE II
	Zhu 2020 (survey)#	Moderate
School measures	Brooks 2020a (SR)*^	Low%, AMSTAR
	CDC 2022(GL)#	Low, AGREE II
	CDC 2022a(GL)#	Low, AGREE II
	CDC 2022b(GL)#	Low, AGREE II

Table 5. Included studies and ratings of methodological quality (Continued)

	DES 2020(GL)#	Low, AGREE II
Work measures	-	-
Crowd avoidance, including individual physical distancing measures	ECDC 2020(GL)#	Low, AGREE II
	NACCHO 2006 (guideline)+*	Moderate, AGREE II
	PHAC 2021(GL)#	Low, AGREE II
	PHAC 2021a(GL)#	Low, AGREE II
	Teasdale 2014 (SR, qualitative)*	Moderate, AMSTAR
	Tooher 2013 (SR)*	High, AMSTAR
	WHO 2020b(GL)#	Moderate, AGREE II
	Eaton 2020 (scoping review)*^	Low, AMSTAR
	Lor 2016 (qualitative)*	Moderate, CASP
	Atchison 2020 (survey)#	Moderate
	Briscese 2020 (survey)#	Moderate
	Clements 2020 (survey)#	Low
	Kwok 2020 (survey)#	Low-moderate
	Lohiniva 2020 (qualitative)#	Moderate, CASP
	Lunn 2020 (RCT)#	Moderate, CASP
	Meier 2020 (survey)#	Low-moderate
Roy 2020 (survey)#	Low	
Zhong 2020 (survey)#	Low	
General	Bekele 2020(SR)#	Moderate, AMSTAR
	Berg 2021(scoping review, rapid)#	Low, AMSTAR
	ECDC 2020g (review of guidelines)#	Low, AMSTAR
	Gupta 2021(SR)#	Low, AMSTAR
	JHCHS 2019 (guideline)*	Moderate, AGREE II
	Li 2020(SR)#	Moderate, AMSTAR
	Majid 2020(scoping review) #^	Low, AMSTAR
	Noone 2021(scoping review, rapid)#	High, AMSTAR

Table 5. Included studies and ratings of methodological quality (Continued)

PHAC 2022(GL)#	Low, AGREE II
Sarria-Guzman 2021(SR)#	Low, AMSTAR
WHO 2017 (guideline)*	High, AGREE II
WHO 2020(GL)#	Low, AGREE II
WHO 2020a(GL)#	Low, AGREE II
WHO 2021a(GL)#	Low, AGREE II
Lim 2020 (survey)#	Moderate

COVID-19-specific, #^ included research not COVID-19-specific but review conducted explicitly in the context of the current pandemic outbreak, *non-COVID-19-specific study

Bold text indicates new studies added in this update.

AMSTAR ratings categorised as follows (scored out of 11): 1-4 low, 5-7 moderate, 8+ high-quality

AGREE II ratings categorised as follows (mean scores across 6 domains): < 40% low, 40 to < 70% moderate, 70%+ high-quality

&AGREE II overall rating calculated based on mean of 3 domains (1, 3, 6) rather than all 6 domains of the tool

% AMSTAR rating from McMaster Health Forum (via Health Systems Evidence <https://www.healthsystemsevidence.org>)

APPENDICES

Appendix 1. Vulnerable groups within populations

The following comprehensive list of people considered vulnerable in the context of the COVID-19 pandemic is taken directly from WHO 2020c (COVID-19 Global Risk Communication and Community Engagement Strategy – interim guidance (who.int) Dec 2020).

- Older people (> 60 years): who may be unable to access adequate information and health services; need support of caregivers; not understand public health information; have difficulty physically distancing (e.g. assisted living facilities).
- People with pre-existing medical conditions: who may not have access to information about why they are at heightened risk.
- Children/young people: may not have access to information or understand required behaviours, and may be amongst the most affected by preventive measures (e.g. school closures).
- Ethnic/monitory populations: may not have ready access to information in own language, or face stigma/discrimination in healthcare settings.
- Disadvantaged populations (e.g. gender-based violence survivors, homeless, mental health conditions, sexual and gender minorities, women and girls): who may face disruption of services/support; isolation; lack of understanding of information on preventive measures; exclusion from decision-making; restricted access to information due to limited education and language learning opportunities.
- People deprived of their liberty (e.g. prison, detention centres): may have limited information or opportunities to ask questions, and lack trust of facility staff and information.
- People living within humanitarian crises (e.g. refugee camps): access to essentials (e.g. shelter, food, protective supplies) may be disrupted; and timely and accurate information may be lacking due to isolation or language barriers.
- People living in overcrowded spaces (e.g. slums, dormitories, urban poor): physical distancing may be difficult with overcrowding/movement of people between dwellings; may be higher levels of distrust of government; lower levels of education and health literacy, all of which may impede access/understanding of public health information and required measures.
- People with disabilities: amongst the most marginalised (i.e. live in poverty, higher rates of violence, neglect and abuse); excluded from decision-making; unequal access to information or available services (particularly those with specific communication needs).
- People working in confined conditions (e.g. factories, abattoirs, meat-packing plants) or informal economy: may be unable to follow physical distancing measures and/or measures may be poorly regulated. Public health information may not be readily available.
- Refugees and migrants: may face legal hurdles, discrimination and language barriers which prevent understanding of public health information; may not be included in national response plans; and may be difficult to reach (i.e. mobility which may include cross-border movements).

Appendix 2. Planned sequence of screening activities

Sequence of review search activities

In the original review, screening was undertaken sequentially in order to identify relevant evidence.

In short, screening was conducted in two phases:

- Phase 1: systematic reviews and guidelines (COVID-19, SARS, MERS, influenza, TB, Ebola)
- Phase 2: primary studies to fill gaps in the phase 1 evidence (COVID-19 only)

The table below outlines the sequence of search activities used for the original review.

We planned to follow the same process for this update. However, screening identified a very large number of synthesised evidence sources (SRs and GLs) in the updated searches. We therefore decided to halt screening at the phase 1 level, selecting only relevant systematic reviews and guidelines with a focus on COVID-19 for inclusion.

1	2	3
Search for and select (1) guidelines, (2) systematic reviews, and (3) single studies on COVID-19 Search sources to include sources 1-4 (above) concurrently Include any guideline or systematic reviews that <ul style="list-style-type: none"> • Addresses physical distancing; • Includes primary COVID-19 era research of intervention/experience/views/case report related to communication purposes above. 	Map against questions by extracting brief data on: <ul style="list-style-type: none"> • Reference/source; • Country of included study; • Population; • Intervention; • Phenomenon of interest. 	Identify key gaps
4	5	6
Search for guidelines and systematic reviews (no single studies) related to other infectious diseases (including SARS, MERS, influenza, Ebola, TB and potentially, hypothetical pandemic diseases) Search sources to include sources 1-4 (above) concurrently Include any guideline or systematic reviews that: <ul style="list-style-type: none"> • Address physical distancing; • Include primary research of intervention/experience/views related to communication purposes above. 	Map against questions by extracting data on: <ul style="list-style-type: none"> • Reference/source; • Country of included study; • Population; • Intervention; • Phenomenon of interest. 	Identify key gaps
7	8	9
Contact experts to check data sources and for advice on gaps	Review search yield of single primary research studies (COVID-specific) and select those which fill gaps in the guideline or review evidence	Consider any further searches identified from expert consultation to fill outstanding gaps by searching for single studies

Appendix 3. Cochrane Library search strategy

#1 COVID-19

#2 MeSH descriptor: [COVID-19] explode all trees

- #3 MeSH descriptor: [SARS-CoV-2] explode all trees
- #4 MeSH descriptor: [Coronavirus] explode all trees
- #5 MeSH descriptor: [Coronavirus Infections] explode all trees
- #6 (covid or coronavir* or coronavir*)
- #7 ((corona* or corono*) NEAR (virus* or viral* or virinae*))
- #8 (ncov or n-cov or 2019nCoV or nCoV2019 or CO?VID-19 or CO?VID19 or WN-CoV or WNCov or HCoV-19 or HCoV19 or 2019nov-el* or SARS-CoV-2 or SARSCoV-2 or SARSCoV2 or SARS-CoV2 or SARSCov19 or SARS-Cov19 or SARSCov-19 or SARS-Cov-19 or Ncovor or Ncorona* or Ncorono* or NcovWuhan* or Ncov-Hubei* or NcovChina* or NcovChinese* or SARS2 or SARS-2 or SARScoron?virus2 or SARScoron?virus2)
- #9 {OR #1-#8}
- #10 Leadership OR "Health Knowledge, Attitudes, Practice"
- #11 Health Promotion
- #12 "Treatment Adherence and Compliance"
- #13 MeSH descriptor: [Reminder Systems] this term only
- #14 MeSH descriptor: [Health Education] explode all trees
- #15 MeSH descriptor: [Consumer Health Information] this term only
- #16 MeSH descriptor: [Patient Education as Topic] this term only
- #17 MeSH descriptor: [Information Literacy] this term only
- #18 MeSH descriptor: [Communication] explode all trees
- #19 MeSH descriptor: [Decision Making] this term only
- #20 MeSH descriptor: [Competitive Behavior] this term only
- #21 MeSH descriptor: [Cooperative Behavior] this term only
- #22 MeSH descriptor: [Mass Behavior] this term only
- #23 MeSH descriptor: [Social Skills] this term only
- #24 MeSH descriptor: [Social Support] this term only
- #25 MeSH descriptor: [Pamphlets] this term only
- #26 MeSH descriptor: [Communications Media] this term only
- #27 ((health OR medical OR clinical OR advice OR patient*) NEAR/3 (educat* OR inform*)):ti,ab,kw.
 ((patient* OR communit* OR population OR mass) NEAR/3 (literatur* OR material* OR information* OR guide OR guides OR instruction*)):ti,ab,kw.
- #28 ((print* OR written OR text* OR social) NEAR/3 (material* OR information* OR guide OR guides OR instruction* OR advice OR advis* OR messag* OR note OR notes OR media)):ti,ab,kw.
- #29 ((handout* OR guidebook* OR information) NEAR/3 (card OR cards OR postcard*)):ti,ab,kw.
- #30 (information NEAR/2 (pack* OR sheet*)):ti,ab,kw.
- #31 (mhealth OR M*health):ti,ab,kw.
- #32 (communit* NEAR/3 leader*):ti,ab,kw.
- #33 (self-monitor* OR "self monitor*"):ti,ab,kw.

- #34 {OR #13-#33}
- #35 MeSH descriptor: [Coronaviridae] 1 tree(s) exploded
- #36 MeSH descriptor: [Coronavirus Infections] this term only
- #37 MeSH descriptor: [Hemorrhagic Fever, Ebola] this term only
- #38 MeSH descriptor: [Tuberculosis] this term only
- #39 MeSH descriptor: [Disease Outbreaks] explode all trees
- #40 MeSH descriptor: [Epidemics] explode all trees
- #41 MeSH descriptor: [Pandemics] explode all trees
- #42 MeSH descriptor: [Influenza, Human] explode all trees
- #43 (nCoV OR nCoV OR ((new OR novel OR wuhan) NEAR/3 coronavirus) OR covid19 OR covid-19 OR SARS-CoV-2 OR "Severe Acute Respiratory Syndrome Coronavirus 2"):ti,ab,kw
- #44 (coronavirus* OR coronovirus* OR coronoravirus* OR coronaravirus* OR corono-virus* OR corona-virus*):ti
- #45 (pneumonia OR respiratory-illness* OR respiratory-symptom* OR "respiratory disease*"):ti
- (ebola OR tuberculosis OR pneumonia OR SARS OR MERS):ti
- #46 {OR #35-#45}
- #47 MeSH descriptor: [Contact Tracing] explode all trees
- #48 ((trace OR identif*) NEAR/2 contact*):ti,ab,kw.
- #49 ((case* OR early OR mobile OR tracing OR contact) NEAR/2 (detect OR detecting OR detection OR find* OR app OR apps)):ti,ab,kw.
- #50 {OR #47-#49}
- #51 MeSH descriptor: [Patient Isolation] explode all trees
- #52 MeSH descriptor: [Social Isolation] explode all trees
- #53 (self-isolat*):ti,ab,kw.
- #54 ((patient* or case* or voluntary or home or social or self) NEAR2 (isolat* OR confine* OR confinement* OR isolation)):ti,ab,kw.
- #55 {OR #51-#54}
- #56 MeSH descriptor: [Quarantine] explode all trees
- #57 (quarantin*):ti,ab,kw.
- #58 {OR #56-#57}
- #59 (school* NEAR/2 (closure* OR closing OR holiday*)):ti,ab,kw.
- #60 (college* NEAR/2 (closure* OR closing OR holiday*)):ti,ab,kw.
- #61 ((class or classes) NEAR/2 dismiss*):ti,ab,kw.
- #62 {OR #59-#61}
- #63 MeSH descriptor: [Work] explode all trees
- #64 MeSH descriptor: [Workplace] explode all trees
- #65 (work site* OR workplace* OR business* OR organisaton* OR job site* OR organization* OR office*):ti,ab,kw.
- #66 {OR #63-#65}

#67 (shutdown* OR closure* OR close* OR closing OR cease OR cessation* OR leave):ti,ab,kw.

#68 #66 AND #67

#69 MeSH descriptor: [Teleworking] explode all trees

#70 #68 OR #69

#71 Social Behavior

#72 ((social OR community) NEAR/2 (mixing OR distanc* OR mitigat*)):ti,ab,kw.

#73 (gather* OR crowd* OR event* OR meeting* OR sport* OR concert* OR pilgrimage* OR park OR parks OR conference* OR mosque* OR temple* OR party OR parties OR wedding* OR funeral* OR mass OR community OR communities OR church*):ti,ab, kw.

#74 {OR #71-#73}

#75 (distanc* OR space OR spacing OR avoid* OR remote OR retreat):ti,ab, kw.

#76 #74 AND #75

#77 MeSH descriptor: [Physical Distancing] explode all trees

#78 (lockdown* OR lock down* OR confine*):ti,ab, kw.

#79 ((stay OR remain) NEAR/2 home):ti,ab, kw.

#80 ((physical OR social*) NEAR/2 distanc*):ti,ab, kw.

#81 non pharmaceutical intervention*:ti,ab, kw.

#82 non?pharmaceutical intervention*:ti,ab, kw.

#83 NPI*:ti,ab, kw.

#84 (public health NEAR/2 (measure* OR restriction* OR order*)):ti,ab, kw.

#85 {OR #77-#84}

#86 #50 OR #55 OR #58 OR #62 OR #70 OR #76 OR #85

#87 #34 AND #46

#88 #87 AND #50

#89 #87 AND #55

#90 #87 AND #58

#91 #87 AND #62

#92 #87 AND #70

#93 #87 AND #76

#94 #87 AND #85

#95 #87 AND #86

Appendix 4. Embase search strategy

1. meta-analysis:.mp. or search:.tw. or review.pt.

2. exp clinical pathway/

3. exp clinical protocol/

4. exp consensus/

5. exp consensus development conference/
6. exp consensus development conferences as topic/
7. critical pathways/
8. guidelines as topic/
9. exp practice guideline/
10. practice guidelines as topic/
11. health planning guidelines/
12. (position statement* or policy statement* or practice parameter* or best practice*).ti,ab,kw.
13. (standards or guideline or guidelines).ti,kw.
14. ((practice or treatment* or clinical) adj guideline*).ab.
15. (guideline or practice guideline or consensus development conference or consensus development conference, NIH).pt.
16. consensus*.ti,kw.
17. consensus*.ab.
18. ((critical or clinical or practice) adj2 (path or paths or pathway or pathways or protocol*).ti,ab,kw.
19. recommendat*.ti,kw.
20. (care adj2 (standard or path or paths or pathway or pathways or map or maps or plan or plans)).ti,ab,kw.
21. (algorithm* adj2 (test or tested or testing or assessment* or diagnosis or diagnoses or diagnosed or diagnosing)).ti,ab,kw.
22. (algorithm* adj2 (therap* or treatment* or intervention*)).ti,ab,kw.
23. (CPG or CPGs).ti.
24. or/2-23
25. 1 or 24
26. attitude to health/
27. health education/
28. consumer health information/
29. reminder system/
30. patient education/
31. information literacy/
32. exp interpersonal communication/
33. exp decision making/
34. competitive behavior/
35. cooperation/
36. mass behavior/
37. social competence/
38. social support/
39. exp mass communication/

40. patient compliance/
41. exp health promotion/
42. leadership/
43. pamphlet*.tw.
44. ((health or medical or clinical or advice or patient*) adj3 (remind* or educat* or inform* or belie*)).tw,kw.
45. ((patient* or communit* or population or mass) adj3 (literatur* or material* or information* or guide or guides or instruction*)).tw,kw.
46. ((print* or written or text* or social) adj3 (material* or information* or guide or guides or instruction* or advice or advis* or messag* or note or notes or media)).tw,kw.
47. ((handout* or guidebook* or information) adj3 (card or cards or postcard*)).tw,kw.
48. (information adj2 (pack* or sheet*)).tw,kw.
49. (mhealth or M#health).tw,kw.
50. (communit* adj3 leader*).tw,kw.
51. (self-monitor* or "self monitor*" or "self protect*" or self-protect*).tw,kw.
52. or/26-51
53. exp severe acute respiratory syndrome coronavirus 2/ or coronavirus disease 2019/ or experimental coronavirus disease 2019/
54. (corona* adj1 (virus* or viral*)).ti,ab,kw.
55. (CoV not (Coefficient* or co-efficien* or covalent* or covington or covariant* or covarianc* or "cut-off value*" or "cutoff value*" or "cut-off volume*" or "cutoff volume*" or "combined optimi?ation value*" or "central vessel trunk" or CoVR or CoVS)).ti,ab,kw.
56. (coronavirus* or 2019nCoV* or 19nCoV* or "2019 novel*" or Ncov* or "n-cov" or "SARSCoV-2*" or "SARSCoV-2*" or SARSCoV2* or "SARS-CoV2*" or "severe acute respiratory syndrome*" or COVID*2).ti,ab,kw.
57. or/53-56
58. contact examination/
59. ((trace or identif*) adj2 contact*).tw,kw.
60. ((case* or early) adj2 (detect or detecting or detection or find*)).tw,kw.
61. ((mobile or tracing or contact) adj2 (app or apps)).tw,kw.
62. or/58-61
63. patient isolation/
64. social isolation/
65. (self-isolat* or solitary or solitude).tw,kw.
66. ((patient* or case* or voluntar* or home or social or self) adj2 (isolat* or confine or confinement)).tw,kw.
67. or/63-66
68. exp quarantine/
69. quarantin*.kw,tw.
70. or/68-69
71. (school* adj2 (closure* or closing or holiday*)).tw,kw.
72. (college* adj2 (closure* or closing or holiday*)).tw,kw.

73. (class* adj2 dismiss*).kw,tw.
74. or/71-73
75. exp work/
76. (work site* or workplace* or business* or organisaton* or job site* or organization* or office*).tw,kw.
77. or/75-76
78. (shutdown* or closure* or close* or closing or cease or cessation* or leave).tw,kw.
79. and/77-78
80. 79 or telework.kw,tw.
81. "social behavior"/
82. "social distance"/
83. (social* adj2 (mixing or distanc*)).kw,tw.
84. (community adj2 mitigat*).tw,kw.
85. (gather* or crowd* or event* or meeting* or sport* or concert* or pilgrimage* or park or parks or conference* or mosque* or temple* or party or parties or wedding* or funeral* or mass or community or communities or church*).tw.
86. or/81-85
87. (distanc* or space or spacing or avoid* or remote or retreat).tw.
88. and/86-87
89. social distancing/
90. ("stay at home" or lockdown* or "lock down*" or confine*).tw,kw.
91. ((stay or remain) adj2 home).tw,kw.
92. ((physical or social) adj2 distanc*).tw,kw.
93. non?pharmaceutical.tw,kw.
94. non pharmaceutical intervention*.tw,kw.
95. npi.tw,kw.
96. (public health adj2 (measure* or restriction* or order*)).kw,tw.
97. or/89-96
98. or/62,67,70,74,80,88,97
99. 52 and 57 and 98
100. 25 and 99
101. 1 and 99
102. 24 and 99
103. 101 or 102
104. Ebola hemorrhagic fever/
105. exp tuberculosis/
106. epidemic/

107. pandemic/

108. influenza/ or experimental influenza/ or influenza a/ or influenza b/ or influenza c/ or pandemic influenza/ or seasonal influenza/ or swine influenza/

109. (ebola or tuberculosis or pneumonia or SARS or MERS).ti,ab,kw.

110. severe acute respiratory syndrome/

111. Middle East respiratory syndrome/

112. or/57,104-111

113. 25 and 52 and 112

114. 1 and 52 and 112

115. 24 and 52 and 112

116. 114 and 62

117. 114 and 67

118. 114 and 70

119. 114 and 74

120. 114 and 80

121. 114 and 88

122. 114 and 97

123. 115 and 62

124. 115 and 67

125. 115 and 70

126. 115 and 74

127. 115 and 80

128. 115 and 88

129. 115 and 97

Appendix 5. MEDLINE search strategy

1. "Health Knowledge, Attitudes, Practice"/

2. health education/

3. consumer health information/

4. Reminder Systems/

5. patient education as topic/

6. exp information literacy/

7. exp Communication/

8. exp Decision Making/

9. competitive behavior/

10. cooperative behavior/

11. mass behavior/
12. social skills/
13. exp social support/
14. Pamphlets/
15. Communications Media/
16. "Treatment Adherence and Compliance"/
17. Health Promotion/
18. Leadership/
19. ((health or medical or clinical or advice or patient*) adj3 (remind* or educat* or inform* or belie*)).ti,ab,kw.
20. ((patient* or communit* or population or mass) adj3 (literatur* or material* or information* or guide or guides or instruction*)).ti,ab,kw.
21. ((print* or written or text* or social) adj3 (material* or information* or guide or guides or instruction* or advice or advis* or messag* or note or notes or media)).ti,ab,kw.
22. ((handout* or guidebook* or information) adj3 (card or cards or postcard*)).ti,ab,kw.
23. (information adj2 (pack* or sheet*)).ti,ab,kw.
24. (mhealth or M#health).ti,ab,kw.
25. (communit* adj3 leader*).ti,ab,kw.
26. (self-monitor* or self monitor* or self protect* or self-protect*).ti,ab,kw.
27. or/1-26
28. exp Coronaviridae/
29. Coronavirus Infections/
30. Hemorrhagic Fever, Ebola/
31. Tuberculosis/
32. Disease Outbreaks/
33. epidemics/ or pandemics/
34. Influenza, Human/
35. (nCoV or 2019-nCoV or ((new or novel or wuhan) adj3 coronavirus) or covid19 or covid-19 or SARS-CoV-2 or "Severe Acute Respiratory Syndrome Coronavirus 2").mp.
36. (coronavirus* or coronovirus* or coronoravirus* or coronaravirus* or corono-virus* or corona-virus*).ti,ab,kf.
37. (pneumonia or respiratory-illness* or respiratory-symptom* or respiratory disease*).ti,ab,kf.
38. (ebola or tuberculosis or pneumonia or SARS or MERS).ti,ab,kf.
39. or/28-38
40. COVID-19/
41. SARS-CoV-2/
42. exp Coronavirus/
43. exp Coronavirus Infections/
44. (covid or coronavir* or coronovir*).mp.

45. ((corona* or coron*) adj1 (virus* or viral* or virinae*)).ti,ab,kf.
46. (ncov or n-cov or 2019nCoV or nCoV2019 or CO?VID-19 or CO?VID19 or WN-CoV or WNCov or HCoV-19 or HCoV19 or 2019nov-el* or SARS-CoV-2 or SARSCoV-2 or SARSCoV2 or SARS-CoV2 or SARSCov19 or SARS-Cov19 or SARSCov-19 or SARS-Cov-19 or Ncovor or Ncorona* or Ncorono* or NcovWuhan* or Ncov-Hubei* or NcovChina* or NcovChinese* or SARS2 or SARS-2 or SARScoron?virus2 or SARS-coron?virus-2 or SARScoron?virus2 or SARScoron?virus2).ti,ab,kf.
47. or/40-46
48. 27 and 47
49. Contact Tracing/
50. ((trace or identif*) adj2 contact*).ti,ab,kw.
51. ((case* or early) adj2 (detect or detecting or detection or find*)).ti,ab,kw.
52. ((mobile or tracing or contact) adj2 (app or apps)).ti,ab,kw.
53. or/49-52
54. Patient Isolation/
55. Social Isolation/
56. (self-isolat* or solitary or solitude).ti,ab,kw.
57. ((patient* or case* or voluntar* or home or social* or self) adj2 (isolat* or confine* or confinement*)).ti,ab,kw.
58. or/54-57
59. Quarantine/
60. quarantin*.ti,ab,kw.
61. or/59-60
62. (school* adj2 (closure* or closing or holiday*)).ti,ab,kw.
63. (college* adj2 (closure* or closing or holiday*)).ti,ab,kw.
64. ((class or classes) adj2 dismiss*).ti,ab,kw.
65. or/62-64
66. exp Work/
67. Workplace/
68. (work site* or workplace* or business* or organisaton* or job site* or organization* or office*).ti,ab,kw.
69. or/66-68
70. (shutdown* or closure* or close* or closing or cease or cessation* or leave).ti,ab,kw.
71. and/69-70
72. 71 or telework.ti,ab,kw.
73. social behavior/
74. (social* adj2 (mixing or distanc*)).ti,ab,kw.
75. (community adj2 mitigat*).ti,ab,kw.
76. (gather* or crowd* or event* or meeting* or sport* or concert* or pilgrimage* or park or parks or conference* or mosque* or temple* or party or parties or wedding* or funeral* or mass or community or communities or church*).ti,ab,kw.
77. or/73-76

78. (distanc* or space or spacing or avoid* or remote or retreat).ti,ab,kw.
79. and/77-78
80. Physical Distancing/
81. (lockdown* or lock down* or confine*).ti,ab,kw.
82. ((stay or remain) adj2 home).ti,ab,kw.
83. ((physical or social*) adj2 distanc*).ti,ab,kw.
84. non pharmaceutical intervention*.ti,ab,kw.
85. non?pharmaceutical intervention*.ti,ab,kw.
86. NPI*.ti,ab,kw.
87. (public health adj2 (measure* or restriction* or order*)).ti,ab,kw.
88. or/80-87
89. or/53,58,61,65,72,79,88
90. and/48,89
91. 48 and 53
92. 48 and 58
93. 48 and 61
94. 48 and 65
95. 48 and 72
96. 48 and 79
97. 48 and 88

Appendix 6. Data tables: characteristics, quality assessment, findings and mapping and translational steps

Data extracted from each of the included studies are presented in the data tables that follow.

Tables are organised by physical distancing measure (focus), presenting evidence first from synthesised sources (guidelines and SRs), followed by primary studies.

- **Table a** contact tracing
- **Table b** isolation
- **Table c** quarantine
- **Table d** school measures
- **Table e** work measures
- **Table f** crowd avoidance
- **Table g** general physical distancing

Within these physical distancing categories, each data table for each study reports:

- Characteristics of that study;
- Results of quality assessment;
- Outcomes and findings;
- Translational and mapping steps.

*Please note that the 'mapping to themes...' field of studies added in this update (column 1) refers to initial mapping steps undertaken against the thematic framework derived from the original review. This was an intermediate organisational step undertaken as part of the synthesis of findings; leading to the identification of six final themes that emerged from the inclusion of newly-added data in this update.

Table a: Contact tracing

Public Health Measure 1: Contact tracing	Study features	Outcomes and findings	Translational steps
Systematic reviews, guidelines			
<p>Chung 2021#</p> <p><u>Citation type:</u> SR</p> <p><u>Public health measure:</u> Contact tracing, and also, maps on-to isolation and quarantine</p> <p><u>Mapping to:</u> Uptake, adherence</p> <p><u>Mapping to:</u> Theme 1: features of public communication: content, timing and duration, and delivery</p> <p>Theme 3: support for individual and population behavioural changes</p> <p>Theme 5: public trust and perceptions</p>	<p><u>Overview and aim:</u> To examine experiences and approaches of countries implementing find, test, trace, isolate, support (FTTIS) strategies early in the COVID-19 pandemic</p> <p><u>Type of study and data:</u> SR; primarily qualitative; N = 118 included (e.g. rapid report/reviews, case study/series, evaluation/simulation studies, narrative reviews)</p> <p><u>Inclusion and exclusion criteria:</u> Included: English language; published research studies/reviews of contact tracing, testing, isolation or quarantine</p> <p><u>Participant features and numbers, sampling details:</u> Approaches of interest applied to general population; no specific selection criteria related to participants were stated or reported against.</p> <p><u>Included disease(s):</u> COVID-19</p> <p><u>Timing:</u> Searches run May 2019 to January 2021. No further consideration of timing, although authors noted that review focused on FTTIS measures early in the pandemic</p> <p><u>Countries included:</u></p>	<p>Data on testing and contact tracing approaches and infrastructure, test performance or digital contact tracing applications not extracted and reported as unrelated to communication</p> <p><u>Self-isolation/quarantine:</u> Features of support for those undertaking self-isolation (note Webster 2020, Brooks 2020 papers already included in original review cited here, together with additional papers)</p> <p>Factors associated with adherence included knowledge of the disease and process for quarantine, social norms, perceived benefits of quarantine and risk of disease, and access to essential supplies and/or financial support.</p> <p>For informal or low-income earners, self-isolation or quarantine may be unaffordable, and people may require financial support to undertake the measures.</p> <p>Isolation or quarantine may have adverse psychological consequences (e.g. anxiety, confusion, anger and PTSD symptoms) and may be related to factors such as fear of infection and inadequate supplies. Increased rates of domestic violence have also been reported.</p> <p>Providing sufficient timely information to people undertaking isolation/quarantine may improve uncertainty, quarantining people for the minimum safe period, and ensuring provision of adequate supplies may mitigate these negative effects.</p> <p>Psychological screening may also help to identify those most in need of support (e.g. counselling, coaching, social prescribing such as exercise or art classes, online communication (e.g. via social media) may help reduce loneliness during & increase coping during isolation.</p> <p><u>Testing:</u> Communicating information about how to get a test, and under what conditions, has been challenging. This is especially true for some minority ethnic groups.</p> <p><u>Public awareness and communication:</u> Public perceptions of the reliability of testing services, and effectiveness of communication about actions that can be taken to help contain COVID-19 both influence uptake.</p> <p>Testing kits and stations also need to be accessible to disadvantaged groups and, if such groups (e.g. ethnic minori-</p>	<p><u>Communication purpose:</u> Findings may inform communication strategies for increasing public awareness of the need for FTTIS, such as providing tailored, up-to-date information, practical and financial supports, and working to build trust amongst community members and the public more broadly.</p> <p><u>Related to review questions:</u> Clear, reliable information, including that about disease risk severity and societal benefits of measures, may help to dispel distrust of government/authorities and promote uptake of testing and isolation behaviours required to control disease transmission.</p> <p>Communication of such information needs to be flexible and up-to-date as circumstances or required public health measures change over time, and might also aim to address misinformation or areas of uncertainty in or-</p>

(Continued)

Various, not systematically described (included South Korea, Japan, Taiwan, UK, USA, Portugal, Brazil, Bangladesh, India).

Studies likely across all income brackets (low to high income) but not specifically identified.

Intervention or phenomenon of interest:

Communication to support contact tracing, adherence to isolation and subsequent public health actions

Quality assessment:

AMSTAR 4/11

[1. Not clear whether protocol was established a priori; 2. Unclear re duplicate screening/data extraction; 4. Seems published papers only, in English, included; 5. No excluded studies provided; 8. No integration of quality assessments; 10 no publication bias assessment; 11. No COI for included studies].

Funding source:

DP is funded through the EPSRC I sense consortium, and other authors receive no funding for the study.

ties) are at heightened risk, then communication must be tailored to encourage engagement with testing.

Communication by authorities to ensure the public are well-informed and kept up to date about the pandemic as the situation changes is important for increasing awareness of the need for FTTIS and correcting misinformation or rumours that may arise where there is uncertainty or gaps in public knowledge.

Regular press conferences by authorities (including progress briefings, policy changes & correcting misinformation) may have a role in such communication to provide clear information about disease risk severity. Social media and the Internet may also influence behaviour when people are in isolation. For instance, social media may increase intention to adhere to public health measures, whereas conspiracy beliefs can be inversely associated with adherence to self-isolation guidelines. Lowering perceived response costs and clear information about the severity of risks may help motivate the public to self-isolate.

Reliable official sources (e.g. government information, official news and journalism) may be best placed to communicate information about severity of disease risk, while social media may best focus on messaging related to recommended health measures and messages of hope.

Public co-operation:

Low public trust of government may prevent public cooperation with FTTI guidelines. Conversely, perceived benefits, self-efficacy and trust are positively associated with uptake of contact tracing apps.

To support uptake of contact tracing apps, personal information must be protected. This can help to promote trust, prioritise care and encourage individuals to cooperate with guidelines to prevent transmission of disease.

Recommendations:

Implementing an effective FTTIS system includes the need for support measures to promote testing and behaviours such as isolation or quarantine associated with testing. Support can include timely, adequate information to reduce anxiety and uncertainty, or practical supports in the form of provision of adequate supplies or financial assistance. Such measures also serve to build public trust, which is key to controlling COVID-19 in any population as this relies on people voluntarily providing their information and following public health measures.

Public communication by authorities is also critical to provide ongoing information about the pandemic and/or policies over time. An essential part of this is ensuring open and balanced discussions take place about concerns such as data privacy/protection, and limits on personal freedom for the greater societal good.

der to further build public trust.

Provision of tailored support, including practical and financial supports, for those at socioeconomic or other disadvantage may help people to adopt and adhere to measures.

(Continued)

 Gilmore 2020#^A
Citation type:

SR (rapid)

Public health measure:

Contact tracing, and also maps on-to isolation, quarantine, and general PD

Mapping to: Uptake, acceptability

Mapping to:

Theme 2: recipients of public communication: audience, setting and equity

Theme 4: community engagement to support communication

Theme 5:

public trust and perceptions

Overview and aim:

To review evidence on community engagement for prevention and control of infectious diseases during epidemics

Type of study and data:

Rapid SR; 32 included empirical studies (any design) (describing 37 initiatives) plus 11 general guidance documents

Inclusion and exclusion criteria:

Included: community-level engagement (range of collaborative processes with community actors). All languages

Excluded: Interventions focused on community health workers without wider community engagement.

Participant features and numbers, sampling details:

Most activities were aimed at entire communities. Authors note a small number of studies targeted marginalised groups (e.g. non-English-speaking groups); including all 4 studies of H1N1 outbreaks in which equity was considered in relation to remote/aboriginal populations (but engagement was limited to design and planning activities only in these cases).

Composition of community engagement groups often not reported, but some explicitly included marginalised groups (e.g. women representative, EVD survivors, youth).

Included disease(s):

Identified six broad community engagement approaches aiming to address infection prevention and control through six major channels

Major actors or approaches included the following: community leaders (traditional, religious and/or governing); community and faith-based organisations; community groups; health management committees; individuals; and key stakeholders (students, survivors, women, elderly, youth).

Community engagement interventions operated via six main channels:

- designing and planning interventions (including messaging),
- community entry and trust building,
- social and behavioural change communication
- risk communication
- surveillance and contract tracing, and
- broader logistics and administration activities (e.g. constructing facility, record keeping).

Community engagement was mostly used for social and behavioural change communication, and risk communication, followed by surveillance and contact tracing; many approaches were multi-faceted & involved multiple actors.

Key enablers and barriers for community engagement were identified from included research.

Facilitators:

- Early engagement;
- Ensuring processes are ongoing and reassessing and modifying as needed;
- Ensuring multi-sectoral engagement & decentralised governance;
- Ensuring there are clear roles and responsibilities for all stakeholders;
- Use of and engagement of pre-existing actors (e.g. community groups; leaders) when appropriate;
- Having open communication, with clear two-way dialogue.

Barriers:

- Lack of contextual understanding (e.g. social norms, traditions, customs, and beliefs that are pervasive within that specific cultural context);
- Lack of engagement with appropriate actors;
- Inconsistent and confusing messaging;
- Lack of trust in government, media and organisations;
- Inadequate training, support structures, resources or incentivisation;
- Unclear responsibilities;
- Weak infrastructure or broader contextual conflict (e.g. poverty).

Communication purpose:

These findings can usefully inform development of community engagement strategies to support prevention and control measures during pandemic outbreaks. Community engagement can occur via different approaches and channels, and several features such as early and ongoing engagement are critical to success.

Related to review questions:

Community engagement approaches may involve a range of approaches, and channels, operating in various combinations to achieve different purposes, such as planning and design of interventions, trust-building, and communication (including messaging) about risk and/or social and behavioural changes.

To be most effective, community engagement incorporating two-way dialogue should begin early and be ongoing in order to build trust within the community and to better understand the socio-cultural context in which disease prevention and control efforts are needed.

(Continued)

Previous epidemics: EVD (28 studies), SARS (0), MERS (0), H1N1 (4), Zika (5)

Timing:

Searches May 2020; literature limited to those published from 2000 onwards

Countries included:

28/37 for EVD (25 West African outbreak 2014-15: Sierra Leone (11), Liberia (9) Guinea (2), Nigeria (1), Ghana (1), mixed country (1); 3 Democratic Republic of Congo 2018-20 outbreak: Uganda (2))

5/37 Zika (USA and Puerto Rico (3), Singapore (1), Uruguay (1));

4/37 H1N1 (Australia (3), Canada (1)).

Range of income brackets but most studies undertaken in low-income countries

Intervention or phenomenon of interest:

Community engagement strategies

Quality assessment:

5/11 AMSTAR

[5. No excluded studies reported, unclear 7,8;

Quality not assessed or used 9;

Synthesis methods not clear and/or appropriate 10; Publication bias not formally assessed 11; COIs of included studies not reported]

Funding source:

Provenance: Not commissioned

Recommendations:

Best-practice recommendations were developed based on identified enablers and barriers:

- Community engagement should be context-specific and consider the cultural/social norms, traditions, customs, and beliefs that are pervasive within that context;
- Discussions and negotiations (two-way dialogue) with the community should begin early and be ongoing in order to build trust and should be established through multiple channels;
- Identification of issues, and design of prevention and control approaches and associated appropriate messaging (information, education and communication) should be undertaken collaboratively (co-design). Community members who have legitimacy and are able to represent and influence the community should be involved;
- Messaging built on clear, accurate, consistent information can be used to help to build trust and address rumours and misinformation or misconceptions. Such information should be tailored to local context, respectful and not induce fear, and should include examples relevant to the community;
- Incorporating community members into planning, response and monitoring activities of pandemic management teams, with plans widely disseminated within communities to promote support. Topics might include population monitoring (e.g. surveillance and contact tracing systems), remote monitoring and alert systems, community response mechanisms for positive cases (e.g. social isolation and/or quarantine procedures, contact tracing), support for lockdown, isolation or quarantine especially for vulnerable populations (including providing essential supplies);
- Collaboratively working to identify and address health and safety issues in the early planning stages is key, including safe engagement activities, appropriate distancing measures for in-person interactions, and community procedures for isolation and quarantine measures;
- For meaningful engagement, establishing mechanisms for regular feedback that monitor how knowledge, beliefs and practices/behaviours change over time, and to change or adapt course as required, is needed for inclusive and meaningful engagement.

Community engagement can inform choice, development and/or appropriateness of measures required within specific groups; co-design of messaging (information, education, communication) can help to ensure appropriateness and reach of messages to support public health measures.

Messaging built on clear, accurate, consistent information, tailored to local context, can help to build trust, clarify misconceptions, and to directly address rumours and misinformation.

Meaningful engagement should include mechanisms for regular feedback from the community in order to monitor knowledge, beliefs and practices/behaviours and their changes over time, and to adapt course as required.

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<p>Heuvelings 2018*</p> <p><u>Citation type:</u></p> <p>SR</p> <p><u>Maps to:</u> Acceptability</p>	<p><u>Overview and aim:</u></p> <p>Evaluation of effectiveness (including cost-effectiveness) of service models and organisational structures for TB identification and management</p> <p><u>Participant features and numbers, sampling details:</u> Included: hard-to-reach populations (homeless people, drug users, migrants); countries with low-to-moderate TB incidence</p> <p><u>Intervention or phenomenon of interest:</u></p> <p>Included interventions: Effects of healthcare worker type or setting type on TB identification and/or management</p> <p><u>Type of study and data:</u></p> <p>SR; 11 included studies</p> <p>NICE and Cochrane methods followed; updates NICE review (previously included 6 studies)</p> <p>RCTs, non-RCTs included</p> <p><u>Countries included:</u> OECD, EU/EEA countries (UK, Portugal, Spain, Germany)</p> <p><u>Quality assessment:</u></p> <p>7/10 AMSTAR rating%</p> <p><u>Funding source:</u></p> <p>Funders who supported this work: European Centre for Disease Prevention and Control; National Institute for Health Research (NIHR) (1): Grant ID: NF-SI-0616-10016</p>	<ul style="list-style-type: none"> Effectiveness of Community Health Worker (CHW), street teams, peers (screening uptake, treatment and contact tracing); mobile and specialised TB clinics (identifying cases and active treatment), directly observed therapy (treatment completion); Focus reported here is contact tracing activities only (2 studies); Involvement of CHWs from the same migrant community as the person with TB, in organising contact tracing improved tracing of contacts (1 study). Contact tracing was defined as tracing of at least one contact (rather than all contacts); Involving peers in contact tracing for drug users, compared with healthcare workers, also increased contact tracing (1 study). <p><u>Recommendations:</u></p> <ul style="list-style-type: none"> Improving TB control and care in hard-to-reach populations is critical. Involving CHWs from same migrant community or peers amongst drug using populations may improve contact tracing in these hard-to reach groups. Both interventions were assessed as highly acceptable and likely feasible in recent guidelines including these studies⁵. 	<p><u>Communication purpose:</u></p> <p>This may inform decisions about who might most effectively conduct contact tracing in hard-to-reach populations such as the homeless and migrants.</p> <p><u>Related to review questions:</u></p> <p>Findings may provide insight into improving acceptability of contact tracing.</p>
<p>Khorrman-Manesh 2021#</p> <p><u>Citation type:</u></p>	<p><u>Overview and aim:</u></p> <p>To systematically review the literature to identify educational strategies</p>	<p>Four main themes were identified.</p> <p><i>Practical aspects</i></p>	<p><u>Communication purpose:</u></p> <p>Findings may inform strategies to</p>

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SR <u>Public health measure:</u> Contact tracing, and also maps onto General PD <u>Mapping to:</u> Uptake, acceptability, adherence <u>Mapping to:</u> Theme 2: recipients of public communication: audience, setting and equity Theme 5: public trust and perceptions	to promote public health measure implementation, particularly contact tracing, prior to public health emergencies <u>Type of study and data:</u> SR; quantitative and qualitative, N = 52 studies <u>Inclusion and exclusion criteria:</u> Included: research, English language Excluded: conference papers, abstracts, reports, and non-scientific publications <u>Participant features and numbers, sampling details:</u> General public/communities No particular demographic features reported <u>Included disease(s):</u> COVID-19, H1N1 <u>Timing:</u> Search dates unclear; the majority of papers from 2020, 2021 <u>Countries included:</u> US and Canada (16 studies), Asia-Pacific (13). European Union (9), UK (7), Middle East (3), Africa (3). Range of income levels, 38/52 high income; remainder of countries middle income (lower-to-upper middle) <u>Intervention or phenomenon of interest:</u> Educational strategies to support public health measure implementation <u>Quality assessment:</u>	<ul style="list-style-type: none"> • Contact tracing apps must fulfil technical requirements, identifying not only close contacts within an individual's social networks but casual contacts e.g. as a fellow bus passenger. The process must provide valid and accurate data, and many such systems now exist, e.g. GPS information, QR codes, cellular location tracking. • Simple, safe technology may increase people's willingness and ability to participate in contact tracing and so improve the reliability and impact of the system on disease transmission. <p><i>Ethical aspects</i></p> <ul style="list-style-type: none"> • Many contact tracing apps not able to be used on certain older device types, meaning that vulnerable people in the population (e.g. the elderly and the poor) are unable to participate and/or cannot access the technology to participate. • There are also concerns related to an individual's rights to opt out of contact tracing; privacy and data collection issues; and recognised need for new legislation to safeguard a return to normal life once the crisis is over in order to promote public trust for people to consider participating in mass surveillance strategies. <p><i>Psychological aspects</i></p> <ul style="list-style-type: none"> • People's beliefs and reasoning influence their use (or non-use) of contact tracing apps. Themes in participants' responses include lack of information and misconceptions associated with the COVID-19 tracing app; privacy, stigma and uptake concerns; and contact tracing as a benefit for the population. Concerns about privacy, stigma and uptake may particularly negatively influence willingness to use an app. • The use and impact of technologies may vary by age or underlying conditions (medical or psychological). Challenges such as difficulties in adopting changes to daily routines or precautionary (preventive) measures may lead to anxiety, stress, worry, despite being well-informed and well-connected via an app. • Circulating rumours may also influence people's emotions, increasing anxiety and anger. Quarantine and isolation measures may be associated with increases in distress, suspiciousness and other negative outcomes. Such factors may negatively influence adherence to isolation, contact tracing, and following recommended protective measures. <p><i>Community-level education</i></p> <ul style="list-style-type: none"> • Although the majority of populations (> 75%) across EU countries have downloaded contact tracing apps, it is unclear how well this corresponds with actual use. • As information is critical to implementing new ideas and technology, public education is needed to support use. Previous studies during the H1N1 pandemic indicated that inadequate community awareness of the disease and its prevention was a major barrier to successful management of the disease.
		support implementation of public health measures such as contact tracing, including public education and various forms of support for physical distancing measures. <u>Related to review questions:</u> Simple, safe technology may increase people's willingness and ability to participate in contact tracing, but adequate information must be provided about apps used for public health protection, and specific concerns such as those about data protection and privacy, and stigma must be addressed to promote uptake and adherence. Education to increase community knowledge and awareness of the disease and preventive measures is also needed. Tailored information specific to communities may assist with uptake and adherence, and such information needs to include targeting to those in the community of lower general or health-specific literacy levels. Use of digital technologies for public health measures must consider that people may have differential access to devices that can

(Continued)

AMSTAR 5/11:

[1. No protocol/plan 5. No list of excluded studies 6. Included study characteristics inadequate 8. Quality not integrated explicitly into findings 10. No publication bias assessment 11. No COIs for included studies]

Funding source:

This research received no external funding.

- Other prior studies have also indicated that adding details specific to communities, such as information about resources and supplies, and information about whom, when, where and how recommendations are to be implemented, are critical elements. Examples exist from low and middle-income countries of efforts to engage and mobilise communities in detection of cases through community-based workshops and via social media.
- New technologies may be a facilitator of community engagement, for example, digital technologies might be used as a basis for informing community members about the size and progress of the pandemic, and they may also be enlisted to support public health measures such as surveillance activities.
- While apps must fulfil certain technical requirements, they must also be tailored to people's general and health literacy levels.
- The health information acceptance model suggests some key factors influencing uptake and use of new technologies, including health factors (perceived usefulness, perceived threat), information-related factors (subjective social norms, credibility of the technology) and technical factors (such as perceived output quality, usability).

support apps (e.g. older devices may not run, older people may not have access to technology), and that this may further marginalise vulnerable groups within the community, such as those who are older or poorer.

Information and education for the public needs to consider not only information provision related to public health measures but the emotional, psychological and practical impacts of the measures.

Recommendations:

Contact tracing efficiency depends inherently on the public's willingness to engage with authorities and the process. In turn, this depends on the public's trust of the government in terms of measures imposed to protect health and to protect privacy.

Increased availability of technology presents the option of using these as a basis for protection of public health (digital health protection measures) and enable social networking but also have ethical and psychological impacts that need to be factored into decision-making.

In the current pandemic, where treatments and vaccines were lacking, physical distancing measures were the key available public health strategies. These also carry societal and ethical impacts that may influence levels of adherence, and this may vary across countries and populations.

Lack of adherence to physical distancing measures may be due to disagreement with the social restrictions, but in other cases the cause is more fundamental and reflect the needs of people under public health surveillance e.g. reflecting issues associated with housing and living arrangements, transport, education, food and essential household supplies. Addressing these needs may help to increase people's willingness to adhere to physical distancing measures such as quarantine.

The current COVID-19 pandemic and deployment of digital public health technologies have led to efforts to produce guidelines and policies with an emphasis on personal data safety and privacy, and so ensure widespread public trust and uptake.

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As well as providing information and ensuring quality, to minimise misconceptions, efforts to better understand factors affecting app usability are key, including in relation to contact tracing apps. Public education at all levels but particularly community level, is also needed to support these apps, by increasing perceived usefulness and ease of use. Education needs to be tailored and targeted within the population, including towards people with lower health literacy, who may otherwise be unable to effectively engage with apps and associated public health measures.

<p>Megnin-Viggars 2020#</p> <p><u>Citation type:</u> SR, rapid</p> <p><u>Public health measure:</u> Contact tracing</p> <p><u>Mapping to:</u> Uptake, acceptability</p> <p><u>Mapping to:</u> Theme 1: features of public communication: content, timing and duration, and delivery</p> <p>Theme 4: community engagement to support communication</p> <p>Theme 5: public trust and perceptions</p>	<p><u>Overview and aim:</u> To identify barriers and facilitators to community uptake of, and engagement with, contact tracing during an infectious disease outbreak</p> <p><u>Type of study and data:</u> Rapid SR; qualitative and quantitative research; 12 included studies (6 qualitative interview and focus group studies, 5 quantitative surveys, 1 mixed methods (qualitative interview plus quantitative survey))</p> <p><u>Inclusion and exclusion criteria:</u> Included: Primary qualitative or quantitative research; English language; assessed factors related to contact tracing</p> <p>Excluded: experience of non-viral and contagious major health incident, sexually transmitted diseases</p> <p><u>Participant features and numbers, sampling details:</u> People with experience of a major viral and contagious health incident; included general population, contact tracers and their supervisors, public health professionals, CDC staff</p> <p><u>Included disease(s):</u></p>	<p><u>Reported on:</u> Barriers and enablers of uptake of and engagement with contact tracing (CT) were identified.</p> <p><u>Enablers:</u> Four themes were identified.</p> <p><u>Collective responsibility</u></p> <ul style="list-style-type: none"> Participants' sense of collective responsibility and desire to protect others' health, especially the vulnerable in the community, strongly influenced intention to use a contact tracing app. One study found creating a positive image of contact tracers helped emphasise collective responsibility. <p><u>Personal benefit</u></p> <ul style="list-style-type: none"> Participants positively viewed the capability of a contact tracing app to provide information about infection risks, symptoms and disease spread, so providing peace of mind. In contrast, where people did not intend to use an app, this was typically because they did not see a personal benefit of doing so (and doubted their usefulness). Various reasons were given, including: people believing existing measures (e.g. physical distancing) were adequate, not believing they would be infected, believing such apps lead to hyper-awareness of risks and increased stress, or believing that contact tracing apps were less acceptable in countries like the UK than in others where apps have been widely implemented. Where personal benefit was initially lacking, this could be improved in specific ways e.g. providing financial support/incentives to those contacted. <p><u>Co-production of CT systems</u></p> <ul style="list-style-type: none"> Working with the community is critical to understanding local needs and implementing contact tracing, and to building engagement and trust. Co-production may also improve app usage as intention to use an app is related to people's understanding of government advice. Community engagement may help to identify contacts and overcome stigma related to contact tracing. <p><u>Perception of system (as efficient, rigorous, reliable)</u></p> <ul style="list-style-type: none"> People viewed digital CT systems as able to efficiently and effectively contact people, and that such systems 	<p><u>Communication purpose:</u> May inform development and implementation of contact tracing systems, as well as development of messages for communicating with the community to promote engagement with contact tracing systems.</p> <p>Factors may inform messaging and activities used to develop and support CT systems, as well as practical measures to overcome barriers to engagement.</p> <p><u>Related to review questions:</u> Several factors, both enablers and barriers, influence individual and community engagement with contact tracing systems. This in turn, affects acceptance and uptake of systems.</p> <p>Communication intended to inform people about contact tracing measures need to take account of these factors and ensure that clear, consistent and actionable</p>
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<p>COVID-19 (6 studies), EBV (5), hypothetical (1)</p>	<p>might empower the individual as the holder of their own data and enable information sharing.</p>	<p>information is available.</p>
<p><u>Timing:</u></p>	<p><u>Barriers:</u></p>	<p>Both information and CT systems should be tailored appropriately to the local context. Messages might usefully promote both individual and collective benefits of contact tracing systems, while partnerships with communities may help to counter mistrust and concerns over privacy and stigma.</p>
<p>Searches from inception to July 2020 inclusive</p>	<p>5 themes identified.</p>	
<p>Timing of population and communication not otherwise considered explicitly</p>	<p><u>Privacy</u></p>	
	<ul style="list-style-type: none"> • People's concerns about government surveillance, privacy and data protection was a major barrier to CT engagement. 	
<p><u>Countries included:</u></p>	<p><u>Mistrust and/or apprehension</u></p>	
<p>Single country studies: UK (3), Sierra Leone (3), Netherlands (2), Australia (1), & Liberia (1)</p>	<ul style="list-style-type: none"> • Mistrust (of government, CT personnel and technology) was a key barrier to CT engagement, a technology barrier for older people. Prior experience of CT and concerns over what may be required (and associated financial and social pressures) was associated with apprehension. Some mistrust/apprehension of digital CT systems related to uncertainty about system effectiveness, concerns about whether people would engage with systems lacking human interface, and that poor uptake would limit usefulness. 	
<p>Multiple country studies: Sierra Leone, Guinea, Liberia, Mali, Senegal, Nigeria; France, Germany, Italy, UK, US</p>		
<p>West African countries low income except Senegal (lower middle income); others all high income</p>	<p><u>Unmet information and support needs</u></p>	
	<ul style="list-style-type: none"> • Gaps in knowledge (information) were associated with mistrust and apprehension. People lacked information about why CT is needed, whether a digital system was capable of conveying the right information, and that information might be conflicting (e.g. with websites) or be unclear about actions to take. Digital CT systems might be limited as digital information may be perceived as more severe than that coming from another person, and there was limited opportunity to provide reassurance or support. 	
<p><u>Intervention or phenomenon of interest:</u></p>	<p><u>Fear of stigmatisation</u></p>	
<p>Community engagement with contact tracing, and factors affecting (positive and negative)</p>	<ul style="list-style-type: none"> • Fear of being 'branded' as COVID-19 positive was related to privacy concerns. 	
<p><u>Quality assessment:</u></p>	<p><u>Mode-specific challenges</u></p>	
<p>8/11 AMSTAR [8. Quality assessed but not linked to findings explicitly; 10. Publication bias not assessed; 11. COI included studies not reported].</p>	<ul style="list-style-type: none"> • Practical barriers to using a contact tracing app may exist (e.g. people not owning appropriate devices, difficulty installing, downloading or running the app, requiring more interactivity to allow test or symptom reporting), as well as psychological barriers to engaging with technology (e.g. perceived difficulty of installation or use). Manual systems also encounter practical difficulties e.g. challenges identifying contacts, and in recruiting and retaining contact tracers. 	
<p><u>Funding source:</u></p>	<p><u>Recommendations:</u></p>	
<p>PC and OMV were funded by Go-Science; the review was conducted at the request of the</p>	<p>Engagement with CT systems might be enhanced through:</p>	
<p>Scientific Pandemic Influenza Group on Behaviours</p>	<ul style="list-style-type: none"> • Clear, consistent information and communication about contact tracing, including why it is needed and how it will work (specific, actionable behaviours re- 	
<p>(SPI-B), a behavioural science advisory group for the Scientific Advisory Group for Emergen-</p>		

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cies (SAGE): Coronavirus (COVID-19) response team, who provide scientific and technical advice to

support UK government decision-makers. GJR and DW were funded by the National Institute for Health Research Health Protection Research Unit (NIHR

HPRU) in Emergency Preparedness and Response,

a partnership between Public Health England, King's College London and the University of East Anglia. DW is also supported by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Behaviour Change

and Evaluation, a partnership between Public

Health England and the University of Bristol.

quired to engage with the system), and conveying both personal and collective benefits as well as providing support (including financial support).

- Promoting feelings of collective responsibility in countering disease outbreaks, as well as perceived personal benefit. This has to outweigh barriers such as privacy concerns and mistrust.
- Partner with communities to ensure local needs are met and promote trust and engagement. Co-producing CT systems with stakeholders may help address privacy and stigma concerns, and improve mistrust and apprehension about use.
- Quality assurance of CT systems to ensure they are efficient, rigorous and reliable, and to reinforce these perceptions within the community.

<p>Saurabh 2017*</p> <p>(SR)</p> <p><u>Mapping to:</u> Acceptability</p>	<p><u>Overview and aim:</u></p> <p>Assessment of the role of contact tracing in the 2014 Ebola epidemic and to identify factors influencing health workers' ability to perform contact tracing</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: populations or communities exposed to EVD outbreak</p> <p><u>Type of study and data:</u></p> <p>SR; 60 included studies/reports.</p> <p>Primary studies (no details), technical reports, reviews, editorial documents</p> <p><u>Countries included:</u></p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • Utility of contact tracing for controlling EVD outbreaks. Exposed person followed for 21 days (maximum EVD incubation period); • Challenges in implementing contact tracing, and at different stages of an EMV outbreak (early or later); • Tracing all contacts is logistically challenging (e.g. due to absence of specific address, full name), and only effective if performed soon after case identification; • Effective contact tracing relies on active community involvement, which is affected by understanding of the disease, trust, fear and stigma; • Successful contact tracing depends on accurate, culturally sensitive communication to ensure the appropriate message is communicated, as well as psychosocial support provided for community members; • Engaging and educating community leaders, religious groups and mass media communication to promote awareness of accurate information in affected communities is key; • Contact tracing has huge potential to control disease outbreaks but for EVD could not be put in place in most affected settings due to huge caseload and limited healthcare staff; 	<p><u>Communication purpose:</u></p> <p>Findings may inform decisions about how and who to provide information to about disease outbreaks and subsequent contact tracing efforts.</p> <p><u>Related to review questions:</u></p> <p>Findings may provide insight into improving acceptability of contact tracing and factors influencing uptake (ability to perform) contact tracing in communities.</p>
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West Africa (Guinea, Sierra Leone, Liberia, Congo), also USA, Spain

Quality assessment:

1/11 AMSTAR rating (critically low quality according to AMSTAR 2)

Funding source:

Not reported

- Although not implemented early in the outbreak, later control efforts relied heavily on contact tracing, and success was attributed largely to community involvement, promoted through international efforts.

Recommendations:

- Contact tracing has enormous potential to reduce cases of EVD but relies on trust and accurate and appropriate communication with communities, including community leaders, to be successfully implemented.
- Engaging and educating communities by communicating accurate information in different ways is critical for ensuring that contact tracing can be performed.

Szkwarko 2017*

(SR)

Mapping to: Adherence

Overview and aim: Tuberculosis Child Contact Management (CCM) implementation, challenges, predictors, and recommendations

Inclusion and exclusion criteria:

Included: Child population (< 15 years) exposed to TB in household in high-burden countries. All quantitative, qualitative and mixed-methods studies

Excluded: randomised controlled trials, editorials, or commentaries

Type of study and data:

37 studies included (25 quantitative, 3 qualitative, 9 mixed methods)

Countries included:

22 studies in African region (most in South Africa (10), Ethiopia (4) and Malawi (3)), 14 in Southeast Asia (most in India (5), Indonesia (4)), and one in the Americas (Peru)

Quality assessment:

6/11 AMSTAR rating

Funding source:

K01 AI104351/AI/NIAID
NIH HHS/United States

Reported on:

Focus reported here is on contact identification and tracing (not screening, treatment).

Child contact (< 5 years) identification varied widely (24 to 1227 child contacts).

Challenges for contact management/tracing included the following:

- Health system infrastructure challenges (lack of prioritisation, limited resources, lack of tools to support contact tracing and documentation).
- Knowledge gaps amongst index cases, caregivers and healthcare workers were apparent, with inadequate health education or lack of understanding of information on CCM, particularly caregivers were not informed about the need for child contact screening and the importance of preventive therapy.
- Healthcare workers also showed knowledge gaps. Lack of guidelines, and non-adherence to guidelines were also found in many studies (n = 21).
- Another concern was stigma, with caregivers expressing child contact screening could lead to unwanted disclosure of TB and/or HIV to others (n = 5).
- Other major barriers or challenges to child contact screening included difficulties accessing care (e.g. due to cost, transportation difficulties) and family prioritisation of other competing priorities (i.e. parents' work schedules, child contacts need to go to school).

Recommendations:

- A focus should be on a CCM-friendly healthcare environment with improved CCM processes and tools; extensive health education for healthcare workers, index cases, caregivers and the community; and active, evidence-based strategies to decrease barriers such as those in accessing care and competing priorities.

Communication purpose:

This may be used for communication with parents to enhance compliance with contact tracing measures, by filling knowledge gaps, decreasing stigma, and increasing perceived importance of contact tracing.

Findings may also help to inform decisions about how to decrease barriers to contact tracing measures, such as difficulties with access, or on stigma associated with TB.

Related to review questions:

Findings identify factors that may impact on non-adherence to child contact tracing measures, such as knowledge gaps and competing demands.

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Primary studies

Bodas 2020#	<i>Overview and aim:</i>	<i>Reported on:</i>	<i>Communication purpose:</i>
<p>(primary)</p> <p><i>Mapping to:</i> Adherence</p> <p><i>Also mapping to:</i> Public health measures 3 (quarantine) and 2 (isolation) rather than contact tracing</p>	<p>Assessment of public attitudes to self-quarantine for COVID-19, including economic factors (compensation for lost wages) as a factor influencing compliance</p> <p><i>Inclusion and exclusion criteria:</i></p> <p>Included: adults (18 years and older)</p> <p><i>Type of study and data:</i> Cross-sectional survey; 563 participants (representative randomised sample of population of State of Israel)</p> <p><i>Countries included:</i></p> <p>Israel</p> <p><i>Quality assessment:</i></p> <p>Response rate: +</p> <p>representativeness: ++</p> <p>COI not declared; results rely on self-reported intentions (not behaviours), at a single time point; sample may under-represent those without computer skills/Internet; paper peer reviewed and published</p>	<p>Public attitudes to COVID-19 outbreak, including personal concern, attitudes towards public health regulations and compliance with public health regulations, including when compensation was provided or not.</p> <ul style="list-style-type: none"> • Most (60%) respondents reported monitoring the situation via news reports; over 80% report moderate or higher levels of concern about the outbreak; and over 80% a moderate or higher rating of trust of the Ministry of Health in current outbreak. • 94% of respondents indicated intention to comply with two-week self-quarantine period when compensated for lost wages; when compensation was removed intended compliance decreased to 57% (11% indicated they would no longer comply). <p><i>Recommendations:</i></p> <ul style="list-style-type: none"> • Decision-makers must take into account the effects of monetary compensation on compliance with self-quarantine measures. • Risk communication may be targeted towards those who are undecided about self-quarantine compliance in the absence of compensation (approximately 30% of respondents). 	<p>This may inform communication with communities to prevent transmission through adherence to public health measures (short-term (2 weeks) self-quarantine), and for communicating with and supporting people undecided about behavioural compliance in the absence of financial compensation.</p> <p><i>Related to review questions:</i></p> <p>Findings identify factors influencing behavioural adherence to public health measures, particularly those related to monetary compensation and effects (that financial security is important for guaranteeing adherence to proposed measures).</p>

#COVID-19-specific study; *Non-COVID-19 specific study; % AMSTAR rating from McMaster Health Forum (via Health Systems Evidence <https://www.healthsystemsevidence.org>); European Centre for Disease Prevention and Control. Guidance on tuberculosis control in vulnerable and hard-to-reach populations. Stockholm: ECDC; 2016.

Abbreviations:

CCM: child contact management

CHW: community health worker

COI: conflict of interest

CT: contact tracing

EEA: European Economic Area

EU: European Union

EVD: Ebola Virus Disease

FTTIS: find, test, trace, isolate, support

GPS: global positioning system

H1N1: H1N1 influenza strain

HIV: Human Immunodeficiency Virus
 MERS: Middle Eastern respiratory syndrome
 NICE: National Institute for Clinical Excellence
 NPI: non-pharmaceutical interventions
 OECD: Organisation for Economic Co-operation and Development
 PD: physical distancing
 PTSD: post-traumatic stress disorder
 QR: quick response
 SAGE: Scientific Advisory Group for Emergencies
 SARS: Sudden acute respiratory syndrome
 SPI-B: Scientific Pandemic Influenza Group on Behaviours
 SR: systematic review
 TB: tuberculosis

Table b: Isolation

Public health measure 2: Isolation	Study features	Outcomes and findings	Translational steps
Systematic reviews, guidelines			
<p>WHO 2021#</p> <p><u>Citation type:</u></p> <p>GL</p> <p>Actions for consideration in the care and protection of vulnerable populations from COVID-19; interim guidance 13th October 2021;</p> <p>At:</p> <p>WPR-DSE-2020-021-eng.pdf (who.int)</p> <p><u>Public health measure:</u></p> <p>Isolation, and also maps onto quarantine, crowd avoidance, and general PD</p> <p><u>Mapping to:</u> Uptake, acceptability, adherence, feasibility</p> <p><u>Mapping to:</u></p> <p>Theme 2: recipients of public communication: audience, setting and equity</p> <p>Theme 3:</p>	<p><u>Overview and aim:</u></p> <p>To provide guidance on care and protection of vulnerable populations during COVID-19</p> <p><u>Type of study and data:</u></p> <p>GL; rapid literature search and guideline development process</p> <p><u>Method:</u></p> <p>GL was developed based on a review of relevant literature/guidance on vulnerable populations. Recommendations decided through group consensus</p> <p><u>Included disease(s):</u></p> <p>COVID-19</p> <p><u>Timing:</u></p> <p>Revised October 2021; no further information specific to timing</p>	<p><u>Reported on:</u></p> <p>Guidance for the general population may not be feasible for vulnerable groups. Guidance here presents options for ensuring that recommended measures are accessible and appropriate for vulnerable populations; this can not only ensure more equitable access but also that COVID-19 is controlled in vulnerable populations (which affects the health of the whole population).</p> <p>Findings summarised below focus on communication issues related to physical distancing barriers and mitigation of these for vulnerable groups.</p> <p>Some population groups may have less agency to comply with PD recommendations.</p> <p><u>Potential barriers impacting PD adherence/uptake include:</u></p> <ul style="list-style-type: none"> • People lacking clear, accurate and culturally appropriate information on how to protect themselves and others from the virus; • People who lack formal housing; or live in dormitories, inter-generational housing or detention centres/prisons may have inadequate space to physically distance or may not be free to self-isolate; • Financial barriers: The need to keep working to maintain income. This may also include migrant workers who may not access testing or care because of their precarious legal or employment status; • Being unable to survive alone in isolation and requiring carers to provide meals, care etc. <p><u>Potential strategies for mitigating barriers include:</u></p> <ul style="list-style-type: none"> • Tailored community public information and/or engagement campaign targeting those most severely affected by COVID-19; aim to provide clear, accurate, culturally appropriate information about how to observe physical distancing or care for sick people at home. Such messages need to be tailored 	<p><u>Communication purpose:</u></p> <p>May be useful for identifying barriers and mitigation strategies for vulnerable communities in terms of prevention and containment of COVID-19. Also provides guidance on communication strategies and features that may usefully inform tailoring of public health communications to differentially vulnerable groups within populations.</p> <p><u>Related to review questions:</u></p> <p>Identifies several factors which may create vulnerability in different groups and so increase their risk of poor outcomes related to COVID-19.</p> <p>Provides a range of strategies, both material (practical) and commu-</p>

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support for individual and population behavioural changes Theme 4: community engagement to support communication Theme 5: public trust and perceptions	<p><u>Countries included:</u></p> Across-country; developed by WHO Regional Office for the Western Pacific	for context and content (e.g. to those living in rural/remote locations) and/or for delivery (e.g. sign language for people with disabilities) to ensure reach to different vulnerable groups within the community.	nication-related, that may be used with the aim of redressing the imbalances or inequalities faced by many vulnerable populations. Implementation of such strategies may help to reduce barriers to uptake of preventive measures and so improve accessibility, feasibility and adherence to physical distancing measures.
	<p><u>Intervention or phenomenon of interest:</u></p> To strengthen the care & protection of vulnerable groups from community transmission during COVID-19	<ul style="list-style-type: none"> • Engage with the community to identify and prepare alternative self-isolation facilities for those with mild symptoms. Support this with technical guidance for local authorities and community health workers. • Ensure appropriate monitoring processes are in place so that people with disabilities who may not be able to voice their concerns during isolation are protected from harm. Longer-term mitigation strategies might include advocating for provision/expansion of paid sick leave; promoting intersectoral action to deploy and expand safety nets (e.g. cash transfers) to provide temporary relief to affected households; advocating for adequate housing; and advocating to prevent charges or fees for breaking quarantine where people are leaving dangerous households, or for those without adequate housing.	
	<p><u>Population addressed in GL:</u> vulnerable populations defined as those experiencing any condition resulting in inequitable access to resources and increased likelihood of adverse health outcomes of COVID-19. This includes (but not limited to): people living in overcrowded housing, collective sites, informal settlements or slums, or experiencing homelessness; people who have been forcibly displaced, migrant workers; those in rural and remote locations; people living in poverty; people with disability and those living in closed facilities; those adversely affected by the digital divide; and people affected by intersecting, accumulating or other vulnerabilities.</p> <p><u>Quality assessment:</u></p> AGREE II: scope and purpose 86.1%; stakeholder in-	<p><i>Other relevant public communication activities are focused on the following:</i></p> <ul style="list-style-type: none"> • Ensure all vulnerable populations are informed of, and can access, healthcare for COVID-19 treatment and have access to testing in appropriate languages. • Provide access to support services, including mental health supports and disseminate information on coping strategies; these must be culturally appropriate and tailored to need. • Train service providers appropriately to prevent and address stigmatisation/discrimination of vulnerable populations. • Work to provide adequate social protection e.g. financial support in various forms appropriate to need, including those with precarious employment e.g. migrant workers. • Promote factual national reporting to combat misinformation, stereotypes and stigmatisation by disseminating contextualised evidence-based information to the public e.g. targeting fear/hostility for new or returning migrant workers. • Communicate using digital technologies with awareness of the digital divide, and that disparities in digital literacy and accessibility exist and may exacerbate health inequalities. Supplementary communications may be needed to overcome this as a barrier e.g. providing opportunities for women and girls to learn and access digital services; communicate using non-Internet systems (also in recognition of limited Internet penetration in some areas) to communicate e.g. SMS. • Encourage the reduction of movement within & between areas by providing communities with alternative mechanisms to engage with family (e.g. phone credit and SIM cards). <p><i>For people with disabilities:</i></p> <ul style="list-style-type: none"> • Ensure information is easy to read, at suitable literacy and comprehension levels for people with intellectual disability or cognitive impairments, and that these can be adapted for people with neurocognitive impairment (including those who cannot self-report symptoms). • Alternative communication strategies (e.g. sign language), and communication through multiple channels (e.g. radio, websites, television) is needed to ensure that people with dis- 	

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volvement 25%;
rigour of develop-
ment 18.8%; clari-
ty of presentation
77.78%; applicabil-
ity 8.33%; editorial
independence 50%

Funding source:

Not reported

abilities receive adequate public health information to protect their health, and to be able to communicate with health professionals to raise concerns or questions. Including simultaneous interpretation into the locally relevant sign language, and transcripts, during major announcements may help to ensure accessibility of public health information.

- Build capacity amongst healthcare and other community workers to communicate with people with disabilities, in order that people adequately understand the required prevention/containment measures.
- Ensure people with disabilities have access to essential services (e.g. telehealth, food); and to care pathways that are easy to access and clearly communicate to people with disabilities, their carers and service providers.
- Ensure formal and informal caregivers for people with disabilities are considered part of the essential workforce and exempted from curfews and other restrictions that may affect their delivery of support or care. If carers are quarantined, continued care for people with disabilities needs to be assured. Facilitating people with disabilities and their carers to make contingency plans for such situations may be beneficial to ensure continuity of care.
- Ensure that there are no additional barriers to seeking care or support (e.g. social assistance) for people with disabilities e.g. physical inaccessible application points.

Community engagement

- Build trust and engage in two-way dialogue with community leaders/representatives/organisations with the capacity to facilitate the COVID-19 response. Work with community partners to reach and empower vulnerable groups and address stigma undermining prevention measures.
- Engage with community representatives to understand community concerns/barriers/needs and identify localised solutions. Ask them to deliver key health messages, that can address concerns of specific groups, and capture community feedback to inform national decision-making.
- Engage the community (through local leaders and government officials) to develop and disseminate local, culturally appropriate guidance on COVID-19 preparedness, at locations that are frequented by vulnerable populations, which is checked for accuracy and relevance, and translated to local languages.
- Build capacity locally (community representatives, leaders) to disseminate information, address concerns and promote dialogue on specific needs of groups, such as those with lower literacy, visual, intellectual or other impairments. Information should include COVID-19 prevention (protection) measures and when to seek care.

Recommendations:

Prevention and containment measures for the general population need to be adapted and supported in different ways for people with different vulnerabilities. This can include a range of communication, information, training and practical supports to help to mitigate the risk of COVID-19 or of severe disease and to help to ensure more equitable health outcomes across the population.

(Continued)

Cardwell 2021#^
Citation type:

SR (rapid)

Public health measure:

Isolation, and also maps onto quarantine, and school measures

Mapping to: Adherence

Mapping to:

Theme 3:

support for individual and population behavioural changes

Overview and aim:

To identify strategies to support people in isolation or quarantine for COVID-19 and to assess effectiveness of strategies during respiratory pathogen pandemics to support and improve adherence to these measures

Type of study and data:

SR; international guidance documents (WHO, ECDC from 19 countries); rapid review of primary studies (n = 1, survey)

Inclusion and exclusion criteria:

Included: support for people in isolation or quarantine, respiratory viruses e.g. SARS, MERS

Excluded: non-respiratory pathogens or non-pandemic settings

Participant features and numbers, sampling details:

General populations across 19 countries; no specific groups noted, although some countries may target support to vulnerable groups or those already receiving state aid.

Two primary studies (same dataset): 1) 257 families, 49% under 12 years, 54% male; 2) 133 households

Reported on:

Support measures from 19 countries were analysed and identified 5 categories of support.

Psychological, addiction and safety support measures:

- Most countries (18/19) provided psychological supports including mental health, addiction and domestic violence supports, or various types including information leaflets/portals, access to helplines and online/video appointments with counsellors or psychologists. Information on fees to be paid for using services, or which services existed pre-pandemic, was typically not reported. Authors also note that support services may exist even where government or agency websites do not list these as specific pandemic-related support measures.

Essential needs support measures:

- Individuals isolating or in quarantine should have access to essentials including food, medicines, accommodation, care (including healthcare and childcare), and PPE. Most countries (16/19) provided information on support related to people's essential needs, but this ranged from comprehensive to more selective coverage.

Information:

- All countries provided specific information support for those isolating or quarantining, and many also provided more comprehensive information related to COVID-19 and a wide range of related issues. Most commonly information support was available via helplines or websites, and in some countries (n = 4), via mobile phone apps.

Financial support:

- Financial support measures were reported by all countries. Some provided a certificate of requirement to isolate/quarantine in order to access financial supports. Payments were typically a fixed amount rather than a proportion of salary.

One study reported different measures put in place to support people during isolation/quarantine for H1N1 in Australia, with positive cases in classrooms the trigger for school closures and quarantine.

- Provision of information on quarantine was linked to adherence with restrictive measures. Most people (90%) understood what they were meant to do during quarantine, with almost 90% of parents receiving quarantine information from the school, 63% from the health department and 44% from the media. Most families (76%) reported using two or more information sources, and most (around 67%) reported that information from the health department, schools or health services was useful or extremely so, while only 38% rated media-sourced information at this level.
- Adherence to quarantine requirements was reported to be 55% overall and was higher amongst households who reported understanding what they were meant to do or not do during quarantine (55% versus 35%).

Communication purpose:

May inform the purpose(s) and range of supports available for people undertaking isolation or quarantine. May also inform communication strategies to inform individuals and communities about the supports available to them, including what these are, who is eligible, and how to access them, should they be needed.

Related to review questions:

Different supports are needed for people undertaking isolation/quarantine. These range from information and mental health services to access to essential supplies, PPE and financial support. Supports may vary in intensity (comprehensiveness) and target (generally or to specific vulnerable populations).

Clear, consistent information about isolation and quarantine measures, and their rationale and features (e.g. duration, what is required), is needed to help people know what to do and how to adhere to the measures.

Information is also needed about what supports for isolation and quarantine

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Included disease(s):

Respiratory diseases e.g. SARS, MERS, influenza

Timing:

Search up to January 2021, literature limited to 2000 onwards. No further information related to timing of the pandemic or related communications

Countries included:

International guidance from Austria, Australia, Belgium, Canada, Denmark, England, Finland, France, Iceland, Ireland, Netherlands, New Zealand, Northern Ireland, Norway, Scotland, Singapore, Sweden, Switzerland, Wales

Rapid literature review: Australia

All high-income countries

Intervention or phenomenon of interest:

Support (any public health guidance or measures) for isolation or quarantine measures

Quality assessment:

5/11 AMSTAR:

[2. Single screening and data extraction only (second reviewer checked extracted data); 5. No excluded studies reported and included not very clear; 6. Characteristics of included studies not clearly

Recommendations:

Across countries there is variation in the type and intensity of support offered to people undertaking isolation or quarantine measures to protect public health during the COVID-19 pandemic. Some countries target support to vulnerable groups; and many countries leverage support during the pandemic from existing services rather than creating new structures and services to provide such support.

Most services are reactive, requiring individuals to initiate the support, although some proactively target vulnerable (medically or financially) populations. As well as support for isolation and quarantine, many countries have in place punitive measures for lack of adherence.

Adherence to measures may be influenced by the culture in which the measures are implemented.

Adherence to isolation and quarantine measures may be improved by better knowledge of the measures and their rationale, and provision of financial support and essential supplies.

Providing consistent and factual information may promote adherence to measures; warning people about misinformation and addressing inaccuracies or conspiracies in available information is similarly important.

Information and messages emphasising the supports that will be provided should isolation or quarantine be needed are beneficial, so that people know what is available as well as how to access supports, should they be needed. Framing messages positively in terms of the benefits for society and for themselves and communicating to promote solidarity and the altruistic nature of adherence, may also improve adherence.

tine are available, and how, where and who can access these supports, so that people are clear about the options in place and what to do if the situation requires it.

Information may be consumed via multiple sources and communicated via different media, such as websites and helplines, information pamphlets and portals, and mobile phone apps.

Financial insecurity is a major contributor to lack of adherence, particularly for those of lower socioeconomic status. Lack of suitable accommodation and essential supplies are further barriers, as are inconsistent information, stress and stigma associated with quarantine.

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reported; 8. Quality not incorporated into findings/conclusions; 10. Publication bias not assessed; 11. No COI included studies reported]

Funding source:

This research was funded in part by the Health Research Board under grant no. HRB-CICER-2016-1871.

<p>Chu 2020#[^]</p> <p><u>Citation type:</u></p> <p>SR</p> <p><u>Public health measure:</u></p> <p>Isolation, and also maps onto quarantine</p> <p><u>Mapping to:</u></p> <p>Acceptability, adherence</p> <p><u>Mapping to:</u></p> <p>Theme 1:</p> <p>features of public communication: content, timing and duration, and delivery</p> <p>Theme 3:</p> <p>support for individual and population behavioural changes</p> <p>Theme 4: community engagement to support communication</p> <p>Theme 5:</p> <p>public trust and perceptions</p>	<p><u>Overview and aim:</u></p> <p>To identify social consequences of mass quarantine (measures that restrict physical contacts and mobility of 10,000 or more people or all residents in a specific jurisdiction) during infectious disease outbreaks; and to identify strategies to mitigate negative social impacts of movement restrictions for COVID-19</p> <p><u>Type of study and data:</u></p> <p>SR; qualitative, quantitative and mixed methods studies; N = 15 (6 qualitative, 6 quantitative, 1 mixed-methods, 2 ethical)</p> <p>Surveys (telephone, web-based, mail; cross-sectional), interviews and focus group methods and evidence synthesis (for ethical studies).</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: Social impacts of mass</p>	<p><u>Reported on:</u></p> <p>6/15 studies were rated as low quality, 9/15 as high quality; with seven consequences of mass quarantine identified.</p> <p><u>Psychological distress (11 studies):</u></p> <ul style="list-style-type: none"> • Studies across diseases and countries reported that psychological impacts during/after mass quarantine include emotional distress and symptoms of mental illness, such as anxiety, life dissatisfaction, fear of infection, loneliness and mistrust. • Mental health outcomes may be poorer amongst those who are unemployed. • Other single studies reported that a substantial proportion of people under movement restrictions and physical distancing measures report insomnia, post-traumatic stress disorder symptoms, and depression; and others indicate heightened mistrust between racial and religious groups (in terms of disease spread) and avoidance behaviours relating to people returning from regions of infection. Mass quarantine also led to stigma and could prevent people affected from accessing food or other essential items. <p><u>Heightened communication inequalities (9 studies):</u></p> <ul style="list-style-type: none"> • Mass quarantine exaggerated inequalities in people's access to, understanding of, and actions for preventing infection. • One study in Canada reported that racial and linguistic minorities may have higher likelihood of inaccurate information on confinement measures as a result of lower literacy or lack of message clarity. • Another highlighted distrust of the government amongst Liberian slum dwellers, due to a lack of information about military-enforced lockdown targeting their homes and indicated that such enforced lockdown measures without community engagement may exacerbate distrust of authorities and decrease willingness to adhere to restrictions. • One other study stressed the importance of government transparency of decisions on mass movement restrictions and public information about how outbreak surveillance works in order to avoid panic. 	<p><u>Communication purpose:</u></p> <p>Findings may inform authorities' planning and implementation of mass quarantine, including communication to inform populations of measures and to support them in practical terms.</p> <p><u>Related to review questions:</u></p> <p>Mass quarantine has several negative effects on society and may worsen existing inequalities. Communication strategies to engage with and inform populations about the measures therefore needs to explicitly address such communication inequalities.</p> <p>Communication between authorities and the population should provide clear, accurate and consistent information; actionable messages; and these must be tailored to different groups with-</p>
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Theme 6: distancing measures in schools and workplaces

quarantine during infectious disease outbreaks; empirical research

Excluded: Studies without peer-reviewed original empirical evidence (e.g. thesis, book chapters and reviews) or focusing only on epidemiological consequences of mass quarantine (e.g. estimates of infection, disease rates/risks)

Participant features and numbers, sampling details:

Sample sizes ranged from small numbers of key informants (e.g. n = 9 to 42) to larger samples up to approximately 1000 people responding to surveys. Participants included residents of affected villages, regions, or cities, community leaders and key informants for organisations and communities, healthcare workers, printing company workers and university faculty.

Included disease(s):

SARS (8 studies), EVD (4), COVID-19 (2), H1N1/influenza (1)

Timing:

Searches inception to April 9, 2020

Eight studies focused on 2003 SARS outbreak; 4 on 2014-16 EVD outbreak; 1 on 2009-2010 H1N1

- Identifying trustworthy information was reported as challenging for the public as a result of diverse, unverified information sources; heightened uncertainty during outbreaks; lack of clear, consistent messaging from authorities (about why, how, and how long to enact quarantine); and inability to contact public health staff (3 studies). One study also reported that contradictory instructions about quarantine (from public health experts, mass media, experts) widened communication inequalities, increased the difficulty of adhering to measures, and led people to rely on word-of-mouth information that may not have been accurate.
- Being older (> 65 years), female and a healthcare worker were associated positively with knowledge and acceptance of mass quarantine (2 studies).
- People in poverty may not have space available for physical distancing in their households (1 study), a pattern noted in another study amongst Canadian First Nations people. People's mass quarantine adherence is determined by housing conditions, poverty and presence of healthcare facilities (3 studies); another study reported that community leaders could not respond effectively to an outbreak, despite disease awareness, without functioning healthcare. High adherence with quarantine was attributed to the presences of on-site healthcare personnel within the village (1 study); another indicated that community-based peer education, together with improved communication infrastructure, might reduce negative quarantine impacts.

Food insecurity (8 studies):

- Mass quarantine-induced mobility restrictions impacted every step of the food supply chain, for instance affecting harvesting and subsequent supply, limiting or delaying transportation. One study reported that villagers disobeyed quarantine orders because of their intermittent food supply, with others reporting concerns about storing food (their own, or those in financial difficulty) during mass movement restriction (2 studies).
- Food access during quarantine varied across countries (e.g. inaccessibility levels were 4% in one Canadian study but 50% in another Liberian study); with some noting that quarantine disrupted traditional mutual support between villagers, leaving those in isolation without support and food.
- Two studies reported that most respondents indicated that governments should supply basic needs to those in quarantine, including food and shelter, to improve food security.

Economic challenges (7 studies):

- By limiting personal movement and goods transportation, mass quarantine economically impacts both businesses and individuals.
- Business impacts can include interruption of the food supply chain, including effects on both domestic and international agricultural trade; and effects on restaurants, tourism and travel-related businesses (3 studies).
- For individuals, economic impacts can include reduced income, unemployment and concerns about additional employment costs. Lost or reduced income due to missing work may affect a substantial proportion of people (2 studies), and

in the population (e.g. those of lower health literacy or minority racial groups).

Introducing mass quarantine needs to recognise the unintended negative effects of such measures upon the population, and that vulnerable groups may be disproportionately affected. This may require tailored or intensified support (e.g. financial support, food, family violence support and other necessities) to be provided to some or all of the population under quarantine. Strengthening of health systems, and associated support (e.g. access to psychological support) is also indicated.

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outbreak; 2 on 2020 COVID-19 outbreak.

Quarantine range:

7 days to 1 month; not specified in 3 studies, not applicable in a further 2 studies

Countries included:

SARS outbreak Canada, China, across-countries (8 studies); EVD Sierra Leone and Liberia (4), COVID-19 China and multiple countries (2), H1N1/influenza Canada (1)

Country income tended towards high and upper-middle income (SARS, H1N1, COVID-19); and low income for EVD.

Intervention or phenomenon of interest:

Social consequences of mass quarantine, and strategies to mitigate negative effects

Quality assessment:

AMSTAR 7/11:

[5. No excluded studies list provided; 8. Quality assessment not integrated into most findings; 10. Publication bias not assessed; 11. No COI for included studies]

Funding source:

WT/Wellcome Trust/United Kingdom

unemployment leading to loss of income was also identified as the primary concern of people during SARS and EVD outbreaks. People who work part-time or are self-employed may be particularly vulnerable if the government delays financial support to those under quarantine who cannot work without travel (1 study). A study from Sierra Leone reported that residents were unable to work due to village-based quarantine, and that this impacted the labour supply and agricultural cycle.

- Studies on balancing the economic implications of quarantine have suggested that closing 'non-essential community workplaces' might be one way to reduce expenses for compensating employees who are under quarantine (1 study); another reported that the majority of people (88%) believed that quarantine orders should be followed regardless of employment status but that most (68%) also believed that governments should compensate people for lost earnings during quarantine (1 study).

Diminished access to healthcare (6 studies):

- Access to healthcare was affected by reallocation of resources to the outbreak emergency and by widening health inequality in vulnerable populations, but this varied across contexts. For instance, some informants in a study in Liberia reported increased deaths and complications from preventable diseases as most medical facilities within travelling distance were closed; but another study in Liberia (n = 9) reported full access to medical care for sick family members, supported by government medical transportation services. Other studies reported that some people under quarantine lacked access to prescriptions and health services (2 studies).
- Three studies found changes to health-seeking behaviours during quarantine, such as reduced visits to nutrition screening and seeking help from unverified sources. One study reported a dramatic shift in public health priorities to EVD management (over screening), indicating reduced screening due to movement restrictions, behaviour changes in users due to lack of trust, and resource scarcity or competition between EVD management and humanitarian nutrition programmes, both of which were critical for people's survival.

Disrupted education (4 studies):

- Children and adolescents were affected by school closures, but this varied across countries and outbreaks: some reporting no schooling and others reporting homeschooling by parents. Others in Canada reported that parents might be able to provide homeschooling if both schools and workplaces were closed in mass quarantine; and adolescents reported that they could learn remotely given web-based learning platforms and mobile connections.

Gender inequality and violence (3 studies):

- Mass quarantine may worsen gender inequality and gender-based violence. Studies reported inequality in housework and caring responsibilities, with women regarded as default caregivers of sick family members at home, and perhaps delaying their own hospital treatment due to family care responsibilities (1 study). Another reported increasing domestic violence rates against women, while one further reported (ap-

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proximately 3-fold) higher rates of psychological disorders amongst men in quarantine.

Recommendations:

Several negative effects of mass quarantine were identified; the only positive effect identified was altruism.

Since mass quarantine can lead to several negative social consequences and may worsen existing inequalities, a focus on reducing social inequalities should be a priority for countries to build resilience and preparedness for future outbreaks.

Authorities should implement specific interventions and equity-based strategies to mitigate socioeconomic implications and mental health impacts of mass quarantine, and clearly tackle social inequalities during mass quarantine and in preparation for lifting such restrictions.

Negative social consequences of mass quarantine, such as poor psychological outcomes, can exacerbate existing inequalities or determinants of health. Negative effects may disproportionately affect people experiencing financial hardship, those who are unemployed, or who cannot work from home.

Limited access to overloaded healthcare services may also worsen psychological effects, inhibit consultations for those with existing conditions, and substance abuse may be left untreated.

A sense of altruism was a positive consequence of mass quarantine; authorities may promote altruism by developing culturally competent, context-specific strategies; promote use of digital technologies to increase healthcare capacity and harness technology to better enable social connectedness amongst populations.

Negative impacts of mass quarantine included reinforcing stigma against minority populations, increased misinformation, and lowered trust in authorities. Such effects have exaggerated existing communication inequalities, which may be negatively associated with outbreak preparedness; these have been compounded by poor information governance across authorities (e.g. no rationale for decision-making, inconsistent information and instructions and lack of coordination of mass quarantine).

Authorities can improve communication by designing equity-based communication messages (such as information tailored to individual needs based on age, educational level, language), based on accurate data and measures adjusted for risk of disease, consulting community representatives (e.g. those from social minority groups) in developing supplementary measures to lockdowns, and learn from examples of successful misinformation curbing. Community engagement, transparency and tailored strategies to address misinformation are key elements of communication inequality mitigation. Responses should also aim to mitigate existing social disparities (e.g. those for women or ethnic minorities) and respond to needs of vulnerable populations identified directly.

Negative effects of mass quarantine may more heavily burden countries unprepared for public health emergencies. For instance, food insecurity may lead to panic buying in high-in-

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come countries but to population-level famine in low-income countries; similarly, remote learning may be feasible in urban centres but not for those living in poverty, or in remote areas with poor digital infrastructure. Interventions are therefore needed to address existing disparities as well as those worsened by mass quarantine.

ECDC 2020b#	<u>Overview and aim:</u>	<u>Reported on:</u>	<u>Communication purpose:</u>
<u>Citation type:</u>	To describe measures for prevention and control of COVID-19 for refugees and migrants (including asylum seekers and others) living in reception and detention centres	<ul style="list-style-type: none"> Vulnerabilities of migrants and refugees living in reception/detention centres are heightened by the COVID-19 pandemic, and migrants may be at increased risk of communicable diseases for reasons such as limited healthcare access, low socioeconomic status, lack of vaccination, and poor living conditions (including overcrowding, poor living conditions). 	Findings can inform strategies for developing appropriately tailored (to health literacy, cultural background) information to communicate with refugee and migrant populations to reduce risk of COVID-19 transmission.
GL		<ul style="list-style-type: none"> Although physical distancing measures be difficult to implement in migrant reception/detention settings (due to overcrowding or lack of facilities), physical distancing principles for the community should be applied and promoted in these settings. 	
Guidance on infection prevention and control of COVID-19 in migrant and refugee reception and detention centres in the EU/EEA and the UK (europa.eu)	<u>Type of study and data:</u>	<ul style="list-style-type: none"> Early detection of cases is critical, particularly in overcrowded settings, and this depends on clear communication of symptoms to residents and staff. Multilingual signage (information/infographics with pictograms) should be available about signs & symptoms and what to do if symptomatic, while leaflets and SMS messages should also be considered. Close contacts should be promptly identified and instructed to self-quarantine and advised what to do if they develop symptoms. Rumours and misinformation may increase fear and anxiety, as could a lack of readily available accurate information available in people's own languages. Isolation and quarantine may also worsen mental health, and access to mental health and psychosocial services must be provided as essential services for those in migrant and refugee settings. PD should only be implemented in these settings based on proven or presumed infections. Inclusive risk communication and information is required to provide migrants with accessible information from trusted sources, with regular updates, in appropriate languages. Information should include that on evidence-based prevention of COVID-19, messages to promote psychosocial well-being, as well as how and where to seek support. Community leader engagement can also help to raise awareness of and coping with mental health issues. 	<u>Related to review questions:</u>
June 2020	GL (technical report)		
<u>Public health measure:</u>	<u>Included disease(s):</u>		
Isolation, and also maps onto quarantine, and crowd avoidance	COVID-19		
	<u>Timing:</u>		
Mapping to Uptake, acceptability, adherence, feasibility	None specific		
<u>Mapping to:</u>	<u>Countries included:</u>		
Theme 1:	EU/EAA and UK		
	Higher-income countries		
features of public communication: content, timing and duration, and delivery	<u>Intervention or phenomenon of interest:</u>		
Theme 2: recipients of public communication: audience, setting and equity	Communication to support preventive health measures in refugee/migrant detention centres		
	<u>Quality assessment:</u>	<u>Risk communication and community engagement:</u>	
Theme 4: community engagement to support communication	AGREE II: scope and purpose 86.1%; rigour of development 12.50%; editorial independence 25%	<ul style="list-style-type: none"> Communication about COVID-19 risks and prevention measures requires strategies that are adapted to meet language, cultural and literacy needs of different population groups housed at such centres. Community engagement (e.g. local influencers, trusted organisations) is a key component of effective communication strategies; helping to build trust, ensure cultural appropriateness of messages, tailor messages, and facilitate better communication and understanding of messages. Accurate, reliable, up-to-date information about prevention and control need to be adapted and translated to rele- 	Despite the difficulties inherent in implementing preventing measures in migrant/refugee detention centres, the aim should be to enact physical distancing and others measures as well as possible given practical limitations (e.g. overcrowding).
Theme 5:			
public trust and perceptions	<u>Funding source:</u>		
	Not reported		

(Continued)

vant languages; pretested for cultural appropriateness; visual communication should be adopted (i.e. infographics or photos) to help overcome literacy barriers; and be communicated via a range of channels (e.g. radio, SMS, videos, multilingual hotlines, loudspeaker messages within camp settings), in addition to written information to improve accessibility of the information (particularly in areas of low connectivity).

Actionable messaging:

- Messages should clearly focus on what people are able to practically do to reduce their risk, and what steps they should take if they suspect they might have COVID-19.
- Strategies might include working with community leaders to promote appropriate behaviours in the context of reception/detention centres, as well as signposting, practical instructions, and linking behaviours to social norms.
- Research efforts should be used to gather information about culture, trusted information sources (e.g. social media posts, government statistics and reports), health literacy levels, and health-seeking behaviours, risk behaviours and prevention barriers; and might include formative sources (e.g. focus groups, interviews).
- Mapping exercises can help better understand leaders and influencers within communities.

Addressing rumours and fears:

- Fears, rumours and misconceptions circulating amongst the migrant community can affect preventive behaviours and prevent people from seeking medical care (for COVID-19 and for routine health issues). These therefore need to be understood and addressed.

Addressing stigma and discrimination:

- Misconceptions also need to be addressed to avoid or minimise stigma and discrimination. Communication efforts should focus on acknowledging the existing concerns and presenting a factual response. Media can have an important role to play in conveying factual information while avoiding stigmatisation, stereotyping or religious or ethnic blaming. Storytelling is one possible approach to provide understanding about refugees' lives and information about preventive measures in place.

Recommendations:

Preventive measures like physical distancing may be difficult to implement in refugee/migrant reception or detention centres, due to problems such as overcrowding and lack of facilities. Despite this, physical distancing and other measures should be promoted by providing clear, accurate, understandable information to residents, focusing on actionable messages about prevention and healthcare. Information must be tailored appropriately to language, health literacy and culture, and should aim to address misconceptions or rumours.

ECDC 2020a#	<u>Overview and aim:</u>	<u>Reported on:</u>	<u>Communication purpose:</u>
[Guidance on the provision of sup-	To provide guidance (for civil soci-	[data extraction focuses on findings of the joint review + survey data, not on the separate results of each]	

(Continued)

port for medically and socially vulnerable populations in EU/EEA countries and the United Kingdom during the COVID-19 pandemic, 3 July 2020. Stockholm: ECDC; 2020]

Citation type:

GL

Public health measure:

Isolation, and also maps onto quarantine, general PD

Mapping to: Acceptability, adherence, feasibility

Mapping to:

Theme 1:

features of public communication: content, timing and duration, and delivery

Theme 2: recipients of public communication: audience, setting and equity

Theme 3:

support for individual and population behavioural changes

Theme 4: community engagement to support communication

Theme 5:

public trust and perceptions

ety, NGOs and national, regional authorities) on major challenges, successes and lessons learned from organisations providing support to medically and socially vulnerable people during the COVID-19 pandemic

Type of study and data:

GL: guidance presented as technical report based on triangulation of findings from rapid review and across-country survey (EU/EEA/UK). Authors noted this is exploratory, rather than exhaustive.

Included disease(s):

COVID-19

Timing:

Survey completed June 2020; in response to stay-at-home measures from March-May 2020 but in anticipation of further restrictive measures as pandemic progresses

Countries included:

EU/EEA/UK

high income

Intervention or phenomenon of interest:

Challenges for people living in vulnerable situations during pandemic (medically vulnerable or socially vulnerable) and ways to address these

The COVID-19 pandemic has created huge challenges in terms of morbidity and mortality, but also in terms of social and economic impacts. Within populations, some people are much more vulnerable to the effects of COVID-19 than others. This may be a medical vulnerability (i.e. people at higher risk of death or severe disease e.g. older people, people with underlying medical conditions), a social vulnerability (i.e. vulnerable due to the public health measures put in place to control COVID-19 e.g. people with long-term physical, mental, intellectual or sensory impairments, homeless people, ethnic minorities, irregular migrants), or overlapping or accumulating categories of vulnerability which create particularly challenging circumstances.

There is need for policy responses that recognise the particular challenges faced by each type of vulnerable population, and that allow a more comprehensive approach to address shared challenges and needs across groups.

Some of the challenges identified for people who are medically/socially vulnerable have included:

- The need for targeted information
- Difficulties accessing services
- De-prioritisation of routine services
- Stigma and discrimination
- Legal and financial barriers

Information jointly analysed from a rapid review and across-country survey indicated a range of strategic good practices to better support vulnerable groups during the pandemic, particularly if there are surges of cases requiring reintroduction of restrictive measures (i.e. movement restrictions and stay-at-home orders) and their accompanying challenges.

Those practices most closely related to communication and physical distancing measures are summarised below.

Clear communication between service providers and users:

Standard risk communication principles should be used when communicating with service users, including:

- All information about COVID-19 should be provided in plain (lay) language, translated into minority languages (including languages that are understood by irregular migrants).
- Information should be provided in a range of formats, follow accessibility standards, and be disseminated through mass media and digital (as well as written) channels.
- Tailoring of information, specific to the intended audience, is needed.
- Ensure that messages are likely to be appropriate (acceptable) and effective (accurately understood) by testing these with members of the target audience.

Community engagement:

- Representatives of vulnerable populations should be engaged throughout the development and implementation of response measures during the pandemic in order to build and maintain trust, to ensure acceptability of approaches,

Findings can inform development of public health communication and information strategies to more effectively and appropriately reach vulnerable groups within the community.

Related to review questions:

Improving communication and support of vulnerable populations may improve uptake, acceptability and adherence to measures; and may mitigate some of the unintended consequences of PH measures in vulnerable groups within the community.

(Continued)

Quality assessment:

AGREE II: scope and purpose 75.0%; stakeholder involvement 55.56%; rigour of development 13.5%; clarity of presentation 66.67%; applicability 6.25%; editorial independence 0%

Funding source:

Not reported

their sustainability and effectiveness, and avoid unintended effects (harms).

- Engagement and communication should be two-way, collaborative, and involve mutual listening, as per a partnership model of engagement.

Use of online/digital technologies:

Online technologies (e.g. video or telephone services, virtual peer support groups, group sites for sharing information and lessons), have been an essential way to provide support during the pandemic, and to assist with continuity of existing services. However, such services may not be appropriate in all cases, for instance:

- People with some vulnerabilities may still need in-person services or meetings e.g. some of the most marginalised people do not have access to telephones or computers to connect remotely. Continuing to provide services in person, with physical distancing, is critical.
- Some people (particularly older adults) lack knowledge of or access to digital technologies.
- People with visual or auditory impairments cannot easily access all online materials.
- Access to Internet/phone may be limited for some people (e.g. poor Wi-Fi).

In such cases, other means of reaching people are needed and must be accessible (e.g. by providing financial reimbursement for costs, mobile devices, training).

Maintaining social connections:

Efforts are needed to ensure that vulnerable people are not socially, as well as physically, isolated. These might include assistance with planning how to keep in touch with family/friends, counselling or psychosocial support, and online group activities.

Other key good practices identified include the following:

- The need to ensure continuity of service provision: services must be able to continue their work with vulnerable people and cope with increased demand during the pandemic; requiring proper levels of staffing, training, support and supervision for the service to be sustainable in the longer term; as well as financial support.
- Collaboration between national/regional authorities and civil society service providers is needed to coordinate a response.
- Equity and human rights: ensuring equity helps to ensure good public health practice and health protection. Governments should provide financial aid to all people in need, irrespective of their legal working status (e.g. sex workers) or residency status (e.g. irregular migrants); leaders should speak out against stigmatisation of particular groups in the context of the pandemic; implement quarantine measures proportionately to risk and ensure the rights of those in quarantine are considered.

Recommendations:

(Continued)

Recognition of and attention to addressing the particular challenges of vulnerable groups during the pandemic is key. Principles of risk communication can inform communication strategies for such groups, and community engagement may critically inform responses developed to support vulnerable people within the population, as well as helping to build trust, sustainability and acceptability of responses.

Digital technologies may assist in adapting some support services for vulnerable people; but care must be exercised as lack of easy access to such technologies may otherwise further marginalise people from vulnerable groups.

Provision of material, including financial, support is crucial to ensure that routine services are maintained and extended for those experiencing disproportionate effects of the pandemic due to one or more vulnerabilities.

<p>Mao 2021#</p> <p><u>Citation type:</u></p> <p>SR (rapid)</p> <p><u>Public health measure:</u></p> <p>Isolation, and also maps onto quarantine, and general PD</p> <p><u>Mapping to:</u> Adherence, feasibility</p> <p><u>Mapping to:</u></p> <p>Theme 3:</p> <p>support for individual and population behavioural changes</p> <p>Theme 4: community engagement to support communication</p>	<p><u>Overview and aim:</u></p> <p>To identify models and features of volunteering in the UK during the COVID-19 pandemic (volunteering defined as giving unpaid help as an individual or through a group, club or organisation, to people who are not a relative)</p> <p><u>Type of study and data:</u></p> <p>Rapid SR; qualitative and quantitative; N = 27 (13 reports, 3 briefings, 5 blog posts, 2 newspaper articles, 2 websites entries, 2 peer reviewed journal articles)</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: studies of community/volunteering groups, volunteers, community champions; UK only. Diverse research included: peer reviewed articles, reports, briefings, blog posts, newspaper articles,</p>	<p><u>Reported on:</u></p> <p>Several major topics identified through thematic analysis</p> <p><u>Volunteering activities: addressing needs:</u></p> <ul style="list-style-type: none"> • Early in the pandemic, delivery of essential supplies (e.g. food, prescriptions) was dominant; as the pandemic progressed, activities moved towards combating social isolation (e.g. telephone support, online social activities). • Following the first lockdown, activities shifted to a wider focus of pandemic impacts e.g. mental health, social benefits, employment (2 studies), including involvement in political action (1 study) e.g. developing a collective approach to address poor housing conditions; and eviction resistance campaigns. In such cases, volunteers were working to meet unmet needs that fall within the remit of public services. <p><u>Volunteering activities: adapting through digital tool use:</u></p> <ul style="list-style-type: none"> • Volunteers adapted to changing needs but also changing circumstances that made traditional forms of volunteering challenging – most notably in the change from offline to online volunteering. Many organisations and projects adapted their services rapidly by moving to digital infrastructure; some overhauled their activities to move towards digital delivery (e.g. Facebook-based interactive youth club), while others adopted online tools to complement their offline activities, with many seeking to combat digital exclusion through activities such as mass leaflet drops. <p><u>Volunteering models:</u></p> <ul style="list-style-type: none"> • Lockdown onset saw emergence of a huge number and range of volunteer activities, some emerging spontaneously, others from existing organisations or networks. • Three broad types of activities: formal, social action volunteering and neighbourhood support (e.g. shopping for others); different coordinated approaches reflect decentralised (information and decision-making spread around members) versus centralised (command and control) models. The former may be better able to meet a wide range of needs that might be otherwise unmet, however, lack of leadership may be problematic. In reality, most organisations included ele- 	<p><u>Communication purpose:</u></p> <p>Findings may be useful for informing strategies to communicate with communities about isolation and lockdown measures, as well as identifying a range of needs of communities during enactment of such measures.</p> <p><u>Related to review questions:</u></p> <p>Volunteer groups and activities are diverse and have a critical role in supporting people during the pandemic, e.g. in relation to adherence to isolation (lockdown). Early activities focused on delivery of essential supplies; later, on overcoming social isolation apparent in many in the community; and after the first lockdown, activities shifted to address wider pandemic impacts and unmet needs of community members. Provision of such supports may assist</p>
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online media. English language only.

Excluded: Non-English language; commentary/review; not empirical or analytical

Participant features and numbers, sampling details:

Sample sizes varied enormously, depending in part on method e.g. 7 interviews plus 57 survey responses up to approximately 32,000 survey responses.

Included disease(s):

COVID-19

Timing:

Search for evidence January to October 2020.

Results are discussed in terms of timing of lockdowns (early/late) and stage of pandemic. Authors note that the timing of the review (2020) represents a limitation in that findings are only relevant to the relatively early stages of the pandemic.

Countries included:

UK only; high-income country

Intervention or phenomenon of interest:

Community volunteer activities and outcomes during the pandemic

Quality assessment:

ments of different approaches, although informal volunteer networks appear to be thriving during COVID-19.

Volunteer profiles:

- A new volunteer workforce has emerged during the pandemic, one concentrated in working-age adults (age group and regions) rather than older groups.
- Predictors of volunteering include being female, wealth and class (i.e. more socioeconomic advantage); but this varies, and other studies have suggested that volunteering in deprived areas may lack resources despite greater community need.
- One study reported that certain personality traits (e.g. agreeableness), and social support and engagement, were associated with volunteering during the pandemic; and those volunteers reported higher trust in people to follow guidelines, trust in government, compassion and social connection.

Successes, challenges, and determinants of effectiveness:

- Mutual aid groups played a critical role early in lockdown while public services struggled to deliver services effectively and have led to formation of new networks and knowledge which may prove valuable in later pandemic stages.
- Challenges also exist, e.g. difficulty maintaining volunteer enthusiasm over time, bureaucratic processes delaying interventions (particularly for larger organisations), or logistical difficulties (e.g. co-ordination required to scale up smaller schemes).
- Factors important for sustaining volunteering included allowing volunteers to say no, providing social rewards, and recognising their contribution. An underpinning by community-led infrastructure may assist with co-ordination and communication between groups and local authorities and help to ensure that the needs of people not covered by government services are met (e.g. homeless, families with young children).

Relationships with authorities:

- Authorities collaborating with local communities to support activities: good models may include community champion schemes (e.g. volunteers given latest COVID-19 information and asked to share this with their community, while also feeding back which communications were effective and which were not). Such information might include infographics in a range of languages, with champions connected to provide mutual support.
- In other cases authorities' influence on community organisations may be unhelpful, such as seeking to control the organisation and actions of volunteers; failing to support the group (e.g. not sharing relevant information or joint planning).
- Authorities consulting local communities: consultations with local community groups and volunteers regarding priorities and needs (current or future) may be helpful e.g. studies have identified priorities from such consultation as including ensuring clear advice as communities move out of lockdown, tackling inequalities, and preparing/supporting children to return to school and businesses to reopen. However, consultation must be undertaken with a clear intention of involving

people to adhere to isolation measures.

Volunteer activities and organisations have needed to remain flexible in order to respond to the changing circumstances with the prolonged pandemic emergency, for instance moving services to digital delivery or adapting delivery and activities undertaken, while attempting to address issues such as digital exclusion through other communication methods (e.g. mass leaflet drops).

New partnerships and knowledge formed through mutual aid groups responding in early stages of the pandemic may be valuable as the pandemic continues but also in future emergencies.

Volunteering structures which incorporate leadership together with information sharing and shared decision-making may be best placed to respond to the wide range of needs that are encountered. Co-ordination and communication with authorities by a community-led infrastructure may help to ensure that the needs of those people within the community not met by standard government services are identified and met.

(Continued)

[1. No protocol/plan; 2. No mention of screening/data extraction details; 5. No excluded studies list; 8. Quality not integrated with findings; 10. No publication bias assessment; 11. no study COI reported].

Funding source:

This work was supported by the UK Research and Innovation/Economic and Social Research Council (grant reference number ES/V005383/1). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

groups meaningfully to form strong coalitions and leadership to enact change.

Recommendations:

Diverse volunteering activities and organisations have been apparent during COVID-19, reflecting existing community support groups adjusting their activities and scope of their activities and the emergence of new groups to meet needs within communities.

Importantly, groups appear to have modified their activities following the first lockdown (earlier section of the research sampling window), with an overall shift from immediate demands towards more structural needs.

Social connections, local knowledge and social trust were key factors associated with volunteering. Volunteers also tended to be of working age, women, highly educated and middle class.

To date community engagement with volunteer groups has been limited but public engagement and community support have been critical during the COVID-19 pandemic and are likely to have a key role in future public emergencies.

People who volunteer tend to show social support and engagement, strong trust in people to follow guidelines and trust in government, as well as social connection.

A promising model includes community champion schemes, where volunteers are provided with the most recent information (including infographics in community languages) on COVID-19 to share with their community, as well as providing feedback from the community to authorities about which communications are effective and which are not.

Authorities consulting with community groups may provide helpful information on current or future priorities and needs within the community, for example, that clear advice is available to communities as they move out of restrictions (lockdown), that inequalities within communities are addressed, and that support for children to return to school or for businesses to reopen is provided.

<p>Mobasseri 2020#</p> <p><u>Citation type:</u></p> <p>SR (scoping)</p> <p><u>Public health measure:</u></p>	<p><u>Overview and aim:</u></p> <p>To review the evidence on issues faced by older people during the COVID-19 pandemic</p>	<p><u>Reported on:</u></p> <p>Six themes identified; those relevant to communication are summarised below.</p> <p><u>Support and information sources:</u></p> <ul style="list-style-type: none"> • Support, such as providing services (e.g. meals, telehealth), 	<p><u>Communication purpose:</u></p> <p>Findings indicate some specific issues for older adults, particularly related to remote-</p>
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Isolation, and also maps onto general PD <u>Mapping to:</u> Adherence <u>Mapping to:</u> Theme 2: recipients of public communication: audience, setting and equity Theme 3: support for individual and population behavioural changes	<p><u>Type of study and data:</u></p> Scoping review; 210 included papers; quantitative and qualitative (included guidelines, reviews, epidemiological research, editorials, brief reports etc.)	<p><u>Inclusion and exclusion criteria:</u></p> Included: all publications on COVID-19 and older adults (research, reports, guidelines, news articles, and scientific material); English language Excluded: non-English language papers Participant features and numbers, sampling details: ‘Older adults’; no further details <p><u>Included disease(s):</u></p> COVID-19 <p><u>Timing:</u></p> Searches for literature January to end July 2020 <p><u>Countries included:</u></p> China, France, US, UK, Italy, Germany, Spain, Australia, Ireland, other. All upper middle- or high-income countries <p><u>Intervention or phenomenon of interest:</u></p> Issues for older people living	educational programmes for older adults may all be important during the pandemic. <ul style="list-style-type: none"> Development of guidelines specific to older adults has also been key to inform decisions around shielding to protect health. <p><u>E-Health services:</u></p> <ul style="list-style-type: none"> Telemedicine services can allow older adults to access healthcare using secure online services and apps, and such services have been introduced in several countries. Social contact may also be delivered via telephone or video call. However, many older people do not have ready access, or know how to use, the Internet or a smartphone (e.g. in the UK, < 50% of people aged 75 years or older have Internet access). Volunteer groups may have a role in supporting older adults to access and use technology. <p><u>Essential supply access:</u></p> <ul style="list-style-type: none"> Access to essential supplies (food, medicines) has been provided to older adults in many countries during the pandemic (e.g. online food ordering, meal delivery, allocated shopping hours for older adults). Many countries have formed volunteer groups to support older adults with out-of-home work (e.g. grocery shopping). <p><u>Physical and mental consequences of self-isolation:</u></p> <ul style="list-style-type: none"> The effects of isolation may be particularly profound for older adults, especially those with an existing mental illness, with increases in several poor outcomes noted. Focused models of care and support may be needed to maintain and improve health and related outcomes in these people. <p><u>Neglect and age discrimination:</u></p> <ul style="list-style-type: none"> During the pandemic, older adults may not have been able to undertake their usual activities, e.g. caring for grandchildren. Negative views and age-related stigma (e.g. vulnerability to COVID-19 because of advanced age) has led to loss of such roles for older people in the public eye. Additionally, openly ageist discourses, such as media coverage about expensive care for older adults that portrays their mortality as less important than that in other age groups, may contribute to anxiety in older age groups. <p><u>Recommendations:</u></p> Older people have a range of needs, issues and challenges associated with living through the pandemic. These may require tailored services, information and support to improve and maintain people’s well-being. The media has a key role in educating the public and preventing age discrimination. Telemedicine may be an effective way to deliver healthcare, but older people need support and information to be able to access health or social care online.	ly accessing health or other services, and so may inform strategies to improve support to these people. <p><u>Related to review questions:</u></p> A range of services, including access to food and essential supplies, is needed to support older adults during isolation required to protect their health during the pandemic. Although remotely delivered health and social care may assist older people to participate in these activities more readily, many do not have ready access to technology or know how to use it. Information and guidance are therefore needed to enable older people to make use of such services.
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(Continued)

through a pandemic

Younger people can support older people in isolation through grocery delivery, helping with everyday tasks and supporting their use of technology, so they can remain socially connected.

Quality assessment:

AMSTAR 4/11:

[1. No protocol/plan; 5. No real features of included studies; 6. Excluded studies listed; 7,8 quality not assessed or integrated into findings; 10. Publication bias not assessed; 11. No COI for included studies]

Funding source:

This study is the part of research project funded by Tabriz University of Medical Sciences (Grant No: 65164) and approved by regional research ethics committee of Tabriz University of Medical

Sciences; Approval ID:

IR.T-BZMED.REC.1398.1278.

Regmi 2021#	<u>Overview and aim:</u>	<u>Reported on:</u>	<u>Communication purpose:</u>
<u>Citation type:</u> SR	Identification of factors associated with implementation of non-pharmaceutical (NPI) measures (physical distancing, isolation, quarantine) for reducing COVID-19 transmission	Identified seven themes on enablers (3 themes) and barriers (4) to NPI measures	Factors (enablers and barriers) may be useful for developing targeted messages and information to target disadvantaged groups, and to consider tailored support for those less likely, or less able, to follow NPI measures.
<u>Public health measure:</u> Isolation, and also maps onto quarantine, crowd avoidance and		No enabling themes related to communication specifically; rather focused on effective NPI elements (e.g. behavioural change following NPI measures)	
general PD		<u>Of barriers identified, two relate to communication:</u>	
<u>Mapping to:</u> [major outcome categories] Acceptability, adherence	<u>Type of study and data:</u> SR; qualitative and quantitative primary research. N = 33 studies included (cross-sectional (26), 4 qualitative, 2	<ul style="list-style-type: none"> Fears and concerns about COVID-19 (12 studies): included uncertainty about the duration of required measures; growing case and mortality numbers; uncertainty about ability to cope with measures in the long term; lack of trust in public health authorities and the government due to lack of clear information on infection and what measures are effective. One study identified a lack of clear information on physical distancing and isolation in particular and a lack of trust in the media/government. Debatable role of mass media (3 studies): Rumours on social, electronic and print media about measures negatively impacted mental health and reduced ability to cope. Despite 	<u>Related to review questions:</u> Clear, reliable information may help to dispel distrust
<u>Mapping to:</u>			

(Continued)

<p>Theme 1: features of public communication: content, timing and duration, and delivery</p> <p>Theme 3: support for individual and population behavioural changes</p> <p>Theme 5: public trust and perceptions</p>	<p>cohort, 1 case-controlled study)</p> <p><u><i>Inclusion and exclusion criteria:</i></u></p> <p>Included: Participants of any age, gender or ethnicity, and health-care workers; NPIs (physical distancing, isolation, quarantine); all effectiveness studies (RCTs, non-RCTs, observational) including pre-prints</p> <p>Excluded: publications lacking primary data</p> <p><u><i>Participant features and numbers, sampling details:</i></u></p> <p>116,897 participants in total</p> <p>Explicitly considered older people (over 70 years) and/or those with comorbidity; as well as those ethnic populations in lower SES groups</p> <p><u><i>Included disease(s):</i></u></p> <p>COVID-19 only</p> <p><u><i>Timing:</i></u></p> <p>Searches December 2019 to March 2021. No further consideration of pandemic timing</p> <p><u><i>Countries included:</i></u></p> <p>17 countries including the UK (5), China (8 including Hong Kong), USA (4), Germany (3), Italy (3), the Netherlands (2), Paraguay, India, Saudi Arabia, Ireland, Tanzania, Singapore, UAE,</p>	<p>many participants being adequately informed about COVID-19 infection, people were still largely influenced by media information.</p> <p><u><i>Further factors affecting adherence (equity implications) (13 studies):</i></u></p> <ul style="list-style-type: none"> • COVID-19 infection associated with people from BAME populations in lower socioeconomic groups, lower economy band employment, comorbidities, exposure risks and older age. • Older people (70+) almost twice as likely as younger (18-24 years) to adhere to NPIs; single people less likely to practice physical distancing. • People from more disadvantaged backgrounds less likely to be able to work from home, or to self-isolate. The most economically disadvantaged were less able to comply with some NPIs, due at last partly to financial needs; a strong association between socioeconomic deprivation and ability to adopt NPIs was noted. <p><u><i>Recommendations:</i></u></p> <p>Research is needed to better understand and promote adoption of specific NPIs within different countries and contexts, and to further consider the many factors that might influence this including sociopolitical, socioeconomic and cultural factors. Improving factual communication about pandemic risks, and understanding the needs and behaviours of individuals and specific populations are important.</p> <ul style="list-style-type: none"> • There is a need to intensify public awareness, and educate both general and specific populations in order to address the lack of knowledge and/or misconceptions about COVID-19. • Authors recommend utilising Internet-based information with social media influencers, and education and counselling strategies to address misconceptions and provide support via different stakeholders (governments, NGOs, charities, national volunteers, community support groups). • Increased media coverage may be helpful in increasing uptake/acceptance of NPIs. • Effectiveness of messaging may be affected by perceived credibility of the source, as well as message content and context. 	<p>of public health authorities and the media, and to support adoption of behaviours needed to enact NPI measures.</p> <p>Provision of tailored support for those at socioeconomic or other disadvantage may also help people to adopt and adhere to measures.</p>
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Nepal, Sudan, Georgia, Bangladesh

Studies across all income brackets (low to high income) but approximately 80% high-income countries

Intervention or phenomenon of interest:

Implementation of specific NPIs, and factors (enablers and barriers) associated with these

Quality assessment:

AMSTAR 7/11:
[5. No excluded studies listed/provided; 8. Quality assessed and reported but not linked to results specifically; 10. Publication bias not assessed; 11. No COI for included studies reported]

Funding source:

This research received no external funding.

Seale 2020#

Citation type:

SR (rapid; not truly systematic)

Public health measure:

Isolation, and also maps onto quarantine, school measures, and work measures

Mapping to: Uptake, acceptability, adherence

Mapping to:

Theme 3:

Overview and aim:

To identify key determinants of community engagement with individual protective behaviours and non-pharmaceutical measures for COVID-19, and their impacts on individuals, and to identify behaviour change interventions to promote and support community participation in required measures

Type of study and data:

Reported on:

[N.B. results related to personal protective measures not extracted – outside review scope]

Isolation and quarantine:

- Several factors linked to quarantine adherence; educational level, others' behaviours, family needs, work and financial commitments; female gender and married status more likely to adhere, younger age groups less likely.
- Attitudinal factors also influence quarantine adherence; perceived susceptibility or proportionality, perceived efficacy of measures and trust in authorities are all associated with adherence.
- A major concern is impacts on employment (job security) and income across all income brackets, but particularly concerning to those earning lower incomes, people not paid for time away from work or unable to work from home, and for those living in urban areas, aged 18-30 years, or with a high school educational level.

Communication purpose:

Findings may inform development of communication messages for communities and individuals who are being asked to adhere to NPI measures such as isolation, quarantine and school closures. They may also inform development of tailored communication messages to particular groups within communities, such as those less likely to ad-

(Continued)

support for individual and population behavioural changes	Rapid SR; qualitative and quantitative studies; 53 included	<ul style="list-style-type: none"> Concerns also present related to access to essential services (food, healthcare, accessing doctors for evidence of sick leave) unless social and material support were provided; ability to comply with quarantine orders in larger households (more than parents and their children) with limited space (such as in Australian Aboriginal communities), and ability to attend important gatherings (e.g. funerals, caring for sick family or community members). Importance of proportionality of restrictive measures to the public's perceived risk to foster adherence. Negative effects of quarantine and isolation exist (e.g. stigma, fear, loneliness); these are worsened by inadequate supplies, fear of infection, and inadequate information and communication. 	here to measures, or those with lower health literacy levels.
Theme 6: school measures	<p><u><i>Inclusion and exclusion criteria:</i></u></p> <p>Included: Community settings (general population, non-healthcare); English language; published, peer-reviewed research; COVID-19, SARS, MERS, H1N1, influenza A, hypothetical pandemics; personal protective and environmental measures (data not extracted) and NPI measures (isolation and quarantine, school and workplace measures, crowd avoidance)</p> <p><u><i>Participant features and numbers, sampling details:</i></u></p> <p>Not reported across included studies; specific examples cited related to described results</p> <p><u><i>Included disease(s):</i></u></p> <p>COVID-19, SARS, MERS, H1N1, influenza A, hypothetical pandemics</p> <p><u><i>Timing:</i></u></p> <p>Searches January to March 2020 (early in pandemic). No specific time-related factors highlighted. COVID-19 studies published as of July 2020 were included.</p> <p><u><i>Countries included:</i></u></p> <p>Not clear for study set as a whole; NPI measure stud-</p>	<p><u><i>Recommendations:</i></u></p> <p>NPI measures need to be introduced with practical supports (e.g. financial support, communication systems for contact while in isolation/quarantine). Information to support the measures needs to consider health literacy levels; be written in clear lay language including acknowledgement of the difficulties of adhering as well as information on the impact of measures and how to address or reduce negative impacts.</p> <p><u><i>School measures:</i></u></p> <ul style="list-style-type: none"> Parents may be unwilling or unmotivated to adhere to school measures if they do not: understand the reasons for the measures or what is required, believe the closure will have any impact or benefit to the community, or feel that their children are at risk (i.e. low perceived risk). Misunderstanding of term "school closure" was associated with "permitting out-of-home activities" i.e. school measure success may be undermined by compensatory contact between children out of school. Communication to the community is needed to support school closures (e.g. sports clubs). Students may not understand advice to avoid contact is to prevent themselves from infecting others. Financial burden on families due to increased childcare and/or work absence during school closures affects adherence but varies across studies. This may be particularly important for those unable to work at home and for single-parent households. Families may need assistance with caring for children during closures or leave children to self-care (with attendant risks). Children in self-care may be more likely to engage in compensatory behaviours. Negative closure effects (particularly longer duration) include those on nutrition (unable to access school nutrition programmes) and disrupted learning. The latter may be mitigated by remote learning, but inequalities may be heightened (e.g. children from lower SES backgrounds may not have ready access to computers/Internet/adults to assist with learning). Conflicting/insufficient information to support parents to home-school children may compound negative effects. <p><u><i>Communication themes:</i></u></p> <ul style="list-style-type: none"> NPI strategies should be proportional to the risk, clearly and 	<p><u><i>Related to review questions:</i></u></p> <p>Clear, consistent communication and information about NPIs are needed to support people's adherence to the required measures.</p> <p>NPI strategies should be proportional to the risk, and communications accompanied by reciprocal support (e.g. social and financial supports) for those adhering to the measures.</p> <p>A clear rationale for the measures needs to be widely communicated so that people accurately understand the risks, and should be accompanied by clear, actionable and consistent information about what people need to do to protect their health.</p> <p>Involving communities in developing and delivering messages to support the required behaviour changes may build trust and improve adherence.</p> <p>Communication and information provision should be tailored to local communities and groups within communities, such as those who are less likely to adhere, and use a range of media (e.g. social</p>

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ies mentioned Australia (Aboriginal communities), Canada, New Zealand, Japan, The Netherlands, USA, Taiwan, Liberia.

All high income except Taiwan (upper middle-income) and Liberia (low-income)

Intervention or phenomenon of interest:

Community engagement with NPI measures, and effects upon behaviours such as adherence to measures

Quality assessment:

3/11
 [1. No protocol; 4. Only published literature considered; 5.6 no list or complete characteristics of included studies; 7. No quality assessment or 8. Use in formulating results; 10. Publication bias not assessed; 11. COI for included studies missing]

Funding source:

There was no funding associated with this study.

panied by reciprocal support for those adhering to the measures.

- Low community levels of knowledge of measures or rationale for their use, of how to undertake the measures, or exposure to conflicting information all negatively influence adherence.
- Communications that emphasise benefits to the community of adhering to measures, reinforce related social norms and that adherence is the socially responsible action to take, may be beneficial.
- Use a range of media (e.g. social media, posters) to impart information; consider tailored messages to those who are less likely to adhere (e.g. younger men); and targeting different health literacy levels.

Recommendations:

A key focus needs to be community participation and co-design of communication messages, materials and delivery of these (outreach) to support community behaviour change (adherence).

Clear, consistent information about measures, including rationale for their use and practical 'how to' information (what can and cannot be done; who, what, when and where), as well as emphasising benefits of adherence, is critical as NPIs are introduced and implemented.

Reciprocal support (social, healthcare, financial supports) is needed alongside communications to promote adherence.

Communications need to be tailored to the community, including to lower health literacy levels, and/or to those less likely to adhere to measures.

Involving community leaders in communicating key messages may help to build trust and move the community towards action.

media, posters) to optimise reach.

WHO 2020c#

At:

COVID-19 Global Risk Communication and Community Engagement Strategy – interim guidance (who.int)

Interim guidance December 2020

Overview and aim:

To describe components of revised risk communication and community engagement framework and guidance in the context of the ongoing COVID-19 pandemic

Reported on:

Extracted data focuses on RCCE strategy components and purposes related most closely to PD measures for COVID-19 prevention and control. Revised RCCE strategy reflects shift from directive, one-way communication to community engagement and participatory approaches that have been successful in control and elimination of past disease outbreaks. The overall goal is to promote person-centred, community-led approaches in order to increase trust and social cohesion, and to decrease negative impacts of COVID-19.

Communication purpose:

Findings may inform effective communication and engagement strategies and processes to address both existing and emerging issues (e.g. pandemic fatigue, eco-

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<p><u>Citation type:</u></p> <p>GL</p> <p><u>Public health measure:</u></p> <p>Isolation, and also maps onto</p> <p>crowd avoidance, and general PD</p> <p><u>Mapping to:</u> Uptake, acceptability, adherence</p> <p><u>Mapping to:</u></p> <p>Theme 1:</p> <p>features of public communication: content, timing and duration, and delivery</p> <p>Theme 2: recipients of public communication: audience, setting and equity</p> <p>Theme 4: community engagement to support communication</p> <p>Theme 5:</p> <p>public trust and perceptions</p>	<p><u>Type of study and data:</u></p> <p>GL: based on series of stakeholder consultations and underpinned by meta-analysis of 9 databases</p> <p><u>Included disease(s):</u></p> <p>COVID-19</p> <p><u>Timing:</u></p> <p>Nonspecific</p> <p><u>Countries included:</u></p> <p>WHO; international</p> <p><u>Intervention or phenomenon of interest:</u></p> <p>Risk communication and community engagement elements as key to pandemic PH responses</p> <p><u>Quality assessment:</u></p> <p>AGREE II: scope and purpose 52.8%; stakeholder involvement 44.44%; rigour of development 24.0%; clarity of presentation 58.33%; applicability 29.17%; editorial independence 33.3%</p> <p><u>Funding source:</u></p> <p>The RCCE Collective Service is a collaborative partnership between RCCE practitioners, convened by IFRC, WHO and UNICEF, with support from the Global Outbreak Alert and Response Network (GOARN), and key stakeholders from the public health</p>	<p>Generally, data show that people know about COVID-19 and the preventive measures needed to protect themselves, but risk perceptions are falling and complacency growing alongside increasing pandemic fatigue and uncertainty and falling confidence in ability to control the pandemic.</p> <p>Uptake of protective behaviours and adherence to measures will continue to be critical to controlling COVID-19 even with effective vaccines and treatment; therefore strengthened RCCE will be critical to improve knowledge, acceptance and uptake of measures. Community engagement is key to understanding local contexts and ensuring an informed, appropriate (person-centred) response, without which misinformation, confusion and mistrust can undermine public health efforts.</p> <p>Pandemic fatigue is growing and is likely to lead to fewer people being motivated to follow recommended preventive behaviours, and can be influenced by several factors including: lowered disease risk perceptions, increased socioeconomic and psychological impacts of the pandemic and restrictions, stress of uncertainty, becoming used to living in a pandemic situation and decreased trust in authorities.</p> <p>Importance of engaging stakeholders to design and implement communication strategies is emphasised, alongside mechanisms for feedback from stakeholders (which underpins effective two-way communication and engagement).</p> <p><i>Meta-analysis of multiple datasets identified the following related to communication and physical distancing measures:</i></p> <ul style="list-style-type: none"> • Basic knowledge about COVID-19 is good and improving (e.g. knowledge about symptoms), but risk perceptions of COVID-19 as a disease are falling (e.g. believing the pandemic over, or that others in community are more likely to contract the disease). Lower knowledge levels are associated with lower adherence to measures, but factors affecting knowledge vary across countries and regions. • Globally most (68%) people trust information from doctors/scientists, 56% from WHO. Trust is a key determinant of behaviour; with variability in trust of politicians (possibly due to historical or structural factors, lack of transparency). • Channels of information provision should be contextually appropriate; and high exposure to a particular information channel does not necessarily correspond with high levels of trust of information received via the channel, e.g. while use of online sources is growing, trust in those channels is typically low. • Self-efficacy (confidence) in ability to prevent COVID-19 is low (50% or lower). In countries with lower self-efficacy levels, people are less likely to practice preventive measures. Additionally, people are more willing to act to prevent disease if included in decision-making processes related to the COVID-19 response. • Worsening inequalities, with the pandemic affecting the poorest and most vulnerable disproportionately. • Stigma and discrimination leading to marginalisation of minority or foreign population groups, which can slow or prevent efforts to prevent spread of COVID-19. Engaging with affected communities is imperative so that they can lead and deliver local responses wherever possible. 	<p>conomic and social pressures) experienced by people across the world that can impact on uptake and adherence to PHSMs to prevent and control COVID-19.</p> <p><u>Related to review questions:</u></p> <p>Many factors affect adherence to physical distancing measures. Some are structural or practical; others reflect sociocultural factors within local communities and populations. Community engagement and clear communication and information may assist with addressing some of the identified barriers to adherence to measures.</p>
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and humanitarian
sectors

- Adherence to personal preventive measures (e.g. keeping physically distant) is generally high, although physical distancing is generally adhered to less often than other measures such as handwashing. Adherence is also lower for those measures that restrict economic activities, and food insecurity risk and income loss can affect adherence.
- Measures that limit public gatherings show limited adherence, and this is influenced by traditions, sociocultural norms and need for social interactions.
- Physical distancing uptake and adherence is influenced by structural factors (e.g. social context, personal circumstances) as well as people's access to space. Perceived norms are an important factor but vary across countries, as are other factors such as carer responsibilities (e.g. lower levels of distancing because of need to care for others outside the home).
- Physical distancing measures are also determined by personal characteristics such as socioeconomic status and gender (e.g. men tend to leave the house to socialise more often than women, risk may be more common in those with fewer resources).
- Adherence to self-isolation measures is lower than for other personal preventive measures. There is confusion about the terminology (isolation, quarantine, shielding) that needs to be clarified globally.
- Informal mechanisms predominate where support for vulnerable people shielding is needed e.g. in LMIC, families and households take on primary responsibility for care of the vulnerable; these can be extended by kinship and mutual aid groups within communities. Voluntary shielding approaches appear more effective than mandated. Economic impact on households (e.g. loss of livelihood, unpaid caregiving by household member) can be a barrier to shielding the most vulnerable.
- Acceptability of PHSMs is generally high globally, but pandemic fatigue and/or loss of trust in authorities or governments can become a barrier to supporting the measures or lead to protests and disruption to civil society.
- There are secondary health impacts of the pandemic which are identified globally e.g. difficulties in access and/or timeliness of care for non-COVID-19 illnesses.

Objectives of RCCE include:

- Community-led: with communities assessing own needs and participating in planning, design, implementation, monitoring, and evaluation of local COVID-19 responses. Strategies to achieve this include provision of guidance and tools for best-practice community engagement; develop strategies to address stigma/discrimination, pandemic fatigue and to build trust; coordinate efforts to manage the infodemic and build health and digital literacy; balance digital and in-person engagement to ensure vulnerable people are not left behind.
- Reinforce capacity and local solutions to control the pandemic and mitigate impacts through mentoring, technical support and resource sharing with local groups. Local expertise should be explicitly recognised and should be central to community engagement efforts (building on existing relationships and established trust). Aspects to consider include: the required skills needed in different contexts should be identified and include participatory approaches, facilitation and

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co-ordination and data collection/analysis; requirements for technical support and capacity building; opportunities and requirements for training, training resources (adaptable to language, format, accessibility); strengthen capacity for local and national media to identify and address misinformation.

- Work collaboratively: via strengthening of co-ordination at different levels and promoting partnerships with local groups (community-based organisations, local governments, communities themselves) to identify localised community-centred responses. Strategies to achieve this include convening multi-stakeholder groups to broker partnerships and coordinate RCCE; identifying organisations involved in engaging communities and particularly vulnerable groups; integrate RCCE into all response efforts for COVID-19 to ensure coverage and prevent duplication of effort, and to promote sharing of resources, evidence and expertise.

RCCE efforts need to prioritise the most medically or socially vulnerable, with many different groups identified, including:

- Older people (> 60 years): who may be unable to access adequate information and health services; need support of caregivers; not understand public health information; have difficulty physically distancing (e.g. assisted living facilities).
- People with pre-existing medical conditions: who may not have access to information about why they are at heightened risk.
- Children/young people: may not have access to information or understand required behaviours and may be amongst the most affected by preventive measures (e.g. school closures).
- Ethnic/monitory populations: may not have ready access to information in own language, or face stigma/discrimination in healthcare settings.
- Disadvantaged populations (e.g. gender-based violence survivors, homeless, mental health conditions, sexual and gender minorities, women and girls): who may face disruption of services/support; isolation; lack of understanding of information on preventive measures; exclusion from decision-making; restricted access to information due to limited education and language-learning opportunities.
- People deprived of their liberty (e.g. prison, detention centres): may have limited information or opportunities to ask questions and lack trust of facility staff and information.
- People living within humanitarian crises (e.g. refugee camps): access to essentials (e.g. shelter, food, protective supplies) may be disrupted; and timely and accurate information may be lacking due to isolation or language barriers.
- People living in overcrowded spaces (e.g. slums, dormitories, urban poor): physical distancing may be difficult with overcrowding/movement of people between dwellings; may be higher levels of distrust of government; lower levels of education and health literacy, all of which may impede access/understanding of public health information and required measures.
- People with disabilities: amongst the most marginalised (i.e. live in poverty, higher rates of violence, neglect and abuse); excluded from decision-making; unequal access to information or available services (particularly those with specific communication needs).

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- People working in confined conditions (e.g. factories, abattoirs, meat-packing plants) or informal economy: may be unable to follow physical distancing measures and/or measures may be poorly regulated. Public health information may not be readily available.
- Refugees and migrants: may face legal hurdles, discrimination and language barriers which prevent understanding of public health information; may not be included in national response plans; and may be difficult to reach (i.e. mobility which may include cross-border movements).

Major themes anticipated in immediate-to-medium term future (with relevance to communication for physical distancing measures):

- Uncertainty will continue: clear, consistent public health communication that acknowledges this can help to mitigate the impact of uncertainty (and does not undermine trust).
- Building and maintaining community trust is essential; it is built from sustained community engagement that is evidence-based, communicated via trusted sources, and responsive to community feedback but requires structures and processes (e.g. participatory governance, mechanisms to involve communities in policy and intervention design) in place.
- Community engagement to overcome politicisation of the pandemic response (e.g. conflicting messages from leaders); and community engagement to answer questions and provide clear, accessible information from trusted sources in community languages, via a range of channels preferred by the community. Effectively engaging communities can also help to prevent and stop stigma and discrimination.
- Economic pressures will continue to grow, forcing people to take greater risks, such as having to decide between following PHSMs and earning enough money to survive. Effective RCCE can help to engage those who are economically vulnerable and provide opportunities for them to identify locally appropriate responses that reflect their economic and social needs.

Recommendations:

Global trends in knowledge, perceptions, fatigue and related factors (e.g. economic impacts) indicate that effects of the pandemic are many and complex and make effective communication to increase PHSMs uptake challenging.

RCCE and community engagement are key to promoting PHSMs and to addressing problems evident across communities and populations worldwide. At its heart, this should engage communities in two-way dialogue to support locally appropriate processes, interventions and mechanisms to support and sustain implementation of required PHSMs. This should include deliberate consideration and engagement with those who are vulnerable (of which there are many) and work to ensure that engagement is representative of local communities.

Co-ordinated efforts to tackle misinformation will be critical, as this can lead to poor adherence to public health advice (as well as increase stigma and adversely affect health), which limits the effectiveness of the measures in countries' pandemic responses.

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Pandemic fatigue will increase with the continuation of the pandemic, and better understanding is needed of the effects of this, e.g. people's efforts to follow preventive measures may fall, their efforts to stay informed may also fall. Identifying and creating ways to engage and motivate people by partnering with local groups and leaders may help to improve motivation and therefore adherence to measures.

Primary studies

<p>Burnet 2020a#</p> <p>(primary)</p> <p><u>Mapping to:</u> Adherence, also to acceptability</p> <p>Also relevant to public health measures 3 (quarantine) and 6 (crowd avoidance)</p>	<p><u>Overview and aim:</u></p> <p>Exploration of Australians' experiences of self-isolation/quarantine and barriers and enablers to successful self-isolation/quarantine</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: Adults (20 to 73 years), self-isolating (or have done so) in Australia after being instructed to by a health or government authority</p> <p><u>Types of study and data:</u></p> <p>Primary qualitative study</p> <p><u>Countries included:</u>Australia</p> <p><u>Quality assessment:</u></p> <p>6/10 CASP score (recruitment strategy not reported; no referral to researcher/participant relationship; ethics approval not reported; no primary quotations used, analysis method not stated, coding framework not included)</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • Communication • Service provision (basic services, mental health crisis, financial support). <p><u>Communication:</u></p> <ul style="list-style-type: none"> • Socially isolating participants were highly motivated to 'do the right thing' but were uncertain about what to do to comply with self-isolation/quarantine measures requested. Provided information was inadequate (confusing, unclear, contradictory), with confusion about physical distancing requirements compared with self-isolation. This may lead to non-compliance with measures. • People in home-based quarantine are turning away from government announcements as they perceive them as incomplete (not presenting evidence/whole story), impractical or unhelpful, inadequate (lacking hard and fast rules) and having a finger pointing/shaming tone (and people have a lack of support). • People perceive government inaction as de-motivating when self-isolating, and they don't see an adequate government response on a population level. People felt their isolation was not contributing to reducing transmission because of government inaction and lack of support. <p><u>Service provision/support:</u></p> <ul style="list-style-type: none"> • Participants reported limited support or follow-up contact by government to determine whether they were self-isolating and whether they required support to do so. • Ensure people have access to basic services (including food, medication, activities) to support their period of isolation. Most participants relied on family and friends, with little support from services, which can make people vulnerable and decrease compliance to the required measures. • Expanded mental health services during home-based quarantine are needed, as people are at higher risk of new or recurring problems, exacerbated by the population's uncertainty about the pandemic and response to the pandemic. Participants indicated they needed immediate support but did not know how to access channels of support. • For many people, job security has been lost during home-based quarantine, and this will increase over time. Difficulties accessing financial support while in isolation causes distress and non-compliance with required measures and may lead to people taking additional risks once quarantine is completed in order to survive financially (e.g. continuing to work in close 	<p><u>Communication purpose:</u></p> <p>This may inform communication with individuals who have been asked to self-isolate or are in quarantine to adhere to health or government authority requirements. These findings may also inform communication with communities about preparing for, or complying with, isolation or quarantine.</p> <p><u>Related to review questions:</u></p> <p>Findings show that individuals' perceptions and experiences of self-isolation and quarantine are affected by their access to clear information. Lack of information, contradictory/confusing information or difficult-to-find information about what people can and cannot do while in isolation/quarantine was related to non-adherence.</p> <p>Access to basic services for those in isolation/quarantine must be assured, and information about these services commu-</p>
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contact with people despite lack of physical distancing measures).

Recommendations:

Enhance immediate and ongoing communications to promote better knowledge about required self-isolation/quarantine measures, including information to make the distinction between these measures and physical distancing measures clear. Create and disseminate consistent central information using lay language and incorporating practical information about initiation of measures, compliance, and services available to support the measures (including mental health services).

Develop better ongoing support to enable people to be as compliant in home-based and community-based quarantine as possible, while reducing long-term physical and mental health effects. This includes easily accessed food, medication, mental health services and financial support. This will be particularly important for those who are in home-based quarantine without all the immediate government supports. Communicate the availability of these support services widely.

Communicate about home and community-based quarantine in a supportive, 'no blame' manner.

nicated widely, including about mental health services and financial support, and how to access these services.

<p>Burnet 2020#</p> <p>(primary)</p> <p><u>Mapping to:</u> Adherence (primary) but may also map to acceptability</p> <p>Also relevant to public health measures 3 (quarantine) and 6 (crowd avoidance)</p>	<p><u>Outcomes and aim:</u></p> <p>Exploration of Australians' experiences of self-isolation/quarantine and barriers and enablers to successful self-isolation/quarantine</p> <p><u>Intervention or phenomenon of interest:</u></p> <p>Adults (18 to 73 years), self-isolating (or have done so) in Australia after being instructed to by a health or government authority</p> <p><u>Types of study and data:</u></p> <p>Primary qualitative study</p> <p><u>Countries included:</u></p> <p>Australia</p> <p><u>Quality assessment:</u></p> <p>6/10 CASP score (recruitment strategy not reported;</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • Communication • Access to information • Service provision • Preparedness <p>Findings reported here focus on social distancing measures and communication.</p> <p><u>Communication and information access:</u></p> <p>Fear and a lack of clear advice is driving symptomatic (COVID-19) people to travel back to Australia without reporting symptoms, as they do not trust they will be supported to return home, and they do not understand Australian government policy.</p> <ul style="list-style-type: none"> • Community-level plain language information must be communicated about transmission risks in those transitioning from quarantine to physical distancing and aiming to reduce stigma (rights and responsibilities assured) in order that people can safely transition out of quarantine and physical distancing restrictions. Information materials may include discussion scripts (e.g. for employers, colleagues, family). Community-level stigma based on fear of disease transmission may inhibit contact tracing and testing, so reducing effectiveness of public health measures. <p><u>Service provision:</u></p> <ul style="list-style-type: none"> • Families and pregnant women tested for COVID-19 reported not receiving mental health assessments and support despite the presence of pre-existing and acute mental health issues, running the risk of exacerbation of current illness or new pathology. 	<p><u>Communication purpose:</u></p> <p>This may inform communication with individuals who have been asked to self-isolate or are in quarantine to adhere to health or government authority requirements and also clarify transmission risks once quarantine is complete. These findings may also inform communication with communities about preparing for, or complying with, isolation or quarantine and also transmission risks once recovered from COVID to reduce stigma.</p> <p><u>Related to review questions:</u></p> <p>Better communication and information about home-based quarantine,</p>
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no referral to researcher/participant relationship; ethics approval not reported; some primary quotations used but analysis method not stated, coding framework not included)

- Assure people they will receive appropriate support, including food provision, maternal and child checks and mental health services.

Recommendations:

Key recommendations to improve compliance with quarantine and reduce negative population-wide health effects include:

- Improved communication and information about home-based quarantine, including practical information, such as FAQ to support decision-making and service provision.
- Develop and communicate officially the range of specific support services available to people in quarantine, e.g. how to access food and medication, financial supports, and mental health services.
- Acknowledge the difficulties of quarantine by providing moral support to individuals undergoing home-based quarantine and supporting them to complete quarantine.
- Encourage and support people (through information) to develop quarantine plans ahead of time.

including practical information, are needed to support people's adherence to required measures.

Access to support services for those in self-isolation/quarantine must be assured, and information about these services communicated clearly, including mental health services, maternal and child checks and financial support, and how to access these services.

Community-level plain language information must be communicated about transmission risks in those transitioning from quarantine to physical distancing and aiming to reduce stigma so that people can safely transition out of quarantine. People with COVID experience stigma due to fear of community transmission and which may potentially negatively impact testing and contact tracing, so threatening the effectiveness of public health measures.

Farooq 2020#	<u>Outcomes and aims:</u>	<u>Reported on:</u>	<u>Communication purpose:</u>
(primary) <u>Mapping to:</u> Uptake Also relevant to general PD measures, particularly crowd avoidance	Investigates the impact of cyberchondria (continuous impulses to go online and read about concerning health topic) and information overload on voluntary self-isolation intention	<ul style="list-style-type: none"> • Cyberchondria and information overload affected individuals' threat and coping perceptions, and through them, self-isolation intention. • Perceived severity and self-efficacy positively influenced intentions to self-isolate, whereas response cost had a negative effect. • Cyberchondria increases threat appraisals through perceived severity and vulnerability. Perceived severity in turn is related to increased self-isolation intention, but perceived vulnerability is not. 	Findings may be useful for enabling communication; facilitating decision-making and supporting individuals' behaviour change in relation to uptake of phys-

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Intervention or phenomenon of interest:

Study develops and tests a model based on protection-motivation theory to identify whether intermediate constructs (related to threat appraisal and coping appraisal) are impacted by cyberchondria or information overload and then influence self-isolation intention.

Inclusion and exclusion criteria:

Included: Students, faculty, and employees of a university

Type of study and data: Questionnaire-based survey; 225 respondents; (March 19, 2020) using online survey tool Webropol. Descriptive statistics for all survey measures

Countries included:

Finland

Quality assessment:

Response rate: +

representativeness: +

COI: authors declared no COI exists; participants were geographically (Finland) and socially limited (students/staff of a university); pre-print paper (not peer-reviewed)

- Information overload reduces coping appraisal (assessed via self-efficacy) and increases coping appraisal (assessed via perceived response cost). In turn, self-efficacy increases self-isolation intention whereas perceived response cost reduces self-isolation intention.
- Social media as the primary information source increases both cyberchondria and information overload compared to other sources.

Recommendations:

Generally, cyberchondria and information overload are regarded as negative consequences of online information, however, during the COVID-19 pandemic, they may indirectly contribute to self-isolation intention.

Sourcing information primarily from social media increases both cyberchondria and information overload.

Recommended personalising communication by providing:

- 1) reassuring/hopeful messages targeting individuals experiencing cyberchondria;
- 2) communication aiming to increase perceived severity of the situation targeting those with no intention to self-isolate;
- 3) clearly structured communication using reliable health information targeting those experiencing information overload.

ical distancing behaviours (intention to adopt self-isolation).

Related to review questions:

Findings link information provision (cyberchondria and information overload) to perceived threat and appraisal of coping and through them, influences intention to self-isolate. Findings suggest that clear, tailored communication targeting particular groups may help to counteract some of these effects, particularly associated with social media as the primary information source, and so positively influence intention to self-isolate.

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<p>Qazi 2020#</p> <p>(primary)</p> <p><u>Mapping to:</u> Uptake</p> <p>Focused on general PD measures particularly crowd avoidance</p>	<p><u>Outcomes and aim:</u></p> <p>Effects of formal and informal information sources on situational awareness (perceived public understanding) to predict adoption of PD measures during COVID-19</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> Formal information sources included newspapers, press releases, educational messages, while informal sources included social media, online reviews and family or peer views. Both formal and informal information sources affected perceived understanding. Perceived understanding in turn is related to physical distancing behaviour adoption. 	<p><u>Communication purpose:</u></p> <p>This may guide communication with communities to prevent transmission through adoption of public health measures (physical distancing).</p>
	<p><u>Inclusion and exclusion criteria:</u></p>	<p><u>Recommendations:</u></p> <p>Formal and informal information sources influence public situational awareness. This in turn increases adoption of preventive behaviours (physical distancing).</p>	<p><u>Related to review questions:</u></p>
	<p>Included: Adults 18 years and older</p>	<p>Formal sources are associated with greater compliance with physical distancing measures; informal sources may not be influential until preventive behaviours have been adopted by the community.</p>	<p>Findings link information provision through informal and formal routes to changes in perceived understanding, and with adoption of physical distancing measures.</p>
	<p><u>Type of study and data:</u> Questionnaire-based survey; 210 responses. Formal information sources (e.g. newspapers, press releases, educational messages) and informal sources (social media, peer and family views)</p>		
	<p><u>Countries included:</u></p> <p>Unclear, likely Pakistan</p>		
	<p><u>Included disease(s):</u></p> <p>Specific to COVID-19 but based on same theory used for SARS outbreak analysis</p>		
	<p><u>Quality assessment:</u></p> <p>Response rate: +</p> <p>representativeness: +</p> <p>authors declare no COI; people with lower computer skills/access under-represented; paper published (peer reviewed)</p>		

COVID-19-specific study

Abbreviations:

AGREE II: Appraisal of Guidelines for Research & Evaluation II tool
 AMSTAR: A Measurement Tool to Assess Systematic Reviews
 BAME: Black, Asian and minority ethnic
 COI: conflict of interest
 ECDC: European Centre for Disease Prevention and Control
 EEA: European Economic Area
 EU: European Union
 EVD: Ebola virus disease
 FAQ: frequently asked questions
 GL: guideline
 GOARN: Global Outbreak Alert and Response Network
 H1N1: H1N1 influenza strain
 IFRC: International Federation of Red Cross and Red Crescent Societies
 LMIC: low and middle income country
 MERS: Middle Eastern respiratory syndrome
 NGO: non-government organisation
 NPI: non-pharmaceutical intervention
 PD: physical distancing
 PH: public health
 PHSM: public health and social measures
 PPE: personal protective equipment
 RCCE: risk communication and community engagement
 RCT: randomised controlled trial
 SARS: Severe Acute Respiratory Syndrome
 SES: socioeconomic status
 SIM: subscriber identity module
 SMS: short message/ messaging service
 SR: systematic review
 UAE: United Arab Emirates
 UNICEF: United Nations International Children's Emergency Fund
 WHO: World Health Organization

Table c: Quarantine

Public health measure 3: Quarantine	Study features	Outcomes and findings	Translational steps
Systematic reviews, guidelines			
Brooks 2020^{*,^} (rapid review) <u>Mapping to:</u> Acceptability, feasibility and related factors	<u>Outcomes and aim:</u> Psychological impact of quarantine and mitigation <u>Inclusion and exclusion criteria:</u> Included: participants entering quarantine of at least 24 hours, outside hospital setting <u>Types of study and data:</u> Rapid SR; 24 included studies. Surveys (cross-sectional, longitudinal, other), ob-	<u>Reported on:</u> <ul style="list-style-type: none"> Psychological effects of quarantine (health workers, patients (adult and child)) appear substantial and varied, including symptoms of depression, anxiety, PTSD; and may be long-lived in some. Stressors during quarantine included duration (longer quarantine periods (10 days+) associated with poorer mental health outcomes); fears of infection (particularly in pregnant women or those with young children); frustration, isolation and boredom; inadequate supplies (e.g. food, water, shelter; also regular prescriptions); and inadequate information, such as insufficient or conflicting information about guidelines or quarantine purpose, risk levels, severity of outbreak. Numerous stressors post-quarantine were reported, including financial losses (related to poor psychological outcomes and socioeconomic distress) and stigma (for 	<u>Communication purpose:</u> Factors identified here may inform strategies for communicating with and supporting people in quarantine/self-isolation, in particular to identify information required and channels of communication that may best support people in order to minimise psychological im-

(Continued)

servations; focus groups and interviews

Included disease(s):

SARS (14 studies), EVD (5), H1N1 (2), MERS (2), equine influenza (1)

Countries included:

Taiwan (2), Canada (8), Australia (2), Liberia (2), South Korea (2), China (4), Canada and USA (1), Sierra Leone, Senegal, Hong Kong

Quality assessment:

4/9 AMSTAR rating%

Funding source:

The research was funded by the National Institute for Health Research (NIHR) Health Protection Research Unit in Emergency Preparedness and Response at King's College London, in partnership with Public Health England, and in collaboration with the University of East Anglia and Newcastle University.

both patients and healthcare workers, and in some cases particularly for minority groups within communities).

- Findings on factors (pre-quarantine) predicting psychological impact were mixed.

Recommendations:

Quarantine people for the shortest possible time (based on scientific evidence of incubation times, rather than indefinitely).

Provide information (rationale and guidelines for quarantine – what is happening, and why) through clear, consistent communication.

Provide adequate supplies, both general and medical.

Reduce boredom by providing meaningful activities and ensuring communication with social networks (including support lines).

Provide clear lines of communication for those in quarantine, should they develop symptoms (e.g. phone line/on-line service staffed by health professionals).

Consider health professionals as special cases, needing support from both immediate colleagues and organisationally.

Public health messages should reinforce the protective, altruistic choice of quarantine/self-isolation.

pects of quarantine.

Related to review questions:

Findings suggest that lack of information, communication and support may have negative psychological effects that influence acceptability and related factors.

Gomez-Duran 2020#^

Citation type:

SR (rapid)

Public health measure:

Quarantine

Mapping to:

Acceptability

Mapping to:

Theme 3:

support for individual and population behavioural changes

Overview and aim:

To investigate the psychological effects of quarantine on healthcare workers (HCWs) in order to better understand the needs and concerns of this group

Type of study and data:

SR; N = 12 studies; qualitative (3 studies) and quantitative (7 cross-sectional, 1 observational, 1 prospective). 10/12 related to SARS outbreak, 2/12 EVD

Inclusion and exclusion criteria:

Included: primary research on HCWs in quar-

Reported on:

Mental health issues:

- Compared to those not in front line roles, lower mental health functioning was reported after front-line care and after off-duty quarantine shifts.
- In one study, altruistic acceptance of risk was negatively related to post-traumatic stress symptoms.
- Quarantine associated with acute stress disorder and with reports of exhaustion, detachment, anxiety, fear of infecting family and stigma from the community due to hospital work.
- Cross-sectional studies reported psychological symptoms (including depressive symptoms) 3 years after the SARS outbreak, and this was associated with having been quarantined (i.e. quarantined HCWs represented 19% of the overall sample but 60% of those identified as severely depressed; and those severely depressed were more likely to also be suffering PTSD symptoms and to show signs of alcohol abuse or dependency).
- Other psychological impacts reported include a correlation between quarantine time and emotional exhaustion, avoidance behaviours and anger; with short-

Communication purpose:

Findings may be useful in developing public communication strategies to convey accurate information about quarantine and associated risks. Findings may also inform communication strategies for HCWs in quarantine and help to identify better mechanisms of support.

Related to review questions:

High levels of distress, fear of infection and poor

(Continued)

Theme 6: distancing measures in schools and workplaces

antine; report mental health/psychological outcomes related to quarantine; published in peer-reviewed journal. No timing or language restrictions

Excluded: not primary research, HCWs in quarantine or psychological outcomes

Participant features and numbers, sampling details:

Sample sizes ranged from 10 to approximately 270 HCWs, often as part of larger sample. Few details of professional role or demographics.

Quarantine duration 10 days to 3 weeks

Included disease(s): Outbreaks prior to COVID-19 (included: SARS and EVD)

Timing:

Search for evidence April 2020

Countries included:

Canada (5 studies), China (3), Taiwan (2), Senegal (1), Sweden (1)

Most (8/12) studies in high-income brackets; also middle income (upper-middle China lower-middle Senegal)

Intervention or phenomenon of interest:

Psychological impact of quarantine in HCWs, potential needs and concerns

Quality assessment:

AMSTAR 5/11

[1. No protocol; 4. Published papers only; 5. No excluded studies list provided; 8. Quality as-

essment associated with a lower level of avoidance behaviours.

- Surveys of HCWs in quarantine indicated high levels of distress; and that following quarantine were more likely to suffer negative consequences such as stigma, avoidant behaviour from others in the community, and greater income losses.

Emotional responses:

- During early days of quarantine, both general public members and HCWs feared being infected, and this was heightened if they experienced symptoms potentially related to infection.
- HCWs reported fears about becoming infected and fear of infecting others, with their dual roles (HCW, family member) creating internal conflict and leading to guilt, fear, anxiety and remorse.
- HCWs quarantined at home were concerned this exposed their own family to unnecessary risk.
- HCWs were particularly worried about infecting vulnerable family members or friends, particularly children; and restricting contact was reportedly more challenging with children in the household.
- Emotional effects on loved ones were a significant concern of HCWs, who despite being the primary source of information about the disease may also be the main potential source of exposure.
- HCWs found it difficult to explain the situation to their children; and one study documented those changes to household roles and routines created stress on entire families.
- HCWs in quarantine also found restrictions on physical and social contact to be physically and psychologically isolating; while colleagues may have shared the same situation and provided social contact and support, many HCWs also expressed concern about understaffing that occurs as a result of quarantined staff.
- Being monitored may be challenging for HCWs: it may lead to fear of being infected but also conflict with their own perceived ability to determine whether they are infected.

Inadequate information:

- HCWs are more likely than the general public to understand the reasons for quarantine but being a HCW did not influence perceptions of the adequacy of information about home infection control measures.
- Lack of clear guidelines on minimising infection risk at home and in quarantine leads to frustration, fear of infecting their family and uncertainty about effectively mitigating risk.
- Poor communication may result in HCWs finding out about their need to quarantine from sources like the media; and lack of transparency about the level of risk for people quarantined can lead them to expect and fear the worst (as in EBV). Better information from authorities and the media to the population as a whole may also help to reduce stigma for HCWs.

psychological outcomes are common in the public undergoing quarantine. These same outcomes are also prevalent in HCWs in quarantine, with additional complexity because of their dual role as HCW and family member. Such issues highlight the need for better support and information for HCWs in quarantine.

Providing clear, accurate and timely information about disease and quarantine risks to both those undergoing quarantine and the general public may help to mitigate some of the poor outcomes people commonly experience. It may also serve to diminish stigma associated with quarantine by members of the general public and others.

Psychological support is needed to help to address some of the poor outcomes experienced by HCWs in quarantine, some of which may be long-lasting. Quarantine may provide a window of opportunity to intervene and provide support, as otherwise HCWs may be too busy during a disease outbreak.

Support for HCWs might also include financial compensation, as finan-

(Continued)

essed but not closely integrated to findings; 10. no publication bias assessment; 11. no COI for included studies]

Funding source:

The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Financial losses:

- Financial losses during and after quarantine are a common risk factor for psychological distress amongst the general public, and outcomes may be particularly poor amongst those with lower household income. During Senegal's EBV outbreak, financial losses were a central issue, with HCWs dependent on their families during quarantine as their jobs were unstable, incomes unpredictable, and they were not paid if not attending the workplace. This was worsened when the HCW was the family's only income earner.

Stigma:

- Stigma is a common theme. HCWs are typically more aware of infection prevention measures than the general public, and are more likely to experience stigmatisation and rejection by neighbours (than those not quarantined), but the degree to which HCWs experience stigma varies across countries.
- In some cases stigma leads HCWs to be highly selective about informing people of their status as contacts because others would regard them as infected; in some countries HCWs report little long-term stigma; in others quarantine of female HCWs led to their husbands or mothers-in-law questioning their jobs.
- Stigmatisation occurred from partners, colleagues, and even in terms of whether HCWs' children had the right to attend daycare. Generally, HCWs understood stigma to arise from poor understanding of the disease and risk, but also reported feeling angry and hurt, particularly when their children were stigmatised. Adverse reactions reportedly persisted after the end of the outbreak, and many avoided telling others about their jobs as HCWs as a result.

Recommendations:

Quarantine of HCWs leads to considerable psychological distress, mental health problems, isolation and financial losses, as well as stigma from various sources. Additionally, HCWs experience conflict between professional and family (personal) roles, with many expressing concerns about the impact of quarantine on their family's safety and well-being, especially their children.

Psychological support for HCWs in and following quarantine is needed; without this, poor psychological effects can persist for years after the outbreak and quarantine period. Quarantine may present the opportunity to deliver psychological support to HCWs who would otherwise be too busy working to engage with these services.

Clear, unambiguous information from health authorities and the media are needed to convey accurate information to the public about quarantined HCWs; while accurate, timely information to HCWs undergoing quarantine would assist them to manage uncertainty and consequent effects on their own health and well-being.

cial losses are commonly reported and may increase psychological distress.

(Continued)

Concerns about their family was a common issue for HCWs; providing suitable accommodation to HCWs (outside the family home) may help to lessen the risk to families and alleviate HCWs' concerns about infection risk.

<p>Lin 2014*</p> <p>(SR)</p> <p><u>Mapping to:</u> Adherence</p> <p>Relevant to general PD measures (particularly crowd avoidance/individual PD)</p>	<p><u>Outcomes and aim:</u></p> <p>Identification of factors associated with communication inequalities during H1N1 pandemic</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: communication with public during H1N1 pandemic, empirical data</p> <p>Excluded: not published in English, French, Italian, Spanish, Chinese or Portuguese; focused on communication between agencies or health professionals, on development of telecommunication strategies, or on public health surveillance or epidemiology; or not related specifically to the H1N1 pandemic in 2009</p> <p><u>Type of study and data:</u></p> <p>SR; 118 included studies</p> <p>Population-based studies (92/118), studies on information environment; primarily survey-based (cross-sectional or other), some interview or focus group-based</p> <p><u>Countries included:</u></p> <p>USA, China, UK main countries</p> <p><u>Quality assessment:</u></p> <p>5/11 AMSTAR rating</p> <p><u>Funding source:</u></p> <p>We acknowledge funding support from the U.S. Centers for Disease Control and Prevention (CDC)</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • Several outcomes were reported, including communication outcomes (e.g. information-seeking, trust and credibility, information use), preparedness outcomes (e.g. knowledge/awareness, preventive behaviours (including physical distancing), potential predictors of communication inequalities (e.g. socioeconomic status, social capital), and information environment (formal versus informal sources). • Several factors were identified as predictors of behaviour compliance to preventive recommendations for H1N1, including sociodemographic (age, ethnicity, education), attitudinal (perceived severity of disease) and communication determinants (such as information-seeking behaviours, knowledge levels, exposure to media). • Trust in information source was linked to compliance with NPIs; and trust and credibility substantially affected people's choice of information source as well as attitude towards the message. Trustworthy information sources included social networks (including physicians), communities and health agencies. <p><u>Recommendations:</u></p> <ul style="list-style-type: none"> • Future communication efforts should engage with community leaders, physicians and others including the mass media to ensure that public health messages are accurate, timely and have the greatest possible reach in the community, including amongst more vulnerable groups. • That people with higher levels of education were more informed about risks suggests that health communication messages need to be better tailored to those of lower educational levels. • Future communication needs to consider identified factors in order to ensure the greatest compliance with preventive measures during a pandemic and to minimise communication inequalities in future pandemics. Findings suggest that younger people, the less educated and those of lower socioeconomic status might reasonably be the focus of future communication efforts in a pandemic as these groups may not know about the risk of disease, may perceive the risk to be low and may therefore be less likely to comply with preventive actions. 	<p><u>Communication purpose:</u></p> <p>Results may be useful for those planning communication campaigns and seeking to reduce communication inequalities across communities. Factors identified may be useful for developing targeted messages to vulnerable groups, and may inform the medium of communication, as well as the sources of information drawn upon.</p> <p><u>Related to review questions:</u></p> <p>Findings suggest that several factors influence community awareness of public health messages related to a pandemic, and this in turn influences compliance with recommended protective measures, including physical distancing measures. Communications intended to inform populations about pandemic disease and preventive measures need to take account of such factors to ensure that communication is as equitable and has as much reach within communities as is possible, in order to mount a consistent preventive</p>
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grant number 5PO1T-P000307-05 Supplement.

response to a pandemic.

<p>Sopory 2021#[^]</p> <p><u>Citation type:</u> SR (QES)</p> <p><u>Public health measure:</u> Quarantine</p> <p><u>Mapping to:</u> Acceptability</p> <p>adherence,</p> <p><u>Mapping to:</u> Theme 1:</p> <p>features of public communication: content, timing and duration, and delivery</p> <p>Theme 2: recipients of public communication: audience, setting and equity</p> <p>Theme 3:</p> <p>support for individual and population behavioural changes</p>	<p><u>Overview and aim:</u></p> <p>To examine adherence to quarantine by exploring strategies to influence adherence, identifying barriers and enablers of acceptance and identifying benefits and harms of quarantine</p> <p><u>Type of study and data:</u></p> <p>QES; any primary qualitative research. N = 17 included studies (16 qualitative, 1 mixed-methods with separate qualitative component)</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: Published 2001 onwards, English language; qualitative method.</p> <p>Excluded: Documents (e.g. commentary)</p> <p><u>Participant features and numbers, sampling details:</u></p> <p>Quarantined population general public (14 studies), healthcare workers (7).</p> <p>Vulnerable populations addressed 5/16 studies</p> <p><u>Included disease(s):</u></p> <p>General infectious disease (1 study), EBV (4), influenza (4), SARS (7)</p> <p><u>Timing:</u></p> <p>Published evidence sought 2001 onwards.</p> <p>Event year varied across time period 2003 to 2016.</p> <p>Data collection period was pre-event (4 studies), post-real event (10),</p>	<p><u>Reported on:</u></p> <p>18 synthesised findings were reported.</p> <p>Quarantine adherence (3 major findings, low-high confidence):</p> <ul style="list-style-type: none"> Community-level impact of quarantine may be more meaningful than individual or abstract information. Agencies should work to understand the local context (e.g. economic status, trust of agencies and government, customs, political history) and work cooperatively with the community's existing structures and leadership to increase adherence. Public information dissemination from agencies is important to both healthcare workers and the public, and increased adherence during an outbreak. Effective information was persuasive rather than threatening and aimed for two-way information exchange (rather than one-way); occurred over the course of the episode; and involved multiple channels (including mass media and interpersonal sources) and multiple sources, including public health and healthcare staff. Effective information included disease and quarantine information, including rationale for quarantine; avoided technical language; avoided arousing fear or anxiety and was not stigmatising; and included clear, consistent information about infection control and coping methods. To increase adherence to quarantine, agencies can focus on care (i.e. expressing concerns, providing support), rather than control/enforcement of restrictions. <p><u>Quarantine adherence facilitators/acceptance (2 main findings, moderate -high confidence):</u></p> <ul style="list-style-type: none"> Adherence was facilitated by agencies understanding that multiple actors (agencies, jurisdictions) were required to work co-operatively to plan and implement quarantine. This included recognising that planning to scale up operations would be needed during an outbreak. Generally, the public, including vulnerable groups (e.g. those who are homeless) accepts the concept of quarantine as part of the outbreak response, for several reasons: sense of duty, civic-mindedness and ethical concerns for the situation. Quarantine may be effective when people voluntarily comply, rather than because of legal enforcement. <p><u>Quarantine acceptance (4 main findings, high confidence). Restrictions may be more acceptable to people undertaking quarantine when there is:</u></p> <ul style="list-style-type: none"> Financial compensation for lost work, including partial/full income replacement (during quarantine), assurance of job security and economic recovery (at end of quarantine) and payment for housing and utilities. 	<p><u>Communication purpose:</u></p> <p>Findings may inform development of communication strategies to provide information to the public about quarantine restrictions.</p> <p><u>Related to review questions:</u></p> <p>Information about quarantine is important to both the general public and to healthcare workers, and effective communication from agencies, tailored to local context and undertaken co-operatively with local structures and leadership, is needed to promote acceptance and adherence to quarantine measures.</p> <p>Effective information and communication might best involve two-way dialogue with the community, happen over the course of the disease outbreak, and involve multiple channels and sources. Information should be clear and accessible, non-stigmatising or inflammatory, and include a rationale for the quarantine measures as well as information on the process and supports available for people.</p> <p>Recognition of the supports needed</p>
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(Continued)

and during a real event (6).

Countries included:

Canada (6 studies), United States (4), Australia (1), international (1), Taiwan (1), remote First Nations Canada (2), Africa (Liberia) (1), Senegal (1)

12/17 conducted in high-income countries.

Authors noted that the synthesis was conducted for the US context, and this may have introduced bias weighted towards understanding the phenomenon for high-, rather than low-middle-income countries.

Intervention or phenomenon of interest: Adherence to quarantine

Quality assessment:

AMSTAR 8/11

[5. No excluded studies listed; 10. Publication bias not assessed; 11. COI of included studies not reported]

Re item 1. No protocol or a priori mentioned in published paper but formed part of a larger evidence synthesis report for National Academy so determined scope is implied

2. Duplicate processes confirmed by author response.

4. Extensive searching including grey literature outlined in accompanying report

Funding source:

Funding for the review was received by Pradeep Sopory and

- Provision of food and other essential supplies (by government, agencies, community groups or others), and that dietary requirements and preferences of those in quarantine were met.
- Provision of professional social support in the form of a new or pre-existing general confidential hotline giving access to professional counselling. Provision of mobile phones to people without access to one was also needed.
- Reasonable flexibility in rules and procedures to accommodate the needs of the situation and the people in quarantine e.g. changes to policies for tobacco and alcohol use, leaving quarantine to get supplies or to work. Quarantine in this light is a nuanced measure, dependent on context.

Harms of quarantine restrictions (4 main findings, high confidence):

- People undertaking quarantine may experience financial instability. Quarantine may be initiated with little advance notice, which may affect employment status, and, in the absence of compensation, suffer loss of wages or other income. This situation was particularly severe for those who worked part-time, casually or were self-employed.
- Social isolation is a salient harm of quarantine, leading to feelings of both physical and psychological isolation which were exacerbated by others' physical distancing (e.g. family, friends, neighbours).
- People in quarantine experience social stigma as a harm, being publicly labelled as disease carriers, leading to mistrust, fear and avoidance by other people that extended beyond the quarantine period. Stigma was worsened when people quarantined were from marginalised groups.
- People in quarantine may experience many negative effects including heightened anxiety, fear, worry, stress and loneliness, due to financial stress, social isolation, stigma and risk of infecting others.
- Healthcare workers in quarantine experience similar harms to the general public, but these may be amplified (e.g. stronger negative psychological states due to the possibility of infecting patients in their care while infectious; worry about leaving colleagues overworked and understaffed). 'Work quarantine,' where essential workers must continue to care for infected patients, led to even greater anxiety and also led to resentment and conflict with non-essential co-workers put under quarantine at home.

Quarantine and vulnerable groups (1 finding, high confidence):

- There should be recognition and acceptance that imposing quarantine on vulnerable groups (e.g. poor, homeless) requires greater modification of standard processes and organisers should be aware that greater harms are possible. Such groups have different needs to the general public, and policies may need to be more

for the public undertaking quarantine is needed, alongside particular awareness of heightened risks of harms of quarantine in vulnerable groups is needed.

Acceptance of quarantine may be greater, and harms minimised, where people's needs are met, including financial compensation, food and essential supplies, and social support, and that there is some flexibility in the system to accommodate particular needs.

(Continued)

Julie Novak. The review was commissioned by the National Academies of Sciences, Engineering, and Medicine (National Academies)

Committee on Evidence-Based Practices for Public Health Emergency Preparedness and Response (Contract# 20000010696), which was sponsored by the United States Centers for Disease Control and Prevention (CDC).

flexible to meet these needs. Harms such as financial, psychological and social harms may also be more pronounced.

Recommendations:

Findings were used to develop a conceptual framework, outlining topics for considerations in situations where quarantine may be implemented to curb disease outbreak. These may help to improve acceptance and adherence to quarantine in particular.

Findings indicate two major sets of communication activities to be undertaken related to the topics identified: communication within and across agencies and organisations related to the coordination of quarantine activities, and communication of information about quarantine to the general public.

Quarantine is controversial and relies on the public understanding the benefits as well as risks and potential harms. These need to be effectively communicated to the public by the agencies involved in planning and implementing the restrictions.

When planning and implementing quarantine, vulnerable groups within the population such as the poor or marginalised, may need additional protections. Such groups may be more at risk of harms, or the harms may be more severe – such as financial hardships that are worsened by being required to quarantine, and/or the need to safeguard civil rights of vulnerable groups.

Webster 2020#^A
 (rapid review)

Mapping to: Adherence

Outcome and aim:

To identify factors affecting adherence to quarantine during disease outbreaks

Inclusion and exclusion criteria:

Included: participants entering quarantine of at least 24 hours, outside hospital setting. Studies reporting primary research, published in English or French, reporting factors associated with or reasons for (non)-adherence outcomes

Type of study and data:

Rapid SR; 14 included studies. Surveys (cross-sectional), retrospective cohort, interviews, focus groups

Included disease(s):

Reported on:

- Adherence to quarantine varied dramatically: across eight studies, estimates ranged from 0% compliance (home quarantine 10-14 days, SARS, Taiwan) to 93% (home quarantine 7 days, H1N1, Australia).
- Voluntary quarantine adherence depends on a number of practical and psychological factors. Those most often reported were
 - People's knowledge about the outbreak and about the quarantine protocol (knowing why (rationale for), and what, to do);
 - Social norms (e.g. social pressure to adhere, sense of altruism for adhering to voluntary measures);
 - Perceived benefits of quarantine (such as preventing transmission to others, especially those at higher risk);
 - Perceived risk of the disease (in terms of transmission and severity of the disease);
 - Practical issues associated with being quarantined (such as loss of income, lack of supplies or medical care).
- These factors have also been associated with adherence to other protective measures, such as crowd avoidance.

Recommendations:

Communication purpose:

Results may inform decisions about main information messages to communicate to populations and individuals being asked to quarantine.

Related to review questions:

Findings indicate that several factors influence adherence to quarantine measures. Consideration of these factors should inform public health communications related to quarantine.

(Continued)

H1N1 (5 studies), EVD (3), SARS (5), mumps (1)

Quarantine varied:

Home quarantine (up to 14 days), EVD studies included restriction of movements (1 month), check-ups and social distancing (21 days), state-enforced home and neighbourhood quarantine (21 days).

Countries included:

Australia (5), Canada (3), Senegal, Liberia, Sierra Leone, Germany, Taiwan, USA

Quality assessment: 5/11 AMSTAR rating

Funding source:

The research was funded by the National Institute for Health Research Health Protection Research Unit (NIHR HPRU) in Emergency Preparedness and Response at King's College London in partnership with Public Health England (PHE), in collaboration with the University of East Anglia and Newcastle University.

To increase adherence to quarantine protocols, public health officials should provide:

- A clear and timely rationale for the measures;
- Clear information about the steps required (quarantine protocol);
- Clear messages reinforcing social norms and promoting the behaviour as altruistic;
- Clear messages that emphasise both the importance and benefits of quarantine for public health;
- Sufficient supplies and assistance for those financially impacted by undergoing quarantine.

<p>WHO 2021b#</p> <p><u>Citation type:</u></p> <p>GL (interim advice)</p> <p>Considerations for quarantine of contacts of COVID-19 cases: WHO interim guidance</p> <p>June 2021</p> <p><u>Public health measure:</u></p> <p>Quarantine</p> <p><u>Mapping to:</u> Acceptability, adherence</p>	<p><u>Overview and aim:</u></p> <p>Updated advice on implementation of quarantine for contacts of COVID-19 cases, including provision of support for people under quarantine</p> <p><u>Type of study and data:</u></p> <p>GL (interim advice); based on review of evidence and informed by experiences from Member States</p> <p><u>Included disease(s):</u></p> <p>COVID-19</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • Core public health and social responses are needed to break COVID-19 transmission chains; three essential components are needed in every national response: 1. Identification, isolation, testing and clinical care for cases; 2. Tracing and supported quarantine for contacts; and 3. Promoting physical distancing, together with respiratory hygiene, hand hygiene, mask-wearing and improved ventilation of indoor spaces. • Prolonged absence from economic and social activities is challenging for most people and this is likely to affect people's adherence to quarantine measures. Balancing the public health risks and benefits against social and economic impacts is therefore essential. • Prior to implementing quarantine, authorities should communicate with the public about why the measure is needed and provide support to people so that they are able to quarantine safely. Authorities should provide 	<p><u>Communication purpose:</u></p> <p>Guidance may be useful when considering communication with the public and with individuals in relation to quarantine.</p> <p><u>Related to review questions:</u></p> <p>Clear communication and information, together with community engagement, are needed prior to implementation of quaran</p>
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<u>Mapping to:</u>	<u>Timing:</u>		
<p>Theme 1: features of public communication: content, timing and duration, and delivery</p> <p>Theme 3: support for individual and population behavioural changes</p> <p>Theme 4: community engagement to support communication</p>	<p>Guidance refers to importance of early communication with the public about quarantine (i.e. prior to implementation), including engagement with communities at early stages to help improve acceptability of quarantine.</p> <p>The importance of communicating with those undertaking quarantine at the beginning of their confinement is also emphasised.</p>	<p>clear, up-to-date, consistent and transparent guidance and reliable information about quarantine measures.</p> <ul style="list-style-type: none"> • Constructive community engagement is key to promoting acceptability of quarantine within the community. • Since a range of cultural, geographic and economic factors influence acceptability and adherence to quarantine, the local context should be considered and potential barriers and enablers to quarantine identified and used to inform planning for the most appropriate and acceptable measures to be enacted. • Authorities should communicate with people undertaking quarantine in a language understandable to the quarantined individuals, and include clear explanation of their rights, services available, the duration of quarantine and what will happen should they become ill; and if needed, provide contact information for their local embassy or consular support. • Support is needed for people undertaking quarantine, whether quarantine is undertaken in a dedicated facility or at home. Support includes access to essential supplies (adequate food, water, protection, hygiene) for the person undertaking quarantine and for household members and children who are in their care; financial, social and psychosocial support; provision for communication including access to education for children who need to be quarantined, and paid leave or remote work arrangements for jobs; protection; and access to health monitoring and healthcare over the course of the quarantine period, including care for existing conditions. • The needs of people from vulnerable groups should be prioritised. • Facilities for quarantine should be disability inclusive and consider the needs of women and children. • Authorities should avoid separating families and balance the child's welfare against the risk of COVID-19 transmission within the family. • If the child is the contact requiring quarantine, the child should be quarantined at home in the care of a parent or other caregivers; where this is not possible, children should be quarantined in the household of another family member or caregiver who is at low risk of severe COVID-19. Even if an adult is the contact, they should be kept together with the child (including supporting women who are breastfeeding infants). • If home quarantine is not possible, children should be quarantined and cared for in child-friendly facilities, taking into account their needs, safety and their physical and mental well-being; and, if at all possible, with a carer or other family member to stay with them or visit daily. Settings expecting to host children (particularly those without caregivers) must provide trained staff to provide a safe, caring and stimulating environment that provides for the child's psychosocial and educational needs. Children's health should be monitored by those trained to recognise COVID-19 symptoms in children, and referral pathways for medical care or urgent assistance be established ahead of time. • Training and communication for infection control practices (IPC) are needed within quarantine facilities, in- 	<p>tine. This may improve acceptability and adherence to the measures.</p> <p>Provision of the range of supports identified may enable people to adhere to quarantine measures safely and to mitigate the economic and social risks of doing so.</p>
	<u>Countries included:</u>		
	N/A, developed by WHO, across-country application		
	<u>Intervention or phenomenon of interest:</u>		
	Quarantine implementation and communication with those involved		
	<u>Quality assessment:</u>		
	AGREE II scope and purpose 63.9%; stakeholder involvement 38.89%; rigour of development 8.3%; clarity of presentation 77.78%; applicability 22.92%; editorial independence 0%		
	<u>Funding source:</u>		
	Not reported		

(Continued)

cluding: educating all people quarantined about IPC upon arrival and over the course of quarantine; training personnel on IPC measures before they are implemented; educating quarantined people and personnel about the importance of promptly seeking medical care should they develop symptoms; and having in place policies and procedures to support early recognition and referral of suspected COVID-19 cases.

Recommendations:

People undertaking quarantine need clear, accessible information about why the measure is needed and what is involved, as well as a range of support to enable them to undertake quarantine safely and to adhere to the restrictions during the quarantine period.

Primary studies

<p>Zhu 2020#</p> <p>(primary)</p> <p><u>Mapping to:</u> Uptake.</p> <p>Relevant to general awareness of measures required (crowd avoidance)</p>	<p><u>Overview and aim:</u></p> <p>Public attention to a disease outbreak can be captured by social media posts, where awareness and attentiveness have implications for acceptance and adoption of prevention and control measures.</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: randomly sampled accounts of Weibo-scope database, a nationally representative sample of the Weibo user population</p> <p><u>Timing:</u></p> <p>Between December 31, 2019, and February 12, 2020</p> <p><u>Type of study and data:</u></p> <p>Longitudinal analysis of posts from cohort (52,268 randomly sampled accounts) of Weibo-scope database</p> <p><u>Countries included:</u></p> <p>China</p> <p><u>Disease(s) included:</u></p> <p>Cohort's posts were searched for COV-</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> Percentage of daily posts related to COVID-19 from the sampled cohort Considered against major COVID-related Chinese events, there was limited evidence of attention to the outbreak prior to January 20th (human-to-human transmission acknowledged and initiation of nationwide reporting in China began). Rapid increase in attention to the outbreak occurred after this date, with attention remaining high and particular peaks in posts after major events (e.g. Wuhan quarantine initiated). <p><u>Recommendations:</u></p> <ul style="list-style-type: none"> Adoption of personal protective behaviours is related to trust in government. Citizen's awareness of outbreak severity at an early stage might increase acceptance and adherence with prevention and control measures such as large-scale physical distancing measures. Governments might proactively communicate early warnings of disease outbreaks to the public in order to engage people earlier in control and prevention measures. 	<p><u>Communication purpose:</u></p> <p>Might inform decisions about timing of communication of outbreak information to communities and populations, where earlier awareness might promote better engagement with required physical distancing measures.</p> <p><u>Related to review questions:</u></p> <p>Findings suggest that lack of outbreak awareness creates missed opportunities for the public to take up preventive and control measures.</p>
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ID-19-related keywords and a daily percentage calculated (no. COVID-related posts/no. total daily posts)

Quality assessment:

Response rate: +

Representativeness: +++

Authors declared no COI; possibility of Internet censorship in China, sample included only one of several social media platforms; paper published (peer reviewed)

COVID-19-specific, #^ included research not COVID-19-specific but review conducted in context of current pandemic outbreak, *non COVID-19 specific, % AMSTAR rating from McMaster Health Forum (via Health Systems Evidence <https://www.healthsystemsevidence.org>)

Abbreviations:

AGREE II: Appraisal of Guidelines for Research & Evaluation II tool

AMSTAR: A Measurement Tool to Assess Systematic Reviews

COI: conflict of interest

EVD: Ebola Virus Disease

GL: guideline

H1N1: H1N1 influenza strain

HCW: health care worker

MERS: Middle East Respiratory Syndrome

N/A: not applicable

NIHR: National Institute for Health Research

NPI: non-pharmaceutical interventions

PD: physical distancing

PTSD: Post-Traumatic Stress Disorder

QES: qualitative evidence synthesis

SARS: Severe Acute Respiratory Syndrome,

SR: systematic review

WHO: World Health Organization

Table d: School measures

Public health measure 4: School measures	Study features	Outcomes and findings	Map to
Systematic reviews, guidelines			
Brooks 2020a* [^] (SR)	<u>Outcomes and aim:</u> Assessment of effects of unplanned school closures on children's activities	<u>Reported on:</u> <ul style="list-style-type: none"> Activities and social contacts decreased during closures, but all studies reported children leaving the home and/or child-care from someone outside the home (thereby having social 	<u>Communication purpose:</u> May be used to inform communication with parents
<u>Mapping to:</u> Adherence, acceptability, feasibility			

(Continued)

and contacts outside home

Inclusion and exclusion criteria:

Included: primary, peer-reviewed research, written in English or Italian; reporting children’s social activities during temporary unplanned school closure

Excluded: research on hypothetical/simulation scenarios, or intentions

Type of study and data:

SR; 19 included studies.

18 cross-sectional design with questionnaire, 1 qualitative study

Disease(s) included:

Most (12) reported school closures related to H1N1 pandemic or other influenza/influenza-like outbreaks (6). Duration of closures was 1-14 days.

Countries included:

US (10), Australia (4), 1 each in Argentina, Japan, Russia, Taiwan, UK

Quality assessment:

3/11 AMSTAR rating%

Funding source:

Not reported

contact with others they could potentially infect if they themselves were infected).

- There was some evidence that continuing to engage in social contact during school closures may be related to older child age, parental disagreement with closure, and mixed evidence of infection status.
- Length of time at home was not associated with length of isolation and did not fluctuate over the course of isolation in one study of participants asked to undertake voluntary home quarantine of 1 to 14 days.
- Parents typically agreed with school closures, most often because they believed it would protect health (community, child, and household) and believing there were too many sick children for the school to remain open.
- Some parents disagreed with closures, most often because of perceived low infection risk, mildness of illness and lack of closure effectiveness against infection; but practical factors were also apparent, such as childcare arrangements, educational and financial impacts, and uncertainty about closure duration.

Recommendations:

Ensuring parents understand why school closure is important will be a key factor determining the success of the measure in future disease outbreaks.

Although most children may not need childcare arrangements (outside home) that might increase disease transmission risk, public health officials should consider how to support parents and to prevent this.

Advice from schools should be consistent with public health advice; hosting extracurricular activities/sporting events during a closure sends mixed messages that can be confusing or detrimental.

Short closures (up to two weeks) may be manageable by parents but longer closures (e.g. for mitigating pandemic waves) may be more challenging.

about why school closures and adherence to avoiding social contacts are important.

Related to review questions:

Despite public health advice, many children have social contact outside the household during school closures.

Parents may accept and adhere to school closures if they perceive benefits from the measure.

Parents may not accept or adhere to school closures if they do not perceive the measure will decrease infection risk, or they have concerns about practicalities and impact of the closure e.g. on the child’s education, difficulty making childcare arrangements and economic impacts (such as lost income).

CDC 2022#

Overview and aim:

Reported on:

Communication

Citation type:

purpose:

(Continued)

GL At: COVID-19 Guidance for Operating Early Care and Education/Child Care Programs (cdc.gov) <u>Public health measure:</u> School measures, and also maps onto work measures <u>Mapping to:</u> Adherence, feasibility <u>Mapping to:</u> Theme 2: recipients of public communication: audience, setting and equity Theme 3: support for individual and population behavioural changes Theme 4: community engagement to support communication Theme 6: distancing measures in schools and workplaces	To provide guidance on protecting young children and adults in early childhood education (ECE) settings <u>Type of study and data:</u> Official CDC guidance; periodically updated in line with updated quarantine/isolation advice, community vaccination and other relevant variables. Based on CDC Science Brief <u>Included disease(s):</u> COVID-19 <u>Timing:</u> None <u>Countries included:</u> USA advice (CDC) High-income country <u>Intervention or phenomenon of interest:</u> Providing guidance on physical distancing and other layered measures to protect children and adults in ECE settings <u>Quality assessment:</u> AGREE II: scope and purpose 72.2%; stakeholder involvement 30.56%; rigour of development 2.1%; clarity of presentation 69.44%; applicability 27.08%; editorial independence 0% <u>Funding source:</u> Not reported	<ul style="list-style-type: none"> • Early Care and Education (ECE) programmes include child-care centres, home-based programmes and family childcare, Head Start and other pre-kindergarten programmes. • Most ECE programmes involve children in an age group not yet eligible for vaccination; therefore layered prevention strategies are critical to protecting adults and children in these programmes. ECE providers should implement prevention strategies as far as is possible; but with consideration of the educational needs and social and emotional well-being of children, and of the importance of children's access to learning and care. • Adopting layered prevention strategies is critical because in ECE settings it may not be possible to observe all measures all the time (e.g. physical distancing, mask-wearing). • ECE providers should communicate information about their prevention measures (including cohorting, staying home when sick and quarantine), along with any changes to measures, to staff and families (and older children) using accessible communication materials and channels, and in a language and literacy level that staff members, families and children understand. ECE programmes should also share information with parents and families about what to expect at the ECE programme in terms of preventive measures. • Plans for preventive measures within ECE programmes should be developed with the involvement of staff, parents and guardians as well as other community partners (e.g. health centres). Plans should outline how staff will be trained on COVID-19 safety protocols; should incorporate planning for back-up staffing; and should consider the needs of staff, children and families, including children's developmental needs, the needs of those children with disability or other healthcare needs, and of those experiencing homelessness. <p><u>Equity in ECE settings:</u></p> <ul style="list-style-type: none"> • ECE programmes have a critical role in helping to promote equity in learning, care and health, especially for groups disproportionately affected by COVID-19, which have also affected children (including people with disabilities, immigrants, those in rural and remote areas, and people identifying as American Indian or Alaskan Native, black or African-American, or Hispanic or Latino). Considering health equity is therefore key as part of the decision-making related to ECE settings; ECE administrators and public health authorities can therefore work to ensure safe, supportive environments; reassure families and ECE staff by planning and implementing layered prevention strategies to support in-person learning and care; and communicating about these efforts. • ECE programmes and administrators can also work to promote equity by engaging with parents to understand their concerns and preferences for in-person learning and care; and ensuring that staff and children have access to resources to support physical and mental health. • ECE administrators can offer modifications to job responsibilities for staff at higher risk of severe disease and who are not up-to-date/unable to be vaccinated; while maintaining individual privacy. • An individualised approach may be needed for working with children with disabilities; ECE administrators should consider adaptations/alternative approaches for prevention strate- 	Guidance indicates the several communication strategies to support implementation of preventive measures in ECE services. Implementation of layered preventive approaches needs to be developed and supported with an understanding of the community's needs, and with communication to the community about the measures put in place to protect the health of children and staff. <u>Related to review questions:</u> Physical distancing measures may not be possible in all situations in ECE services, therefore a layered approach to protecting health is needed. Families, services and the community need to work together to plan such measures, ensuring that the diverse needs of the community are taken into account, including those for children with disabilities, healthcare concerns, or homelessness, and with a focus on including those disproportionately affected by the pandemic. ECE services should communicate clearly with families and children, and staff, about preventive measures in place, as well as the process for return-
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gies, while maintaining efforts to protect all children and staff from COVID-19.

Physical distancing and cohorting:

- Physical distancing is difficult to maintain in ECE settings at all times, particularly when caring for young children; other preventive measures are particularly important when distance cannot be maintained (e.g. mask-wearing). Cohorting may be used where physical distancing is not possible, but does not replace the need for other measures to be in place at the same time.
- Physical markers can be used to remind cohorts or individuals to maintain an appropriate distance (e.g. tape on floor, wall signs) in communal areas.
- Behavioural techniques such as modelling and reinforcing desired behaviours and using approaches such as picture schedules, timers, visual cues, and positive reinforcement may help children to adjust to changes in routines or required behaviours.
- When ECE programmes are planning to optimise physical distancing and cohort sizes, they should consider the social and emotional needs of children, loss of learning, and needs of families if they are unable to participate in in-person learning and care.

Staying home/returning from isolation:

- Children with symptoms of COVID-19 should not attend ECE programmes.
- Programmes should also provide flexible, non-punitive, supportive paid sick leave policies and practices that encourage sick workers to stay home without fear of retaliation, loss of pay, or loss of employment. Employers should clearly communicate with staff to ensure that workers are aware of and understand these policies, as well as the policy for returning to work after COVID-19 illness.
- ECE programmes should encourage families to monitor children for symptoms of an infectious illness. Policies for returning to the ECE programme after COVID-19 illness should also be clearly communicated to families.
- When someone in the ECE programme tests positive to COVID-19 or has symptoms and is a presumed case, it is necessary for the programme to take steps to minimise the risk of transmission. This might include identifying staff and families about being a close contact so that appropriate quarantine measures can be established and return to work instructions can be provided; instructing families to monitor children who are close contacts for symptoms; educating staff and families about when they and their children should be tested, when they should stay home, and when they can return to the ECE programme.

Children with disabilities or other healthcare needs:

- Accommodations, modifications and assistance for children and staff with disabilities or special needs will need to be provided when implementing COVID-19 prevention measures. Working with families to better understand the individual needs of the child in this situation may be helpful.

ing to ECE services post-COVID-19 illness.

ECE staff need to be supported to work during the pandemic, educated and trained in preventive practices and policies, and workload and mental health strain managed proactively. Provision needs to be made, and clearly communicated, for staff who become ill to help ensure that they do not attend work if sick or fear negative repercussions of being absent or homelessness, and with a focus on including those disproportionately affected by the pandemic.

ECE services should communicate clearly with families and children, and staff, about preventive measures in place; about monitoring for symptoms and undertaking testing, as well as the process for returning to ECE services post-COVID-19 illness.

ECE staff need to be supported to work during the pandemic, educated and trained in preventive practices and policies, and workload and mental health strain managed proactively. Provision needs to be made, and clearly communicated, for staff who become ill to help ensure

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ECE staff:

- Recognition of the potential mental health strains of working through the COVID-19 pandemic is important; administrators should educate staff about mental health and share information about available mental health support and counselling services; as well as provide a supportive work environment for staff managing job stress and building resilience, and manage workplace fatigue.
- ECE employers should train all staff on workplace hazards related to COVID-19 transmission risks and prevention strategies, to protect workers and policies for reporting concerns. Communication and training for all staff should be frequent and easy to understand.

sure that they do not attend work if sick or fear negative repercussions of being absent.

Recommendations:

Access to and attendance at ECE programmes is important for children's learning and social and emotional well-being. Prevention measures to safely enable children to attend ECE programmes need to be layered, and staff supported and protected, to reduce the risk of transmission and help to maintain open and accessible in-person ECE services during the pandemic.

<p>CDC 2022a#</p> <p><u>Citation type:</u></p> <p>GL</p> <p>At:</p> <p>Guidance for COVID-19 Prevention in K-12 child care CDC</p> <p><u>Public health measure:</u></p> <p>School measures, and also maps onto work measures</p> <p><u>Mapping to:</u> Adherence, feasibility</p> <p><u>Mapping to:</u></p> <p>Theme 2: recipients of public communication: audience, setting and equity</p> <p>Theme 3:</p> <p>support for individual and population behavioural changes</p> <p>Theme 4: community engagement to</p>	<p><u>Overview and aim:</u></p> <p>To provide guidance on protecting students and staff in school settings</p> <p><u>Type of study and data:</u></p> <p>Official CDC guidance; periodically updated in line with updated quarantine/isolation advice, community vaccination and other relevant variables. Based on CDC Science Brief</p> <p><u>Included disease(s):</u></p> <p>COVID-19</p> <p><u>Timing:</u></p> <p>None</p> <p><u>Countries included:</u></p> <p>USA advice (CDC)</p> <p>High-income country</p> <p><u>Intervention or phenomenon of interest:</u></p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • The benefits and importance for students of in-person learning means that safely returning to in-person schooling is a priority and requires implementation of layered prevention strategies to protect students, teachers and staff, and members of families in the school community. Layered prevention approaches mean that students should not be excluded from in-person learning in order to keep up minimum distance requirements, or in cases where not all prevention measures can be put in place at once (e.g. where the school community includes those not fully vaccinated, where the school has physical space limitations). • Schools should communicate information about their prevention measures, along with any changes to measures, to teachers, staff and families, and directly to older students, using accessible communication materials and channels, and in a language and literacy level that staff members, families and children understand. • Each school district and school should have a plan in place to protect students, teachers, staff and families from COVID-19 transmission. Plans should outline the prevention strategies to be implemented; steps to be taken when someone (student, teachers, staff member) has been exposed to COVID-19, tests positive or has symptoms of COVID-19 (including any differences in protocol for those who are fully vaccinated versus those that are not); be developed in collaboration with local regulatory and public health agencies, and with involvement of teachers, staff, students and families, as well as community partners. Considerations should include social and behavioural factors that might influence transmission risk and the feasibility of different prevention strategies in the school community. <p><u>Equity in schools:</u></p>	<p><u>Communication purpose:</u></p> <p>Guidance indicates several communication strategies to support implementation of preventive measures in schools.</p> <p>Implementation of layered preventive approaches needs to be developed and supported with an understanding of the community's needs, and with communication to the school community about the measures put in place to protect the health of students and staff.</p> <p><u>Related to review questions:</u></p> <p>Physical distancing measures may not be possible in all situations in schools, therefore a layered approach</p>
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support communication

Theme 6: distancing measures in schools and workplaces

Promoting physical distancing and other layered measures to protect students and adults in school settings

Quality assessment:

AGREE II: scope and purpose 69.4%; stakeholder involvement 25%; rigour of development 0%; clarity of presentation 69.44%; applicability 45.83%; editorial independence 0%

Funding source:

Not reported

- Schools have a critical role in helping to promote equity in learning and health, especially for groups disproportionately affected by COVID-19, which have also affected children (including people with disabilities, immigrants, those in rural and remote areas, and people identifying as American Indian or Alaskan Native, black or African-American, or Hispanic or Latino). Considering health equity is therefore key as part of the decision-making related to schools; schools and public health authorities can therefore work to ensure safe, supportive environments; reassure families, teachers and staff by planning and implementing layered prevention strategies to support in-person learning and care; and communicating about these efforts.
- Schools can also work to promote equity by engaging with parents to understand their concerns and preferences for in-person learning; and ensuring that all students, teachers and staff have access to resources to support physical and mental health.
- School administrators can offer modifications to job responsibilities for staff at higher risk of severe disease, while maintaining individual privacy.
- An individualised approach may be needed for working with children with disabilities; administrators should consider adaptations/alternative approaches for prevention strategies, while maintaining efforts to protect all students and staff from COVID-19.

Physical distancing and cohorting:

- Schools should implement physical distancing as one of the layered prevention approaches as far as is possible within their structures, but because of the importance of in-person learning should not exclude students from attending in-person learning to meet minimum distance requirements.
- Cohorting may be used where physical distancing is not possible but does not replace the need for other measures to be in place at the same time; and schools must ensure that cohorting is performed in an equitable manner that does not perpetuate academic, racial or other tracking.

Staying home/returning from isolation:

- Students, teachers or staff with symptoms of an infectious disease (COVID-19 or other) should not attend school.
- Schools should allow for absences for students who are sick; and provide flexible, non-punitive, supportive paid sick leave policies/practices that encourage sick workers to stay home without disadvantage (fear of retaliation, loss of pay, loss of employment). Schools should clearly communicate with staff to ensure that workers are aware of and understand these policies.
- Schools should educate teachers, staff and families about when they should stay home and when they are able to return to school.
- When someone in the school tests positive to COVID-19, the school should notify teachers, staff and families of students who were close contacts as soon as possible after they have been notified of a positive case. Notifications need to be accessible for all students, teachers and staff, including people with limited English language proficiency (e.g. through trans-

to protecting health is needed.

Families, schools and the community need to work together to plan such measures, ensuring that the diverse needs of the community are taken into account.

School teachers and staff need to be supported to work during the pandemic, educated and trained in preventive practices and policies, and workload and mental health strain managed proactively. Provision needs to be made, and clearly communicated, for staff who become ill to help ensure that they do not attend work if sick or fear negative repercussions if absent due to illness.

(Continued)

lated materials) and those with disabilities. The school should also ask families to report new cases to the school and to public health authorities.

School staff:

- Workers at risk for severe illness from COVID-19 (e.g. older adults) may need to continue to use additional preventive measures to protect themselves; and policies and procedures should be in place to protect and support these workers.
- Recognition of the potential mental health strains of working through the COVID-19 pandemic is important; administrators should educate staff about mental health and share information about available mental health support and counselling services; as well as provide a supportive work environment for staff managing job stress, building resilience and managing workplace fatigue.
- School response plans should include periodic hazard assessments to identify transmission risks and prevention strategies, when conditions change, or when there is a case within the school. All staff should be trained on workplace hazards, precautions to protect workers and policies for reporting concerns. Communication and training for all staff should be frequent and easy to understand, and in a language, literacy level and format that is understandable to all workers.

Recommendations:

Access to in-person school learning is important for children's learning and social and emotional well-being. Prevention measures to safely enable children to attend school need to be layered, and staff supported and protected, to reduce the risk of transmission and help to maintain open and accessible in-person school learning during the pandemic.

<p>CDC 2022b#</p> <p><u>Citation type:</u></p> <p>GL</p> <p>Guidance for Institutions of Higher Education (IHEs) CDC</p> <p><u>Public health measure:</u></p> <p>School measures, and also maps onto work measures</p> <p><u>Mapping to:</u> Adherence, feasibility</p> <p><u>Mapping to:</u></p> <p>Theme 2: recipients of public communication: audience, setting and equity</p>	<p><u>Overview and aim:</u></p> <p>To provide guidance on protecting students and staff in higher education settings</p> <p><u>Type of study and data:</u> Official CDC guidance; periodically updated in line with updated quarantine/isolation advice, community vaccination and other relevant variables. Based on CDC Science Brief</p> <p><u>Included disease(s):</u></p> <p>COVID-19</p> <p><u>Timing:</u></p> <p>None</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • Guidance is designed for institutes of higher education (IHE) offering education/instruction beyond high school level (e.g. universities, colleges, community and technical colleges). • IHE administrators can determine collaboratively (with state, tribal, local health and other officials) how to implement guidance while taking into account the local needs of the community. Health equity should be considered to ensure fair access to health; and several factors should inform implementation of layered prevention measures, with consideration of the direct IHE population and that of the local community (e.g. including levels of community transmission, health system capacity, testing availability). Careful, collaborative planning can help IHEs to decide on prevention strategies, to take steps to avoid transmission, and to avoid or contain outbreaks when they happen. • People living and working in shared housing in IHE settings may have challenges with physical distancing and other prevention strategies. As shared housing is considered a lower risk congregate setting, because it involved young adults, it needs to follow the general population guidance for isolation and quarantine. <p><i>Communicating prevention strategies:</i></p>	<p><u>Communication purpose:</u></p> <p>Guidance indicates several communication strategies to support implementation of preventive measures in within higher educational settings.</p> <p>Implementation of layered preventive approaches needs to be developed and supported with an understanding of the community's needs, and with communication to the school community about the measures put in place to protect the health of students and</p>
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Theme 3: support for individual and population behavioural changes Theme 4: community engagement to support communication Theme 6: distancing measures in schools and workplaces	<p><u>Countries included:</u></p> USA advice (CDC) High-income country <p><u>Intervention or phenomenon of interest:</u></p> Promoting physical distancing and other layered preventive measures to protect students and staff in higher education settings <p><u>Quality assessment:</u></p> AGREE II: scope and purpose 77.8%; stakeholder involvement 33.33%; rigour of development 17.7%; clarity of presentation 69.44%; applicability 27.08%; editorial independence 0% <p><u>Funding source:</u></p> Not reported	<ul style="list-style-type: none"> • A staff member or office should be designated as responsible for responding to COVID-19 concerns; and if students or staff develop, have symptoms, or are exposed to a positive case of COVID-19, they should report it to the person/office responsible. • Signs should be posted in highly visible locations (e.g. entrances to buildings, dining areas) and communication with students and staff (via social media and email) undertaken to inform them of prevention strategies, including physical distancing. • Signs for this purpose should include visual cues, and could be based on CDC's print communication materials (available in multiple languages) e.g. use markers and guides to ensure people remain at least 6 feet apart in communal areas. • Language should be clear, simple and effective when communicating with students and staff about preventive measures. • New students and staff should attend virtual training on campus prevention strategies, policies and procedures. • All communications should be accessible for students, staff and other essential visitors (e.g. parents); and all should accommodate diverse audiences, including people with disabilities. • Partnerships for communicating about preventive measures may be useful, as this may help to increase the reach of important preventive information, particularly for those groups that are disproportionately affected by the pandemic. • IHE communication plans should use behaviour-based, actionable strategies to increase uptake of prevention, testing, isolation and quarantine measures. Plans should also provide advice on returning to campus after travelling; and IHEs should include planning for communication with people who have confirmed or suspected COVID-19, and for communicating relevant information about known cases to other students and staff that protects personal privacy. <p><i>Health equity:</i></p> <ul style="list-style-type: none"> • There are longstanding health and social inequities that have rendered many racial and ethnic minority groups at increased risk of death or severe disease from COVID-19. These disparities exist across all age groups including children and young adults; and may indicate that in-person learning at IHEs poses a greater risk to disproportionately affected populations. • Health equity therefore needs to be considered in the context of in-person education. Partnerships (e.g. amongst academics, public health and laboratory systems) could be strengthened or established to improve engagement with underserved populations. • IHE administrators should also act to protect people at increased risk of severe disease or death due to COVID-19, and promote health equity, by promoting strategies such as offering options for accommodation/modification and assistance to students or staff at increase risk that limit their exposure to risk while allowing work and educational opportunities (e.g. virtual learning, telework, modified job role); provide inclusive programming and create options for people with disabilities or special healthcare needs that enable in-person or virtual participation with appropriate modifications, accommodations and supports (e.g. people with disability may need sup- 	staff, and to ensure equitable access to in-person learning. <p><u>Related to review questions:</u></p> Physical distancing is one of a suite of measures to be implemented in a layered way in IHEs. IHEs should engage with the local community to plan preventive measures, ensuring that the diverse needs of the community are taken into account and the equitable access is promoted. Students and staff need to be trained and supported to attend IHEs during the pandemic, including providing clear communication and education on preventive practices and policies. Provision needs to be made, and clearly communicated, for staff who become ill to help ensure that they do not attend work if sick or fear negative repercussions if absent due to illness.
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port to access and use technology for virtual learning); enact policies to protect privacy and health information of all people; train people at all levels of the IHE to identify and address all forms of discrimination; and work to connect people with needed resources (e.g. stable housing, healthy foods) and services to meet their range of needs.

- Students or staff with symptoms of an infectious disease (COVID-19 or other) should stay home and/or seek healthcare. IHEs should encourage students and staff to perform daily health screening, including for COVID-19.
- IHEs should allow for absences for students who are sick; and provide flexible, non-punitive, supportive paid sick leave policies/practices that encourage sick workers to stay home without disadvantage (fear of retaliation, loss of pay, loss of employment). IHEs should clearly communicate with staff to ensure that all are aware of and understand these policies.

People with disabilities:

- Disability resource centres should review policies/procedures to assess whether and what sorts of accommodations and support may be needed due to the pandemic; both students and staff should be encouraged to discuss their needs with the centre.
- Individualised prevention approaches and/or accommodations should be considered for people with disabilities, and work to ensure that education remains accessible and preventive measures are put in place.

Recommendations:

Equal access to in-person higher education is important for learning and social and emotional well-being. Prevention measures to safely enable higher educational attendance, need to be layered, and the measures communicated clearly to the entire IHE community, to reduce the risk of transmission and help to maintain open and accessible in-person education during the pandemic.

DES 2020#	<i>Overview and aim:</i>	<i>Reported on:</i>	<i>Communication purpose:</i>
<p><u>Citation type:</u></p> <p>GL</p> <p>The Department of Education and Skills (Ireland) (2020). Reopening Our Schools - The Roadmap for the Full Return to School</p> <p><u>Public health measure:</u></p> <p>School measures</p> <p><u>Mapping to:</u></p> <p>Adherence</p>	<p>Outlines the public health advice and implications of school reopening, including specific measures to be implemented at different levels. Plans include those for effective communications to ensure that all stakeholders have access to clear, relevant and timely information to support reopening and sustained school opening.</p>	<ul style="list-style-type: none"> • Key to schools reopening and remaining open is for every member of the school community to recognise their role, and to keep playing their role, of adopting behaviours to prevent virus entry and transmission within schools. • High levels of awareness of how each person can protect themselves others, and how to recognise and report COVID-19 symptoms, are essential. Guidance and support for schools to enact these measures is critical as is guidance and materials to support communications by schools with the school community. • Physical distancing measures is one of the main measures to prevent COVID-19 transmission within schools; such key measures need to be maintained if the school community is to be protected. • Physical distancing within schools is based on increasing separation and decreasing interactions between people (students, teachers, staff); but this requires flexibility and will look different across different student ages/stages, and needs to be undertaken with well-being (learning, health and safety) as the major guiding principle. 	<p>Clear, proactive communication from schools to their communities is needed as part of the preparation to re-open. Support for students, and for teachers and staff is also indicated, particularly for those at particular disadvantage or at higher risk of severe disease.</p> <p>Engagement of stakeholders, providing clear infor-</p>

(Continued)

feasibility <u>Mapping to:</u> Theme 3: support for individual and population behavioural changes Theme 6: distancing measures in schools and workplaces	<u>Type of study and data:</u> GL: contributing evidence is not reported. <u>Included disease(s):</u> COVID-19 <u>Timing:</u> Predominantly targeted at preparing for schools to reopen (August 2020), but also with explicit recognition that remote learning may be required at later stages of the pandemic and of the need for schools to be prepared for this possibility <u>Countries included:</u> Ireland; high income <u>Intervention or phenomenon of interest:</u> Communication to support school reopening and the maintenance of open schools over time (focus of data extraction) <u>Quality assessment:</u> AGREE II: scope and purpose 58.3%; stakeholder involvement 16.67%; rigour of development 4.2%; clarity of presentation 83.33%; applicability 62.5%; editorial independence 0% <u>Funding source:</u> Not reported	<ul style="list-style-type: none"> • Transportation to school and from also requires children and families to follow specific guidance (e.g. maintaining physical distancing while waiting for transport, using pre-assigned seating; not using transport if displaying symptoms); this requires clear communication with children and families to ensure high awareness and adherence to measures. • Further support is available to schools to support their students generally following closures, with additional supports aimed at children with special educational needs or with educational disadvantage. Supports range from financial support to reconfigure classrooms and schools through to additional psychological and support staff for school to implement and maintain the changes in light of reopening. • Support and guidance for staff and teachers is also an important aspect of this in relation to reopening, in order to support their own well-being and to equip them to support students. These will include comprehensive communications campaigns to deliver messages of safety and well-being, a webpage with access to information about school reopening and including well-being information and links to resources, guidance and support, psychological support services, and others, such as a well-being app/portal. • School curricula need to ensure equity and take into account that the impact of school closures has not been uniform i.e. those more severely affected might include those with special needs, educational disadvantage, English as an additional language, or experiencing homelessness or living in direct provision. • Provision is needed for high-risk staff and students as schools reopen. This might include facilitating staff to work remotely to ensure their safety; and working to support and ensure good communication with students needing to continue to learn remotely so that they are sufficiently engaged to learn effectively and develop meaningful social interactions and relationships. • The ongoing nature of the pandemic, and the necessity of school closures to protect public health, has highlighted that schools must be prepared to be flexible and ready to provide continuity of teaching and learning, as a contingency for future closures. This includes being prepared to communicate with students, teachers and staff, and to promote communication between these different groups, should the need arise in response to public health advice. <p><i>Ongoing communication arrangements:</i></p> <p>Communications aim to ensure that schools, communities and all stakeholders have access to clear, timely and relevant information to support reopening and continued operation of schools.</p> <p>Continuing stakeholder engagement:</p> <ul style="list-style-type: none"> • Detailed engagement has been critical for identifying the range of complex challenges for reopening schools, including practical challenges of meeting requirements including physical distancing measures, to keep the school community safe. • All stakeholders share the goal of providing certainty wherever this is possible, to ensure that maintenance of the commu- <p>mation to different groups within school communities, and ensuring ongoing two-way communication and support mechanisms are in place, flexible, and adapted as circumstances change will be essential for ongoing management of school settings during the pandemic.</p> <p><i>Related to review questions:</i></p> <p>Promoting clear and comprehensive communication between schools and their communities will be essential as schools reopen, to help to ensure high levels of awareness and adherence to required measures to prevent COVID-19 transmission, and to help support children, teachers, staff and families as they undertake this transition.</p>
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nity's well-being is clearly present in all communications, and to communicate transparently and in a timely manner.

- Close and continuing engagement with education partners and key stakeholders is planned as a mechanism of refining guidance over time that relates to school reopening and operation.

Providing support for schools:

The Education Department is providing materials to support school planning for reopening and communication with school communities in advance of reopening, including:

- Training programmes for staff (e.g. health and safety, well-being, tailored training for different staff categories);
- Guidance and support information related to curriculum;
- Provision of age-appropriate information posters (real and digital) with key health messages; and
- Guidance for communicating effectively with school students and families about reopening.

Supporting students, parents and school communities:

Providing materials to schools for distribution (augmented by Department communications via digital channels) to returning students and families ahead of reopening, including:

- Brief information for parents (primary and post-primary levels) emphasising PH and well-being;
- Age-appropriate information for students, emphasising PH and well-being;
- All information will be developed to highlight well-being, accessibility and inclusion;
- Schools will be provided with templates for communication with students' families to disseminate school-specific information;
- Media and government channels will be used to ensure reach of information about returning to school to all school community members.

Direct communication channels for schools:

Several direct communication channels will be available to directly support schools as they reopen, including:

- A webpage to enable open and transparent information sharing;
- A dedicated Departmental team to support schools with specific requests, information about availability of supports etc. related to the roadmap.

In recognition of the range of responses possible from the school community upon reopening, well-being is to be a major focus; specific supports to be made available to students including vulnerable groups, those experiencing bereavement.

A significant shift is required behaviourally, with all members of the community playing their part to keep everyone safe e.g. those with symptoms to stay home, respecting physical distancing practices and minimising social contacts. Extensive communication by schools with their communities is required

(Continued)

to support this shift - which requires not only achieving physical distancing minimum standards but supporting re-engagement of students in learning and social activities; students will need support from families, teachers and school staff to make this transition successfully.

Key public health advice messages will need to be communicated and reinforced throughout the community, including being aware of what to do to protect themselves and others, continuing to observe physical distancing and other measures.

Recommendations:

School reopening and remaining open requires students, families, teachers and staff to have high awareness of and adherence to preventive measures such as physical distancing. Extensive communication and support are needed to support this transition and to ensure that schools are able to remain open once students return to face-to-face learning.

*Non-COVID-19-specific study; % AMSTAR rating from McMaster Health Forum (via Health Systems Evidence <https://www.healthsystemsevidence.org>)

Abbreviations:

AGREE II: Appraisal of Guidelines for Research & Evaluation II tool

CDC: Centres for Disease Control and Prevention

ECE: early care and education

GL: guideline

H1N1: Influenza A virus subtype

IHE: institute of higher education

PH: public health

SR: systematic review

Table e: Workplace measures

Public health measure 5: Workplace measures	Study features	Outcomes and findings	Translational steps
No studies were identified that focused on workplace measures only (several studies mapped also to other physical distancing measures included workplace measures).			

Table f: Crowd avoidance, including individual physical distancing measures

Public health measure 6: Crowd avoidance	Study features	Outcomes and findings	Translational steps
Systematic reviews, guidelines			
ECDC 2020#	<i>Overview and aim:</i>	<i>Reported on:</i>	<i>Communication purpose:</i>
At:	To assess the risk of COVID-19 transmission to the general	<ul style="list-style-type: none"> Public health response measures are variable across countries; many have relaxed or lifted measures in a range of schedules (including several measures simultaneously). 	Guidance may inform public health

(Continued)

Risk of COVID-19 transmission related to the end-of-year festive season (europa.eu)

Citation type:

GL

Public health measure:

Crowd avoidance, and also maps onto general PD

Mapping to:

Uptake, acceptability, adherence

Mapping to:

Theme 1: features of public communication: content, timing and duration, and delivery

Theme 2: recipients of public communication: audience, setting and equity

Theme 5:

public trust and perceptions

population and medically vulnerable people, in the period leading up to Christmas; and to provide guidance on mitigation measures and on risk communication activities to support these measures.

Type of study and data:

GL, rapid risk assessment based on ECDC methodology

Included disease(s):

COVID-19

Timing:

Pre-Christmas festive season 2020 (4 December 2020); guidance developed in preparation for the festive season, with background risk of COVID-19 in the community at high levels and prior to the availability of vaccination against COVID-19

Countries included:

Advice for countries in the EU/EEA and UK. Predominantly high-income

Intervention or phenomenon of interest:

Communication of risk and mitigation measures leading up to festive season

Quality assessment:

AGREE II: scope and purpose 61.1%; stakeholder involvement 22.22%; rigour of development 11.5%; clarity of presentation 55.56%; applicability 2.08%; editorial independence 0%

Funding source:

Additionally, disease transmission is also influenced by individuals' adherence to measures, individual behaviours, and a range of cultural, societal and economic factors.

- Adaptation of measures should be done in a targeted, proportionate and co-ordinated way, based on the current epidemiology at the time, capacity of public health and healthcare systems, and the social and economic impacts of the measures. The aim is to implement public health measures such as physical distancing in the most effective, co-ordinated and targeted way possible, while minimising negative social, economic and health effects.
- Information about public health measures needs to be communicated clearly to the public in order to mitigate the risk of increased levels of transmission likely to arise during the end-of-year season (during which time related activities such as shopping, social gatherings, meetings and travel are associated with increases in COVID cases). Such communication also needs to take into account the social, personal and economic impacts of any measures.
- If public health measures are relaxed temporarily (e.g. around Christmas), there needs to be clear communication and guidance on how to mitigate the associated risks.
- As well as intensified transmission risk associated with the end-of-year season (social gatherings, shopping, increased travel of people in shared transport), 'pandemic fatigue' (people becoming demotivated to follow recommended protective measures) has been reported in many European countries. Pandemic fatigue brings a risk of rising transmission and infection rates, with increased strain on healthcare and economic impacts, and increases the likelihood that stricter measures may be necessary in future to control transmission.

Risk communication: addressing pandemic fatigue:

- Addressing pandemic fatigue should therefore be a key goal of risk communication activities, as engagement of the public is critical to the success of public health measures, and this is more likely to be achieved if the measures are clear, proportionate, transparent and supported by quantified goals and epidemiological targets. Authorities need to find the balance between epidemiological risk and social and economic risk; and to balance the apparently conflicting messages to the public which on the one hand convey information about relaxation of measures over the end-of-year period and on the other, advocate for restrictions to minimise epidemiological risk.

Risk communication principles to be considered include the following:

- It is critical that authorities communicate with empathy to the public, acknowledge the difficulties faced by people, and that they are seen to be listening to the public.
- New public health measures need to be clearly explained, with a clear justification or rationale as well as an indication of their likely duration and the criteria to be used to decide when to end the measures.

communication strategies in situations where public health measures are changing or there is anticipated change in future.

Provision of clear, accessible and transparent information about measures, supported by concrete goals and epidemiological targets to directly address pandemic fatigue, which has the potential to undermine the effectiveness of public health measures

Related to review questions:

Clear communication and community engagement are key to providing guidance to the community about which measures apply, when, and how to protect themselves and others by mitigating the risk of disease transmission. This may be particularly important as public health restrictions change and people still need to minimise transmission risks to themselves and to vulnerable members of the community.

Addressing pandemic fatigue through effective risk communication is essential, as lack of adherence to measures may increase transmission and undermine effectiveness of public health measures.

(Continued)

Not reported; this report was written with the co-ordination and assistance of an Internal Response Team at the European Centre for Disease Prevention and Control.

- Public messages should be presented using accessible and emotionally engaging language and manner that people can easily understand and relate to.
- Public health messages should be consistent, transparent about uncertainties, and easily understood by the audience.
- Epidemiological data may be explained more easily using visualisations to help convey information.

Measures for public health protection should be applied and layered irrespective of underlying level of community transmission, and in all settings i.e. ensuring physical distancing, hand and respiratory hygiene, use of masks, and ensuring sufficient ventilation; cancelling or limiting the size and length of social events, offering online alternatives, and within-household only gatherings, creating and maintain small social bubbles, self-quarantine, and shielding medically and socially-vulnerable people may all help to reduce risk.

Authorities should implement strategies to protect people who are medically or socially vulnerable; particularly those in long-term care facilities and others living in confined spaces (e.g. prisons, migrant camps). Strategies might include helping people to avoid crowds and providing support for infection prevention and control, practical and mental support, while accounting for people's need for social interactions. Social bubbles and/or self-quarantine before gatherings with vulnerable people is also advisable.

Authorities should communicate the above measures and precautions to the public, so that people are encouraged to reduce travel and social activities; take extra precautions before gatherings (e.g. self-quarantine); and consider alternatives to those traditionally practised (e.g. creating social bubbles, moving gatherings online).

Authorities should also communicate to the public that they might consider the potential consequences of infecting others or sparking a chain of transmission that could lead to severe illness or death.

Recommendations:

Authorities need to work to balance the epidemiological risk of disease transmission against the relaxation of public health measures; and to communicate effectively with the public to convey information about measures to mitigate risk in situations where measures are temporarily relaxed.

NACCHO 2006*+

Mapping to: Adherence, acceptability

Overview and aim:

Assistance for local health departments writing new, or improving existing, local pandemic influenza plans by identifying common elements

Intervention or phenomenon of interest:

Reported on:

- Risk communication and public information are critical for pandemic planning and implementation, throughout all phases, and continuously updated to reflect status (pandemic status, impacts on essential services, actions being taken to address the outbreak, ways people can protect themselves).
- Disseminate and share timely and accurate information with the public, including advice that action taken to minimise exposure, and actions if exposed, will help to reduce transmission and may help to relieve strain on health system and other essential services.

Communication purpose:

These guidelines may be useful for enabling communication; and supporting behaviour change in pandemic influenza planning that focuses on public education and risk commu-

(Continued)

We focus here on guidance related to communication targeting community dwelling general public about physical distancing to limit viral transmission.

Inclusion and exclusion criteria:

Included: numerous local level Health Department pandemic flu plans reviewed by NACCHO to develop the guide

Countries included:

USA

Quality assessment: (AGREE II) ¹:

Scope and purpose: 100%

Stakeholder involvement: 67%

Rigour of development: 44%

Clarity of presentation: 94%

Applicability: 33%

Editorial independence: 25%

Funding source:

This product was funded through the “Linking Centers for Excellence and Public Health Departments” Cooperative Agreement between the Centers for Disease Control and Prevention and the National Association of County and City Health Officials (# U50 /CCU 302718).

- Provide messages that detail how to limit the spread of the virus (e.g. cover your cough) and that home healthcare for family members may be better than medical care during a pandemic.
- If people are required to stay home for prolonged periods provide the information, education, and tools necessary for people to prepare to meet basic needs (e.g. food, medicines).
- Ensure the rationale for physical distancing strategies (e.g. cancelling public events, closing schools), aiming to reduce infection spread during a pandemic, is clearly communicated to the public.
- Ensure public information provides consistent messages across jurisdictions.
- Engaging the public in planning might help to identify ways people might respond in a crisis that are different to those predicted. While the public is often not part of planning, they may be more likely to participate and comply when they are informed about the rationale for measures and the essential role, they play in responding to a pandemic outbreak.
- Specific to Phases 1 through 3 (pre-pandemic and early alert phase of pandemic):
- Educate the public about influenza pandemics and the role that quarantine, and isolation measures have in preventing the spread of the virus. Focus on the role that each person has in taking care of themselves and their families.
- Develop information resources beforehand for rapid dissemination during an outbreak.
- Detail how to prevent infection (cover that cough, wash hands), when to stay home and when seek medical care, how to find information about the outbreak and caring for others.
- Ensure information resources are available in the main languages used in the community.
- Engage with religious and community organisations to reach people that may not access traditional communication channels (e.g. homeless populations).
- Choose an official pandemic spokesperson.

Phases 4 and 5 (pandemic alert period with increasing clusters of cases):

- Distribute information resources developed in advance.
- Ask state health departments to provide a public information hotline. Use federal and state guidelines to develop standardised message scripts for the public information hotline.
- Consider activating a Joint (across state) Information Centre.
- Develop press releases tailored to local needs that utilise federal and State information but also include relevant local phone numbers, websites, and healthcare information.
- Regularly update local websites with emerging information.
- Develop message maps for conveying key information.
- Brief the general public and media daily on the status of the pandemic.

nication related to limiting the spread of the disease.

Related to review questions:

Findings indicate the critical role of public information and risk communication in a pandemic outbreak. Consideration of these information requirements should inform communication planning prior to an outbreak and be updated throughout.

(Continued)

- Work with employers to plan support for their workers if services (e.g. childcare) are unavailable during a pandemic.
- Ensure that administrators, managers and supervisors know about and promote use of tools and techniques for supporting staff with mental healthcare needs during crisis. This may include training staff to help employees cope with grief, anger, exhaustion, fear; both behavioural health professionals and non-professionals (e.g. clinicians, community leaders, cultural and faith-based organisations).

Phase 6 (pandemic period, increased and sustained transmission):

- Establish a Joint Information Centre.
- Update message maps as required to ensure information is current.
- Continue to regularly update the general public about the pandemic, include advice on caring for the unwell and ways people can obtain further information.
- Activate plans for psychosocial support of the workforce.

Recommendations:

Consider the following issues when planning for and responding to pandemic:

How the necessity of isolation/quarantine should be communicated, and what advice will be given.

How to urgently convey the importance of staying at home (unless requiring medical care); where to direct people to get usual medical care (if unavailable through usual routes).

How to ensure consistent information and messages, and to address misinformation that may arise.

How to reach groups not reached through traditional communication channels (e.g. other channels, involvement of other groups such as community groups).

How to ensure translated information is available (e.g. could information prepared in advance be translated in advance).

PHAC 2021	<u>Overview and aim:</u>	<u>Reported on:</u>	<u>Communication purpose:</u>
Public Health Agency of Canada (PHAC) 2021 Individual and community-based measures to mitigate the spread of COVID-19 in Canada At:	Identification of non-pharmaceutical PH measures to mitigate COVID-19 transmission risks for individuals and communities, considering a range of settings and issues specific to different groups within communities	Several factors influence adherence to PH measures, including contextual (e.g. living, working, community conditions), social and financial circumstances, and cultural and spiritual factors. These may also influence whether individuals can adopt measures and sustain adherence over time. Duration of the pandemic and pandemic fatigue due to sustained efforts also impact adherence.	May inform development of more effective and appropriate communications around PH measures, including physical distancing measures
Individual and community-based measures to mitigate the spread of COVID-19	<u>Type of study and data:</u> Guideline; the best available evidence	To promote adherence, public education and communication strategies should be tailored to a range of factors including age, sex and gender, ability status, caregiving responsibilities and other SES/identity factors. <i>Communication and public education:</i>	<u>Related to review questions:</u> Describes measures to tailor and improve communication

(Continued)

ID-19 in Canada -
Canada.ca

Citation type:

GL

Public health measure:

Crowd avoidance,
and also maps onto

general PD

Mapping to:

Uptake,
acceptability,
adherence

Mapping to:

Theme 1: features
of public commu-
nication: content,
timing and dura-
tion, and delivery

Theme 2: recipients
of public commu-
nication: audience,
setting and equity

Theme 3:

support for indi-
vidual and popu-
lation behavioural
changes

Theme 4: commu-
nity engagement to
support communi-
cation

Theme 5:

public trust and
perceptions

and expert opinion; in-
cluded rapid evidence
reviews, policy ad-
vice from PH agencies
(WHO, CDC), economic
advice and research

Included disease(s):
COVID-19

Timing:

Guideline to be inter-
preted in the context
of changes in timing
and intensity of COV-
ID-19 activity across
jurisdictions, and local
adaptations to legisla-
tion, regulations and
policies

Countries included:

Canadian context;
some included evi-
dence from Canadi-
an agencies, others
from international or
national sources (e.g.
WHO, UNICEF, ECDC,
CDC, SAGE UK)

High-income countries
well represented; but
within these, disad-
vantaged and/or re-
mote groups consid-
ered

Intervention or phe-
nomenon of interest:
PH measures to mit-
igate transmission
risk in a range of set-
tings and population
groups

Quality assessment:

AGREE II: scope and
purpose 83.3%; stake-
holder involvement
30.56%; rigour of de-
velopment 19.8%;
clarity of presentation
63.89%; applicability
25.0%; editorial inde-
pendence 0%

Funding source:

Not reported

- During a PH emergency, communication of informa-
tion and advice is a critical public health intervention.
The public, healthcare providers and other stakeholders
all require trustworthy, accessible, comprehensive, evi-
dence-informed information to be available in a timely
way, in order to be able to protect their own and others'
health.
- Maintaining public trust is a critical element of communi-
cation and helps to ensure that members of the public will
continue to support and follow public health advice. Trust
can be built and maintained in the following ways:
- Providing clear, consistent information about COV-
ID-19 and prevention measures via trusted authoritative
sources;
- Communicating transparently, including conveying the
commitment to base decisions on the best available scien-
tific knowledge at any time;
- Communicating the rationale for and benefits of the public
health measure, alongside the need to continue such mea-
sures over time;
- Communicating the rationale for and factors to be consid-
ered when adjusting PH measures, to ensure public safety;
- Tailoring the information and messages to ensure equi-
table access by diverse people and their needs, for all ages
and gender identities, and carefully accounting for factors
such as socioeconomic, cultural and other relevant factors;
- Maintaining relationships with the media and stakeholders
is critical as it helps to ensure that key messages are clearly
and consistently communicated; can address misinforma-
tion early (before it spreads widely); and consensus is built
around behaviours to adapt to prevent spread of the dis-
ease (e.g. physical distancing behaviours).
- Public health messages should include information about
ways to reduce risk, as well as rationale for decisions, as
this will help to promote trust and adherence to the ad-
vice. Information or messages for the public also include
the need for:
- Such information or communication tools to use plain lan-
guage, and to be tailored to local needs so that messages
are widely accessible, easily understood, and culturally
and contextually relevant and appropriate;
- Strategies to be tailored to particular audiences (e.g. those
at higher risk, minority ethnic groups, remote and isolat-
ed communities, those not fluent in the dominant lan-
guage(s), people with disabilities, people experiencing
homelessness, those who are radicalised), being particu-
larly mindful that there are people within the community
who may not be able to access or use standard resources;
- Translation of messages into a range of languages (e.g. of-
ficial, Indigenous community languages);
- Use of several methods to deliver the messages and to im-
prove reach across the community (e.g. social media, ra-
dio);
- Description of statistical information in words, considering
also using real-life stories to convey risks, the importance
of following PH advice;
- Modelling desirable behaviours to make them the social
norm;

tion to support pre-
ventive measures.

Identifies several
factors and contex-
tual features that
might influence
PH messaging; and
which might be de-
liberately consid-
ered when commu-
nicating with com-
munities and re-
gions.

Improving such
communication
may promote bet-
ter acceptability,
uptake and adher-
ence to required
physical distancing
measures.

Provides recom-
mendations for im-
proved communi-
cation about mit-
igation strategies
(including PD) for
vulnerable/isolat-
ed communities
and in certain set-
tings (e.g. on public
transport).

(Continued)

- Address stigma which might otherwise lead to isolation of particular groups and increased spread of the virus;
- Identify and counter rumours and misinformation which might otherwise spread rapidly.
- Community engagement with community leaders and other stakeholders is important for:
 - Both sharing information and receiving feedback on the relevance and value of communications;
 - Helping to disseminate accurate, culturally appropriate messages; and
 - Identifying risk mitigation measures that are practical and acceptable; identifying and addressing community concerns or needs; and for identifying how messages should be tailored, and for whom, in order to promote health equity within the community.
- To be avoided in communications (by governments, leadership groups and agencies):
 - Overstatements/exaggerations: can lead to loss of trust in the individual or organisation making the statement;
 - Appealing to authority: explaining how it is known that a PHM works, or why or how a particular position has evolved may avoid some individuals' lack of trust in authorities;
 - Appealing to fear: while people sharing (peer-to-peer) their experiences may be helpful in conveying disease risk; authorities' appeals may appear coercive;
 - Repeating myths: even where these are repeated alongside factual information, this can inadvertently reinforce the myth; generally, consistently emphasising facts is more effective;
 - Countering narrative with facts: statistical information is ineffective at countering a narrative story, whereas descriptive stories or visual representations are typically more understandable and more persuasive.

Specific communication considerations for physical distancing measures for mitigating risk:

- Public health agencies need to continually communicate with the public to encourage high awareness of COVID-19 and the measures to be taken to reduce risk. This might include communication about personal protective practices, as well as encouraging high awareness of knowledge of symptoms and self-monitoring and providing clear instructions on when and how to isolate, seek medical attention and when to be tested.
- Agencies need to communicate not only to encourage knowledge of and adherence to measures, but also correct use of measures.
- Agencies should also encourage people in the community to plan ahead by maintaining a supply of essential medicines, home supplies and food in the event that they or the household need to isolate or quarantine. Agencies should also provide information on the resources and support available in their communities.
- Use signage and/or communiqués to convey information and promote personal protective behaviours (support adherence) e.g. do not enter area if symptomatic, reinforce physical distancing instructions, maintaining the greatest

(Continued)

distance possible etc. These messages can also be conveyed through websites/voicemail.

- In busy/noisy settings, promote noise reduction strategies to enable people to interact or communicate at a distance (i.e. avoiding close interaction).
- Use visual cues and directional marking to support recommended distancing.
- Promote non-contact ways of interacting with one another (e.g. waving to greet).
- For people at risk of more severe disease (higher risk): adjust services to help reduce the interactions and risk of disease in these individuals e.g. work/study from home, dedicated shopping hours, delivery services.

Communication for remote/isolated communities:

- Remote, island and isolated communities, and settings such as First Nations, Inuit and Metis communities, have additional issues to consider and require tailored approaches to reduce risk and to communicate about these e.g. tailored based on culture, geography and social determinants of health.
- Factors such as access to adequate housing (e.g. whether poor housing or overcrowding is an issue), water quality or access and sanitation, food security, limited healthcare, educational access and income, and higher rates of pre-existing health conditions may all be important.
- Planning for adjustment and/or introduction of PH measures should be undertaken in conjunction with local and regional leadership.
- Some key aspects of promoting PH measures in such communities includes:
 - Promoting awareness of the need for planning to ensure essential supplies are maintained and collaborating with services to ensure delivery of supplies.
 - Identifying culturally appropriate housing for people needing to isolate or quarantine if their own home does not allow physical separation.
 - Encouraging on-the-land activities and living as a physical distancing measure to minimise risk of infection.
 - Identify communities where tailored communication strategies are needed. Tailoring PH communication strategies to local community circumstances and recognising that such remote communities may not be exposed to the same level of communications as urban areas. This might include developing communication campaigns collaboratively with community members; tailoring the mode of communication (e.g. community radio, mail outs, posters), and considering whether messaging from familiar or trusted individuals (e.g. Elders, First Nations physicians) may be appropriate.

Communication for community congregate living facilities (e.g. shelters for homeless people, industrial camps, group homes for people with disabilities):

- In applying risk mitigation strategies it is key to recognise that individuals may have particular health, age, ability status or socioeconomic or other circumstances that limit their ability to adhere to recommended measures.

(Continued)

Quality assessment:

AGREE II: scope and purpose 44.4%; stakeholder involvement 11.11%; rigour of development 2.1%; clarity of presentation 61.11%; applicability 0%; editorial independence 0%

Funding source:

Not reported

Recommendations:

People considering hosting or attending gatherings need to be aware of the risks of contracting COVID. People hosting gatherings have a responsibility to communicate with guests ahead of time what measures will be in place to help to minimise risks, so that they can make informed decisions about whether to attend.

measures, and to consistently follow the recommendations.

Those hosting gatherings have a role to play in communicating in advance about the measures that will be in place to improve safety, but responsibility for maintaining public health measures during gatherings falls to all involved.

Teasdale 2014*

(SR)

Mapping to: Acceptability, uptake, adherence, feasibility

Also relevant to public health measures 3 (quarantine), 4 (school) and 5 (workplace measures)

Overview and aim:

Exploration of public perceptions of non-pharmaceutical interventions aiming to reduce the transmission of acute respiratory infections

Inclusion and exclusion criteria:

Included: qualitative or mixed-methods studies (if having a substantial qualitative component) assessing adult (17 years or older) public (general public or patients) beliefs and perceptions of NPIs for acute respiratory infections and/or interventions that aimed to promote non-pharmaceutical respiratory infection control
Excluded: studies of health professionals or children

Type of study and data:

Qualitative systematic review. 16 included studies, total participants 1022; most (12) assessed general public, (2) focused on ethnic groups, 2 on peo-

Reported on:

Focus here is on findings related to physical distancing measures

- Isolation and physical distancing behaviours (quarantine, school closures) were viewed as acceptable, showing social responsibility (protecting others from infection).
- Concerns were raised about NPIs including potential to attract social stigma and perceived adverse impacts (physical, emotional (feelings of stigma, segregation) and socioeconomic (individual (e.g. economic pressures of returning to work) and societal)). There were particular concerns about physical distancing and the wearing of masks in some contexts.
- Physical distancing within households and some cultural groups was viewed as unacceptable due to the limitations placed on interactions regarded as socially and culturally necessary, including caring for sick family members.
- Respiratory viruses were typically viewed as transmitted by air, caught via proximity to infected others (including beliefs about geographic proximity) and more likely to spread in cold temperatures. These views may affect perceived effectiveness of NPIs, particularly social isolation.
- People acknowledged that uncertainty is associated with emerging infections and did not express confidence about self-diagnosing in an emerging outbreak. This suggests that people do not see this as their role (self-diagnosis) and may affect their propensity to take up NPIs such as social isolation.

Perceived vulnerability to respiratory infection

- People typically accepted that an emerging outbreak created risk to the community, although some identify themselves as less vulnerable/more capable (e.g. than people with chronic health problems) and this may influence their own likelihood of adopting NPIs.
- During the H1N1 2009 pandemic, people seemed to rate their susceptibility to a new infection in terms of features of their living environment, in comparison with living situations where they believed a new infection was likely to

Communication purpose:

Findings may inform communication with communities to improve the acceptability, feasibility, and uptake of physical distancing, and to support behaviour change required for these measures.

Related to review questions:

People's views and perceptions of physical distancing may impact their acceptance, uptake and adherence. Messages should be framed positively where possible to reduce stigma and encourage adherence. Communication should also target people's perceptions that only 'others' are at risk, and therefore they do not need to comply and aim to also address other barriers such as costs.

(Continued)

ple with chronic conditions).

Most (10) studies focused on actual respiratory infection outbreak/pandemic (SARS and H1N1 2009 pandemic).

9/16 studies included physical distancing as an element of NPI.

Included studies generally examined multiple NPIs or NPIs in combination with pharmaceutical measures.

Countries included:

UK (6), USA (4), one study each in Canada, Australia, Hong Kong, Bangladesh, New Zealand, Spain

Quality assessment:

6/11 AMSTAR rating

Funding source:

This research was undertaken as part of doctoral research funded by the National Institute for Health Research (NIHR) School for Primary Care Research (SPCR).

emerge (e.g. lower hygiene levels, high population density). This suggests risk is not assessed rationally but instead people attempt to distance themselves from risk, which may lead to underestimation of personal infection risk and an assessment of the irrelevance of NPIs.

Anxiety about emerging respiratory infections

- Public anxiety was increased by emergence of a new infection in early stages of an outbreak, but this decreased over time, with people making light of the threat. This may represent attempts by people to distance themselves from the threat.

Communications about emerging respiratory infections

- Diminishing anxiety over the course of an outbreak was influenced by people's views of communications related to an emerging outbreak. People were commonly sceptical about the information provided, especially by the media, often viewing communication as unreliable, inconsistent, premature, and unduly alarmist, e.g. that media reporting in an outbreak was often exaggerated.
- The public appeared to assess their personal risk by comparing personal experiences with official information. Mismatches commonly led to doubts about credibility and trustworthiness of information, where this inconsistency might lead to fatigue related to infection communications and blunting of messages about NPIs. This may in turn influence behavioural responses and lead to people disregarding advice.

Recommendations:

NPI measure adoption is likely to be improved by addressing common public beliefs and concerns about the necessity, effectiveness, acceptability and feasibility of the measures, and by addressing key barriers such as personal vulnerability to emerging infections, rejection of personal risk and concerns about possible costs and stigma associated with some NPIs.

Enabling people to associate NPIs with a positive identity rather than a negative or vulnerable identity e.g. positive framing of advice messages around maintaining well-being rather than avoiding infection might improve the perceived relevance of non-pharmaceutical respiratory infection control to those who do not acknowledge that they could be at risk of infection.

<p>Tooher 2013*</p> <p>(SR)</p> <p><u>Mapping to:</u> Uptake, adherence</p> <p>Also relevant to public health measures 3 (quarantine), 2 (isolation) and 5 (workplace measures)</p>	<p><u>Overview and aim:</u></p> <p>Assessment of behavioural responses to H1N1 pandemic (including adoption of non-pharmaceutical mitigation measures) and association with community knowledge levels, perceived</p>	<p><u>Reported on:</u></p> <p><i>Pandemic knowledge</i></p> <ul style="list-style-type: none"> Awareness of the pandemic was high. Level of knowledge about H1N1 in general and transmission was moderate. Knowledge of prevention methods (e.g. avoiding those with infection) was reasonable. <p><i>Levels of concern and risk perception</i></p>	<p><u>Communication purpose:</u></p> <p>May inform communication with communities about pandemic health threats and the importance of behavioural mitigation measures, including to populations</p>
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severity, and level of concern

Inclusion and exclusion criteria:

Included: Community response to pandemic assessed by surveys during or after 2009 H1N1 pandemic

Excluded: Studies of population subgroups, other respiratory diseases, mathematical modelling, qualitative studies

Type of study and data:

SR; 19 included studies.

Cross-sectional or repeated population surveys

Countries included:

Australia (n = 5), the US (n = 4), the UK (n = 1), Hong Kong (n = 2), Saudi Arabia (n = 1), China (n = 1) and Mexico (n = 1), and several European countries (n = 5)

Quality assessment:

8/11 AMSTAR rating

Funding source:

This work was supported by the National Health and Medical Research Council [Grant Number 626867]. Author HM is supported by an NHMRC Career Development Fellowship No. 1016272

- Levels of concern and anxiety about the pandemic were typically low-to-moderate; 2 to 36% reported high or very high levels of concern.
- Perceived severity of H1N1 ranged from low to very severe across countries, with perceived severity declining over time.
- Personal vulnerability to contracting H1N1 generally low-to-moderate; 5 to 25% reported high or very high levels of perceived vulnerability.
- The threat posed to the community was typically low-to-moderate across countries, but 8 to 16% rated the threat as high.

Pandemic behaviours

- Precautionary behavioural actions were lower than intentions: 30% to 99% expressed intentions to undertake protective behaviours and precautions, such as staying home with symptoms. However, lower proportions of respondents had undertaken any of the recommended behaviours and precautions e.g. staying home from work ranged from < 1% to 26%, with similar proportions for other behaviours.
- Factors most commonly influencing recommended behaviour adoption were increased risk perception and older age, increased pandemic knowledge and being female.

Recommendations:

- Community subpopulations (e.g. younger people, those with lower education) may be slower to respond. Decision-makers should consider that communication and strategies must be tailored to local circumstances and groups within communities, such as those most vulnerable to the disease.
- Differences between intended and actual behaviours exist and may be related to people's perceived risk of infection. Pandemic planning and public health communication regarding risk may be important to increase adherence; especially early in pandemics when perceived risk may be lower, but the disease is being transmitted.

less likely to take up those measures, such as younger people and those with lower education.

It may also inform policymakers about communication strategies to enhance knowledge about prevention methods and perceived risk, to maximise behavioural uptake of required measures.

Related to review questions:

Findings link knowledge and perceived risk levels to behavioural change and may provide insight into improving acceptability and uptake of physical distancing measures such as staying away from work with symptoms.

<p>WHO 2020b#</p> <p>At:</p> <p>Public health considerations for elections and related activities in the</p>	<p><u>Overview and aim:</u></p> <p>To provide guidance on measures to minimise COVID-19 transmission in relation to</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • Transparent, deliberate decisions about the safety of in-person electoral activities are needed; and as for any mass gathering should include evaluation of risk, mitigation of risk, and communication of risk. Following this process should lead to an informed decision about the best 	<p><u>Communication purpose:</u></p> <p>Findings may inform public communications in preparation for,</p>
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(Continued)

<p>context of the COVID-19 pandemic (who.int)</p> <p>December 2020</p> <p><u>Citation type:</u></p> <p>GL</p> <p><u>Public health measure:</u></p> <p>Crowd avoidance, and also maps onto general PD</p> <p><u>Mapping to:</u> Acceptability, feasibility</p> <p><u>Mapping to:</u></p> <p>Theme 1: features of public communication: content, timing and duration, and delivery</p> <p>Theme 4: community engagement to support communication</p>	<p>in-person electoral and related activities</p> <p><u>Type of study and data:</u></p> <p>Guidance (across-country)</p> <p><u>Included disease(s):</u> COVID-19</p> <p><u>Timing:</u></p> <p>Nonspecific</p> <p><u>Countries included:</u></p> <p>WHO; international</p> <p><u>Intervention or phenomenon of interest:</u> Communication to support PHSMs to mitigate risk associated with elections and related activities</p> <p><u>Quality assessment:</u></p> <p>AGREE II: scope and purpose 72.2%; stakeholder involvement 36.11%; rigour of development 10.40%; clarity of presentation 83.33%; applicability 39.58%; editorial independence 0%</p> <p><u>Funding source:</u></p> <p>Not reported; this document was developed by the WHO Health Emergencies Programme in consultation with WHO Regional Offices, the WHO Office at the United Nations, other WHO Offices and external experts.</p>	<p>arrangements to promote safe activities, based on the local context.</p> <ul style="list-style-type: none"> • Risk evaluation involves assessing the risk of COVID-19 given the country/area, public health and social measures (PHSMs) in place, event features and other factors; with precautionary measures to be implemented at election points such as polling stations. • To mitigate risk, venues should be adapted as much as possible for safety while ensuring the integrity of the electoral process. This might include adapting or adding to standard precautionary measures, for instance: considering whether adequate space is available within venues to avoid or minimise crowding (consider increasing number of venues), physical barriers, time for voting (e.g. increase voting duration), flow regulation of voters, ventilation (e.g. housing fully or partially out of doors). • Key messages should be disseminated throughout venues via visual reminders, e.g. containing information on basic preventive measures. • Additional measures should be put in place for people at higher risk of transmitting COVID-19 or developing severe disease if infected e.g. dedicated time slots, polling stations or booths, remote voting; and for electoral staff in this category, assignment to positions with little or no direct public contact. <p><u>Risk communication:</u></p> <p>Public communication is needed to promote acceptance of changes required to promote safety and to address rumours, misinformation and concerns about the transmission of COVID-19.</p> <p>Such communication should be in place before, during and after voting, and should aim to convey the following key messages:</p> <ul style="list-style-type: none"> • Information about the measures put in place to improve safety, together with a rationale for these measures; • Explanation of the precautionary measures adopted; • Information about the risks associated with voting activities, both before and after precautionary measures are enacted; • Reporting on the overall safety of the activities once completed. <p>Factors enabling precautionary measures to be implemented include facilitated dialogue between stakeholders involved in the safety of activities; co-ordination between electoral authorities and those responsible for health and safety planning in the context of COVID-19; alignment between electoral precautionary measures and local/national COVID-19 policies; information on precautionary measures, and training in their application, for electoral and related staff; supervision and feedback on precautionary measures during activities.</p> <p>Precautionary measures to be planned and put in place for elections should consider not only the voting process but also the full range of related activities (e.g. meetings, work-</p>	<p>pre, during and post-election activities; and assist with informing individuals and communities of the risks, measures in place to mitigate risks, and to address misinformation directly.</p> <p><u>Related to review questions:</u></p> <p>Communication to the public about COVID-19 risk mitigation measures for electoral activities should include clear information about risk and measures implemented; help to support implementation of the measures, as well as adaptation of these to vulnerable groups within the population; and address misinformation about the mechanisms in place.</p> <p>Measures to mitigate risks, and to communicate with the public about both the risks and the measures need to be planned ahead of time and communication should occur regularly throughout and after the election process and associated activities.</p>
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(Continued)

shops, electoral campaigns, rallies, voter registration, vote counting, gatherings for announcement of results).

Recommendations:

Elections and related activities require planning and implementation of a range of precautionary measures to minimise risk of COVID-19, as well as communication with the public about these risks and measures taken to mitigate risk.

Scoping review, qualitative analysis

Eaton 2020*[^]

(scoping review)

Mapping to:

uptake, acceptability, adherence; also people's views and experiences

Overview and aim:

To outline broad, scoping lessons learned from the HIV epidemic tailored to the nature of what is currently known about COVID-19 using the Social Ecological Model of Health as a unifying framework

Inclusion and exclusion criteria:

Included:

Study types not stated.

No method to indicate inclusion/exclusion of study types

Type of study and data:

Review: scoping (no review method included)

Countries included:

Not explicit (no method), but there are studies in the paper from South Africa, USA, Bulgaria, Thailand, "Africa". Likely other countries represented, but these were the countries/regions that could be identified in the body or reference list of the paper

Quality assessment:

Reported on:

- Sustained, individual-level, behavioral change is challenging to achieve, being affected by many factors that vary across populations. Those most likely to require support for behaviour change are typically those with the greatest barriers to accessing support.
- Awareness of factors increasing communities' vulnerability to COVID-19 is needed e.g. those with high levels of poverty, population density, barriers to physical distancing, and limited access to healthcare and other resources.
- Information, motivation, and skills are key to initiating behaviour change but alone are unlikely to lead to sustained changes unless individually addressed, and sustained change may in any case require boosters.
- Medical mistrust, stigma and other factors can undermine public health interventions and lead to poor outcomes.
- Multi-level community interventions yield more robust and sustainable outcomes than single-level efforts. Early public health efforts often focus on individual behavior, but behavior change interventions need to take the broader social and structural systems into account. In the context of COVID-19, required physical distancing and hygiene requirements can and have been delivered via online platforms, which provide a model for sustaining the required measures.

Recommendations:

Sustained changes to behaviour, particularly over long periods of time, require multi-level approaches (not just interventions targeted at the individual) and regular communication/reiteration of messages over time.

Approaches to addressing stigma and disadvantage in the context of promoting well-being and preventing disease already exist and are likely relevant to COVID-19.

Communication purpose:

Findings may inform the development of communication around public health measures (including physical distancing) beyond behaviour change messages targeted at the individual and/or may help communicators consider wider societal factors which influence individual behaviour change.

Related to review questions:

Factors outside individual control (often socioeconomic) influence ability to take up or adhere to public health recommendations around physical distancing.

Acceptance of communication may be negatively influenced by anti-science communication or conspiracy thinking.

Communication which seeks to shift social norms is more likely to result in uptake of and adherence to public health measures than communications aiming for in-

(Continued)

AMSTAR 0/11% (no method provided, non-systematic)

dividual behaviour change.

Lor 2016*

(qualitative analysis of meeting reports)

Mapping to: Adherence, also feasibility/barriers

Also maps to public health measures, 3 (quarantine) and 2 (isolation)

Overview and aim:

Identification of cultural perspectives that may shape thinking about ethical considerations relevant to pandemic influenza preparedness and response

Inclusion and exclusion criteria:

Included:

168 health professionals, scientists, academics, ethicists, religious leaders, and other community members representing 40 countries (attended the meeting)

Type of study and data: Analysis of four regional meetings funded by the Centre for Disease Control and Prevention (CDC). Qualitative thematic analysis of meeting reports, notes, and stories

Countries included:

40 countries from Africa, Asia, Latin America, and the Eastern Mediterranean region

Quality assessment:

6/10 CASP score

(potential bias not discussed; no mention of ethics approval/consent; data analysis methods unclear)

Reported on:

Outcomes mapped to key ethical challenges for pandemic influenza response described in WHO guidance 'Ethical Considerations in Developing a Public Health Response to Pandemic Influenza':

- Transparency and public engagement were considered important.
- Resource allocation cannot use a 'one-size-fits-all' approach, due to the variety of factors (economic, cultural, contextual) that must be considered, but community engagement may help to identify these factors and to get buy in.
- Social distancing was seen as an important tool to limit disease transmission, but difficulties associated with this measure were acknowledged. These included socioeconomic (e.g. densely populated settings such as slums or refugee communities), cultural factors (e.g. family duty, funeral rituals) and stigma.
- Healthcare workers may have competing obligations (e.g. patients, employers, governments, families), which may compromise their ability to fulfil public health duties. Governments must assist healthcare workers by providing appropriate training and equipment.
- International collaboration was considered important for combating global health threats.

Recommendations:

Decision-makers must consider the importance of procedural ethics, especially transparency and inclusiveness when planning pandemic response.

Decision-makers should consider that procedural ethics can play an important role in bringing people and countries together to respond to the shared health threat posed by a pandemic influenza despite existing cultural differences.

Communication purpose:

Findings may guide communication and promote inclusiveness and public engagement in order to develop culturally appropriate messages, for instance, in relation to physical distancing measures.

This may also inform communication with and support of health staff facing competing obligations during a pandemic.

Related to review questions:

Findings identify cultural factors influencing behavioural adherence to public health measures and indicate that communication regarding such measures requires tailoring to cultural and contextual factors.

Primary studies

Atchison 2020#

(primary)

Overview and aim:

Reported on:

Communication purpose:

(Continued)

<p><u>Mapping to:</u> Uptake, adherence; also feasibility</p> <p>Also relevant to public health measure, 2 (isolation)</p>	<p>Perceptions and behavioural responses to COVID-19</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: adults aged 18 years and over, within 48 hours of government advice to stop non-essential contacts and to cease unnecessary travel</p> <p><u>Type of study and data:</u></p> <p>Cross-sectional survey; 2108 participants (representative of UK population)</p> <p>Descriptive statistics for all survey measures</p> <p><u>Included disease(s):</u></p> <p>COVID-19 outbreak</p> <p><u>Quality assessment:</u></p> <p>Response rate: ++</p> <p>Representativeness: ++</p> <p>COI declared and reported no conflicts; results rely on self-reported data; those without Internet under-represented; pre-print (not peer reviewed).</p>	<ul style="list-style-type: none"> • Rates of uptake of preventive control measures (e.g. crowd avoidance): at least 50% avoided crowds or social events, with higher physical distancing uptake rates higher in older (70 years+) than younger people (18 to 34 years). • Willingness to self-isolate was high. • Reported a range of factors associated with uptake of physical distancing measures, including socioeconomic (household income) levels. • Ability to comply with measures is lower in disadvantaged communities; of those with lowest household incomes only a minority were able to work from home or to self-isolate, with lower rates in black and minority groups. <p><u>Recommendations:</u></p> <p>Ability to take up and comply with certain NPI measures is lowest in lowest socioeconomic groups (self-isolation, working from home). Social and economic policies should mitigate this.</p> <p>Factors affecting uptake/compliance with preventive measures are critical. Those from lower-income backgrounds in particular may need financial assurance and assistance to be able to implement some protective measures.</p>	<p>Findings may inform strategies to communicate with and support behaviour change within the community, focusing on groups who may be less likely to practice measures such as crowd avoidance, and those with fewer socioeconomic resources to enact behaviour change required to prevent transmission.</p> <p><u>Related to review questions:</u></p> <p>Findings suggest that even where willingness to comply with physical distancing measures is high, those with lower household incomes may lack the practical and financial resources to do so and this may affect uptake and adherence to physical distancing measures.</p>
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<p>Briscese 2020#</p> <p>(primary)</p> <p><u>Mapping to:</u> adherence, acceptability</p> <p>Also relevant for isolation/quarantine</p>	<p><u>Overview and aim:</u></p> <p>Intentions to comply with self-isolation measures, and assessment of effects of duration of restrictions on people's intended compliance</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: adults, representative sample of national population (drawn from mar-</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • 27% of respondents were not aware of/confused about end date of restrictions. • Only 3% responded that they expected restrictions to end on the announced date (April 3rd); but expectations of length of extension varied, with 34% expecting restrictions to last indefinitely (as necessary). • At the time of survey, the Italian media considered extension to restrictions likely. • Proportions of self-reported compliance intentions were similar across scenarios (extension of few weeks, few months, indefinite): 68% indicated they would maintain current behaviour; 22% responded they would increase/increase greatly; and 8% decrease or consider not complying (2%) with restrictions. 	<p><u>Communication purpose:</u></p> <p>This may be useful for planning communications with populations and communities about restrictions and required self-isolation measures.</p> <p><u>Related to review questions:</u></p> <p>Results indicate that most people</p>
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(Continued)

database of 60,000 individuals)

Type of study and data:

Survey; 894 participants (representative of Italian population)

Descriptive statistics for all survey measures

Time:

Survey period March 18-20, 2020 [in the context of national lockdown period, declared March 9th until April 3rd 2020]

Countries included:

Italy

Quality assessment:

Response rate: +

Representativeness: ++

COI not declared; results rely on self-reported compliance data; paper unpublished (working paper)

- Intentions to maintain current behaviour did not vary according to the degree of match between respondent's expectations and different duration scenarios.
- However, people's intended increases or decreases in compliance to self-isolation measures did depend on how well the length of the extension matched their own expectations. Of note, respondents with 'negative surprises' (restrictions longer than expected) were less likely to intend to increase, and more likely to intend to decrease, compliance to social isolation measures. This pattern was more pronounced amongst respondents already reporting strong compliance with measures.

Recommendations:

People's intended compliance with self-isolation measures is influenced by the communicated duration of measures and the match or mismatch with people's own expectations of such measures.

Public health authorities need to consider these findings and find approaches to manage population expectations in cases such as the current COVID-19 pandemic where self-isolation measures may be prolonged and/or extended beyond initially proposed time frames.

current self-isolation behaviours in the context of shifting endpoints for restrictions (irrespective of their own expectations).

However, restrictions being extended beyond what people expected led to fewer intending to increase compliance and more intending to decrease compliance with self-isolation measures. This suggests that public health messages related to self-isolation measures need to consider expectations, particularly in cases such as the current pandemic where timelines are uncertain, and restrictions may be extended.

Clements 2020#
(primary)

Mapping to: Adherence

Overview and aim:

Assessment of COVID-19 knowledge and influence on behaviours, including crowd avoidance

Inclusion and exclusion criteria:

Included: adults 18 years and older, recruited through Amazon Mechanical Turk

Type of study and data:

Cross-sectional survey; 1034 participants (of 1070 respondents).

Descriptive statistics for all survey measures

Reported on:

- Knowledge of COVID-19, protective behaviours. Focus here is on social distancing (crowd avoidance) behaviours.
- Correct knowledge varied across questions, with 80% correct overall answers (knowledge).
- For every point increase in knowledge the odds of attending large gatherings (> 50 people) decreased by 13%.
- Older people (aged 55 years+) had generally higher knowledge than younger age groups; there were also differences in knowledge based on education, gender, income, race and political party. People reporting attending large gatherings were generally younger on average.

Recommendations:

Knowledge of COVID-19 is influenced by several factors, and in turn affects compliance with recommendations such as crowd avoidance.

Addressing knowledge differences will be necessary to promote behavioural compliance with preventive recommendations and may require a nationally coordinated pandemic response.

Communication purpose:

May be useful for planning communication to improve knowledge of populations and associated risk behaviours.

Related to review questions:

Findings suggest that knowledge is associated with several factors and may influence compliance to recommended measures such as crowd avoidance.

(Continued)

Time:

Survey conducted March 17, 2020; based on survey by Zhong 2020. Assessed approximately 8 weeks after 1st case diagnosed in the USA

Countries included:

USA

Quality assessment:

Response rate: +

Representativeness: +

Authors report no COI; > 60% had bachelor degree or higher education, other groups may be under-represented; pre-print (not peer-reviewed)

Kwok 2020#

(primary)

Mapping to:
Uptake
Overview and aim:

Assessment of psychological and behavioural responses in early phase of COVID-19 outbreak, include perceived effectiveness and adoption of preventive measures (including social distancing measures)

Inclusion and exclusion criteria:

Included: adults (18 years and older), understood Chinese and lived 5 days/week in Hong Kong within last month; recruited via District Councilors for all 452 areas

Type of study and data:

Cross-sectional survey; 1715 participants

Descriptive statistics for all survey measures

Time:
Reported on:

- Most respondents (89%) thought themselves likely to be infected with COVID-19, considered COVID-19 symptoms serious (97%), and 18% thought themselves likely to survive COVID-19 infection.
- Most (> 98%) considered COVID-19 as severe as SARS, were worried about COVID-19 (97%), and indicated some or great daily routine disruption (98%).
- Almost all (99.5%) continuously monitored COVID-19 progression and actively sought information (83%), most often on case distribution, infection numbers, infection control interventions (government) and preventive measures.
- Most trusted information sources were doctors (84%) but only 5% could obtain information from them. Broadcasts and newspapers were rated the next most trusted sources but less than 40% of respondents used them; while social platforms and websites were most commonly used (> 90%) but rated as reliable by only a minority.
- Information from official websites was rated as reliable by only 16%.
- Social distancing measures were perceived as effective for preventing infection, but adoption rates were lower.
- Good/very good perceived understanding of COVID, and higher anxiety, were both associated with greater adoption of physical distancing measures. Being female and living in the New Territories were also associated with greater adoption.

Recommendations:

Since those with good knowledge of COVID-19 may be more likely to adopt preventive measures, promoting community knowledge may assist with uptake.

Communication purpose:

Findings may be useful for planning communication with communities, particularly in deciding how to provide information more readily from trusted sources.

Related to review questions:

Findings suggest that knowledge and anxiety may affect adoption of physical distancing and other preventive measures and indicate that risk communication strategies to convey information about COVID-19 and preventive measures might be informed by consideration of how trustworthy different sources are, as well as their usage.

(Continued)

Within 36 hours first confirmed COVID-19 cases (January 24 to February 13, 2020)

Quality assessment:

Response rate +

Representativeness ++

No COI statement: respondents were working age and majority female, older people and those without Internet access may be under-represented; pre-print (not peer reviewed)

Decisions about how to communicate information on COVID-19 and preventive measures might be guided by information sources trusted and most commonly used.

Public health officials should collaborate with the associations of medical doctors (doctors being the most trusted source of information) to share official information in more social communication channels.

<p>Lohiniva 2020#</p> <p>(primary)</p> <p><i>Mapping to:</i> acceptability, uptake, adherence</p>	<p><i>Overview and aim:</i></p> <p>Analysis of risk perceptions and trust in public authorities to inform risk communication efforts related to COVID-19</p> <p><i>Inclusion and exclusion criteria:</i></p> <p>Included: members of the public requesting information from the Finnish Institute for Health and Welfare (THL) or commenting on COVID-19 via THL's email or social media</p> <p><i>Type of study and data:</i></p> <p>Qualitative study Thematic analysis of emails and social media posts (n = 116) from the public</p> <p><i>Time:</i></p> <p>3 to 25 February 2020</p> <p><i>Countries included:</i></p> <p>Finland</p> <p><i>Quality assessment:</i></p> <p>7/10 CASP score (Sample may not reflect full range of risk perceptions; no referral to researcher/participant</p>	<p><i>Reported on:</i></p> <p>Public's risk perceptions related to the domains:</p> <ul style="list-style-type: none"> • Catastrophic potential; • Probability of death; • Reasons for exposure; • Individual's ability to control spread; • Trust in authorities. <p>Catastrophic potential:</p> <ul style="list-style-type: none"> • Was linked with four concepts incorporating emotional response, anticipated epidemic growth, belief that authorities not interested in taking action, suspicion that authorities unable to take action. • Lack of knowledge led to greater uncertainty, increasing perceived catastrophic potential. <p>Probability of death:</p> <ul style="list-style-type: none"> • Linked with two concepts increasing perceptions of the probability of death: death was perceived as uncontrollable and as likely (authorities were believed to have taken inadequate action for public protection). <p>Reasons for exposure for COVID-19:</p> <ul style="list-style-type: none"> • Believed to be contact with those infected, with foreign nationals or with people coming from abroad. <p>Controllability beliefs:</p> <ul style="list-style-type: none"> • People perceived only authorities could control the spread of COVID. As individuals, they could not control spread. <p>Trust in authorities:</p> <ul style="list-style-type: none"> • Information produced by authorities was perceived as unreliable. • Actions by authorities to control COVID were seen as insufficient. 	<p><i>Communication purpose:</i></p> <p>May inform risk communication efforts and identify effective features to consider in order to effectively convey information about COVID-19 to the community.</p> <p><i>Related to review questions:</i></p> <p>The content and delivery of information to the community about COVID-19 should account for people's perceptions of risks related to COVID. Lack of trust in government messages, and lack of belief in the individual's ability to control spread in particular may negatively impact acceptance, uptake and adherence to physical distancing measures and may represent targets for risk communication efforts.</p>
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(Continued)

relationship; ethics approval not reported)

Recommendations:

Risk communication should:

- Avoid downplaying strong feelings;
- Provide facts;
- Express care and concern;
- Share facts of what is known about available resources;
- Emphasise known facts about mortality of COVID-19 in different groups;
- Emphasise actions taken by authorities;
- Humanise infected people by telling stories;
- Emphasise individual actions for prevention of COVID-19;
- Emphasise known facts about global situation;
- Repeat information and provide an explanation (reason);
- Communicate actions taken by authorities.

<p>Lunn 2020# (primary) <u>Mapping to:</u> Uptake</p>	<p><u>Overview and aim:</u> Examines the effect of two communication interventions focusing on different COVID-19 messaging</p> <p><u>Inclusion and exclusion criteria:</u> Included: broadly nationally representative participants recruited by a market research agency</p> <p><u>Type of study and data:</u> Randomised controlled trial; 3 arms Control: standard information poster Intervention 1: 'identifiable person' poster (highlighting risk to vulnerable people e.g. older people) Intervention 2: 'transmission rate' poster (highlighting exponential infection rate and risk of transmission to large numbers of people) Outcomes measured were cautious intentions to engage in 'marginal' physical distancing behaviours</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • The control poster was perceived as more effective than the 'identifiable persons' poster, but there was no difference between control and 'transmission rate' posters. • The control poster was perceived as more memorable than either intervention poster. • There were no differences in proportions of individuals expressing medium vs low cautious intentions to engage in marginal physical distancing behaviours in the control group compared to either intervention group, but there was a significant difference favouring the 'transmission rate' intervention (but not the 'identifiable persons' intervention) in the proportion expressing high versus medium cautious intentions to engage in marginal physical distancing behaviours, compared to the control. • More individuals in both intervention groups judged the 'marginal' behaviours of others to be less acceptable than control participants. • There were no differences in participant attitudes and intentions when comparing the two intervention posters. <p><u>Recommendations:</u> The mismatch between participants' judgements about the memorability and persuasive effect of the intervention posters and their actual effect on attitude or intention suggest that even though participants do not like intervention posters, they were nonetheless effective, potentially because they evoke an emotional response. Combined, intervention posters had a significant effect on intention and attitude (increasing participants' caution about marginal behaviours) compared to the control. Both the 'identifiable persons' poster alone and the 'transmission rate' poster alone led to participants judging the marginal physical distancing behaviours of others to be less acceptable than control participants. Communications aiming not only to inform people about recommended behaviours but to also emphasise the impact</p>	<p><u>Communication purpose:</u> Findings may be useful for enabling more effective communication and supporting behaviour change in relation to changing people's attitudes and intentions towards reducing the risk of infection to themselves or others in the community.</p> <p><u>Related to review questions:</u> Communication strategies that emphasise the likelihood of infecting vulnerable people or large numbers of people can help to motivate physical distancing by increasing people's intention to be cautious in own physical distancing behaviours and change their attitudes to be less accepting of marginal physical distancing behaviours in others.</p>
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(behaviours that some individuals deem acceptable, and others do not) and attitudes towards acceptability of 'marginal' physical distancing behaviours of others. 'Marginal' behaviours were identified through focus groups (e.g. own intention to visit others in their home, meet others outside; and attitude towards others e.g. allowing children to play outdoors with others).

Countries included: Ireland

500 participants, 15-minute online study (received €5 incentive for completing)

Quality assessment:

6/10 CASP tool (no detail about randomisation, allocation concealment; no details on participants completing study; confounding of interventions effects possible; not all relevant outcomes considered (but note, rapid trial). Not peer-reviewed)

fiable people and numbers of infections may motivate physical distancing.

<p>Meier 2020#</p> <p>(primary)</p> <p><u>Mapping to:</u> Acceptability, uptake</p>	<p><u>Overview and aim:</u></p> <p>Assessment of public belief in protective measures' effectiveness, uptake of measures in daily life and sources (communication channels) used to obtain relevant information on COVID-19</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: adults, countries with > 500 respondents</p> <p><u>Type of study and data:</u></p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> Information sources most frequently used included television, newspaper/news applications, social media, official websites; healthcare professionals and official health hotlines were used least often. Almost all respondents (> 90%) reported being sufficiently informed about the outbreak and what to do to prevent infection with COVID-19; 95-97% believed that protective measures were effective for preventing COVID-19 spread; while fewer (59-87%) believed total social isolation measures/lockdown were effective. Limiting interactions with other people were reportedly high: cancelling social events (> 95%), avoiding crowds (> 92%), avoiding sick people (> 81%). <p><u>Recommendations:</u></p>	<p><u>Communication purpose:</u></p> <p>Findings may guide information dissemination strategies underpinning physical distancing measures for communities and may inform choice of information dissemination routes to support individuals' decision-making in relation to protective behaviours.</p> <p><u>Related to review questions:</u></p>
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Cross-sectional survey (adapted from validated Flu TEST survey template); 9796 respondents

Descriptive statistics for all survey measures

Countries included:

The Netherlands (88%), Germany, Italy, other countries. The Netherlands and Germany classified as Stage III restrictions (community-wide measures to increase social distance) and Italy Stage IV (widespread community quarantine including cordon sanitaire) at the time of the survey

Quality assessment:

Response rate: +

Representativeness: +
+

All authors but one (not lead) declared no COI; digital online survey and recruitment may introduce selection bias; pre-print (not peer-reviewed)

Public belief in effectiveness, and their response to (implementation of) prescribed protective measures (physical distancing), during the survey period (March 2020) were high.

Respondents were adequately informed, through different communication channels but most often relied on traditional information sources.

Findings indicate that high levels of perceived effectiveness and feeling adequately informed about required measures co-occurred with strong uptake of physical distancing and other measures to protect against COVID-19 infection.

<p>Roy 2020# (primary) <u>Mapping to:</u> Acceptability, feasibility and other factors</p>	<p><u>Overview and aim:</u> Assessment of knowledge, attitudes, anxiety, and perceived mental healthcare needs during the COVID-19 pandemic</p> <p><u>Inclusion and exclusion criteria:</u> Included: adults (18 years and older), able to understand English and to give informed consent, and with Internet access</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> Awareness of basic features of COVID-19 was variable, with some misunderstandings about the disease being common. However, almost all (98%) believed physical distancing essential for controlling the disease and 96% would self-isolate if having fever or cough. Anxiety about COVID-19 was common, and people reported often thinking, worrying or talking about the virus. Most (> 80%) of respondents indicated that they had avoided social contact, large meetings or going out, as well as adoption of other measures (e.g. handwashing). Most (> 80%) respondents indicated that mental health experts were needed to help to deal with emotional and psychological issues during the pandemic. 	<p><u>Communication purpose:</u> Findings may be used to prioritise strategies for improving knowledge in communities, and for supporting people experiencing particularly high levels of anxiety.</p> <p><u>Related to review questions:</u> Willingness to comply with required physical distancing measures was high, despite vari</p>
<p><u>Type of study and data:</u></p>	<p><u>Recommendations:</u> Knowledge and attitudes influence degree of adherence to protective measures.</p>		

(Continued)

<p>Cross-sectional survey; 662 respondents.</p> <p>Descriptive statistics for all survey measures</p> <p><u>Countries included:</u></p> <p>India</p> <p><u>Quality assessment:</u></p> <p>Response rate: +</p> <p>Representativeness: +</p> <p>Authors reported no COI; respondents limited to English speakers with Internet access, educated (half health professionals), snowball recruitment; paper published</p>	<p>Accuracy of knowledge about COVID-19 was variable but willingness to follow physical distancing and quarantine measures were high amongst respondents, as were measures of anxiety.</p> <p>Mental healthcare needs appear high and need to be addressed as part of the current pandemic and public awareness enhanced.</p> <p>Sensible media reporting during the current pandemic may be beneficial in mitigating and tackling mental health challenges.</p>	<p>able knowledge levels about COVID-19, and anxiety associated with the pandemic may represent an unmet need.</p>
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<p>Zhong 2020#</p> <p>(primary)</p> <p><u>Mapping to:</u> Adherence</p>	<p><u>Overview and aim:</u></p> <p>Investigation of knowledge, attitudes and practices towards COVID-19 during the rapid rise period of the outbreak</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: Chinese nationality, aged 16 years or over, able to understand the content of the recruitment poster, agreed to participate in the study</p> <p>Excluded: history of infection with COVID-19</p> <p><u>Type of study and data:</u> Online self-report survey conducted from Jan 27–Feb 1, 2020. Convenience sampling, recruitment through social media channels of the authors, and websites/social media accounts of media</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • In this predominantly female, well-educated sample, there was an overall correct rate of 90% on the knowledge questionnaire, indicating that most respondents were knowledgeable about COVID-19. • The vast majority of respondents also held an optimistic attitude towards the COVID-19 epidemic: 90.8% believed that COVID-19 will finally be successfully controlled. • Respondents' practices were very cautious: nearly all avoided crowded places (96.4%) and wore masks when leaving the home (98.0%). • Knowledge, attitudes and practices towards COVID-19 were typically lower amongst men, younger people (aged 16 to 29), less highly educated, and being unemployed, single or a student. <p><u>Recommendations:</u></p> <p>The findings around demographic groups who are more likely to be non-adherent to prevention measures can help public health policymakers and health workers to recognise target populations for COVID-19 prevention and health education. Public health education measures may be more effective if they target demographic groups more at risk of low knowledge and risky behaviour.</p> <p>That higher knowledge is associated with lower likelihood of dangerous practices and negative attitudes, highlights the importance of educating people about COVID-19 to improve their knowledge which may result in improvements in attitudes and adherence to public health measures.</p>	<p><u>Communication purpose:</u></p> <p>This study may be useful for understanding groups more at risk of low knowledge, poor attitudes and poor preventive health practices, which can help people designing communication interventions target their interventions to higher risk groups.</p> <p><u>Related to review questions:</u></p> <p>Knowledge about COVID-19, and some demographic factors (gender, education level, age, occupation), affects adherence to physical distancing measures (avoiding crowds).</p>
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outlets in the Hubei province.

6910 participants in final sample (6919 recruited, 9 excluded for having been infected with COVID-19)

Countries included:

China

Quality assessment:

Response rate: +

Representativeness: +

Authors declared no COI; women, well-educated people and those involved in 'mental labour' occupations (associated with higher knowledge, attitudes and practices) over-represented in sample; paper published (peer-reviewed)

COVID-19 specific, *^ non COVID-19 specific but interpreted specifically in light of COVID-19 outbreak, * non-COVID-19 specific, + NACCHO National Association of County & City Health Officials, % AMSTAR rating from McMaster Health Forum (via Health Systems Evidence <https://www.healthsystemsevidence.org>); ^AGREE instrument Appraisal of Guidelines for Research & Evaluation (via AGREE Enterprise <https://www.agreetrust.org/agree-ii/>)

Abbreviations:

AGREE II: Appraisal of Guidelines for Research & Evaluation II tool

AMSTAR: A Measurement Tool to Assess Systematic Reviews

CASP: Critical Appraisal Skills Programme

CDC: Centres for Disease Control and Prevention

COI: conflict of interest

ECDC: European Centres for Disease Control and Prevention

EEA: European Economic Area

EU: European Union

GL: guideline

H1N1: H1N1 influenza strain

HIV: human immunodeficiency virus

NACCHO: National Association of County and City Health Officials

NIHR: National Institute for Health Research

NPI: non-pharmaceutical interventions

PH: public health

PHAC: Public Health Agency Canada

PHM: public health measures

PHSM: public health and social measures

SAGE: Scientific Advisory Group for Emergencies

SARS: Severe Acute Respiratory Syndrome

SR: systematic review

THL: Finnish Institute for Health and Welfare

UNICEF: United Nations International Children's Emergency Fund
 WHO: World Health Organization

Table g: included studies with general physical distancing focus

General	Study features	Outcomes and findings	Translational steps
Systematic reviews, guidelines			
<p>Bekele 2020#</p> <p><i>Citation type:</i> SR</p> <p><i>Public health measure:</i> General PD</p> <p><i>Mapping to:</i> Adherence</p> <p><i>Mapping to:</i> Theme 1: features of public communication: content, timing and duration, and delivery</p>	<p><i>Overview and aim:</i> To identify patterns and determinants of knowledge, attitudes, and practices towards COVID-19: within the general population and in health-care workers across the globe.</p> <p><i>Type of study and data:</i> SR, cross-sectional studies; N = 21</p> <p><i>Inclusion and exclusion criteria:</i> Included: studies on COVID-19 of adults, published in English</p> <p>Excluded: unclear outcomes of interest, pre-prints and letters</p> <p><i>Participant features and numbers, sampling details:</i> General population and healthcare workers. Healthcareworkers comprised psychiatrists and other specialists, doctors, nurses and pharmacists. Range of educational levels and occupations across studies.</p> <p>Sample sizes ranged from approximately 300 to 8500.</p> <p><i>Included disease(s):</i> COVID-19</p> <p><i>Timing:</i> Search period: March 16 to July 30, 2020</p> <p><i>Countries included:</i> China (3), India (3), Saudi Arabia (3), Malaysia (2), USA +/- UK (2); remainder single studies: Turkey, Iran, Vietnam, Jordan, Pakistan, Nigeria, Philippines, Qatar</p>	<p><i>Reported on:</i> COVID-19 knowledge</p> <ul style="list-style-type: none"> Overall most participants showed good general knowledge of COVID-19, but knowledge levels related to transmission modes, causal factors, symptoms, preventive actions, potential treatments, incubation and the role of quarantine, but this varied across studies e.g. several studies reported good knowledge levels in around 90% of participants, but some others reported much lower levels (40-70%). <p><i>Attitudes</i></p> <ul style="list-style-type: none"> Attitudes towards COVID-19 were also generally good in some studies, but several reported that the majority of participants expressed worry about the disease, about infecting others, and about the economic impact of COVID-19. <p><i>Practices</i></p> <ul style="list-style-type: none"> Prevention practices were variable across studies. Some reported good levels of skill at practising prevention strategies (e.g. avoiding crowds, physical distancing), in others this was reportedly lower, or participants reported poor practices. A link between positive attitudes and being worried, and good preventive practices was reported. <p><i>Associated factors</i></p> <ul style="list-style-type: none"> Several factors were identified as associated with KAP for COVID-19, including gender, age, education level, occupation, marital status and income. A number of studies reported that knowledge and attitudes were associated with occupation; another that being black, poor and having low health literacy were associated with poor attitudes and practices towards COVID-19; and one further study that being male, of 	<p><i>Communication purpose:</i> Findings may be useful in suggesting factors that might importantly influence knowledge, attitudes and practices when requiring populations to understand and take up preventive measures for COVID-10.</p> <p><i>Related to review questions:</i> Knowledge, attitudes and preventive practices for COVID-19 may be at high levels in some populations and samples but far lower in others. Many factors may influence each of these outcomes and so importantly determine the success or otherwise of public health measures to protect people from COVID-19.</p>

(Continued)

Income levels predominantly high- or middle-income levels across included countries

non-healthcare occupation, single, and of lower educational level were associated with poor knowledge levels.

Intervention or phenomenon of interest: Patterns and factors determining levels of knowledge, attitudes and practice of preventive behaviours.

Recommendations:

Although many participants show good knowledge levels, attitudes and practices towards prevention of COVID-19, these are variable across studies, populations and across outcomes. Many factors may influence these outcomes, and so indirectly influence adoption of preventive behaviours.

Quality assessment:

AMSTAR 5/11:

[1. No protocol; 4. Seems published only, English only papers included; 5. No excluded studies provided; 8. No integration of quality assessment into the findings/interpretation; 10. No publication bias assessed; 11 no COI of included studies reported].

Funding source:

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Berg 2021#

Overview and aim:

Reported on:

Communication purpose:

Citation type:

Synthesis of evidence on different modes of communication used by health authorities for pandemic risk communication.

Three main communication mode categories identified in authorities' risk communication:

May inform health authorities' risk communication messages and choice of channels, for communicating about pandemic risk to populations and groups within populations.

SR (rapid, scoping)

Public health measure:

(1) Communication channels (media types) (2) Source credibility, and (3) How the message is communicated.

General PD

Type of study and data:

Communication channels

Mapping to: Uptake, acceptability

Scoping review (rapid). 48 studies. Included surveys (primarily cross-sectional, n = 15), mixed-methods (n = 1), qualitative research (n = 10), policy studies (n = 1), experimental (n = 4, 1 RCT), quantitative statistical analysis (n = 18)

- People receive pandemic information through multiple formal and informal channels (e.g. traditional mass media, governmental sources; social media); and are not passive information recipients from a single source but instead select from amongst the total information they encounter.

Mapping to:

- Framing may affect how messages are received. Mass media communication may exaggerate or sensationalise risk communication related to a pandemic outbreak leading to increased fear/panic Building relationships between media and national health authorities may be key, as well as building trust in authorities before a pandemic emerges.

Theme 1:

features of public communication: content, timing and duration, and delivery

Inclusion and exclusion criteria:

- Authorities' and government websites may include language that is too difficult for the general population to read. Even where reading level is considered, other aspects may be poor, such as readability (layout, format), accessibility (e.g. lack of non-text alternatives for those with vision problems), and timeliness (information not updated in timely way).

Identified factors may usefully inform decisions about channels to be used, and tailoring of messages.

Theme 2: recipients of public communication: audience, setting and equity

English language, published January 2009 to October 2020.

Related to review questions:

Theme 5:

Communication of pandemic risk messages from authorities to the community is influenced by many factors, and

public trust and perceptions

Studies on communication related to H1N1, COVID-19 or flu more generally

Participant features and numbers, sampling details:

Varied; several surveys randomly or representatively sampled general adult populations within and across countries. Small number qualitative studies with selected population groups (e.g. Aboriginal people from Canada, Spanish-speaking Hispanic people from US). Other analyses based on media analyses (e.g. websites, press releases, video sites).

Included disease(s):

H1N1 or pandemic 'flu' more generally or COVID-19

Timing:

Search dates were based on coverage of the whole H1N1 outbreak (2009 onwards) and coverage of the response phase of the COVID-19 pandemic. No further information reported

Countries included:

North America (n = 15; 11 of which were USA), Asia (n = 13; 8 of which were Chinese), Europe (n = 9), Africa (n = 1), Australia (n = 1), global/cross-continent (n = 9).

Income levels range from low to high-income countries, no further details

Intervention or phenomenon of interest:

Communication modes

- Social media platforms: There is no evidence on health authorities' pandemic risk communication via social media, related to self-protective behaviours. Health authorities may have generally low engagement with their social media posts about pandemic risks. Messages incorporating narratives and imparting self-efficacy are more likely to be engaged with. Both negative and positive framing of messages are used, and while positive framing may increase engagement, it may also undermine perceived seriousness of the threat (risk).
- Messages on social media may change over time e.g. an analysis of Twitter found messages concentrated on instructional information in the early pandemic period but shifted to motivational messages to sustain behaviours in the longer term (focusing on the need to protect vulnerable populations).
- YouTube: may be a source of misinformation for COVID-19; information from credible sources is under-represented e.g. 25% of the most popular videos on COVID-19 (62 million views) included misleading content; such videos are viewed more often than those from credible sources. No evidence on health authorities' use of YouTube for pandemic risk communication related to health protective behaviours was found.

Source credibility (i.e. perceived trust in formal (health authorities, governments, public health professionals) and informal pandemic health risk information sources and impact on protective behaviour):

- Trust in formal information sources may be associated with greater accuracy of knowledge of risk and adoption of protective health behaviours.
- Different sources and associated levels of trust may be associated with age: older people typically trust formal sources while younger people have greater trust in informal sources (e.g. social networks).
- Source credibility does not correlate closely with usage, e.g. health professionals may be most credible but mass media sources most used.
- Authorities failing to report uncertainty about a pandemic outbreak, or reporting inaccurate information, both lead to loss of trust (credibility) in formal sources of information.
- Healthcare professionals are often perceived as credible irrespective of the type of media involved, whereas trust in governmental sources may be more changeable, and the role of media type is unknown.
- Information from health authorities needs to be tailored to meet the needs of different groups (e.g. migrant groups, indigenous groups). Collaboration between health authorities and communities may ensure information needs are appropriately met; using trusted spokespeople may also improve credibility of messages.
- Tailoring of messages from health authorities may be needed for both the message itself and the mode of delivery.

How the message is communicated :

behavioural mitigation measures.

Such communication need to take account of these factors to ensure that risk communication messages are accessible and available to all groups within the population, to ensure consistency of messages to promote trust and understanding of required behavioural change to protect health.

(Continued)

ties during disease outbreaks with pandemic potential

Quality assessment:
AMSTAR 3/11:

[2. Single selection and data extraction; 3. Search was not comprehensive as two databases only; 4. published data only; 5. Excluded studies not reported; 7,8. No quality assessment or use in formulating findings; 10. No publication bias assessment; 11. No declarations of interest for included studies]

Funding source:

The COVID communication: Fighting a pandemic through translating science

(COVCOM) project has received funding from the Trond Mohn Foundation

under grant agreement number TMS2020TMT10 and the University of

Stavanger. JKO is supported by the National Institute for Health Research

Yorkshire and Humber Patient Safety Translational Research Centre (NIHR

Yorkshire and Humber PSTRC).

- Narrative tone of authorities' communications can affect people's emotional state (anxiety, uncertainty) and influence engagement and behavioural responses to risk mitigation messages. Narrative messages that elicit positive emotions may lead to better community engagement, but people may learn more from non-narrative messages.
- Jargon should be kept to a minimum or avoided. Written information should be tailored to the intended audience (readability as well as format and layout).
- Communicating visually (e.g. graphics, images, colours) can significantly influence the reach and reception of messages. Effective risk communication might include several communication modes and include visual information, but visual cues (e.g. colour, preferences) vary across audiences and so need to be considered when tailoring information.

Recommendations:

Ensure health authorities' risk communication considers the range of factors (e.g. tailoring, trust, multiple channels, layout, accessibility, readability, timeliness of information, format) that might influence community engagement, knowledge and self-efficacy, and subsequent behavioural changes to mitigate risk.

Health authorities should disseminate information through multiple channels, including through social media, although care is needed to ensure that messages remain consistent and improve credibility (rather than creating confusion as may be the case if messages are communicated rapidly through multiple channels).

Misinformation related to pandemic risks may be a substantial problem on social media sites. Countering this (misinformation, rumours and contradictory messages) remains problematic for health authorities.

A remaining challenge for health authorities is to engage effectively with social media and to provide readily available, accessible information that is kept up to date, tailored to different reading levels and with consideration of layout to improve access, with the aim of avoiding amplification of risks communicated through mass media messages.

Public trust in health authorities changes over time and is related to perceptions of crisis management. This in turn can affect people's risk perception and behavioural response to risk. Health authorities need to work collaboratively with communities and trusted spokespeople to improve community trust, to ensure that messages are appropriately tailored to communities and to reach different groups, including migrants and ethnic groups, over time as the pandemic response changes.

Risk communication messages should be balanced and evidence-based, motivate self-efficacy, and include actionable information that people can use to protect their health. Jargon may not have a negative impact in all cases, but may need to be considered as part of the tailoring of information to audiences' educational and health literacy levels.

(Continued)

<p>ECDC 2020g#</p> <p>(Review of guidelines; non-SR)</p> <p><i>Mapping to:</i> Acceptability, adherence; also feasibility/barriers</p>	<p><i>Overview and aim:</i></p> <p>Supports public health preparedness planning and response activities based upon physical distancing measures aimed at minimising the spread of COVID-19.</p> <p><i>Inclusion and exclusion criteria:</i></p> <p>Included: Several ECDC documents: Guidelines, rapid risk assessment, technical report, guidance document</p> <p><i>Countries included:</i></p> <p>EU/EEA Member states and UK</p> <p><i>Quality assessment:</i></p> <p>1/11 AMSTAR rating:% (non-systematic review)</p> <p><i>Funding source:</i></p> <p>Not reported</p>	<p><i>Reported on:</i></p> <p>Focus here is on communication related to physical distancing measures.</p> <p><i>Public health</i></p> <ul style="list-style-type: none"> To facilitate public acceptance of social distancing measures, an anticipated end date should be established and communicated, be made clear to the population that measures could be extended or may be removed/reduced while others remain in place. A comprehensive risk communication strategy should include the rationale and justification behind physical distancing measures and encourage individuals to enact the required changes. Different audiences should be targeted (e.g. minority languages). A system should be put in place to monitor public perceptions of outbreak and the outbreak response. To improve adherence to measures, stigma related to quarantine/self-isolation needs to be proactively addressed by reinforcing that everyone in the population is at risk. To promote adherence to social isolation measures, support systems should be developed, and populations informed i.e. systems exist to ensure access to essential supplies and services, social networks, those promoting community support, and this is especially important for vulnerable groups (e.g. elderly, homeless, migrant groups). Measures to compensate communities financially for losses (restricted income or employment) due to restrictive physical distancing measures should be considered as another means of promoting adherence to measures. <p><i>Educational institutions (school measures)</i></p> <ul style="list-style-type: none"> Unequal access to digital education may impact on continuity of education which needs to be considered. Social impacts (social isolation) need to be considered; mental health issues may impact on ability to adhere to physical distancing. Need to consider the needs of visiting students or teaching staff from other countries who may have limited resources. For parents, financial compensation may improve adherence, as parents are likely to miss out on work. <p><i>Workplaces (workplace measures)</i></p> <ul style="list-style-type: none"> Strict instructions need to be given to ensure employees with symptoms do not attend work. Use telework from home and videoconferencing for meetings, but this may not be viable for all, and financial losses may follow. Physical distancing measures that can be taken while remaining at work include closing down certain areas where people are in closer proximity to each other and interact more, avoid medium-to large numbers of people in confined spaces. 	<p><i>Communication purpose:</i></p> <p>This may inform decisions about how to address potential barriers to physical distancing measures and actions to take, and guide communication with communities about measures that may promote improved acceptance of and adherence to physical distancing measures.</p> <p><i>Related to review questions:</i></p> <p>Findings identify a range of factors that may impede uptake of and adherence to physical distancing measures, such as financial losses, stigma, and unequal access to information and support. These vary across populations but need to be addressed to ensure that physical distancing measures are enacted.</p>
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(Continued)

- Financial compensation may increase adherence to workplace measures.

Mass gathering cancellation, including faith-based events:

- Religious leaders should be engaged in public health messaging as they play an important role in public opinion.

Recommendations:

Decisions about implementing physical distancing measures need to be tailored to context and setting (social and political factors).

Identified importance of promoting solidarity and mutual community support when social distancing measures are implemented.

Clear, co-ordinated, and comprehensive communication of information about physical distancing measures is needed.

To improve adherence to physical distancing measures, inequalities in terms of information provision (e.g. vulnerable populations), financial losses (e.g. those unable to work from home), educational disadvantage (e.g. unequal access to digital learning), stigma (for those self-isolating/quarantined) need to be recognised and addressed, and support systems to ensure essential services and supplies put in place.

Gupta 2021#	<i>Overview and aim:</i>	<i>Reported on:</i>	<i>Communication purpose:</i>
<i>Citation type:</i>	To review research studies on knowledge, attitudes and practices towards the COVID-19 pandemic	<i>General public</i>	Findings may indicate some factors that might importantly influence knowledge, in particular about the use of preventive measures for COVID-10. Awareness of preventive measures in vulnerable slum communities could be increased by media campaigns.
SR		<ul style="list-style-type: none"> • Overall, levels of knowledge (of disease transmission, symptoms, and prevention measures) in the general population were generally good. • Higher education and income levels, female gender, and a non-rural location were predictors for higher knowledge scores. Age versus knowledge varied amongst the studies. • Studies reporting attitudes generally indicated high levels of optimism about overcoming the pandemic as well as some misconceptions about preventive measures (1 study). • One study reported that awareness of preventive measures in a vulnerable slum community could be increased by television awareness campaigns and short messages. 	
<i>Public health measure:</i>	<i>Type of study and data:</i>		
General PD	SR; N = 21 studies, all cross-sectional		
<i>Mapping to:</i> Adherence	<i>Inclusion and exclusion criteria:</i>	<i>Healthcare workers</i>	<i>Related to review questions:</i>
<i>Mapping to:</i>	None described	<ul style="list-style-type: none"> • With a few exceptions, most studies reported generally high levels of knowledge about the pandemic. Attitudes, such as those related to optimism, were variable. COVID-19 practices, where reported, were generally high. • Older age and more experience were generally associated with higher knowledge levels. 	Knowledge, attitudes and preventive practices for COVID-19 may be at high levels in some groups but lower in others. Many factors may influence each of these outcomes and so im-
Theme 1:	<i>Participant features and numbers, sampling details:</i>	<i>Students</i>	
features of public communication: content, timing and duration, and delivery	General population (11 studies), healthcare workers (7 studies) and students (n = 3). Sample sizes ranged from approximately 60 to almost 7000		
	<i>Included disease(s):</i>		
	COVID-19		

(Continued)

Timing:

No timing of searches or literature reported. Paper submitted September 2020; included studies will reflect literature available prior to this date. Early pandemic

Countries included:

China (3 studies), Iran (3), global (2), Nepal (2); single studies in Egypt, USA and UK, Tanzania, Paraguay, Jordan/Arabia/Kuwait, Kenya, Peru, Malaysia, Uganda, Pakistan, India

Income levels all middle-income (low and upper) levels except UK/USA (high-income) and Uganda (low-income)

Intervention or phenomenon of interest:

Knowledge attitudes and practices related to COVID-19 in general public, healthcare workers and students

Quality assessment:

AMSTAR 2/11:

[rated down all items except 6. Included studies characteristics provided; and 9. Method of synthesis appropriate]

Funding source:

Not reported

- Knowledge, attitudes and practices were generally good. However, male gender was reportedly associated with lower practice scores for preventive behaviours (1 study).
- Relationships between attitudes and practices and between risk perception and practices, were reported, but in opposite directions.

Recommendations:

Findings suggest the general population has a basic level of knowledge about the COVID-19 pandemic.

Commonly accessed information sources may contribute to spread of information and misinformation about required preventive measures within the general public. Government information is required to raise awareness about the causes and effects of COVID-19.

Healthcare workers have a generally good level of knowledge and a positive outlook towards the pandemic, as do medical students in general.

Despite the generally high levels of knowledge amongst healthcare workers and students, there is still need for consistent reminders and messaging from authorities to improve public knowledge levels.

Importantly determine the success or otherwise of public health measures to protect people from COVID-19.

<p>JHCHS 2019*</p> <p>(Guideline)</p> <p><u>Mapping to:</u> Acceptability, uptake, adherence</p> <p><u>Public health measure:</u></p> <p>6 (crowd avoidance), one specific</p>	<p><u>Overview and aim:</u></p> <p>Identification of priority actions ‘for countries, international organisations, and other stakeholders to pursue that would mitigate the public health, economic, social, and political consequences of the emergence of a</p>	<p><u>Reported on:</u></p> <p>Only data most relevant to communication interventions in the context of the current rapid review have been extracted.</p> <ul style="list-style-type: none"> • There needs to be strong, evidence-based rationale for the necessity of NPIs such as physical distancing, in order that they can be effectively implemented, and the role of such measures communicated to the public. • Community engagement may be highly relevant when considering (positive and negative) public reactions to 	<p><u>Communication purpose:</u></p> <p>Aspects of this report may inform the development of more effective public health communications and engagement, including those around physical distancing.</p>
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example relating to quarantine

high-impact respiratory pathogen.' (p. 7)

Inclusion and exclusion criteria:

Included: several high-level reviews on global preparedness, interviews with international experts in pandemic preparedness and response

Type of study and data:

Review of reviews and interviews with specialists in the field

Countries included:

Not explicitly described

Quality assessment: (AGREE II)¹:

Scope and purpose: 90%;

Stakeholder involvement: 62%;

Rigour of development: 34%;

Clarity of presentation: 67%;

Applicability: 50%;

Editorial independence: 14%.

Funding source:

This report was commissioned by and prepared for the Global Preparedness Monitoring Board.

outbreak responses. Such engagement may link strong equitable health systems to pre-existing community relationships (developed as part of pandemic preparedness measures, prior to disease outbreaks), and enable risk communication to be framed successfully to support non-pharmaceutical measures.

- Countries must be able to communicate with their populations about health and protective actions that can be taken, in a timely, accurate and effective manner. Risk communication and surveillance systems and processes can be established to serve routine health purposes but expanded/adapted as needed during emergencies.
- Public trust is a key element of effective communication and countries, before, during and after an outbreak. Partnership with community members and community engagement (e.g. collaborative decision-making) can strengthen responses to outbreaks, for instance by increasing cultural appropriateness and acceptability of public health interventions, ensuring they are attuned to local conditions. Such engagement may also help to incorporate community views and values into difficult decisions that may arise during outbreaks, and so help to ensure broad support for required measures.
- Communication and establishment of trusted communication lines between the community and public health is an essential element of successful public health responses, which enables successful engagement to improve understanding of risks and buy-in on protective measures. Such communication should be timely, transparent, and understandable.
- Communication about risk also includes communication with and through trusted partners and news media, in order to disseminate accurate risk and protective measures messages. Such partners may also serve as advocates to strengthen public perception of accurate information.
- Communication of consistent messages to the public requires collaboration between public and private sectors.
- Implementing NPIs requires that many challenges be addressed, for instance quarantine measures requiring strict adherence to the protocol, and the public may be more accepting of this where the public trusts the government.

Recommendations:

Risk communication during outbreaks is an essential component of the response, requiring planning prior to outbreaks and involving communities as well as public health experts.

Risk communication messages must be consistent, timely and accurate.

Public trust is essential for effective risk communication, and community engagement can facilitate effective public health responses.

Authorities must provide strong, evidence-based rationale for public health measures, such as NPIs, so that they can

Related to review questions:

Describes actions countries can take to prepare, and optimal conditions for, effective communication to the public during a pandemic. Implementing the communication actions may lead to greater acceptability and uptake/adherence to physical distancing measures.

(Continued)

be implemented effectively and their role in disease prevention be communicated effectively to the affected public.

<p>Li 2020#</p> <p><u>Citation type:</u> SR (rapid)</p> <p><u>Public health measure:</u> General PD</p> <p><u>Mapping to:</u> [major outcome categories] Uptake, adherence</p> <p><u>Mapping to:</u> Theme 1: features of public communication: content, timing and duration, and delivery Theme 2: recipients of public communication: audience, setting and equity</p>	<p><u>Overview and aim:</u> To identify how health provider should advise parents or families to obtain health education information (in relation to an infectious disease outbreak)</p> <p><u>Type of study and data:</u> Rapid SR; observational studies (cross-sectional survey studies); 24 studies included, n = 35,967 participants</p> <p><u>Inclusion and exclusion criteria:</u> Included: People from the general population Observational studies available in English or Chinese before March 31, 2020 Excluded: participants from specific groups within the population (e.g. specific occupational groups)</p> <p><u>Participant features and numbers, sampling details:</u> 35,967 participants sampled from across SARS, MERS and COVID-19 outbreaks. Most (19/24) sampled adults aged 16 years and older; no further details reported</p> <p><u>Included disease(s):</u> COVID-19 (6 studies), SARS and MERS (18 studies)</p> <p><u>Timing:</u> Authors note that accurate, reliable information about a disease outbreak is needed, and that this needs to be timely and kept up-</p>	<p><u>Reported on:</u> 9 studies mentioned information channels where people obtained health education information; 3 studies focused on health education campaigns.</p> <p><u>Lack of public awareness of infectious disease</u></p> <ul style="list-style-type: none"> Findings were mixed. Some (7) studies showed the public had little knowledge about how to face emerging diseases, while others (3 surveys) indicated strong knowledge, attitudes and practice of COVID-19 but also indicated that more public information and education were needed. Lack of epidemiological knowledge of MERS was mentioned in 1 study, and pilgrimage travellers lacked awareness of MERS outbreak and the implications of this (5 studies). <p><u>Mode and health education reliability</u></p> <ul style="list-style-type: none"> Various information-seeking strategies and preferences were identified. Participants reported a range of sources and channels to obtain information about COVID-19 or SARS, and increasingly, people consulted more than one information source to find relevant information on a disease outbreak. Traditional mass media is commonly used (e.g. newspapers, radio, television), but people also consult the Internet and social media, as well as their social networks to obtain relevant information although these latter sources may be less credible. <p><u>The effect of health education</u></p> <ul style="list-style-type: none"> Findings from 4 studies reported but most (3/4) did not clearly report preventive behaviours associated with physical distancing. One study reported crowd avoidance behaviours, but this has been reported elsewhere in the original review (Zhong 2020). <p><u>Recommendations:</u> Improving public awareness of infectious diseases can positively influence preventive behaviours to slow disease transmission. However, stigma, discrimination and fear may also be present and may delay care or early quarantine or treatment, which in turn may increase spread of disease. It is therefore important to promote better knowledge while working to prevent stigma. Health education needs to be tailored to particular groups within the general public, such as children, the elderly and other vulnerable groups or those with particular needs (e.g. travellers likely to come into contact with the infectious disease). People often use multiple sources of information, and while new media may be more easily accessible there may also be a growing risk of misinformation with some of these sources. Public health agencies, governments and health authorities might be relied upon to deliver accurate, timely</p>	<p><u>Communication purpose:</u> Findings may be useful for planning public health education and information, particularly when considering purpose(s), media and channels for such communication.</p> <p><u>Related to review questions:</u> Public information or education about an infectious disease may improve knowledge and awareness of the disease and required preventive measures. However, there needs to be an awareness of the potential for stigma and discrimination and communications need to address these potential adverse consequences directly. A range of channels (media) are accessed by the public for public health information. Information and education should be credible and accurate, and public communication strategies might be planned with this in mind. Special groups may lack adequate knowledge about emerging diseases and communication strategies that specifically target special groups may be needed.</p>
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to-date over the course of the pandemic/outbreak.

information and health education about an infectious disease and its prevention, changing over the stages of a pandemic or outbreak as required.

Countries included:

China (12 studies), Saudi Arabia or the Middle East (6), France (2), single studies in Hong Kong, Australia, Turkey, Canada

Approximately half of studies (13/24) in upper-middle income countries, remainder high-income

Intervention or phenomenon of interest:

Health education and health promotion issues during COVID-19, SARS and MERS outbreaks

Quality assessment:

AMSTAR 6/11:

[1. No protocol, stated explicitly not registered; 5. No excluded studies provided 8. General limitations of studies described but not linked to findings specifically 10. Publication bias not assessed 11. COI for included studies not reported].

Funding source:

This work was supported by grants from National Clinical Research Center for Child Health and Disorders (Children's Hospital of Chongqing Medical University, Chongqing, China) (grant number NCR-CCHD-2020-EP-01) to EL; Special Fund for Key Research and Development Projects in Gansu Province in 2020, to YC; the Fourth Batch of "Special Project of Science and Technol-

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ogy for Emergency Response to COVID-19” of Chongqing Science and Technology Bureau, to EL; special funding for prevention and control of emergency of COVID-19 from Key Laboratory of Evidence Based Medicine and Knowledge Translation of Gansu Province (grant number No. GSEBMK-T-2020YJ01), to YC; The Fundamental Research Funds for the Central Universities (lzujbky-2020-sp14), to YC.

<p>Majid 2020#[^]</p> <p><u>Citation type:</u></p> <p>SR (scoping)</p> <p><u>Public health measure:</u></p> <p>General PD</p> <p><u>Mapping to:</u></p> <p>Acceptability, adherence</p> <p><u>Mapping to:</u></p> <p>Theme 1:</p> <p>features of public communication: content, timing and duration, and delivery</p> <p>Theme 5:</p> <p>public trust and perceptions</p>	<p><u>Overview and aim:</u></p> <p>To examine how knowledge, awareness and misconceptions influence risk perceptions and behaviours.</p> <p><u>Type of study and data:</u></p> <p>Scoping review (cross-sectional, cohort, qualitative, mixed methods); n=149 studies.</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: primary quantitative, qualitative, and mixed-methods studies (including social media analyses) on response to global outbreak/pandemic (with focus on SARS 2003, influenza A/H1N1 2009, MERS 2012, EBV 2013, COVID-19 (2020)).</p> <p>Excluded: mass media communication strategies (e.g. newspapers, television); abstracts, theses, dissertations and published papers without empirical primary data.</p> <p><u>Participant features and numbers, sampling details:</u></p>	<p><u>Reported on:</u></p> <p>Knowledge levels of disease, pandemic outbreak episodes, and modes of transmission or infection, were generally high across studies (8 studies).</p> <p><u>Information sources:</u></p> <ul style="list-style-type: none"> • People typically relied on multiple information sources during a pandemic (e.g. social media, print media, government websites) and sources were themselves of diverse format, language and target audience and including a range of disease, risk, transmission, prevention and aid topics. • Various mass media sources were used (e.g. newspapers, magazines, radio, public service announcements, governmental education initiatives, text messages), but in some studies, mass media information was seen as alarmist and inaccurate. Several studies reported on the importance of information exchange with family, peers and healthcare workers, and the role of trust that may be linked to knowledge and behaviour. Social media was common as an information source, but people’s concerns about inaccuracies and rumours were noted. • Community leaders, healthcare providers, the media, and government play an important role in communicating infection and disease information. • Information provided and effects on behaviour can change over time during a pandemic e.g. as numbers of articles on the pandemic declined, so too did willingness to adhere to measures such as physical distancing. <p><u>Social distancing:</u></p> <ul style="list-style-type: none"> • Adoption of measures such as crowd avoidance increased with the spread of infection, but the proportion of people adopting physical distancing measures varied across countries (e.g. crowd avoidance 10-53%; variation in public transportation use ranging from dramatic decreases to a majority still using). 	<p><u>Communication purpose:</u></p> <p>Findings may inform development of information materials for communicating with communities and individuals; and may help to identify areas where misconceptions are common and may require particular information to be communicated.</p> <p><u>Related to review questions:</u></p> <p>People may rely on several diverse information sources during a pandemic outbreak, including social networks and social media; but some may be prone to inaccuracies and misinformation.</p> <p>Trust is importantly linked to knowledge and protective behaviours during a pandemic, therefore trusted sources such as community leaders and government play a key</p>
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(Continued)

No details systematically synthesised.

Included disease(s):

H1N1 (66 studies), EBV (42), SARS (32), MERS (10), and COVID-19 (1).

Timing:

Searches for evidence were conducted March 2020.

Authors note that information provided and effects on behaviour can change over the course of a pandemic outbreak (e.g. as reports on the pandemic decrease, so too may willingness to adhere to public health measures).

Countries included:

Studies took place across all continents except South America.

Ranged from high income countries (US (26 studies), Hong Kong (13), Canada (11), Netherlands (10)), to middle income (China (9), Malaysia (5)) to low-income countries (Sierra Leone (1), Liberia (4), Guinea (2)). Far more studies (120+) conducted in high rather than low (21 studies) income countries.

Intervention or phenomenon of interest: Knowledge, awareness and misconceptions about infectious disease outbreaks and effects on preventive behaviours (e.g. physical distancing).

Quality assessment:

3/11 [no items met except 6. Included study

- Some studies reported a proportion of people (20-30%) still attended work and school even at the pandemic peak; others that people closely adhered to measures, some because of fear of legal repercussions. Several studies reported avoiding contact with other people, including physical contact, avoidance of sick people, limiting home visitors.

Social pressures:

- Several studies reported that community or family pressures promoted adherence to hygiene/physical distancing measures e.g. social network knowledgeable about health-related behaviours positively associated with adoption of physical distancing and hygiene practice.

Knowledge, risk perceptions and behaviour:

- High knowledge and personal risk perceptions promoted uptake of physical distancing measures e.g. positive association between risk perception and adherence to quarantine protocols, although this was not uniform across studies.
- Participants generally expressed high levels of knowledge and support for physical distancing measures, but fewer people reported adhering to measures.

Misconceptions:

Misconceptions fell into several categories.

- Regarding the disease/infection: People may be confused about symptoms and similarity with other diseases and misinterpret disease fatality e.g. people with chronic disease believing H1N1 to be immediately fatal, based on their experience of the SARS outbreak.
- People may also hold mistaken beliefs about transmission (e.g. believing infection to be due to witchcraft, or transmissible through air at long distances or via food).
- There may also be misconceptions about treatments (e.g. believing saltwater to be effective) which people act on, information on which commonly came from social media posts and which people maintained was correct despite correct information provided from healthcare workers or government. People also had misconceptions about medical treatments e.g. believing that seasonal flu vaccine would protect them from H1N1.
- People held various misconceptions and conspiracy theories about disease origins (e.g. the disease did not exist, or came from another country or from God), or believed that people got what they deserved based on moral actions to understand the disease's origins.
- Misconceptions arose from several sources, including media, social media, family and healthcare workers, including information that was stigmatising to particular individuals or groups.
- People may not verify information they receive from social networks.
- Misinformation from different sources can spread rapidly; this may be due to lack of access and availability of

role in communicating information about the pandemic and protective measures required by individuals and the community.

Social pressures and influences may promote adherence to physical distancing measures; as did higher perceived risk, but behaviour change was not consistently at a high level and is influenced by a range of factors.

A range of misconceptions, arising from a range of sources including social media and social networks, may exist about the disease and symptoms, transmission, treatments and origins. These can co-exist alongside accurate information. Both tend to grow rapidly as the pandemic progresses, and misinformation can grow in the absence of available or accessible information, or in the presence of conflicting public health messages. People may also not tend to check information they receive from social networks.

Misconceptions may negatively affect adoption of protective behavioural measures during a pandemic, and so are important to address. It may be important

(Continued)

characteristics reported; 7. Quality of included studies assessed; 9. Synthesis methods (appropriate for scoping review)].

Funding source:

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication

of this article: Umair Majid receives financial support from the Canadian Institutes of Health Research

and the Government of Ontario, Canada. Neither party was involved in the design and conduct of this research.

accurate information (forcing people to seek alternative sources of information that may be prone to misinformation), deep mistrust of government sources or to conflicting or contradictory public health messages.

- Misconceptions may affect healthcare-seeking and physical distancing behaviours. Some studies reported that those holding conspiracy beliefs were more likely to report greater mistrust of governments and healthcare, more stigmatising beliefs and lower support for physical distancing and quarantine (i.e. conspiracy theories and misinformation tend to be negatively associated with community-based prevention behaviours).

Recommendations:

Knowledge, awareness, and misconceptions influence risk perception and behaviours, but changes depend on a range of factors such as country, population, and societal characteristics.

During pandemics, knowledge generally spreads rapidly, and both accurate and inaccurate information spread quickly, but it is unclear how individuals and communities navigate accurate knowledge that promotes protective behaviours and inaccurate information that does not.

Misconceptions may play a role in determining whether people with accurate knowledge develop high-risk perceptions that then lead to behaviour change; where misinformation can effectively dilute the perception of risk and also lead to ineffective protective behaviours. Misconceptions may also increase risk perceptions (where there is uncertainty), leading to people adopting behaviours they believe are effective even if they are not.

Social pressures may exert a strong positive influence on protective behaviours. However, they may also be the source of misconceptions. Introducing information that contradicts misconceptions may help, but this depends on the source and format of the information and on the level of trust people have in the source.

Information that contradicts existing misconceptions may require people to process information at a higher level to inform their decisions and behaviours; this may delay the adoption of protective behaviours, lead to information overload and negative emotional states.

Information that challenges or contradicts misconceptions, communicated from a trusted source, may reduce misconceptions if the communication is coherent. Frequent, drastic changes in reporting may be perceived as inaccurate by the public and lead to a loss of trust. Authorities should communicate clearly about what is known and what is not to build and sustain trust.

to work to counter misinformation or misconceptions by providing contradictory information, but this requires more cognitive work from people. Misconceptions may be more common amongst those with less trust of the government or of healthcare; therefore, community leaders, healthcare providers, the media and government all play an important role in communicating accurate information about disease and required health protection measures during a pandemic.

Noone 2021#

Overview and aim:

Reported on:

Communication purpose:

Citation type:

Assessment of the focus, quality and generalisability of the evidence on determinants

Adherence conceptualised (e.g. reduced mobility, stay at home, physical distance from others) and measured in a range of ways, mostly relying on smartphone GPS location

Findings may be useful when planning communication

ScR, rapid

(Continued)

<p><u>Public health measure:</u></p> <p>General PD</p> <p><u>Mapping to:</u> Adherence</p> <p><u>Mapping to:</u></p> <p>Theme 3 support for individual and population behavioural changes</p>	<p>of adherence to physical distancing measures.</p> <p>Specific questions included:</p> <p>Focus (what measures were assessed? How was adherence conceptualised and measured?); Quality (how great is the risk of bias?); and generalisability (where was the research set? Were representative groups studied?).</p> <p><u>Type of study and data:</u></p> <p>Scoping review; 84 studies, quantitative (59 cross-sectional, 20 longitudinal, 5 randomised or non-randomised).</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: evaluation of adherence to physical distancing measures, including potential determinants of adherence as independent variables. Quantitative study design; published in any language</p> <p>Excluded: studies focusing only on intention to adhere.</p> <p><u>Participant features and numbers, sampling details:</u></p> <p>26% of studies used nationally representative samples for study; remaining were based on convenience sampling of some type.</p> <p><u>Included disease(s):</u></p> <p>COVID-19.</p> <p><u>Timing:</u></p> <p>Searches July 2020 (first wave of the COVID-19</p>	<p>data (n = 30) or on self-reported adherence (e.g. to PH measures, reduced contacts) (n = 53).</p> <p>Coding using Theoretical Domains Framework for potential determinants of adherence to physical distancing measures identified the following:</p> <ul style="list-style-type: none"> • ‘Environmental Context and Resources’ (coded 388 times across 76 studies) was the most commonly coded domain; broadly covers elements of an individual’s circumstances, including economic circumstances (e.g. debt relief), their demographic features and the public health policies and pandemic severity in their location that might promote or inhibit adaptive behaviours. • ‘Beliefs and Consequences’ (coded 34 times across 21 studies); broadly covering acceptance of reality or outcomes of a particular behaviour, included people’s beliefs supporting physical distancing; risk perception; anticipated regret (motivated by avoiding infecting others); and consequents (perceived severity). • ‘Emotion’ (coded 28 times across 12 studies); included fear, anxiety, stress; with specific examples including the cost of adherence to measures. • ‘Social Influences’ (coded 26 times across 16 studies); broadly covering interpersonal processes leading to changes in feelings, thoughts or behaviours included social norms, social comparisons (others’ physical distancing behaviours) and power (stay-at-home orders). <p>Other domains related to communication and PD were typically less frequently coded but included Knowledge (understanding of COVID-19) and Skills (e.g. health literacy).</p> <p><u>Recommendations:</u></p> <p>Several potential determinants of physical distancing adherence were identified, with adherence conceptualised and measured in a range of ways. These may serve as potential targets for strategies (interventions) seeking to improve adherence to physical distancing measures during a pandemic.</p>	<p>tion and support for communities undertaking physical distancing measures.</p> <p><u>Related to review questions:</u></p> <p>Potential determinants of physical distancing adherence appear wide-ranging. Aspects related on a practical level to individuals’ context and resources, such as economic circumstances and the local pandemic situation, may be important. People’s beliefs in support of physical distancing, perceptions of risk and anticipated regret may also influence their behaviours related to adherence. Other aspects related to emotional state, social influences, knowledge of COVID-19 and skills may also play a role in determining people’s adherence to physical distancing measures.</p>
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pandemic). Searches were restricted to 2020.

Countries included:

42 (50%) USA; majority of the remainder occurred in Western Europe, few taking place in Africa, Latin America and Asia (India, Japan, Thailand, China, Korea, Saudi Arabia, Qatar, Brazil).

Indicates that most studies were undertaken in high income countries.

Intervention or Phenomenon of interest: Potential determinants of adherence to physical distancing measures.

Quality assessment:
AMSTAR 8/11

[5. no list of excluded studies; 10. Publication bias not mentioned/assessed; 11. Sources of support included studies not reported].

Funding source:

NW was funded by a summer scholarship award from Evidence Synthesis Ireland, Cochrane Ireland and the HRB-Trials

Methodology Research Network. HD was funded by the Health Research Board and the Irish Research Council under the

COVID-19 Pandemic Rapid Response Funding Call [COV19-2020-097].

PHAC 2022#	<u>Overview and aim:</u>	<u>Reported on:</u>	<u>Communication purpose:</u>
Public Health Agency of Canada. Adjusting public health measures in	Provides considerations for adjusting PHMs as vaccination coverage increases and as	<ul style="list-style-type: none"> Guidance focuses on individual and community-level considerations for PH measures (PHMs) in the context of increasing levels of COVID-19 vaccination, as well as changing levels of community transmission. 	May inform development of communications around

(Continued)

the context of COVID-19 vaccination

At: [Adjusting public health measures in the context of COVID-19 vaccination - Canada.ca](#)

Citation type:

GL

Public health measure:

General PD

Mapping to:

Acceptability,

uptake, adherence

Mapping to:

Theme 2: recipients of public communication: audience, setting and equity

Theme 3:

support for individual and population behavioural changes

numbers of new and active cases changes within the population and public health and health system pressures ease.

Type of study and data:

Guideline; best available evidence and expert opinion; and informed by PHAC 2021 (individual and community PHM measures; itself developed from rapid evidence reviews, policy advice from PH agencies (WHO, CDC), economic advice and research).

Included disease(s):
COVID-19.

Countries included:

Canadian context; some included evidence from Canadian agencies, others from international or national sources (e.g. WHO, UNICEF, ECDC, CDC, SAGE UK).

High income countries well-represented; but within these disadvantaged and/or remote groups considered.

Timing:

Guideline developed to assist with planning and adjusting PHMs in response to changes in COVID-19 activity occurring over time. Last modified Feb 22.

Intervention or Phenomenon of interest: Considerations for adjusting PHMs including key communications required.

Quality assessment:

AGREE II scope and purpose 61.1%; stakeholder involvement 19.44%;

- Distinguishes between core PHMs (basis of good PH practice, always apply – e.g. staying home when ill) and additional PHMs (more stringent measures when needed for prevention or control of COVID-19; may relate to physical distancing, masks etc). Core PHMs may become the norm, but periods where additional PHM use (individuals and/or communities) are needed may occur.
- In such circumstances, additional measures should be proportionate to the local community risk, weighed against unintended effects of the PHM and responsive to local context; that is, measures are to be promoted during an outbreak and relaxed when outbreak is controlled.
- PH agencies should proactively communicate, in an accessible way, when changes to individual or community-based measures are likely to occur and provide a rationale for the changes when they are enacted. Such transparent communication can improve PHM adherence as people understand the reasons for the measures, the effectiveness of the measures, and they can prepare for the changes to come into play.
- Some people within communities (e.g. those at risk of more severe disease) may choose to enact additional measures even during periods of low community transmission. Clear communication is needed to reduce discrimination and stigmatisation of such individuals by emphasising that such decisions and behaviours (i.e. for individuals to protect themselves) are acceptable.
- Encouraging people to consider ways in which they can benefit others and contribute to keeping everyone in the community safe may help to promote acceptability, as when people feel part of a community response, they may be more likely to adhere to PHMs; and this is especially so if they see others following the same measures.
- Within the population, some people may be unwilling or unable to be vaccinated against COVID-19; avoiding stigmatisation based on vaccination status is important when adjusting PHMs, although agencies or operators in some settings may provide different advice to those who are not fully vaccinated.
- When planning for adjustment of PHMs (i.e. whether to reinstate, maintain, or ease measures), agencies will need to consider several factors, amongst them local COVID-19 epidemiology and PH capacity; individuals' ability to adhere to measures; vulnerabilities of individuals and communities; and costs and social disruption associated with implementing PHMs.
- For individuals, in relation to additional PHMs: Individuals who are at risk of more severe disease, or who are partially or unvaccinated are encouraged to conduct a personal risk assessment to help to decide whether to consider specific additional PHMs, such as crowd avoidance, physical distancing. Individuals at lower risk are advised to follow local/federal PHA advice.
- Community-level strategies for adjusting PHMs to local settings may be uniquely tailored and should also consider issues for those ineligible for vaccination. Communication such as signage at entry points may be useful to communicate the need to stay away (or exclusion) from public spaces if unwell; or scaled-up case and contact manage-

PH measures, and adjustments required to these over time and with changing COVID-19 risk level within communities.

Related to review questions:

Describes features of effectively communicating to support preventive measures, including physical distancing, against a backdrop of changing COVID-19 risk.

Acknowledges that personal information and decision-making required for some individuals to follow additional measures; and the role that PH agencies have in communicating with communities to prevent stigma and promote collective actions for the common safety.

Improving such communication may help to promote and improve acceptability of PHMs and changes to these over time, and to support adherence to required measures for communities and for individuals, including where there is a difference in the level of adoption of PHMs required based on personal risk.

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rigor of development 7.3%; clarity of presentation 66.67%; applicability 2.08%; editorial independence 0%.

Funding source:

Not reported; this technical guidance was developed in consultation with the Canadian Pandemic Influenza Preparedness (CPIP) Task Group and with federal, provincial and territorial partners via the Technical Advisory Committee (TAC) and/or the Special Advisory Committee (SAC). This guidance was also developed in consultation with other government departments, various multilateral partners, Indigenous stakeholders, and other external stakeholders with an interest in this subject matter.

ment activities (e.g. backward contact tracing) in communities where populations are vulnerable, at risk of severe disease and/or have lower rates of vaccination coverage. Agencies may also consider policies to minimise interactions and promote physical distancing, based on local risk assessment and consideration of the people within the community/setting who may be most affected (e.g. those at risk of severe disease; congregate living facilities). Communities at both low and high risk are advised to follow local PHA advice.

- Further factors, such as social, environmental and economic factors (e.g. housing, water quality/access, food security, pre-existing health conditions, precarious income/education/employment) need to be taken into account when adjusting PHMs for people living in remote and isolated communities. Additional barriers for individuals living in such communities also need to be considered and appropriately addressed when considering PHMs and vaccination coverage.

Recommendations:

The risk of COVID-19 is associated with many factors, that change over time. Local responses based on assessment of such factors is required, leading to adjustment in PHMs.

Agencies should proactively plan and communicate with communities about expected adjustments to measures, including reasons for the decisions. There should also be planning in place to support those at higher risk of COVID-19 (e.g. at risk of more severe disease; not fully vaccinated) to adjust measures based on their own circumstances, including communication to normalise such actions where required.

<p>Sarría-Guzman 2021#</p> <p><u>Citation type:</u></p> <p>SR</p> <p><u>Public health measure:</u></p> <p>General PD</p> <p><u>Mapping to:</u> Uptake, adherence</p> <p><u>Mapping to:</u></p> <p>Theme 1: features of public communication: content, timing and duration, and delivery</p> <p>Theme 2: recipients of public commu-</p>	<p><u>Overview and aim:</u></p> <p>To identify and synthesise research on knowledge, attitudes and practices (KAP) related to COVID-19 in America.</p> <p><u>Type of study and data:</u></p> <p>SR; cross-sectional survey; N=13 studies, >18,000 participants.</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: research on KAP; peer-reviewed, published English-language studies; conducted in American continent.</p> <p>Excluded: abstracts; non-peer-reviewed source; non-English; re-</p>	<p><u>Reported on:</u></p> <p>All included studies assessed knowledge; two thirds also assessed attitudes and practices.</p> <p><u>General public:</u></p> <ul style="list-style-type: none"> • KAP of the public importantly influence the behaviours and transmission of COVID-19, with factors such as gender, age, educational level, income and political preferences reported to be influential factors. Knowledge about COVID-19 and protection (prevention) may be lowest amongst those with lower education or employment status. • Knowledge of COVID-19 symptoms, risk factors and prevention measures were commonly obtained via social media, particularly amongst younger people while adults preferred government or international health organisation sites. • Better knowledge was often associated with positive attitude and with appropriate preventive behaviours, and people accessing information via official government sites often adhered to measures such as physical distancing. In contrast, those preferring to access information from social networks more often had knowledge gaps re- 	<p><u>Communication purpose:</u></p> <p>Findings may inform communication with populations for effectively informing them of disease risks and prevention measures, including those at disadvantage and/or those at higher risk of complications due to COVID-19.</p> <p><u>Related to review questions:</u></p> <p>Public KAP related to COVID-19 critically influence the spread of disease, but levels are variable within and across population</p>
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nication: audience, setting and equity

view or meta-analysis; non-American setting; high risk of bias (Hoy tool).

Participant features and numbers, sampling details:

All studies adults aged 18 years or older. General public (7/13 studies), elderly with chronic conditions (3/13), healthcare workers and endodontists (2/13) and farming/non-farming Latin migrant workers (1). Household income varied across studies, several included participants from lower socioeconomic groups.

Included disease(s):
COVID-19.

Timing:

Searches conducted for research published 1 December 2019 to 24 September 2020. No further details.

Countries included:

8/13 USA, 2/13 Brazil, 1 each Paraguay, Ecuador, Colombia

All high or upper middle countries.

Intervention or Phenomenon of interest:

Knowledge, attitudes and practices towards COVID-19 in the general population and within specific groups.

Quality assessment:

AMSTAR 4/11:

[1. No protocol/plan referred to 3. Databases only, no supplemental searches 4. Published, English language stud-

lated to COVID-19 and were more likely to undertake risky behaviours.

- Misinformation (e.g. conspiracy theories about the virus) are common (e.g. 25% of American adults surveyed believed COVID-19 to be a bioweapon), commonly originating from and spread via social media.
- Traditional media (e.g. national newspapers and public television) were typically the most trusted information sources. However, local sources (family, friends, coworkers, healthcare workers) were often the primary information source and a source of discussions about events, particularly healthcare workers who may provide relevant and timely information on risks and prevention measures.
- Even amongst groups with good knowledge of COVID-19 transmission and prevention measures, such as Latino immigrant workers in the USA, there may be structural issues such as the need to work out of the home, visiting family or church attendance, that increase exposure and potential transmission of COVID-19.

People with chronic diseases:

- Most elderly people with at least one chronic condition perceived COVID-19 as a serious threat but knowledge of symptoms and preventive measures varied across studies, with some indicating generally poor knowledge levels (e.g. one third unable to identify symptoms or infection prevention measures) and others with good knowledge (e.g. more than two thirds of those surveyed able to identify common symptoms and preventive measures).
- Some studies have suggested that where knowledge is poor in particular groups (e.g. elderly patients with diabetes in Brazil), the information provided may be inadequate.

Recommendations:

Many factors influence KAP levels related to COVID-19, and can be categorised as:

- scientific and social factors i.e. reliability of information and source credibility;
- sociodemographic aspects i.e. gender, age, education, ethnic background, income and political preference;
- interpersonal relationships i.e. social belonging and family relationships.

While people access information from various sources (television, websites, newspapers and social networks), social media is popular but may be the source of many inaccuracies and misinformation. Most people do not check the source of COVID-19 information presented on social media, and this can lead to poor behaviours and decision-making.

Governments should ensure that high-quality research and expert opinion are delivered clearly, accurately and impartially through a range of media (e.g. awareness campaigns, television). Materials to educate the public about COVID-19 are critical to ensuring people understand what is required to prevent disease transmission.

groups. People obtain information from a variety of sources e.g. traditional and social media sources, but some (social media in particular) may be more prone to spreading misinformation than others. In some cases, the information may itself be inadequate to support informed decisions regarding adoption of preventive measures.

To support better knowledge and behaviour change related to prevention of disease, official sources need to target different groups within the population, including those who are particularly vulnerable to COVID-19 complications or who are greater disadvantage, such as those who are educated to a lower level, in remote areas, or of lower income or employment levels. Information provided must be accurate, timely, comprehensive and delivered through different channels.

Lack of information (gaps) or misinformation may lead to risky behaviours. Improving the accuracy, reliability and dissemination of information related to preventive behaviours is therefore critical to

(Continued)

ies only 5. No characteristics of excluded studies provided 8. Quality assessment not integrated/used for interpretation 10. Publication bias not reported 11. No COI of included studies reported].

Funding source:

Not reported

Healthcare workers also need specific, up-to-date information from reliable sources (e.g. WHO, CDC) in order to be able to adopt the required mitigation and prevention measures in different settings.

Generally, the most marginalised communities (lower education and income levels) are often the most affected by pandemic outbreaks, with lower KAP amongst the elderly, less educated and rural residents. Health agencies and governments need to communicate effectively using a range of media or channels, to reach different parts of the community, including disadvantaged groups and those without Internet access. Educational activities may need to be accompanied by economic support to facilitate adherence to behavioural risk mitigation strategies.

Preventative behaviours may vary across different family dynamics, as families with small children are more careful in following preventative behaviours than single people.

controlling disease transmission.

For some groups, even where knowledge of disease and prevention measures is good, there may be structural issues, such as the need to work outside the home or larger family groups, that necessitate additional supports such as financial support.

WHO 2017*

(guideline)

Mapping to: Uptake, adherence, acceptability; also feasibility and barriers

Overview and aim:

Provides up-to date evidence-based systems-focused guidance on emergency preparedness and response, based on systematic analyses of the literature, and developed particularly for the public health aspects of emergencies.

Inclusion and exclusion criteria:

Included: Evidence assembled under 3 overarching themes (A-C), 12 questions framed and used to guide the development of evidence reviews; included the following research types:

1. Quantitative research with comparison groups (randomized, non-randomized)
2. Quantitative research with descriptive survey methods
3. Qualitative research
4. Mixed-method research and case studies.

Reported on:

- (A) Approaches for building trust and engaging with communities and affected populations.
- (B) Approaches for integrating risk communication into existing national and local emergency preparedness and response structures, including building capacity for risk communication.
- (C) ERC practice – from strategising, planning, co-ordinating, messaging, channelling different methods and approaches of communication and engagement, to monitoring and evaluation – based on a systematic assessment of the evidence on what worked and what did not work during recent emergencies.

Recommendations (directly relevant to review questions):

- A.1 Higher trust in ability of governments and public officials is associated with greater likelihood of the recommended actions being adopted. In order to build trust, risk communication interventions should be timely, transparent, easy-to-understand and consistent (i.e. not conflicting), and should link with self-efficacy, including encouraging engagement and dialogue with the public. Risk communication interventions should clearly and openly acknowledge uncertainty, be targeted towards the groups or populations affected and information should be disseminated in multiple ways (platforms, methods, channels). Strong recommendation; moderate-quality evidence.
- A2. Communication by authorities to the public should include explicit, clear and consistent information about what is known and what is not (uncertainty associated with events, risks and interventions) at a given point in time. Communication of uncertainty can have unintended negative effects, such as loss of trust, for instance, if contradictory messages are communicated. Strong recommendation; moderate-quality evidence.
- A3. Involve people the community trusts in decision-making to ensure interventions are collaborative, contextually appropriate and that communication is communi-

Communication purpose:

This may be useful for improving communication with communities by emphasising the provision of clear, transparent and consistent risk information (messages) that is disseminated widely and through different media, informs people about specific actions for protection of their health, and builds trust through transparency and acknowledgement of uncertainty.

Findings may also inform efforts to engage local stakeholders in risk communication planning and dissemination.

Related to review questions:

Recommendations link effective risk communication strategies with enhanced trust and understanding of

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Intervention or phenomenon of interest:

Emergency responses ranged from infectious disease to floods, earthquakes, volcanic eruption, bioterrorism, food-borne illness, and radiological radiation emergencies.

Countries included:

Studies of all UN countries were reviewed; however, most analysed emergency events in high- and middle-income countries in Asia, Europe, North America, and Oceania.

Quality assessment: (AGREE II) Scope and purpose: 81%

Stakeholder involvement: 86%

Rigour of development: 83%

Clarity of presentation: 88%

Applicability: 67%

Editorial independence: 100%.

Funding source:

Core WHO funds were used to finance 70% of the total cost of the project. This was supplemented by Pandemic Influenza Preparedness (PIP) risk communication capacity building project funds, and unearmarked funds provided to the WHO Health Emergencies Programme by the Government of Japan and the Government of the United Kingdom of Great Britain and Northern Ireland.

ty-owned. This may increase preparedness, and response to an emergency event. Involvement prior to an event is likely to be more successful than those undertaken only during an event. Strong recommendation; moderate-quality evidence.

- C1. There is no one strategy to ensure successful communication in emergency situations. Therefore, strategic communication planning is an overarching best practice that should be presented prior to the recommendations on new practice.
- C2. Evidence shows that knowledge of the affected community needs to be considered by strategic planning efforts so that diverse needs of different populations are able to be met. Involvement of local stakeholders, who can communicate key messages and move populations from awareness to action, is also key.
- C3. Social media and traditional media should be used as part of an integrated strategy to convey accurate, verified information.

Strong recommendation; moderate-quality evidence.

- Social media can be used to engage the public, create situational awareness, monitor and respond to rumours, public reactions and concerns during an emergency, and to facilitate responses (peer-to-peer and local level); however, use and application of social media as a sole strategy may have significant limitations (e.g. misuse, cultural concerns, varying degrees of affordability).

Conditional recommendation, moderate-quality evidence.

- C4. Risk messages should be consistent, and come from different information sources, as these are more likely to be trusted and acted upon. Messages should not be explained in technical terms, as confusion or misunderstanding can stop people from undertaking the required mitigation measures, whereas avoiding technical language may increase mitigation behaviours and is feasible.
- Messages should be available early in the emergency before misinformation or rumours can become established.
- Messages should promote specific actions people can take to protect their health. Such messages should be adapted to cultural contexts and need to be reviewed throughout the emergency. Strong recommendation; moderate-quality evidence.

public health messaging, which may increase uptake of and adherence to risk mitigation measures (such as physical distancing measures).

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WHO 2020#

Overview of public health and social measures

Available:

[Overview of Public Health and Social Measures in the context of COVID-19 \(who.int\)](#)

Citation type:

GL

Public health measure:

General PD

Mapping to: Uptake,

acceptability, adherence

Mapping to:

Theme 1:

features of public communication: content, timing and duration, and delivery

Theme 3:

support for individual and population behavioural changes

Theme 4: community engagement to support communication

Overview and aim:

To provide an overview of PH and social measures for preventing or slowing COVID-19 transmission and identify strategies to limit potential harms (social and economic impact).

Type of study and data:

Overview of several guidelines and policy briefings.

Included disease(s): COVID-19 but also drawing on pandemic preparedness literature more generally.

Timing:

May 2020

Authors note need for authorities and governments to regularly review and calibrate the PH/social response as pandemic changes over time. Changes need to be communicated to the public over time; and strategies to minimise unintended effects of PH/social measures applied and adapted over time.

Countries included:

No specific country identified.

Intervention or phenomenon of interest:

Public health/social measures (including personal measures, PD, movement measures & special protection measures) to suppress disease, as well as social and economic impacts and possible strategies to mitigate negative impacts.

Quality assessment:

Reported on:

- Social and PH measures include special measures to protect vulnerable groups, including people at risk for severe disease (e.g. older people, those with underlying medical conditions); those with social vulnerabilities (e.g. refugees, migrant workers, the homeless); those living in closed settings (e.g. detention centres, camps); and those more likely to be exposed occupationally (e.g. health workers, frontline responders).
- Response must be calibrated to the local context (e.g. commensurate with intensity of transmission nationally and/or subnationally) & reviewed regularly as the pandemic evolves to ensure feasibility, sustainability & acceptability; must also balance interventions to directly target COVID-19 with strategies to limit short- and long-term impacts on health and socioeconomic well-being (e.g. those arising from loss of income, loss of services) that might arise from restrictions. Advanced planning is needed to avert possible indirect health impact that may follow overwhelming of health systems or interruption to other health/social services.
- Unintended negative consequences of measures need to be identified and managed alongside policies to maintain essential healthcare services; protect access to food, water and other essential goods and services; protect income; support communities; and ensure human rights for all (including considerations of gender).
- Authorities should select from the range of available PH and social measures and calibrate and implement the response depending on the local COVID-19 situation (intensity of cases). Measures should be commensurate with intensity of COVID-19 transmission, and adapted to local context to ensure feasibility, sustainability and acceptability.
- Time limits for the length of implementation of measures should be provided.
- Measures may also be adapted to the community, as appropriate, to include local culture, living conditions and resources and services. Duration of measures may also be informed by local context.
- Change to PH and social measures, together with rationale for the change, need to be clearly communicated to the public.
- Coordination of PH and social services is key to ensure that members of the public know how to seek testing or medical attention, isolate, trace and quarantine to protect themselves and others in the community.

Engagement of the public is needed to ensure success of PH and social measures. To achieve this, regular dialogue through trusted channels is needed, so that people have access to the right information at the right time and so can make informed decisions to protect themselves or their families. Decision-makers should engage with communities and communicate openly and regularly about how to implement measures, at all stages of the pandemic and recovery.

Communication purpose:

This report may inform development of public communication strategies over time to inform people of preventive measures and alterations to measures, as well as strategies to counteract negative effects of PH/social measures to control disease.

Measures should be communicated clearly, and regularly, to the public; should be informed by the local context & should provide information on the length of implementation.

Community engagement is needed to help ensure the success of PH/social measures and adherence and acceptability of these within communities.

Related to review questions:

Describes communication and actions to be undertaken by authorities to promote adherence to PH and social measures, and to offset unintended effects of such measures.

Strategies to provide support such as economic support, essential services and supplies, and to promote informed decisions, may be particular-

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AGREE II: scope and purpose 66.7%; stakeholder involvement 30.56%; rigour of development 19.8%; clarity of presentation 50.0%; applicability 6.25%; editorial independence 12.5%.

Funding source:

Not reported.

1. Successful implementation of PH and social measures includes the following, amongst others:

Communicating effectively and engaging communities:

For individuals/community:

- Communicate the risk clearly and provide information on how people can best protect themselves and others;
- Use clear, simple language and messages and encourage information sharing & demystify science;
- Focus on what people can – rather than cannot – do;
- Provide information on how to help others needing assistance;
- Emphasise personal responsibility and the role of each individual in preventing disease and saving lives;
- Address stigma by emphasising respect for others and each person's human rights.

At government level:

- Communicate about risks, plans and policies often and regularly;
- Develop strategies to counter misinformation and myths;
- Involve the community in decision-making (with the aim of strengthening community engagement for PH measures); and identify and engage local networks and communities, leaders and influencers.

Promoting adherence:

For individuals/community:

- Promote access to essential services (e.g. food shopping; online meetings) and provide support to those in isolation/quarantine;
- Implement simple measures such as markings at appropriate distances for spacing as a reminder (e.g. in shops, clinics, school desks) or one-way flow to reduce number of contacts.

At government level:

- Train local workers/volunteers in communication and skills such as contact tracing, home visits;
- Plan regular, iterative response assessment so that measures can be adapted over time, and changes can be communicated to the public.

Mitigating unintended effects of PH/social measures includes the following:

Support families and the community:

- Promote community support for sick or vulnerable;
- Encourage social interaction via virtual methods;
- Help social/community services enhance resilience in communities.

Protect income and economy:

ly key to promoting and supporting adherence to measures to protect health.

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- Promote and encourage flexible leave and payment policies, part-time or adapted work;
- Promote income maintenance; offer social and economic support.

Protect access to food and water:

- Encourage home preparedness for quarantine/isolation, support access to food and supplies;
- Promote priority access to shops and services for vulnerable.

Maintain essential health services:

- Inform the public about safe care-seeking behaviours by disseminating information, including information about new pathways to services, opening hours and precautions needed.

Recommendations:

Public health and social measures to prevent and suppress COVID-19 must be applied appropriately to the local context, and with unintended (adverse) effects of such measures acknowledged and targeted with strategies to minimise negative outcomes.

WHO 2020a#	<u>Overview and aim:</u>	<u>Reported on:</u>	<u>Communication purpose:</u>
At WHO-2019-nCoV-RCCE-v2020.1-en-g.pdf January 2020 interim guidance <u>Citation type:</u> GL; interim guidance <u>Public health measure:</u> General PD <u>Mapping to:</u> Uptake, acceptability <u>Mapping to:</u> Theme 1: features of public communication: content, timing and duration, and delivery Theme 4: community engagement to	To provide actionable guidance for countries to implement effective risk communication and community engagement (RCCE) strategies, with the aim of protecting the public's health in the early COVID-19 response <u>Type of study and data:</u> Interim guidance <u>Included disease(s):</u> COVID-19 <u>Timing:</u> January 2020 (early pandemic) <u>Countries included:</u> WHO, international <u>Intervention or Phenomenon of interest:</u> Guidance on RCCE strategies <u>Quality assessment:</u> AGREE II: scope and purpose 63.90%; stake-	RCCE is a core component of health emergency preparedness and response. Data extracted focuses on findings most focused on communication in relation to promotion of preventive physical distancing measures. Clearly and proactively communicating about what is known, what is not, and what is being done to obtain information with the aim of saving lives, is a critical intervention in public health responses to any event. This helps to prevent spread of misinformation which can otherwise undermine the response, builds trust, and increases the chances that people will follow public health advice. Proactive and consistent public communication and engagement can reduce confusion; help people to understand their risk; identify how this might differ from authorities' risk perceptions; and enables understandable, accessible and trusted information to be delivered to the public. <u>Assessment of readiness (for countries without known cases):</u> <ul style="list-style-type: none">• Assessment should include preparation to communicate with unknown information and certainty; assessment of (sub)national communication capacity; identification of main actors and development of partnerships; planning for implementation of RCCE plan; training staff on these RCCE plans and procedures.• Assess the communication capacity of the relevant stakeholders and channels of communication used by those. Identify and plan communication roles of each stakeholder. Identify target audiences.• Pre-test public communication messages; identify key media and communication channels and their reach, lev-	Findings may inform communication strategies particularly information provision to the public and may assist with planning and implementing communication and community engagement. <u>Related to review questions:</u> Clear, accurate and consistent communication of information, from and through trusted sources, may build trust and increase the likelihood of people following public health advice. Monitoring and addressing misinformation and rumours, and questions from mem-

(Continued)

support communication Theme 5: public trust and perceptions	holder involvement 8.33%; rigour of development 4.20%; clarity of presentation 52.78%; applicability 2.08%; editorial independence 0%. <u>Funding source:</u> Not reported	el of public trust. Ensure that communicators are appropriately skilled and trained. <ul style="list-style-type: none"> Establish engagement methods with affected communities in order to understand people's concerns, attitudes and beliefs; gather information on knowledge and behaviours (e.g. preferred information sources and formats), existing community leaders/influencers (e.g. community or religious leaders, unions) that could be leveraged for community engagement. Prepare to begin public communication before the full picture is known. Establish monitoring (and if needed, response) systems to address rumours, misinformation and common questions. 	bers of the public, may also help to promote uptake of public health advice. Community engagement is also critical to understanding public perceptions and concerns and to identifying feedback to improve subsequent communications and information provision.
		<p><i>RCCE initial response (for countries with cases)</i></p>	
		<ul style="list-style-type: none"> Initial response should include establishing and building trust with the public through two-way communication and engagement. Such activities should happen regularly and address misinformation, rumours, and common questions; encourage people to adopt protective behaviours; communicate uncertainties; assess public risk perceptions; and provide information and guidance. Messages should be coordinated, consistent and timely. Public communication should include early frequent announcement of the health threat; this should be updated after analysis of public risk perceptions and tailored accordingly. Communicate information early, even if incomplete, and communicate openly about uncertainty (i.e. manage uncertainty). Communicate the degree to which uncertainty exists. Trusted, effective communication channels that people use regularly should be used, and trusted leaders or influencers identified. Information should be tailored, translated into community languages and adapted to appropriate literacy levels. Communication should clearly explain what is known and what is uncertain; this should be updated over time as new information emerges. Monitoring for rumours and misinformation should be conducted, and response mechanisms developed; feedback (e.g. mass and social media, hotlines) should also be monitored and used to improve and adapt the communication and community engagement strategy. 	
		<p><u>Recommendations:</u></p>	
		Effective RCCE strategies form a critical part of the public health response to an emergency. They are multifaceted and require assessment, co-ordination and ongoing monitoring and adjustment.	

<u>WHO 2021a#</u>	<u>Overview and aim:</u>	<u>Reported on:</u>	<u>Communication purpose:</u>
Considerations for implementing and adjusting public health and social measures in	To provide guidance to Member States on introducing, lifting or adjusting public health	Globally, COVID-19 control will continue to rely on PHSMs for the foreseeable future, which is influenced by different vaccination levels and unequal access to vaccines around the world, but also by changing community transmission levels, and emergence of variants of concern.	Guidance can inform strategies for planning and implementing pub-

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the context of COVID-19. Interim guidance 14 June 2021	and social measures (PHSMs)	Adjusting public health and social measures:	lic communication and support as PHSMs are adjusted to respond to changing COVID-19 transmission levels within communities.
<u>Citation type:</u>	<u>Type of study and data:</u>	Decisions about implementing, lifting, or strengthening PHSMs should include consideration of several factors, including:	<u>Related to review questions:</u>
GL	GL (interim update, June 2021)	<ul style="list-style-type: none"> Measures which are effective and have the highest acceptability and feasibility (and minimise negative consequences) should be adopted. Assessment of feasibility and acceptability should be based on participatory approaches rather than one-way communication; and engaging with the community will help to promote adherence. When the local situation changes (i.e. changes in case numbers, situational assessment), additional measures should be introduced or re-introduced rapidly. If stricter PHSMs are implemented, this needs to be balanced against socioeconomic impacts (particularly in settings highly dependent on daily wages and the informal economy) and balanced against the positive and negative outcomes for the community as a whole and for individuals. These include effects on health and mental health, human rights, economic considerations, socioeconomic disparities, public health programme continuity, and treatment of non-COVID medical conditions. Public attitudes (sentiment) towards PHSMs are also key. If PHSMs are lifted, new increases in cases should be considered and key transmission drivers must be well understood, as well as adequate health systems in place, and risk to vulnerable individuals minimised. Protecting vulnerable populations (e.g. those at risk for severe disease, such as those older than 65 years, comorbidities, marginalised groups) should be central to decision-making; with awareness that vulnerable communities may need support to meet essential needs if PHSMs are introduced or removed. Assessment of such needs is critical, and vulnerable populations must be safeguarded by mobilising resources and engaging supports as well as community sectors to learn about their concerns and receive feedback. Key concerns include access to health services, food provision or income support, safe housing and safe public transport. 	Proactive communication in advance of PHSM changes
<u>Public health measure:</u>	<u>Included disease(s):</u>		Identifies the need for clear, purposeful communication with communities and changes to these occurring over time.
General PD	COVID-19		Highlights the need for community engagement and involvement of stakeholders in decisions about adjustments to PHSMs and to the public communication around these measures.
<u>Mapping to:</u>	<u>Timing:</u>		Clear, transparent, timely communication tailored to local communities may help to build trust, to improve feasibility of implementation of the measures, and to improve acceptability and adherence to PHSMs.
Acceptability, adherence, feasibility	Guidelines not specific to a particular stage of pandemic but focusses on need for adjustment of PHSMs over time according to COVID-19 prevalence and communication and support measures needed to enable adjustment to measures over time		
<u>Mapping to:</u>	<u>Countries included:</u>		
Theme 1:	WHO, international		
features of public communication: content, timing and duration, and delivery	<u>Intervention or Phenomenon of interest:</u>		
Theme 2: recipients of public communication: audience, setting and equity	Guideline for countries to assess situation at national and subnational levels and need for introducing, adapting, or lifting PHSMs		
Theme 3:	<u>Quality assessment:</u>		
support for individual and population behavioural changes	AGREE II: scope and purpose 63.9%; stakeholder involvement 33.33%; rigour of development 6.3%; clarity of presentation 72.22%; applicability 0%; editorial independence 22.92%.	<u>Community engagement and risk communication:</u>	
Theme 4: community engagement to support communication	<u>Funding source:</u>	<ul style="list-style-type: none"> When PHSMs are changed, communities should be regularly and fully informed, engaged and enabled prior to the changes occurring. This will help communities to engage with the PHSM and to develop trust. Trust is critical and needs to be built and fostered, particularly where there is little or no involvement of the local population in decision-making. Communication and community engagement strategy should be put in place prior to changing PHSMs; and the strategy should be developed in consultation with stakeholders, including those from the community. Plans should include consideration of target audiences, communication channels, and community engagement activities to inform the community. 	
Theme 5:	Not reported		
public trust and perceptions			

(Continued)

- Key information to be conveyed by such plans should include that which is important to the community e.g. extent and duration of measures.
- Governments and authorities should regularly communicate epidemiological data to the public to build trust and to promote acceptance and sustained adherence to PHSMs.
- Risk communication must be clear, concise and transparent; include a rationale for the change to measures; and should be developed with communities in whom the PHSM is to be enacted or changed. It is particularly important that communities are given recognised roles to provide input and take ownership of how and when PHSMs will be changed.
- Communities are critical for the implementation of PHSMs and contribute to mitigating the impacts of certain measures, including the role of volunteers and other community organisations in strengthening community services for those in need (e.g. providing food or other essential supplies to those in isolation or quarantine).
- Mechanisms to enable feedback on PHSMs changes and societal impacts are needed to allow these to be quickly identified and addressed.
- Community engagement is critical in identifying solutions to promote uptake of measures that best fit with local needs, and this may improve adherence to measures. Working with local community networks to build capacity and train local leaders may be beneficial.
- Managing misinformation and information overload must be managed proactively by providing the right information at the right time, to the right people via trusted channels.
- Monitoring needs to be put into action in order to identify patterns as they emerge and to allow tailored communications to be delivered.

Individualised public health measures:

- In settings where PHSMs are robustly implemented to prevent COVID-19 transmission, relaxing some measures for some people (e.g. those fully vaccinated) may help to limit negative social and economic impacts of the measures. In such situations, the ethical implications of adjusting some measures for some people need to be fully considered, particularly in light of unequal access to vaccines within and across countries.

Recommendations:

Establishing, adjusting, or reinstating PHSMs are needed to control COVID transmission and outbreaks. Decisions to adjust measures should be made rapidly in response to local transmission levels. All such decision-making needs to balance the benefits and potential harms of enacting measures on both individuals and communities. Engagement with communities and stakeholders is needed throughout planning and decision-making stages. Communication and support should be planned and in place in advance of any changes to PHSMs, and communication should occur regularly to keep the public informed about the situation. Spe-

(Continued)

cial attention is needed to ensure that vulnerable/disadvantaged communities are engaged and communicated with effectively.

Primary studies

<p>Lim 2020#</p> <p>(primary)</p> <p>Maps to: Uptake</p>	<p><u>Overview and aim:</u></p> <p>Assessment of initial perceptions and responses towards COVID-19 in Singapore, China and Italy in order to identify factors associated with anxiety and behavioural change (included avoidance of workplaces, public spaces, social engagements or public transportation, and changes to work-related or personal travel plans)</p> <p><u>Inclusion and exclusion criteria:</u></p> <p>Included: invited (via email and SMS) online panel members (received incentive for completing), as well as Facebook users who clicked the survey link advertised (but did not receive incentive)</p> <p><u>Type of study and data:</u></p> <p>Online questionnaire-based survey; 4,505 respondents (February to March 2020)</p> <p><u>Countries included:</u> Singapore, China, Italy</p> <p><u>Quality assessment:</u></p> <p>Response rate: +++ (Singapore); ++ (China); + (Italy); Overall: ++</p> <p>Sample methodology: ++</p> <p>Authors declared no COI exists; sample underrepresented older people (China), younger people (Singapore), men and those without tertiary education (all</p>	<p><u>Reported on:</u></p> <ul style="list-style-type: none"> • Most respondents (all countries) reported high knowledge of COVID-19 symptoms and modes of transmission. • Most respondents (all countries) actively searched for information, with main sources identified as the Internet and social media. However, most respondents also rated traditional media (television, radio, print) and government sources as the most trusted sources of information. • Most respondents (all countries) reported high levels of information sufficiency and self-efficacy, although fewer respondents from China reported having sufficient information about risk of infection and why authorities were taking specific control measures. • Compared to other countries, anxiety towards COVID-19 was higher in China, positive behavioural responses were higher in Italy and superstition and fatalism were higher in Singapore. • Most respondents (all countries) reported high acceptance of restrictive public health measures and confidence in authority was similar in Singapore and Italy. • Higher self-efficacy was associated with lower anxiety levels (all countries), and willingness to comply with restrictive measures and greater information sufficiency were associated with more positive behavioural changes to reduce spread of infection to themselves or others. • Higher anxiety was associated with higher superstition and fatalism, and regarding traditional media as the most trustworthy information source (Singapore and Italy). <p><u>Recommendations:</u></p> <ul style="list-style-type: none"> • Across all three countries, information sufficiency and self-efficacy were strongly associated with lower anxiety. • Across all three countries, higher acceptance of restrictive control measures and information sufficiency were strongly associated with greater positive behavioural response. • Communication strategies that increase self-efficacy and information sufficiency may reduce anxiety and promote positive behavioural changes. • Study recommends early dissemination of information from trusted health and government authorities about signs and symptoms of the disease, risk reduction measures, protective behaviours and why specific control measures are being taken, via a variety of online and traditional media outlets. 	<p><u>Communication purpose:</u></p> <p>Findings may be useful for enabling communication; facilitating decision-making and supporting behaviour change in relation to modifying or engaging in specific behaviours to reduce people's risk of infection for themselves or others.</p> <p><u>Related to review questions:</u></p> <p>Lower anxiety was associated with higher self-efficacy and information sufficiency.</p> <p>Higher acceptance of restrictive control measures and information sufficiency were associated with participants modifying or engaging in specific behaviours to reduce the risk of infection to themselves or others (included avoidance of workplaces, public spaces, social engagements or public transportation, and changes to work-related or personal travel plans).</p>
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3 countries); majority of Italian respondents were from Lombardia and Veneto; preprint paper (not peer reviewed)

Abbreviations:

AMSTAR: A Measurement Tool to Assess Systematic Reviews
CDC: Centres for Disease Control and Prevention
EEA: European Economic Area
ECDC: European Centres for Disease Control and Prevention
ERC: emergency risk communication
EU: European Union
GL: guideline
GPS: global positioning system
H1N1: H1N1 influenza strain
KAP: knowledge, attitudes, practices
MERS: Middle East Respiratory Syndrome
NIHR: National Institute for Health Research
PD: physical distancing
PH: public health
PHM: public health measure
PHSM: public health and social measures
RCCE: risk communication and community engagement
RCT: randomised controlled trial
SARS: Severe Acute Respiratory Syndrome
SR: systematic review
WHO: World Health Organization

Appendix 7. Themes used as framework for thematic synthesis

The six themes arising from the original synthesis of studies and used as framework for synthesis in this update (taken from [Ryan 2021a](#)):

1. Public communication: features of communication (content, timing and duration, and delivery);
2. Public communication: recipients of communication (audience and setting, and equity issues);
3. Supporting changes to behaviour at population and individual levels (including changing attitudes or intentions related to behaviour change);
4. Engaging the community and its members in developing and delivering communication;
5. Public trust and perceptions;
6. Communication and support considerations specific to distancing measures in schools and workplaces.

CONTRIBUTIONS OF AUTHORS

Rebecca Ryan: led the protocol and all review stages including study screening, data extraction, quality assessments and data synthesis.

Charlotte Silke: contributed substantially to the protocol and all review stages including study screening, data extraction, quality assessments and data synthesis.

Anne Parkhill: developed and ran all searches; located studies for assessment and contributed to the drafting of the protocol and review.

Ariane Virgona: assisted with data extraction and checking, and with drafting the protocol and review.

Bronwen Merner: assisted with data extraction and checking, data synthesis and thematic analysis, and with drafting the protocol and review.

Shauna Hurley: contributed substantially to drafts of the protocol, review and thematic analysis, wrote the review background and advised on results and quality assessments.

Louisa Walsh: contributed substantially to drafts of the protocol and review and wrote the plain language summary.

Caroline de Moel: assisted with study screening, data extraction and checking, and provided input to thematic analysis and to the protocol and review drafts.

Lina Schonfeld: assisted with data extraction and checking, and provided input to the protocol draft.

Adrian GK Edwards: provided input on thematic analysis and contributed substantially to protocol and review drafts.

Jessica Kaufman: provided input on thematic analysis and contributed substantially to protocol and review drafts.

Alison Cooper: provided input on thematic analysis and contributed substantially to protocol and review drafts.

Rachel Kar Yee Chung: provided substantial input to all review drafts and to thematic analysis results.

Karla Solo: provided support for use of guidelines and provided input to review drafts.

Margaret Hellard: provided input on thematic analysis and to the protocol draft.

Gian Luca Di Tanna: provided input to protocol and review drafts.

Alisa Pedrana: provided input to the protocol draft.

Freya Saich: provided input to the protocol draft.

Sophie Hill: provided input and oversight at all stages of the protocol and review drafts.

DECLARATIONS OF INTEREST

Rebecca Ryan: no relevant interests; Coordinating Editor, Cochrane Consumers and Communication.

Charlotte Silke: none known.

Anne Parkhill: none known.

Ariane Virgona: none known.

Bronwen Merner: no relevant interests; joint Managing Editor for Cochrane Consumers and Communication from 2016 to June 2021.

Shauna Hurley: no relevant interests; adviser to Cochrane's Editor in Chief and as Communications Manager for Cochrane Australia.

Louisa Walsh: Gilead Sciences Inc (Consultant); shared my own opinions and comments on my own social media regarding consumer engagement in health service design and health service research; registered physiotherapist who works in health service research and teaches subjects in physiotherapy and public health degrees; consulting work for Consumers Health Forum of Australia (an ongoing relationship); Managing Editor of Cochrane Consumers and Communication; consumer representative, and have ongoing consumer roles with Consumers Health Forum of Australia and the Victorian Clinical Informatics Council (Department of Health).

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Jessica Kaufman: no relevant interests; Editor, Cochrane Consumers and Communication.

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Rachel Kar Yee Chung: none known.

Karla Solo: none known.

Margaret Hellard: no relevant interests; published opinion pieces and commentary related to COVID; Infectious Disease Physician, Alfred Hospital; .

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Alisa Pedrana: Gilead Sciences Inc (Consultant); affiliated to the Burnet Institute - provided advice to the Victorian Government about policy decisions for COVID-19; Burnet Institute led a longitudinal cohort study on COVID-19 (The Optimise Study) - and we have published data from this study that may be relevant to this work; involved in the Optimise study received funding support from the Victorian Government Department of Jobs, Precincts and Regions, the Victorian Department of Health, the Macquarie Group Foundation, and Burnet Institute donors.

Freya Saich: Burnet Institute (Employment); Burnet Institute conducts social research into COVID-19 through various studies; involved in the Optimise Study - Victorian Government COVID-19 Victorian Consortium, the Macquarie Group Foundation and Burnet Institute donors; the Optimise Study Longitudinal cohort study and social network study. It is a partnership between the Burnet Institute and the Doherty Institute in collaboration with University of Melbourne, Swinburne University of Technology, Monash University, La Trobe University, Murdoch Children's Research Institute, the Centre for Culture Ethnicity and Health, the Health Issues Centre and external collaborators including Alison Coelho.

Sophie Hill: no relevant interests; Cochrane Consumers and Communication Group, Joint Coordinating Editor, 2000-June 2022.

Rebecca Ryan, Anne Parkill, Bronwen Merner, Louisa Walsh, Adrian Edwards, Gian luca Di Tanna and Sophie Hill have past or current editorial roles with the Cochrane Consumers and Communication Group. None were involved in the editorial processes for this review.

SOURCES OF SUPPORT

Internal sources

- No sources of support provided

External sources

- National Health and Medical Research Council, Australia

Rebecca Ryan receives support for her position as Coordinating Editor of the Cochrane Consumers and Communication Group under the NHMRC funding to Australian Cochrane Groups (2020-2023).

- Health Research Board (Ireland) and the HSC Public Health Agency through Evidence Synthesis Ireland, Ireland

Charlotte Silke was partly supported by the Health Research Board (Ireland) and the HSC Public Health Agency (Grant number CBES-2018-001) through Evidence Synthesis Ireland/Cochrane Ireland.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

The protocol described a two-stage approach to selecting relevant evidence (following the methods of the original review published in 2021): stage one identifying synthesised evidence sources (systematic reviews and guidelines); stage two identifying primary research studies that filled gaps in the evidence arising from synthesised evidence sources. Screening for stage 1 identified a large volume and range of synthesised evidence for inclusion and the decision was therefore made to halt screening at this level (rather than proceed to selecting primary studies).

INDEX TERMS

Medical Subject Headings (MeSH)

Communication; *COVID-19 [prevention & control]; Pandemics [prevention & control]; Physical Distancing; Public Health

MeSH check words

Humans