World Health Organization

Communicating risk in public health emergencies

A WHO guideline for emergency risk communication (ERC) policy and practice



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List of key abbreviations

CCB	WHO Communications Capacity-Building unit
COI	conflict of interest
DOI	declaration of interest
ERC	emergency risk communication
ERG	External Review Group
GDG	Guideline Development Group
GRADE	Grading of Recommendations Assessment, Development and Evaluation
GRADE-CERQual	GRADE Confidence in the Evidence from Reviews of Qualitative Research
IHR (2005)	International Health Regulations (2005)
ISG	Internal Steering Group
LIC	low-income country
NGO	nongovernmental organization
PICO	Population, Intervention, Comparator, Outcome questions
SPICE	Setting, Perspective, phenomenon of Interest, Comparison, Evaluation of impact
USA	United States of America
WHO	World Health Organization

Glossary

AACODS (Authority, Accuracy, Coverage, Objectivity, Date, Significance)
a tool used to assess the quality of evidence in so-called grey literature documents.

CERQual (Confidence in the Evidence from Reviews of Qualitative Research)
a transparent method for assessing the quality of reviews of qualitative evidence.

DECIDE (Evidence to Decision)
a five-year project by the GRADE Working Group (2011–2015) co-funded by the European Commission, which aims to improve the dissemination of evidence-based recommendations by developing tools including an Evidence to Decision (EtD) framework.

Emergency risk communication (ERC)
an intervention performed not just during but also before (as part of preparedness activities) and after (to support recovery) the emergency phase, to enable everyone at risk to take informed decisions to protect themselves, their families and communities against threats to their survival, health and well-being.

GRADE (Grading of Recommendations Assessment, Development and Evaluation)
a system developed by the GRADE working group to enable transparent development of evidence-based recommendations.

PICO (Population, Intervention, Comparator, Outcome)
a question governing a systematic evidence review.

Risk communication
the real-time exchange of information, advice and opinions between experts, community leaders or officials and the people who are at risk, which is an integral part of any emergency response.

SPICE (Setting, Perspective, phenomenon of Interest, Comparison, Evaluation of impact)
research questions using a format more applicable to a qualitative and mixed-methods evidence search.


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LOS PATIOS
La salud
es nuestro recurso
más valioso
Representación
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Executive summary

During public health emergencies, people need to know what health risks they face, and what actions they can take to protect their health and lives. Accurate information provided early, often, and in languages and channels that people understand, trust and use, enables individuals to make choices and take actions to protect themselves, their families and communities from threatening health hazards.

Risk communication is an integral part of any emergency response. It is the real-time exchange of information, advice and opinions between experts, community leaders, or officials and the people who are at risk. During epidemics and pandemics, and humanitarian crises and natural disasters, effective risk communication allows people most at risk to understand and adopt protective behaviours. It allows authorities and experts to listen to and address people's concerns and needs so that the advice they provide is relevant, trusted and acceptable.

WHO has manuals, training modules and other forms of guidance related to emergency and risk communication which are based on expert opinion or lessons drawn from major environmental disasters or disease outbreaks, such as the Severe Acute Respiratory Syndrome (SARS) outbreak of 2003, and the H1N1 influenza pandemic of 2009, rather than on systematic analyses of the evidence.

Recent public health emergencies, such as the Ebola virus disease outbreak in West Africa (2014–2015), the emergence of the Zika virus syndrome in 2015–2016 and multi-country yellow fever outbreaks in Africa in 2016, have highlighted major challenges and gaps in how risk is communicated during epidemics and other health emergencies. The challenges include the rapid transformation in communications technology, including the near-universal penetration of mobile telephones, the widespread use and increasingly powerful influence of digital media which has had an impact on 'traditional' media (newspapers, radio and television), and major changes in how people access and trust health information. Important gaps include considerations of context – the social, economic, political and cultural factors influencing people's perception of risk and their risk-reduction behaviours. Finally, guidance is needed on the best approaches for strengthening emergency risk communication (ERC) capacity and sustaining them for potential health emergencies.

The recommendations in these guidelines provide overarching, evidence-based guidance on how risk communication should be practised in an emergency. The recommendations also guide countries on building capacity for communicating risk during health emergencies.

Specific step-by-step instructions are beyond the remit of these guidelines. However, in due course these will be provided in detailed manuals, standard operating procedures, pocket guides, checklists, training modules and other tools that will be developed to elaborate the recommendations.

Why these guidelines were developed (objectives and scope)

These guidelines aim to provide WHO Member States, partners and stakeholders involved in emergency preparedness and response with evidence-based, up-to-date, systems-focused guidance on:

- approaches for building trust and engaging with communities and affected populations;
- approaches for integrating risk communication into existing national and local emergency preparedness and response structures, including building capacity for risk communication as required of all WHO Member States by the International Health Regulations (2005) *(1)*; and
- ERC practice – from strategizing, planning, coordinating, 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.

Who should use these guidelines?

These guidelines were developed for policy- and decision-makers responsible for managing emergencies, particularly the public health aspects of emergencies, and practitioners responsible for risk communication before, during and after health emergencies.

Other groups expected to use these guidelines are: frontline responders; local, national and international development partners; civil society; the private sector; and all organizations, private and public, involved in emergency preparedness and response.

How these guidelines were developed (methods)

Development of these guidelines began in October 2014, with the establishment of an Internal Steering Group (ISG) and the commissioning of a flash literature review *(2)* to provide an overview of existing ERC guidance and potential areas for action or improvement. The flash review found a number of areas where guidance was lacking, including mobile technologies, evaluation research, assessment of barriers to preparedness, ERC during disasters in very low-income countries (LICs), capacity building during the preparedness phase, and application of evidence and past experience for better ERC.

In early 2015, a Guideline Development Group (GDG) was established comprising experts in risk communication, disaster preparedness, and response and health emergencies. The GDG held its first meeting in Geneva, Switzerland, on 22–23 June 2015, to discuss using the findings of the flash literature review to: set the scope of the guidelines; identify areas of risk communication practice needing further investigation; and frame questions to govern a systematic search of the evidence. Twelve questions were framed and used to guide evidence reviews, which were commissioned in 2016, completed by the end of January 2017 and then presented to the GDG.

In February 2017, the GDG met to formulate recommendations, using evidence-to-decision tables in which evidence from the reviews on what worked, what did not work, values, preferences, resource use and equity was analysed. An anonymous electronic vote was cast (see main text for full details) to establish the initial group position. The recommendations were formulated and ultimately agreed upon by an overwhelming majority of the group with any dissenting views reflected in remarks and/or in modifications to the text. An external group made up of ERC practitioners, emergency responders, academics and policy-makers reviewed the meeting's recommendations. Their suggested comments, changes and additions were further reviewed by the GDG, which used them to finalize the recommendations.

Recommendations

Types of recommendations

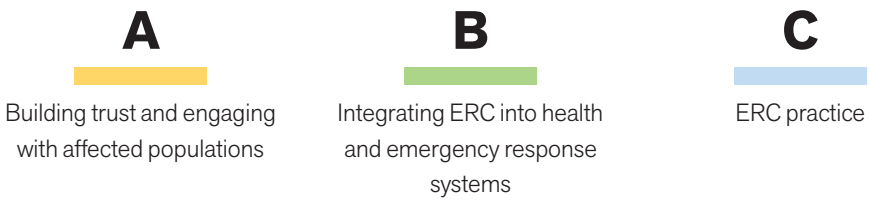
Recommendations are statements about interventions or practices that the evidence indicates are the best choices. In some circumstances, where, for example, there had been inadequate research into an area, the GDG made a 'research recommendation'. In other instances, where there were clear best practices based on accepted principles, the GDG framed their statement as a 'best practice statement'.

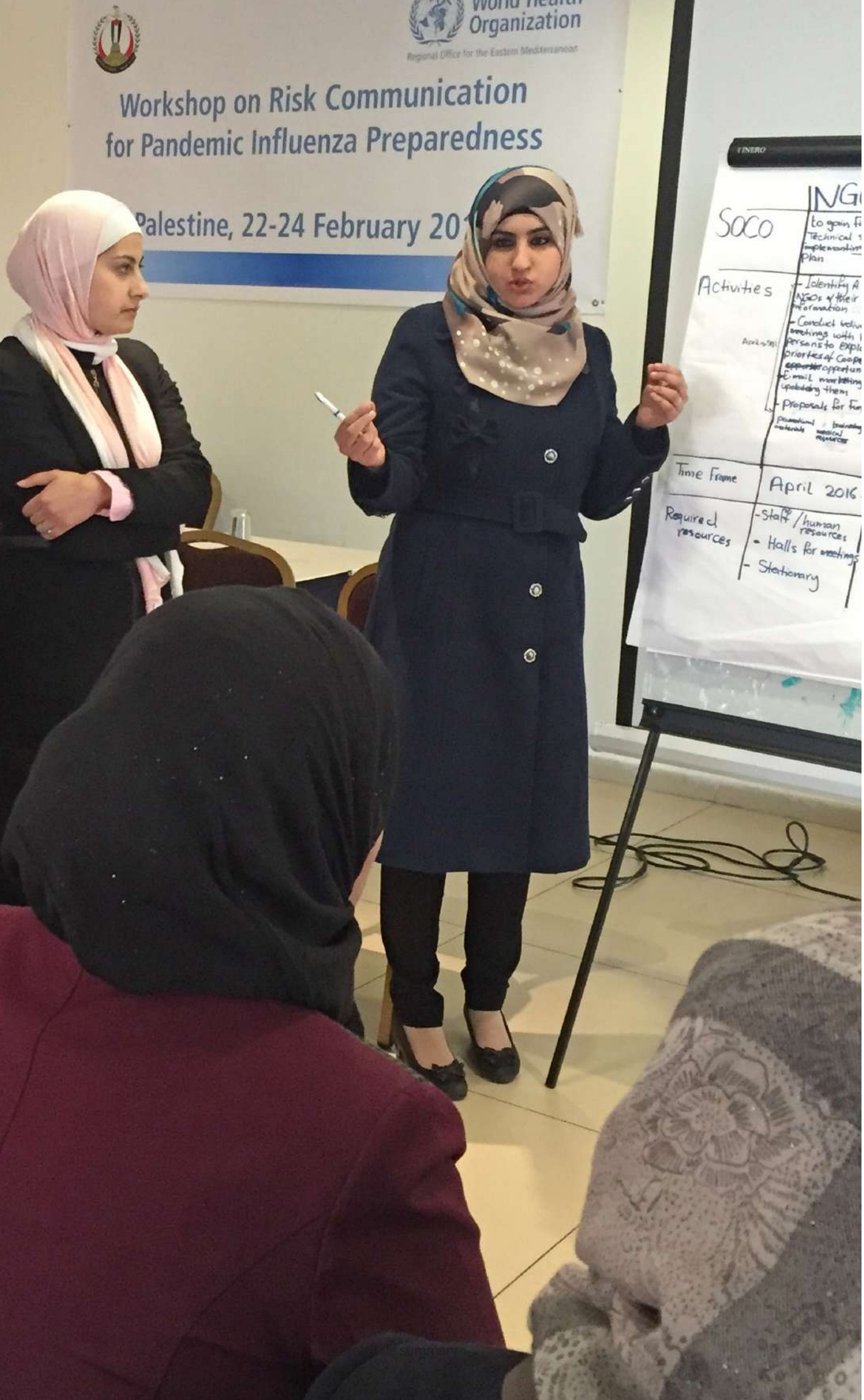
The strength of the recommendation – either 'strong' or 'conditional' – was set by considering the quality of the evidence along with the harms, benefits, feasibility, values, preferences, resource use and equity considerations surrounding the recommendation. A strong recommendation is one that should be implemented in all settings, whereas a conditional recommendation is one that may be implemented in specific settings and/or circumstances.

Assessing the quality of the evidence was difficult, as different evidence assessment tools were used depending on the type of studies providing the evidence (see methods section in Annex 2 for

a full explanation of the tools used). However, clear 'signals' were gathered from the different sets of studies, and confidence in those 'signals' was communicated by the applicable quality of evidence tools. This was used by the GDG to agree on the quality of the evidence and strength of the recommendations. Even though the underpinning evidence was assessed as 'moderate' or 'low' for many of the recommendations, the panel decided to make a strong recommendation because the reported experience (grey literature) and case examples indicated that the recommended action would yield clear benefits, was feasible and satisfied equity considerations.

As the recommendations were developed 'question by question', it became clear that there were natural, logical groupings of issues and areas of practice, with the recommendations falling into the following three categories:




World Health Organization
Regional Office for the Eastern Mediterranean
Workshop on Risk Communication
for Pandemic Influenza Preparedness
Palestine, 22-24 February 20
SOCO
Activities
Time Frame
April 2016
Required resources
- Staff / human resources
- Halls for meetings
- Stationary

A. Building trust and engaging with affected populations

A.1.: Trust

Recommendation

To build trust, risk communication interventions should be linked to functioning and accessible services, be transparent, timely, easy-to-understand, acknowledge uncertainty, address affected populations, link to self-efficacy, and be disseminated using multiple platforms, methods and channels.

Strong recommendation
Moderate quality evidence

A.2.: Communicating uncertainty

Recommendation

Communication by authorities to the public should include explicit information about uncertainties associated with risks, events and interventions, and indicate what is known and not known at a given time.

Strong recommendation
Moderate quality evidence

A.3.: Community engagement

Recommendation

Identify people that the community trusts and build relationships with them. Involve them in decision-making to ensure interventions are collaborative, contextually appropriate and that communication is community-owned.

Strong recommendation
Moderate quality evidence

B: Integrating ERC into health and emergency response systems

Risk communication for health protection needs to work within health and emergency preparedness and response systems. For this reason, the GDG took a systems focus when selecting some of the priority questions. The health systems 'pillars' – governance, information systems, capacity building, finance – underpinned and formed the basis of the questions which provided evidence and led to the recommendations on integrating ERC into health systems.

B.1.: Governance and leadership

Recommendation

ERC should be a designated strategic role in global and national emergency preparedness and response leadership teams.

Strong recommendation
Moderate quality evidence



B.2.: Information systems and coordination

Recommendation

B2.1.: Develop and build on agency and organizational networks across geographical, disciplinary and, where appropriate, national boundaries.

Strong recommendation
Moderate quality evidence

B.2.2.: Tailor information and communication systems to the needs of users and involve local stakeholders to guarantee the flow of information across sectors.

Strong recommendation
Moderate quality evidence
Implementation consideration: ERC professionals need legislative and policy support. Release of information may be forbidden and information flows may be very limited by levels of authority in some settings.

B.3.: Capacity building

Recommendation

Preparation and training of personnel for ERC should be organized regularly and focus on coordination across involved stakeholders.

Strong recommendation
Moderate quality evidence
Implementation consideration: When planning training, consider incorporating, training and include media representatives in training exercises, as appropriate.

B.4.: Finance

Recommendation

ERC requires a defined and sustained budget that should be a part of core budgeting for emergency preparedness and response.

Strong recommendation
Very low quality evidence*

* An extensive evidence search found minimal discussion of policies, mechanisms or considerations of the importance of a defined and sustained budget for risk communication. The GDG decided that grey literature evidence showing that lack of funding hampered ERC during recent crises, was indicative of the importance of recommending the development of such policies and mechanisms.

C: ERC practice

C1: Strategic communication planning

Strategic planning primarily involves the assessment of needs, setting of objectives, implementation of targeted interventions in a coordinated way, and monitoring and evaluation of intervention activities in order to improve public awareness and influence behaviour before, during and after a public health event or emergency. The evidence review indicated that there is no singular strategy to ensure successful communication in such situations. The GDG agreed that planning is an overarching best practice that should be presented prior to the recommendations on new practice.

Best practice statement

ERC planning must occur well in advance and be a continuous process with a focus on preparedness as well as response. Planning should be sensitive to stakeholders' needs, participatory, responsive to the context and incorporate feedback from affected groups.

Best planning practices:

- planning functions best through collaboration among constituent groups; health and emergency response agencies, emergency systems and other public services need to collaborate and establish communication networks in preparation for events;
- communication planning must consider the community structures, cultures and lifestyles of different segments of the public; and further, design disaster education and preparation around these social structures;
- planning must identify and involve multiple channels and means of communicating disaster and emergency messages;
- whenever possible, potentially at-risk communities and populations must be involved at the planning stage for best results;
- planning should include the establishment of mechanisms for monitoring and assessing the effectiveness of messages, and adjusting them as necessary.

C2: Monitoring and evaluation tools

The systematic review found no evidence indicating which tools/approaches to monitoring and evaluation are most effective for refining and adjusting interventions. For this reason the GDG recommended that this area be a priority area of risk communication research.

Research recommendation

Research is required to establish best mechanisms and methods for rapidly evaluating ERC interventions, and incorporating evaluation findings and feedback from stakeholders and communities to inform and improve ongoing and future responses.

C3: Social media

Recommendations

C3.1. Social media may be used to engage the public, facilitate peer-to-peer communication, create situational awareness, monitor and respond to rumours, public reactions and concerns during an emergency, and to facilitate local-level responses.

Conditional recommendation
Moderate quality evidence

C3.2. Social media and traditional media should be part of an integrated strategy with other forms of communication to achieve convergence of verified, accurate information.

Strong recommendation
Moderate quality evidence
Implementation consideration (applies to implementation of both Recommendations above): Government agencies and implementing partners need to train, employ and pay dedicated social media officers in order to build relationships with stakeholders, and to use social media consistently to build trust and credibility before, during and after emergencies.

C4: Messaging
Recommendations

C4.1. Risk should not be explained in technical terms, as this is not helpful for promoting risk mitigation behaviours.

Strong recommendation
Moderate quality evidence

C4.2. Consistent messages should come from different information sources and emerge early in the outbreak.

Strong recommendation
Moderate quality evidence

C4.3. Messages should promote specific actions people can realistically take to protect their health.

Strong recommendation
Moderate quality evidence

Implementation considerations for all messaging recommendations:

- messages need to arise from and be adapted to cultural contexts by using pretesting with intended audiences;
- messages need to be reviewed and reshaped periodically as the emergency evolves.


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¿Cómo se transmite?
Síntomas
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1. Introduction and background

During public health emergencies, people need to know what health risks they face and what actions they can take to protect their lives and health. Accurate information provided early, and in languages and channels that people understand, trust and use, enables them to make choices and take actions to protect themselves, their families and communities from the health hazards threatening their lives and well-being.

The recommendations in these guidelines provide a framework of the elements of effective ERC

Risk communication is the real-time exchange of information, advice and opinions between experts, community leaders, officials and the people who are at risk and is an integral part of any emergency response. In epidemics and pandemics, in humanitarian crises and natural disasters, effective risk communication allows people at risk to understand and adopt protective behaviours. It allows authorities and experts to listen to and address people's concerns and needs so that the advice they provide is relevant, trusted and acceptable.

The International Health Regulations (2005) or IHR (2005) *(1),* underline the importance of risk communication as a health intervention. They require all WHO Member States to develop risk communication capacities, as core capacities. Under the IHR (2005), Member States must assess their risk communication capacities and also have those capacities regularly assessed by external evaluations through the WHO Joint External Evaluation (JEE) tool *(3).*

Although risk communication is an intervention used in all areas of public health, this guidance has specifically been developed to provide the most up-to-date evidence-based recommendations for communicating risk in health emergencies. For the purposes of this guidance, **emergency risk communication (ERC)** is an intervention performed before (as part of preparedness activities), during and after (to support recovery) an emergency to enable everyone at risk to take informed decisions to protect themselves, their families and communities against threats to their survival, health and well-being.

While there are many guidelines on communications in general and risk communication in particular, this is the first to be based on a systematic analysis of the evidence on what has and what has not worked during recent major outbreaks and emergencies, such as the West African Ebola virus disease outbreak in 2014–15 and the global Zika virus outbreak in 2015–2016. Systematic reviews of the quantitative and qualitative evidence were performed and the quality of the evidence analysed using a range of validated tools. To ensure no evidence of recent experience was missed, a rapid review covering the most recent grey literature was also performed.

The recommendations in these guidelines provide a framework of the elements of effective ERC. They do not aim to provide step-by-step guides to the practice of risk communication. These will be developed as derivative products such as implementation guides, checklists, field manuals and training courses.

2. Why these guidelines were developed

WHO has manuals, training modules and other forms of emergency and risk communication guidance based on expert opinion or lessons drawn from major environmental disasters, such as the SARS outbreak of 2003, and the H1N1 influenza pandemic of 2009, rather than on systematic analyses of the evidence.

Recent public health emergencies [. . .] have highlighted major challenges and gaps in how risk is communicated during epidemics and other health emergencies

Recent public health emergencies, such as the Ebola virus disease outbreak in West Africa in 2014–2015, emergence of Zika virus syndrome in 2015–2016, and multi-country yellow fever outbreaks in Africa in 2016, have highlighted major challenges and gaps in how risk is communicated during epidemics and other health emergencies. Major challenges include the changing role of traditional media (newspapers, radio and television) and the rapid transformation in communication technology, including near-universal penetration of mobile telephones and the widespread use, and increasingly powerful influence, of digital media. Important gaps include considerations of context: the social, economic, political and cultural factors influencing people's perception of risk and risk mitigation behaviours. There is a need for guidance on the best approaches for strengthening ERC capacity and sustaining that capacity for any health emergency.

In January 2015, the WHO Executive Board convened a special session to recommend actions to better manage the ongoing West African Ebola virus disease outbreak and passed a resolution recognizing the urgent need for countries to build strong, resilient and integrated health systems capable of fully implementing the IHR (2005) *(1)*. The resolution explicitly "requests the Director-General to continue to develop and implement an Organization-wide communications strategy to improve routine communications, messaging about preventive measures, risk communication, and emergency communications, ensuring that the new policy entails matching the content, form and style of communication with the media, timing and frequency that will reach the intended audience and serve its intended purpose. . ." *(4)*.

Signatories to the IHR (2005) have requested WHO support for building and sustaining their risk communication capacities. These capacities include: engagement of risk communication partners and stakeholders; an up-to-date risk communication plan that has been implemented and tested during an actual emergency or simulation exercise; policies, standard operating procedures, and guidelines covering clearance and release of information during a public health emergency; regularly updated information sources accessible to the media and the public for information dissemination; accessible and relevant information, education and communication materials tailored to the needs of the population; and the use of evaluation to inform risk communication planning.

3. Objectives and scope of the guidelines

These guidelines aim to provide WHO Member States, partners and stakeholders involved in emergency preparedness and response with evidence-based, up-to-date guidance on:

- approaches for building trust and engaging with communities and affected populations;
- approaches for integrating risk communication into existing national and local emergency preparedness and response structures, including building capacity for risk communication;
- Emergency risk communication practice – from planning, messaging, channels and methods 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.

4. Who should use these guidelines?

These guidelines were developed for policy- and decision-makers responsible for managing emergencies, particularly the public health aspects of emergencies, and practitioners responsible for risk communication before, during and after health emergencies.

Other groups expected to use these guidelines are: frontline responders; local, national and international development partners; civil society; the private sector; and all organizations, private and public, involved in emergency preparedness and response.

5. Existing relevant guidelines

WHO and its partners have developed several forms of guidance on risk communication over the last two decades (Table 1).

Table 1
WHO guidance on risk communication

Communication for behavioural impact (COMBI). A toolkit for behavioural and social communication in outbreak response *(5)*
Effective media communication during public health emergencies – a WHO handbook *(6)*
Effective media communication during public health emergencies – a WHO field guide *(7)* offering practical advice
Outbreak communication: best practices for communicating with the public during an outbreak. Report of the WHO Expert Consultation on Outbreak Communications held in Singapore, 21–23 September 2004 *(8)*
WHO outbreak communication guidelines *(9)*, based on the findings of the above expert consultation on outbreak communications
WHO outbreak communication planning guide, 2008 edition *(10)*, manual based on the outbreak communications guidance developed through consultation in Mexico City in 2008

6. How these guidelines were developed (methodology)

Scoping the guidelines

Development of these guidelines began in October 2014, with the establishment of an Internal Steering Group (ISG) and the commissioning of a flash literature review *(2)* (full report available at this link to provide an overview of existing ERC guidance and potential areas for action or improvement. The flash review found a number of areas where guidance was lacking, including: mobile technologies; evaluation research; assessment of barriers to preparedness; ERC during disasters in very low-income countries (LICs); capacity building during the preparedness phase; and the application of evidence and past experience for better ERC.

A Guideline Development Group (GDG) of experts in risk communication, disaster preparedness and response, and health emergencies, was established in early 2015 (see Annex 1 for full list of names, expertise and affiliations). The GDG held a first meeting in Geneva, Switzerland, on 22–23 June 2015, to use the findings of the flash literature review to set the scope of the guidelines, identify areas of risk communication practice needing further investigation, and frame questions to govern a systematic search of the evidence.

The following 12 questions were framed and used to guide evidence reviews (Table 2).

Table 2
Questions to guide evidence reviews

Q1. Leadership and governance: How can emergency risk communication best be integrated into national leadership planning and execution for events and emergencies with public health implications?
Q2. Information systems: What are the best types of mechanism(s) to establish effective, cross-jurisdictional linkages for information sharing for emergency risk communication and internal coordination?
Q3. Human resources: How to best develop and sustain emergency risk communication staff capacity for preparedness and response?
Q4. Financing: How to ensure sufficient and sustainable financing for emergency risk communication?
Q5. Trust: What are the best and most generalizable emergency risk communication activities that build trust in health authorities as a source of health protection information among affected communities and other stakeholders?
Q6. Coordination: What are the best ways to ensure coordination of risk communication activities between responding agencies across organizations and levels of response?
Q7. Strategic communication planning: What are the elements and steps of effective, strategic communication planning?
Q8. Monitoring and evaluation: What are the best ways and most appropriate tools for gathering, analysing, and interpreting emergency risk communication data and feedback, and integrating results into emergency risk communication planning, strategy development, execution and evaluation?
Q9. Community engagement: What are the best ways to engage communities in emergency risk communication activities to respond to events/contexts?
Q10. Social media: What are the best social media channels and practices to promote health protection measures and dispel rumours and misinformation during events and emergencies with public health implications?
Q11. Communicating uncertainty: What are the best ways to communicate uncertainties to public audiences, at-risk communities and stakeholders?
Q12. Messaging: What elements and timing of messages are best at influencing public/community levels of concern to motivate relevant actions to protect health?

Searching and analysing the evidence

The search questions were further developed into the Setting, Perspective, phenomenon of Interest, Comparison, Evaluation of impact (SPICE) format by Jane Noyes, the guideline methodologist supporting the GDG, along with the guideline secretariat and the GDG chair. The SPICE format was chosen over the more commonly used Population Intervention, Comparison, Outcome (PICO) format because SPICE is considered more applicable to a qualitative and mixed-methods evidence search, and it was expected that this type of evidence would be predominant.

The SPICE questions were used to provide search terms for the systematic reviews commissioned in 2016 and completed by the end of January 2017 (see Annex 3 for full SPICE question terms). All systematic review reports are available at this link. Full details of search methods and quality assessment evidence are available in Annex 2. There were four different methodological streams in the evidence synthesis:

1. quantitative with comparison groups
2. quantitative where descriptive survey methods were used
3. qualitative methods
4. mixed-method and case studies.

The reviewers synthesized the findings from studies placed in each methodological stream and then rated the confidence in/certainty of the findings (giving a rating of 'very low', 'low', 'moderate' or 'high') using the tools below.

- Quantitative – comparison groups (randomized, non-randomized) – Grading of Recommendations Assessment, Development and Evaluation (GRADE).
- Quantitative – descriptive survey – principles of GRADE were applied.
- Qualitative – GRADE Confidence in the Evidence from Reviews of Qualitative Research (CERQual).
- Mixed-method and case study – the principles of GRADE and GRADE Confidence in the Evidence from Reviews of Qualitative Research (CERQual) were applied.

The methods used by systematic review groups to develop the evidence synthesis are summarized in Figure 1 below.

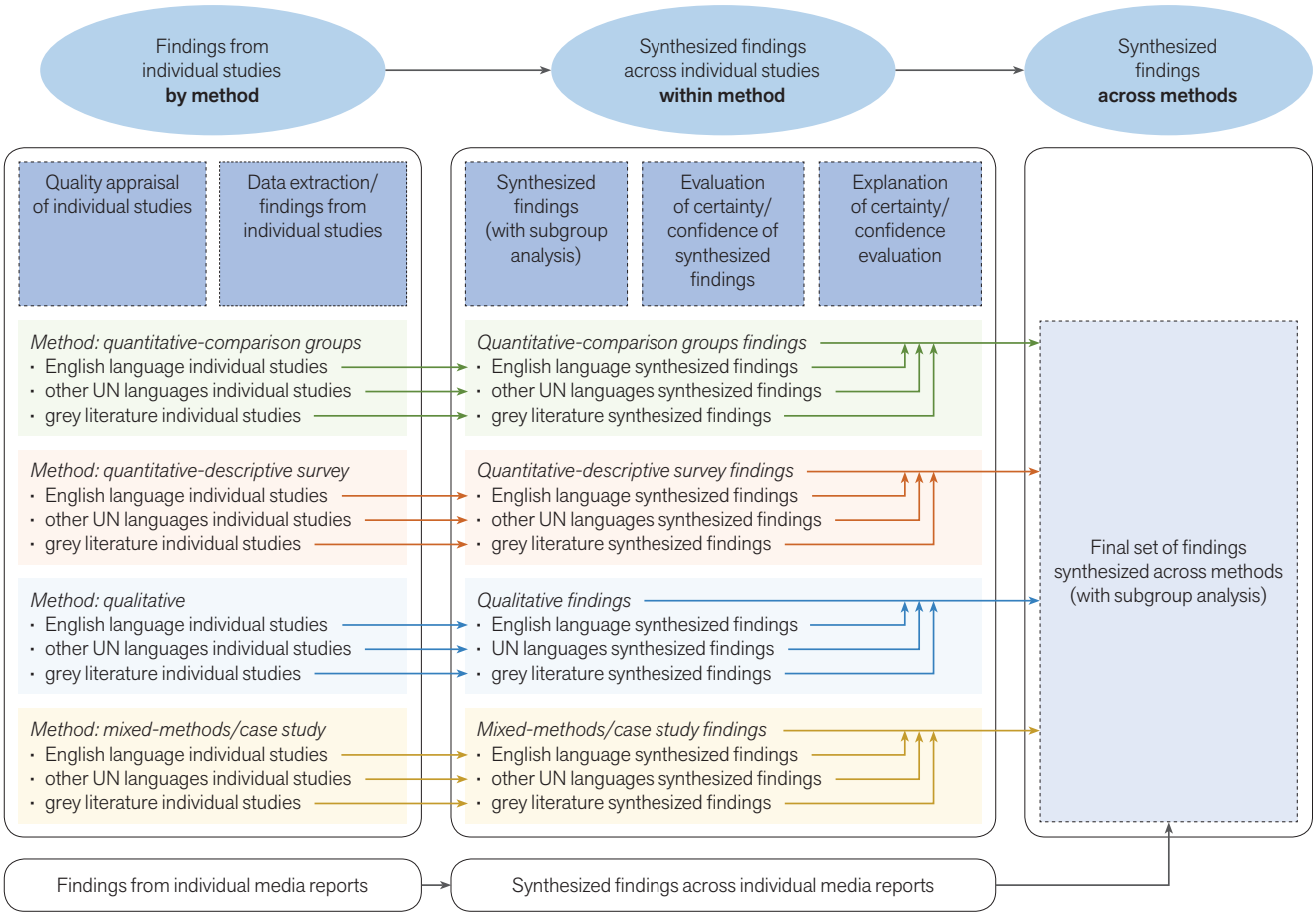


Figure 1. Summary of methods reviewers used to develop the evidence synthesis

While the systematic reviews were underway, the West African Ebola virus disease outbreak, the emergence of Zika virus syndrome and other major public health emergencies generated considerable grey literature on risk communication. To capture this, a rapid grey literature evidence search was undertaken that examined the reports relevant to the 12 questions in Table 2 that ended on 31 December 2016.

6.1. Evidence for recommendations

Statements summarizing the evidence findings were developed and the GDG decided whether or not these could be formulated as recommendations

When all the systematic reviews had been received, the secretariat and methodologist prepared evidence profiles adapting the DECIDE framework for this purpose. DECIDE is an Evidence to Decision (EtD) framework tool enabling explicit and systematic consideration of evidence on interventions in six domains: effects, values, resources, equity, acceptability and feasibility *(11)*.

As the evidence search was guided by SPICE questions to elicit evidence of what worked or what did not work, rather than the usual PICO format which focuses on evidence of effect, the DECIDE tables were adapted to reflect this. However, the other domains – values, resources, equity, acceptability and feasibility – remained the same in the adapted table.

For each question, the GDG were provided with a summary of the systematic review findings, including an assessment of the quality of that evidence, a summary of the grey literature findings, and findings from both the systematic reviews and grey literature reviews pertinent to values, acceptability, feasibility, equity and resource use. During the guideline development meeting, systematic review teams presented their findings, followed by a presentation of the grey literature findings for each question. Then, using the DECIDE tables as a guide, the GDG discussed the evidence for benefits, harms, feasibility, resource use, values, preferences and equity considerations. Statements summarizing the evidence findings were developed and the GDG decided whether or not these could be formulated as recommendations. If it was agreed that this was an area requiring recommendation, the GDG then further refined the language and set the strength of the recommendation according to the balance of benefits, harms, values, preferences, feasibility, resource and equity considerations.

All decisions were ultimately made by consensus. However, given the limited time available to the meeting and in order to establish the group's position rapidly, an anonymous, instant electronic voting system was provided. Handheld, individual keypads were given to each GDG member and they were asked to vote for different options – usually 'yes' or 'no'. The system only permitted one vote per person per question. When all votes were registered, the group decision appeared on a screen. This allowed the group to either move on when there was clear consensus or open the issue for discussion when there was significant divergence. On several occasions, those who held differing opinions were then able to explain their concerns so cogently that the rest of the group changed their opinion.

6.2. Types of recommendations

Recommendations are statements about what interventions or practices the evidence indicates are the best choices. Not all statements made by the GDG were framed as standard recommendations. In one instance, where there had been inadequate research into an important area of practice, the GDG made a 'research recommendation'. In other instances where there were clear best practices based on accepted principles, but evidence was scarce or indirect, the GDG framed the recommendation as a 'best practice statement'.

As described above, the strength of the recommendation – either 'strong' or 'conditional' – was set by considering the quality of the evidence, the harms, benefits, feasibility, values, preferences, resource use and equity considerations surrounding the recommendation. A strong recommendation is one that should be implemented in all settings, whereas a conditional recommendation is one that may be implemented in specific settings and circumstances.

For one of the questions on how best to ensure sufficient and sustainable financing for ERC, an extensive evidence search found minimal discussion of policies or mechanisms but the GDG decided




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that the grey literature evidence showing how lack of funding hampered ERC, necessitated a strong recommendation (see recommendation B.4. Finance for further discussion).

The quality of the evidence was a difficult judgement, as different evidence assessment tools were used, depending on the type of studies providing the evidence (see methods section in Annex 2 for a detailed explanation of tools used to assess the evidence). However, clear 'signals' from the evidence assessment were provided by syntheses of the findings, which were assessed using the different quality of evidence tools described in the methods section above. These were used by the GDG to agree on the quality of the evidence and strength of recommendations. For many of the recommendations, the underpinning evidence was assessed as moderate or low but the panel decided to make a strong recommendation because reported experience (grey literature) and case examples indicated strong benefits, feasibility and positive equity considerations for the actions proposed. A summary of the evidence and other considerations used to develop the recommendations is provided under each of the recommendations in section 7.

Recommendations were developed 'question by question' but it became clear that certain natural, logical groupings of issues and areas of practice were emerging. Hence, the recommendations fall into the following three categories:

A

Building trust and engaging with affected populations

B

Integrating ERC into health and emergency response systems

C

ERC practice

A. **Building trust** and engaging with affected populations

No matter how well planned or applied, risk communication interventions will fail to enable people at risk to make informed decisions to act to protect their lives, their health, their families and communities against threats if they do not trust the information source. Therefore, establishing and maintaining trust is arguably the first and most important step in effective ERC. The evidence search confirmed that building trust is inextricably linked to community engagement and open acknowledgement of uncertainty. Hence, the recommendations that were based on the evidence retrieved for the three questions on building trust, communicating uncertainty and community engagement are grouped in this section.

A.1.
Trust

Recommendation

To build trust, risk communication interventions should link to functioning and accessible services, be transparent, timely, easy-to-understand, acknowledge uncertainty, address and engage affected populations, link to self-efficacy, and be disseminated using multiple platforms, methods and channels.

Strong recommendation
Moderate quality evidence
Rationale: The GDG noted that systematic review and grey literature findings emphasized the benefits of clarity, timeliness, effective dissemination and transparency in communicating what is known during emergencies, as well as interventions, and past positive experience when acting on communication from authorities for building trust. Harms occur when actions promoted by authorities cannot be performed because services are not available, unresponsive or difficult to access.
Remarks: 'Authorities' refers to people in charge at local, national, regional and international levels.

Summary of evidence and considerations

Systematic review findings *(12)*

The systematic review found that most studies analysed events in high- and middle-income countries in Asia, Europe, North America and Oceania. The event most often covered was infectious disease; other relatively common events included floods, earthquake, volcanic eruption, bioterrorism, food-borne illnesses, and radiological/radiation emergencies. All four event phases were covered, although there was strong emphasis on the preparation phase, followed by the onset and containment phases, with much less coverage of the recovery phase.

The review found that several factors including organizational messages and actions could predict a higher level of trust, especially:

- acknowledging uncertainty in messages, including forecasts and warnings;
- being transparent and not concealing negative information, such as rates of casualties;
- speedily disseminating information and intervening;
- creating scientific communication in an easy-to-understand manner;
- seeking input from the public and encouraging a dialogue;
- ensuring coordination between different health authorities and the media along with a uniform message;
- avoiding rapid changes in information and preventing conflicting information dissemination from different agencies; and
- disseminating information through multiple platforms.

The reviewers emphasized that it is important to understand that these actions occur in a larger context encompassing different components of trust, history with authorities and life circumstances of the public/person. All of these can strengthen or weaken the message-trust relationship.

Findings were also extracted from seven existing literature reviews, assessed as being of high and moderate quality. These reviews overlapped with those from the current systematic review showing that trust is influenced by: organizational reputation; quality of stakeholder relationships; understanding and managing media relations; risk information provision strategies; accuracy, timeliness and comprehensive information; transparency about available information; fairness in the treatment of populations; building trust and trustworthiness through participatory dialogue and involvement in pre-event planning, exercises, and in the design and testing of communication plans. Higher trust in the ability of public officials and governments to respond to a public health emergency links to a greater likelihood of the recommended actions being adopted.



Grey literature review findings

Grey literature reports indicated that community engagement and building trust work together. Although local involvement is essential for successful community engagement, not all 'locals' have an equal trust-building effect. During the West African Ebola virus disease outbreak, people did not trust some of the leaders or the individuals being paid to do the work involved with the outbreak *(13)*. Volunteers were used to help address this latter issue.

Reports found that trust in health systems is based on people's perceptions of these systems rather than objective measures. If people think a system is unlikely to help them, they will not use it. Engaging community members by involving them in service delivery meetings *(14, 15)* can overcome this. Disrespectful treatment by health-care workers eroded trust.

A.2.
Communicating uncertainty

Recommendation

Communication by authorities to the public should include explicit information about uncertainties associated with risks, events and interventions, and indicate what is known and not known at a given time.

Strong recommendation

Moderate quality evidence

Rationale: The GDG considered evidence (rated moderate to high quality by the reviewers) of harms caused by failure to clearly explain what is known and what is not known during emergencies. Some of the issues raised in the evidence review overlapped with the recommendation on building trust, so the recommendation was confined to the best way to effectively communicate when not all of the information is clear or certain.

Summary of evidence and considerations

Systematic review findings *(16)*

There is general agreement among experts and researchers that communication by authorities to the public should include explicit information about uncertainties associated with events. However, it is important that the information provided is consistent and not contradictory, and is presented clearly and in an easy-to-understand manner.

Uncertainty of data and knowledge influences interactions within and among groups of experts, and between experts and policy/decision-makers and thus decision-making, in complex ways. Absent or contradictory and inconsistent information from the authorities leads to uncertainty in medical/health-care workers and policy-makers, and in decision-making regarding communication to the public. Authorities should carefully consider these and other aspects of uncertainty when developing the best ways to communicate uncertainties to the general public, at-risk/vulnerable populations, and stakeholders.

When authorities provide information about uncertainties, it is generally associated with desirable outcomes but the possibility of some undesirable outcomes needs to be kept in mind. The public's understanding of information describing the likelihood of an event is prone to error. This is true of experts as well.

Mass media coverage of an event that emphasizes rapidly changing, contradictory, and conflicting information, especially that which differs from official information from authorities, increases uncertainty in the public, which can in turn lead to several undesirable outcomes, such as lack of trust in authorities and in the actions that they recommend.





Grey literature review findings

Grey literature studies found that the manner in which a message is communicated is as important as the message content itself. Panic sparked by Ebola virus disease transmission in the United States of America (USA) was augmented by initial failure to communicate all the facts, for example, no mention was made of breaches in infection prevention and control protocols. Scientists also failed to communicate clearly the true risk levels for different sectors, leading the general public to overestimate their risk *(17)*.

A.3. Community engagement

Recommendation

Summary of evidence and considerations

Systematic review findings *(18)*

Identify people whom the community trusts and build relationships with them and involve them in decision-making to ensure that interventions are collaborative and contextually appropriate, and that the community owns the process of communication.

Strong recommendation
Moderate quality evidence
Rationale: The GDG found there was limited evidence considered evidence comparing the effectiveness of different community engagement strategies. However, there was evidence, assessed as moderate quality, indicating that inclusion of community members in planning activities was beneficial in improving preparedness for and response to an event. A large body of descriptive grey literature about experiences with different approaches indicated the benefit of identifying trusted people within communities and iinvolving them in decision-making. The harms identified were failure to understand the context and culture when developing interventions.
Implementation consideration: Providing feedback is an essential part of good community engagement.
Remarks: 'Community' encompasses a wide range of groupings.

Investigators rarely directly studied which strategies or tactics were most effective for engaging community participation. Studies of community participation in preparedness activities found that including community members as planners, as well as attendees in pre-event activities led to increases in preparedness and response activities. Specific activities investigated were:

- planning design and development
- information dissemination
- training on roles, responsibilities and tasks
- conducting preparedness actions
- relationship building/bonding.

Training on roles and responsibilities is beneficial if it includes community-level considerations, local context and past experience, which not only aid in cooperation and collaboration but also may address the issue of risk paradox tied to perception and experience.

Relationship building and bonding not only serves to create trust and confidence in leaders, but also to create social connectedness and networks.

There is a clear indication that activities prior to an event will more successfully engage communities than those that are only attempted during an evolving event.

Grey literature review findings

The majority of grey literature studies and reports found that engaging communities should play a central role in emergency responses. Local action was crucial to controlling the 2014–2015 West African Ebola virus disease outbreak because the turning point was reached before the full response was operational *(19)*. This review found reports of the different methods used for improving community engagement, but no formal assessment of their effectiveness. The most common are listed in Table 3.

Table 3
Methods used to improve community engagement

Engagement method	No. of documents reviewed
Engage local leaders and key people	31
Tailor interventions for population, gender, circumstances and language	26
Use local people as mobilizers	16
Community creates their own interventions	15
Engage local groups	15
Listening and two-way communication	15
Use local media	12
Ongoing monitoring and evaluation (feedback)	11
Use anthropological assessments	10
Start communication early	8
Use visual aids, role plays and story telling	6
Community conducts their own outbreak analysis	3
Decisions made at local level	3

B.
Integrating Emergency risk communication into health and emergency response systems

Risk communication for health protection needs to work within health systems. For this reason, the GDG took a health systems focus when selecting some of the priority questions. The health systems 'pillars' of governance, information systems, capacity building, and finance underpinned the questions that provided evidence for the recommendations on integrating ERC into health systems.

Recommendation

B.1. Governance and leadership

ERC should have a designated strategic role in global and national emergency preparedness, and response leadership teams with well-defined roles and responsibilities for communication personnel.

Strong recommendation

Moderate quality evidence

Rationale: The GDG found there was evidence of benefit from designating ERC as a strategic role because this facilitated incorporation of risk communication as a functioning 'pillar' of preparedness for and response to emergencies. This recommendation has resource considerations, as designating that role entails training and paying for risk communication professionals. However, the GDG concluded that the benefit strongly outweighed the resource implications.

Remarks: This applies to preparedness and response leadership teams at local, national, regional and international levels.

Summary of evidence and considerations

Systematic review findings *(20)*

Six articles presenting examples of mechanisms that might lead to the integration of ERC functions into the leadership structure were identified. Such mechanisms can be summarized under three themes/outcomes:

- placing ERC functions into the national leadership structure;
- creating organizational proximity of ERC practitioners to national response leadership;
- development of laws, regulations, policies and frameworks in support of ERC.

Evidence from Chinese-language reviews

The systematic reviewers examined the Chinese language literature and reports describing the need for more training, the establishment of professional roles (e.g. media monitoring personnel and spokespersons), and for enabling the timely release of relevant information on disease outbreaks and prevention.

Grey literature review findings

There were very few reports in the grey literature dealing with this issue. The United Nations General Assembly stated that compliance with IHR (2005) includes the establishment of preparedness and response mechanisms. Community engagement and culturally appropriate communication form an integral part of such mechanisms *(21)*. This also implies the integration of risk communication into national health plans. Additionally, in its Ebola Response Improvement Plan, the United States Department of Health and Human Services noted the importance of prioritizing risk communication. A department-wide ERC strategy was to be developed, including training staff to serve as spokespersons and planning to ensure an adequate supply of trained risk communication personnel *(22)*.

Recommendations

B.2. Information systems and coordination

B2.1. Develop and build on relevant stakeholder and organizational networks across geographical, disciplinary and, where appropriate, national boundaries.

Strong recommendation
Moderate quality evidence
Rationale: The GDG agreed there was moderate quality evidence indicating that a benefit- improved coordination and information flow could be achieved by the creation of task forces and committees involving all key stakeholders, regardless of geographical location, discipline or other boundaries. This recommendation has resource implications – time, human and financial. However, the GDG agreed that the benefit of improved coordination and information flow strongly outweighed the harms and resource considerations.

B2.2. Tailor information and communication systems to users' needs and involve local stakeholders to guarantee the flow of information across sectors.

Strong recommendation
Moderate quality evidence
Rationale: The GDG considered the evidence of the benefits derived from the involvement of local stakeholders in information flows. A potential harm was concern about the release of information across sectors, especially in contexts where policies and laws forbid such information flows. This was reflected in the implementation consideration below.
Implementation consideration: ERC professionals need legislative and policy support. Release of information may be forbidden and information flows may be very limited by levels of authority in some settings.
Remarks: Examples of 'users' include government staff, civil society, local communities, emergency response teams, relief agencies, etc.

Summary of evidence and considerations

Systematic review findings *(20)*

Three themes emerged from the literature as mechanisms to enhance information sharing and coordination.

1. The creation of task forces and committees with key stakeholders has been described as a mechanism for improving or facilitating information sharing between national and subnational authorities, and between agencies. A number of components for the effective operation of networks, task forces, and committees were identified. These include: the importance of existing relationships between responders prior to an incident; the role of network teams, as opposed to hierarchical teams for improved emergency response performance and decision-making; and the importance of information exchange and distribution between decision-making units. They also include: the use of information managers for coordinating information between agencies to reduce information demand and improve the supply of key information; and the importance of a public information officer to improve information dissemination.

2. Existing platforms and information systems can be leveraged to enhance ERC. Gresham et al. *(23)* presented the Middle East Consortium on Infectious Disease Surveillance (MECIDS), a regional disease surveillance network of public health experts and ministry of health officials from Israel, Jordan and the Palestinian Authority, as a case example of use of regional disease surveillance networks as a useful mechanism for information sharing. MECIDS unites public health officials of differing Middle Eastern nationalities and contributes to regional health and stability by engaging in regular cross-border information exchanges, conducting regular executive board meetings, performing laboratory and risk communication training, and implementing innovative communication technology. Initially focusing on food- and waterborne diseases, the partnership developed a network of laboratories, protocols for specimen collection and diagnosis of diarrhoeal diseases, and data sharing and notification capabilities, to analyse and share information on disease threats.

3. Engagement of local stakeholders is important for an effective ERC strategy. The following mechanisms for engagement of local stakeholders in communication efforts were identified:

- use of existing social networks in small municipalities for disaster risk reduction activities *(24);*
- the need to centralize resources that can be used to facilitate communication with culturally diverse communities *(25)*; and
- the identification and designation of an agency (e.g. in Taiwan, China, the police) with the best geographical and community reach to lead the process of ERC information sharing *(26)*.

It was also important to address technology gaps in resource-poor areas, integrate nongovernmental organizations (NGOs) into the emergency management information system, and develop capacity to monitor and use relevant social media channels.

Grey literature review findings

The grey literature offered little evidence of the best ways to ensure coordination and information sharing. A total of 33 documents were identified as potentially relevant to coordination: 18 from sources of moderate credibility and 15 of high credibility. However, most of the reports addressed general collaboration and coordination, rather than risk communication, describing collaborative activities but providing no discussion or measure of effectiveness. One paper noted poor understanding between risk assessors and risk communicators to the extent that it was as if they spoke different languages, and suggested that simulation exercises and the training of risk communication personnel on the principles of risk assessment might overcome this *(27)*. Two documents discussed the importance of coordinating with the press before and during an incident, meeting their needs and remaining available to them. This type of coordination was considered especially important as many people depend on the media for their health information *(28, 29)*. Three papers highlighted local collaboration efforts. In Montserrado County, Liberia, the International Rescue Committee (IRC) led a consortium of four NGOs. This proved to be more effective than working separately, as it allowed organizations to focus and capitalize on their areas of strength and advocate more effectively with the government. Sharing information between members helped build trust, as did getting technical input from WHO *(19).*



B.3.
Capacity building

Recommendation

Preparation and training of personnel for ERC should be organized regularly and focus on coordination across involved stakeholders.

Strong recommendation
Moderate quality evidence
Rationale: The GDG found there was moderate quality evidence indicating that training focusing on coordination across agencies led to the improvement of ERC capacity. Although this entailed altering the focus of training exercises, it was not considered to have significant feasibility and resource implications or harms. The evidence review also identified that incorporating media training and involving media professionals in the training was also beneficial. However, the GDG considered evidence of potential harms, such as concerns about feasibility and resource use, and this led the group to agree that this should be an implementation consideration.
Implementation consideration: When planning training, consider incorporating, training and include media representatives in training exercises, as appropriate.
Remarks: 'Focus on coordination' means ensuring training exercises test the ability to share information and the development of coordinated risk communication interventions.

Summary of evidence and considerations

Systematic review findings *(30)*

The majority of studies identified were based on exercises involving tabletop exercises, simulations, and, in a few cases, coursework or workshops. Findings synthesized across methodological streams indicate these exercises should focus on coordinating across agencies, building skills in dealing with media, and designing messages sensitive to audience needs and comprehension. The general consensus in the literature is that tabletop and simulation exercises can, and often do, improve awareness and understanding. These findings, however, come with major caveats. Limitations in methodological rigour, relevance and adequacy of data for most findings were moderate to severe. Among the prescriptive findings identified in the review, only the suggestions that exercises should focus on coordination across agencies and incorporate training in media can be held with even a moderate level of confidence.

Some confidence can be placed in descriptive findings about current norms in ERC training. Syntheses across all methodological streams indicate that current training exercises: do not employ post-action reports in a way that can promote generalized learning; contain little instruction on using social media; are generally disastrous; almost never employ blended online and face-to-face formats; and rarely include training in evaluation. However, because these findings are descriptive, they can only suggest directions for future research. Separate investigations will have to be undertaken to determine what influence each of these factors has on ERC skills.

Scholars have identified a general lack of rigour in studies of emergency preparedness training. They have observed that few standardized assessment tools exist. This makes it difficult to determine whether anecdotal success of drills, workshops, courses, and other types of training translate into actual additional skills and knowledge *(31)*. Also worth noting is that published evaluations of disaster preparedness training and staff development are mostly confined to the USA, meaning that even if research designs were more robust, findings might not necessarily be applicable to other national contexts.



Grey literature review findings

Reports on this subject agree that building risk communication capacity is needed at national, provincial and local levels. Presence or absence of a risk communication plan does not necessarily indicate capacity, nor do elements of infrastructure indicate operational capabilities. Failure to develop local risk communication capacities has led to reliance on outside experts being engaged in times of crisis. Rather than relying on outside assistance, risk communication capacity should be based at each geographical level – local, national, regional and global – with clearly defined roles, responsibilities and infrastructure, with particular focus on developing national capacities. A cadre of personnel should be trained in health crises and risk communication, and refresher training should be provided at least annually. Media personnel should be trained in public crisis communication *(32, 33, 34)*.

Reports focus on capacities that need to be strengthened, namely:

- softer communication and interpersonal skills along with consensus-building (including document preparation);
- analysis, documentation;
- monitoring and evaluation;
- recognition of variables known to provoke outrage, such as perceived unfairness, moral indifference, and impacts on vulnerable populations;
- development of communication strategies, plans and standards of practice;
- stakeholder and partner communications;
- community engagement;
- sociopolitical, economic and cultural analysis for risk communication; and
- translation of technical communications into understandable, contextualized material.


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B.4. **Finance**

Recommendation

ERC requires a defined and sustained budget that should be a component of core budgeting for emergency preparedness, response and recovery.

Strong recommendation

Very low quality evidence

Rationale: An extensive evidence search found minimal discussion of policies, mechanisms or considerations of the importance of a defined and sustained budget for risk communication. The GDG decided that grey literature evidence showing that lack of funding hampered ERC during recent crises was indicative of the importance of recommending the development of such policies and mechanisms.

Summary of evidence and considerations

Systematic review findings *(35)*

There is little evidence that usefully addresses the question. Although 341 potentially relevant documents were identified, most do not directly discuss risk communication funding. Some mention financing mechanisms, such as microcredit, insurance and pool funds to be used for disaster risk management (DRM). Many mention risk communication or public awareness raising/education as part of disaster risk reduction (DRR). Some mention that even where DRR awareness/education materials exist, the prevention messages do not reach the local level. Others mention the need for governments to dedicate funds (for example 1% of the national budget) to DRM/DRR. Nearly all the documents list funding as a major challenge for DRM/DRR, with some noting that funding falls into a gap between development and relief programmes, and is therefore funded by neither. Another frequent message was the need to combine DRM/DRR and climate change adaptation (CCA) funding and efforts.

Grey literature review findings

The grey literature contained minimal relevant material. However, one consistent theme was that lack of funding hampered initial risk communication efforts at the beginning of the 2014–2015 West African Ebola virus disease outbreak *(36, 37, 38, 39)*.

C.
Emergency risk communication practice

During the initial guideline-scoping meeting, the GDG set priority questions seeking evidence of the best means of practising risk communication, considering the evolution of new media, and major societal and demographic change. The following best practice statements and recommendations are based on the evidence reviewed for those questions.

C.1.
Strategic communication planning

Strategic planning primarily involves the assessment and evaluation of intervention activities in order to improve public awareness and influence behaviour before, during and after a public health emergency event. The evidence review indicated there is no singular strategy for ensuring successful communication in such situations. The GDG agreed that planning is an overarching best practice that should be presented prior to the specific recommendations on ERC practice.

Best practice statement

ERC planning must occur well in advance, and be a continuous process with a focus on preparedness as well as response. Planning should be sensitive to stakeholders' needs, participatory, responsive to the context and incorporate feedback from affected groups.

Remarks

- Planning functions best through collaboration among constituent groups with clearly defined roles and responsibilities. Health agencies, emergency systems, and other public services need to collaborate and establish communication networks in preparation for events.
- Communication planning must consider the communities, cultures and lifestyles of different segments of the public; and further, design disaster education and preparation around these social structures.
- Multiple channels and means of communicating disaster messages should be identified and used.
- Planning should include training/information updates for communications personnel and mechanisms for obtaining initial rapid situation assessments.
- Planning should include pre-positioning of communication resources/materials, including core messages, information (e.g. factsheets) and discussion content.
- Planning should include establishment of mechanisms for monitoring and assessing the effectiveness of messages and adjusting them as necessary.
- Planning must be an inclusive process where all affected groups are sought, incorporated, listened to and involved in order that they take ownership. Potentially affected communities must be involved at the planning stage.

Summary of evidence and considerations

Systematic review findings *(40)*

The reviewed studies demonstrate the importance of merging scientific expertise with the local knowledge (first-hand experience) of the communities affected by a public health emergency event. Strategic planning efforts must take into account the role of culture in preparation and response in order to contextualize efforts to meet the needs of diverse populations. Efforts across event phases must involve local stakeholders, who play an important role in communicating key messages and moving populations from awareness to action.

Research has focused on disaster response, helping to provide an understanding of the steps necessary to mitigate disaster situations. However, the studies in the present review encourage more proactive efforts devoted to disaster preparedness. This is particularly so in regions and communities that may be desensitized to the threat and harm caused by disaster because their previous history with disaster situations may have lowered their risk perception. Thus, increased information does not automatically lead to behavioural change, and it is important to use multiple channels and means of communication to reach these populations. This involves moving beyond traditional forms of mass communication to more localized forms including, but not limited to the use of community and family members to spread key messages, intervention programmes, long-term awareness campaigns, and making information available through community centres, religious centres, and other channels used to access information in a disaster.

The findings of the present review largely align with the conclusions of existing reviews set out below.

- The need for various health agencies, emergency systems, and other public services to collaborate and establish communication networks in preparation for events.
- Communication strategies must consider the communities, cultures and lifestyles of different segments of the public, and design disaster education and preparation around these social structures.
- Risk perception is the primary predictor for disaster prevention and mitigation behaviours.
- Risk perception is itself determined by a variety of factors, including knowledge of disasters, trust in officials and demographic characteristics.

Grey literature review findings

According to the grey literature, effective strategic communication planning begins long before a crisis and involves a number of steps: creating a strategy and framework for communicating with all stakeholders; developing and vetting basic messages for issues likely to arise during a crisis; training communications personnel; and developing a system for rapid message review and approval *(22, 28, 41)*. Roles and responsibilities should be outlined and clearly defined *(28),* and a network of communication partnerships should be created and maintained. A plan for working with the media should be developed *(42, 43),* as should a media toolkit *(29)*. Adequate and timely funding should be secured *(44)*.

A second finding was that the communication process needs to start early *(38)* and an essential first step is to conduct an assessment with community leaders and members to identify favoured communication channels, barriers or potential problems, as well as potential solutions *(32, 45)*. One study noted that medical anthropological assessment should be used at the beginning of a response, so that messages and interventions can be shaped accordingly *(46)*. This assessment should include listening to complaints and taking into account the customs and cultures of all involved groups *(28, 47)*.

An example of these steps was provided by the Community Led Ebola Management and Eradication (CLEME) approach *(48)*. This started with an assessment of the situation, community mapping, and information gathering on caring for the sick and the dead, and a walk-through of the community. The community then decided upon interventions together, tailored these for specific groups and implemented them. Contextual analysis, feedback and follow-up visits were used to adjust the interventions.

Additional elements of good communications planning included: distinguishing evidence-based messages from uncertain ones *(36)*; ensuring that lessons learned were captured and applied *(44)*; and building local communication capacities *(42)*.

C.2.
Monitoring and evaluation tools

Research recommendation

Research is required to establish best mechanisms and methods for rapidly evaluating ERC interventions, and incorporating evaluation findings and feedback from stakeholders and communities to inform and improve ongoing and future responses.

Rationale: The GDG agreed that establishing an effective ' feedback loop' enabling incorporation of evaluation findings into ERC is essential but the systematic review found no evidence supporting the effectiveness of any of the current evaluation tools. The GDG, therefore, decided to recommend that tools used to establish feedback loops, which are all currently being used (see list in findings below), but are not being systematically studied for evidence of effectiveness, should be a priority area of risk communication research. Although all areas of risk communication practice require further research (see 'research priorities and gaps' section 7.1., Table 5), this was seen as such a crucial gap that the GDG made this a standalone recommendation.



Summary of evidence and considerations

Although there was no evidence indicating which tools worked best, Table 4 lists tools used to gather and categorize data from the literature by phase of response, which may be considered for research to establish the best mechanisms for developing a feedback loop.

Table 4
Data gathering tools

Preparation (tools for exploratory and engagement purposes when developing ERC strategies)	**Response/recovery** (tools to assess and monitor the effectiveness of ERC strategies)
Focus groups	Focus groups
Interviews	Interviews
Surveys	Surveys
Participatory approaches	Media/social media monitoring Website monitoring Case studies

C.3.
Social media

Recommendations

C3.1. Social media may be used to engage the public, facilitate peer-to-peer communication, create situational awareness, monitor and respond to rumours, public reactions and concerns during an emergency, and to facilitate local-level responses.

Conditional recommendation

Moderate quality evidence

Rationale: There was moderate quality evidence indicating that social media engages the public and is a means of: creating situational awareness; monitoring and responding to rumours; addressing public concerns and reactions; and facilitating peer-to-peer communication and local-level responses. However, the GDG, having assessed resource requirements, feasibility and harms such as misuse, cultural concerns and limitations, decided that this recommendation should be conditional due to the contextual nature of social media use and application. Social media encompasses a wide range of activities and tools, such as social networking, photo/video sharing, live streaming and micro-blogging, each of which has different limitations, different appeal in different circumstances and different levels of affordability.

C3.2. Social media and traditional media should be part of an integrated strategy with other forms of communication to achieve convergence of verified, accurate information.

Strong recommendation

Moderate quality evidence

Rationale: There was moderate quality evidence indicating that integrating social media with traditional media interventions achieves the benefit of information convergence and trust in that information. Resource implications were minimal, and neither significant harms nor feasibility concerns were identified. Thus, the GDG agreed this should be a strong recommendation.

Implementation consideration: (applies to implementation of both recommendations above): Government agencies and implementing partners need to train, employ and pay dedicated social media officers in order to build relationships with stakeholders, and to use social media consistently to build trust and credibility before, during and after emergencies.

Summary of evidence and considerations

Systematic review findings *(49)*

Most studies were undertaken in Australia, China, Japan and the USA, as well as Europe. Earthquakes, typhoons, infectious diseases and floods were studied most often. Most studies of risk communication in social media focus on public and government agency posts on Twitter, Sina Weibo (the Twitter equivalent in China) and Facebook. A minority of studies focus on other social media sites such as Flickr, SMS, blogs, YouTube and mapping apps. The phases most commonly analysed are the containment phase or the containment phase in combination with preparation, onset and/or recovery phases. Most studies focus on the general population or on health agency officials; only a small minority revealed sample demographics focusing on vulnerable groups.

The review found that social media, especially Twitter and Facebook, could be used to spread truthful information and to verify information to dispel rumours and misinformation during public health crises. This is especially important for alternative social media not immediately controlled by the government in countries where people are distrustful of official government messages and campaigns, and turn to peers online to find more information.

Studies demonstrate that users on social media platforms, especially Twitter and Facebook, verify the vast majority of messages via self-regulation. Agencies actively use myth-busting messages to address rumours and spread truthful information. While peer monitoring and correcting largely maintain the accuracy of social media messages, it was found that government agencies and implementing partners needed to train, employ and pay dedicated social media officers to build relationships with at-risk communities and stakeholders, to use social media consistently to build trust and credibility, and address rumours and misinformation as soon as they arise.

The use of hashtags was found to be helpful when busting myths. This was shown in a series of studies based in Australia during a flood, where the social media accounts by local police were celebrated for their prompt myth busting and reliability to provide consistent, timely updates with accurate information. It was found that government agencies should use hashtags that have 'organically' developed on social media, are already used by the majority of the public, and are in wide circulation, rather than creating and insisting on others using their own newly branded hashtags for an event.

Grey literature review findings

One study found that 87% of doctors in Brazil use WhatsApp to communicate with patients and that the use of mobile phones had overtaken television as the main form of media consumption *(50)*. In West Africa, chat apps, especially WhatsApp, were considered better than short message services or SMS because they were cheaper. WhatsApp also proved useful for tracking rumours *(36)*. Other new media tools included RapidPro and SMS systems *(51)*. It was also found that social media is being used increasingly to monitor what the public is saying about public health issues *(27)*.

SMS or text messaging was used successfully to track and combat rumours and to communicate with people in quarantined areas during the West African Ebola virus outbreak *(38, 39, 43)*. A collaborative effort between the British Broadcasting Corporation (BBC) and WhatsApp enabled messages from WHO, the United Nations Children's Fund (UNICEF) and the Centers for Disease Control and Prevention (CDC) in the USA, to be channelled directly to 20 000 subscribers, most of whom were in West Africa. In Sierra Leone, the local version of this channel had 15 000 subscribers by the end of the outbreak *(44)*. Text messaging was also used for real-time monitoring *(34)*. Nigeria used mobile phones to disseminate Ebola messages *(52)*, and the government of Sierra Leone chose WhatsApp as one of its official response channels. Social media enabled the Sierra Leonean diaspora to play a role in social mobilization, despite living abroad, by using Skype, Facebook, WhatsApp and smartphones to share information about the outbreak. Members of the diaspora who were in the health professions used social media to mobilize professional, business and political connections, and their families *(53)*.

C.4. Messaging

Recommendations

C4.1. Risk should not be explained in technical terms, as this is not helpful for promoting risk mitigation behaviours.

Strong recommendation

Moderate quality evidence

Rationale: The GDG agreed that there was evidence of harm when technical language confused or prevented people from taking protective actions and behaviours. There was strong agreement that avoiding the use of technical language would increase risk mitigation, and that this was feasible and did not have major resource implications.

C4.2. Consistent messages should come from different information sources and emerge early on in the emergency.

Strong recommendation

Moderate quality evidence

Rationale: This review and other reviews on trust and uncertainty all provide evidence that the use of consistent messaging via different information sources in an emergency increases the likelihood that the messages will be believed and acted upon. The GDG agreed that this was an important messaging practice. They also emphasized the potential harms of late messaging enabling rumours to take hold and form the basis of established beliefs.

C4.3. Messages should promote specific actions people can realistically take to protect their health.

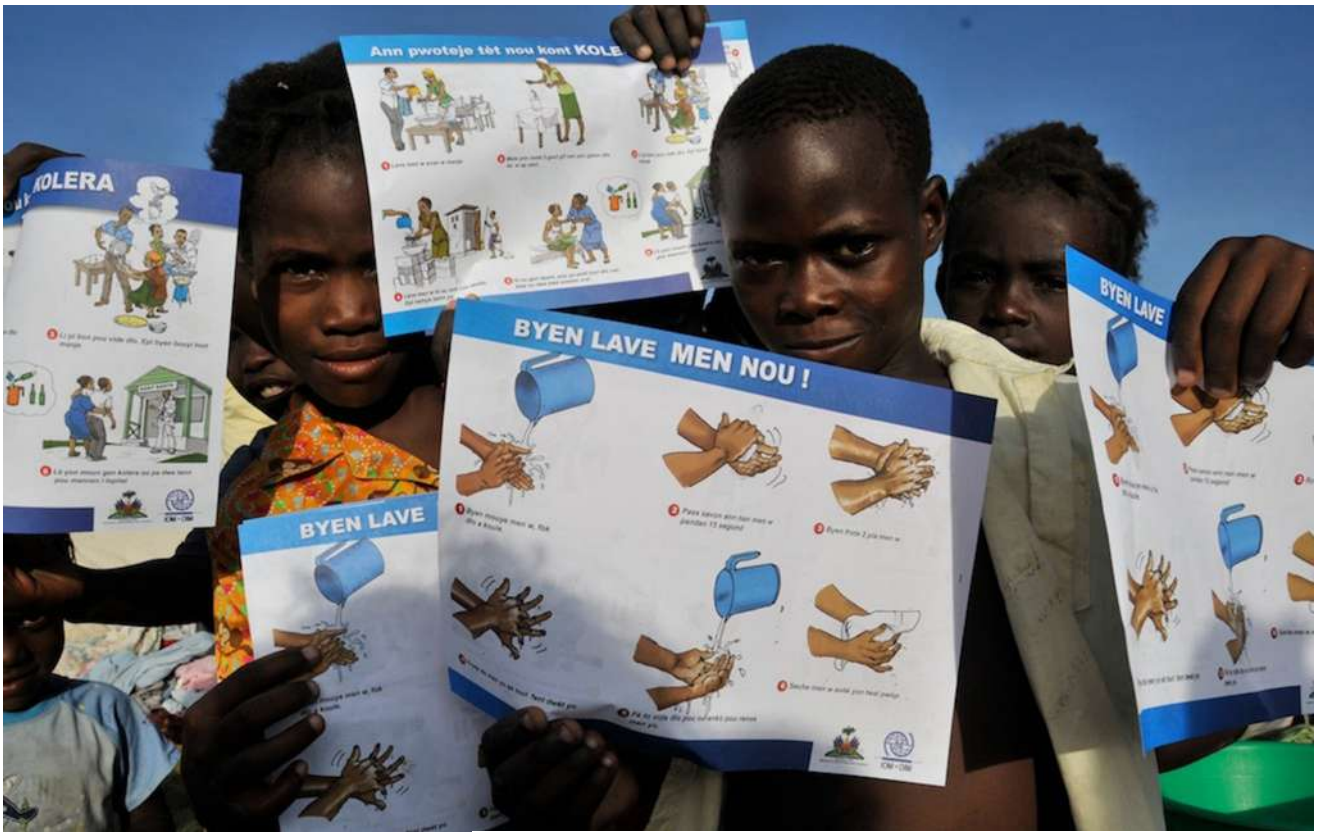
Strong recommendation

Moderate quality evidence

Rationale: The benefit of specific, culturally and contextually appropriate actions that people can take to protect themselves during an emergency was emphasised in this evidence review and other reviews on trust. The harm caused by providing vague or general messages that mean little and confuse people was noted by the GDG. Equity – providing realistic actions to vulnerable groups, such as disabled people – was an important element of the decision to make this a strong recommendation.

Remarks

Implementation considerations for all messaging recommendations: (i) messages need to arise from and be adapted to cultural contexts by using pretesting with intended audiences; (ii) messages need to be reviewed and reshaped periodically as the emergency evolves.



Systematic review findings *(54)*

The findings of the review of 34 English language and 33 other UN language studies are listed below.

- Public health officials appear to be the most credible source for risk information. Depending on the culture and, in some cases, government officials and non-local information sources are generally found to be less credible.
- Although traditional mass media, particularly radio and television, have been found to have the most impact, interpersonal communication networks become important when events include interruption to or loss of power supply.
- Messages should come from different information sources and emerge early in the outbreak; the lack of early messages allows rumours to take hold.
- Messages should be conveyed in non-technical language.
- Messages from one set of sources will get integrated into messages from other sources, whether they emanate from mass media or family and friends. Because of this message integration at the individual level, messages should be developed 'bottom up' so that culture and politics may be considered.
- Consideration of local cultural understanding will allow messages to recommend specific health protection behaviours appropriate to the culture.
- It is important to note that individuals and sometimes communities will dismiss many sorts of messages for a variety of reasons, which are sometimes shared but are not easy to generalize.
- For example, getting people to evacuate or obey quarantine restrictions is difficult across cultures and political systems, but the reasons that underlie that difficulty vary widely.

Grey literature review findings

The grey literature review found that it is essential to know how people obtain their health information *(55)*. Without this, even the best-crafted messages may be wasted if they are placed where they will not be noticed. The target group should assess this since media consumption varies greatly.

Source credibility and trustworthiness affects the adoption of behaviour changes. Several studies found that invoking credible sources *(28, 43, 56)*, or the opinions of trusted community leaders, family members or friends could influence behaviour change *(13)*. The use of messages sharing survivor numbers and stories also encouraged behaviour uptake *(50)*. One report notes that if experts are used, reference must also be made to their trustworthiness *(43)*.

7.1. Research priorities and gaps

Table 5
Research priorities and gaps

Domain	Gaps identified
A.1. Trust	· Insufficient coverage of LICs · Lack of comprehensive examination of the various components of trust along with concepts that substantially overlap with trust but may behave somewhat differently, such as confidence · Absence of longitudinal studies · Insufficient research on how mass media and personal networks interact during events
A.2. Communicating uncertainty	· Research needed into the impact of digital media and the fracturing of the infoscape on how populations assess and trust what they see, hear and read · Lack of comprehensive examination of the various conceptualizations and components of uncertainty · Paucity of studies examining message designs that can augment the understanding of uncertainty information · Insufficient comparative research across countries, especially across low- and high-income countries · Not enough attention paid to vulnerable populations, who often have least access to information resources and exposure to official information · Absence of longitudinal studies
A.3. Community engagement	· Lack of studies on effective ways to engage communities in planning activities and activities for preparedness and response actions; this applies to activities before, during and after disaster/emergency events, and to different community levels, communities-at-large, community sectors, and community individuals/households · Absence of distinctions between engagement during preparedness and response in the literature reveals gaps that require separate attention; although disasters/emergency events always happen locally, there is the possibility of activities that engage communities at the state, regional, national and international level · No study examined how communities (in their many definitions) could play a role in activities conducted at the more distant level
B.1. Governance and leadership	· Research needed in low- and middle-income settings · Research measuring the effect of an intervention/activity rather than simply describing it is needed
B.2. Information systems and coordination	· Research needed in low- and middle-income settings · Research measuring the effect of an intervention/activity rather than simply describing it is needed
B.3. Capacity building	· Existing evidence on how best to develop and sustain the capacity of ERC staff is sparse, and it is difficult to avoid concluding that there has been a lack of interest in determining factors that contribute to training effectiveness
B.4. Finance	· An extensive evidence search found no discussion of policies, mechanisms or considerations of the importance of a defined and sustained budget for risk communication · There is an urgent need for research/analysis of effective means of establishing sustained funding for ERC

Domain	Gaps identified
C.1. Strategic communication planning	• Geography: studies are overwhelmingly slanted toward populations in the USA with some studies in Africa and Australia, some Asian countries such as China and Japan, and in Eastern Europe; roughly half of the studies focus on the onset phase and just over half of them on the evaluation phase • Type of emergency: the types of public health emergency events/disasters most often studied were seismic events such as earthquakes and tsunamis; weather phenomena such as storms and floods; and emerging infectious diseases; most of which are based on data from small sample sizes, which makes it unlikely that researchers garnered samples fully representative of affected populations • Phase: few studies focused on specific strategies that made a clear connection between increased information during the planning/preparation phase and action change during the onset, containment and recovery phases
C.2. Monitoring and evaluation tools	• The systematic and grey literature reviews found no evidence indicating whether any of the current evaluation tools effectively achieve a feedback loop able to better inform the current and future risk communication response • The GDG made a recommendation that research be carried out into effective feedback loops, including the timing of evaluation, when and how it should be done, the challenge around why it has not been done, the need to understand which tools enable rapid assessment, and the capacity that needs to be in place to do rapid assessment
C.3. Social media	• Few studies focus on the use of social media during the preparation and recovery phases. Geographically, Africa, Central and South America, Central Asia, South-East Asia, Eastern Europe and the Indian subcontinent have remained vastly understudied • Where social media was studied, the demographics of social media users are rarely analysed beyond their geographical location, whether they are in or outside the disaster zone, and the frequency and content of their postings • Socioeconomic demographics are not collected and/or analysed to drill deeper into the implications of using social media to reach vulnerable populations • Who is being reached via social media campaigns and who needs to be reached with other means have remained understudied areas; social media's impact as one part of a multi-modal communication strategy similarly remains relatively understudied • Studies point towards information overload and confusion that can arise from the use of social media during events/disasters; however, the ways in which people can use social media well and can balance information-seeking online with sources offline remains little understood
C.4. Messaging	• There is a lack of data on the impact of initial risk messaging during the first days – the early onset of emergency risk – and an absence of research into how to promote individual preparedness for emergency infectious diseases • Vulnerability is generally defined geographically or by age, gender and physical disability; new research should examine vulnerability through a psychosocial or socioeconomic lens • There has been no empirical study of how risk information needs to be changed during the course of an event (linked to evaluation research recommendation) • Creating 'new norms', e.g. washing hands, may be more useful than simply providing information, which needs to be studied and measured

7.2. Composition of guideline groups

Internal Steering Group (ISG)

Set up in 2014, the ISG comprises WHO staff members involved in emergency preparedness and response, and communications. An initial informal discussion was held in October 2014, followed by a formal meeting in March 2015. The ISG has overseen the scoping of the guidelines, the selection of GDG members, the management of the systematic reviews, and the final production of the guidelines. The full list of ISG members is provided in Annex 1, Table 6.

7.3. Guideline Development Group

The secretariat consulted with key partners, stakeholders and the ISG to identify individuals with the appropriate expertise in areas of work such as emergencies, pandemics and epidemics, disaster risk management, communications, and other relevant disciplines, such as anthropology, sociology and health systems. Selections were also governed by the need for gender and regional balance. Annex 1, Table 7 gives the full list of GDG members, their affiliations, expertise and declared interests.

GDG chairpersons

Marsha Vanderford, who was then Associate Director for Communications at the Centers for Disease Control and Prevention, Center for Global Health, Atlanta, Georgia, USA, was the initial GDG chairperson, chairing the GDG during the first scoping meeting, question formulation and evidence search phase. However, in January 2016, Dr Vanderford became a WHO staff member and was no longer



eligible to serve on the GDG. Two chairpersons replaced her, Amrita Gill Bailey from the Strategic Communication Programs, Johns Hopkins University, Baltimore, Maryland, USA, and Peter Banga from the Polytechnic School of Journalism and Media Studies, Bulawayo, Zimbabwe. Ms Bailey and Mr Banga co-chaired the guideline development meeting held in Geneva, 16–17 February 2017, during which the GDG used the evidence retrieved to make recommendations.

External Review Group (ERG)

ERG members comprised risk communication experts and practitioners with experience in emergencies, academic interests in the analysis of risk communication strategies, and experience working in regions of the world prone to outbreaks and emergencies. Their role was to review the draft guidelines for clarity, comment on how actionable or useful the recommendations were, and identify any contextual issues, implications for implementation, issues for end-users and any other areas or issues they considered important [Annex 1, Table 8 lists ERG members, their affiliations, and Conflict of Interests (COI), if any].

Management of conflicts of interest

All experts participating in the development of these guidelines – GDG members, ERG members, systematic reviewers, methodologists and other consultants – were asked to complete a Declaration of Interest (DOI) form detailing any interest relevant to the subject matter before their participation.

The secretariat also performed an online search of activities and publications by potential GDG members and ERG members to determine whether they had competing interests precluding participation in the development of the guidelines. GDG members were also asked to submit short biographies, which were posted publicly for comments prior to their membership being confirmed.

The secretariat reviewed and assessed all declared interests prior to each meeting to determine whether any participants had competing interests that may preclude or limit participation in the process. Any declared interests that might be considered competing interests were referred to the WHO Compliance, Risk Management and Ethics Office for review. Before each GDG meeting, participants were asked to update their declaration of interest forms. These were summarized and presented to the entire group, so that the group was aware of any existing potentially competing interests.

During every GDG meeting, a clear explanation of what was considered or defined as a conflict of interest (COI) was provided. These included any interest (e.g. academic) that could reasonably be perceived to affect an individual's objectivity and independence while working with WHO. All GDG members present were then asked whether they had any competing interests to declare to the group beyond what had been provided in their DOI forms.

As described above, all individuals invited to participate in a substantive way in developing the guidelines (including preparation of systematic reviews and evidence profiles, or contributing to formulating recommendations and writing the guidelines) also completed DOI forms, which were reviewed by the secretariat prior to confirmation of their role. None of the members of the GDG or ERG, systematic reviewers, methodologists and consultants supporting the guideline panel were deemed to have competing interests precluding or limiting their participation. See Annex 1 for declared interests.


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8. Plans for disseminating and evaluating the impact of these recommendations

Effective packaging, targeting, marketing and dissemination of these guidelines are all essential in reaching key audiences – the decision-makers and practitioners responsible for risk communication before, during and after health emergencies. An important part of the dissemination strategy is to develop tools comprising step-by-step guides, field manuals, checklists and online training courses to facilitate implementation of the overarching recommendations.

Packaging

The guidelines will be translated into all UN official languages (Arabic, Chinese, French, Russian and Spanish), as well as Portuguese. They will also be translated into local languages used in countries experiencing, or at high risk of, disease outbreaks and epidemics.

Marketing and dissemination

The guidelines will be marketed through the following channels.

- Policy brief (using a briefing pack) to all Member States and WHO country offices through the WHO Partnership and Country Cooperation Unit.
- Via email to all operational partners within the United Nations system, international NGOs, funding partners, etc.
- Schools of journalism and networks of national, local and community radio via the United Nations Educational, Scientific and Cultural Organization (UNESCO).
- Briefing of Member States' focal points, partners, researchers and academia on the OpenWHO platform including agencies and experts currently part of the WHO risk communication and social science interventions networks.
- Posting on the WHO website and dissemination of the relevant links to all individuals and partners involved in the development of the guidelines; all people working in emergency programmes and risk communication within WHO via distribution lists; partners working in risk communication/community engagement via the risk communication coordination network; the WHO journalists training network; WHO emergency communicators' network (ECN); the WHO media list.
- Printed copies made available at WHO headquarters and in regional offices, and to individuals and partners involved in the development of the guidelines, upon request.
- Academic conferences, panels and meetings, attended by systematic reviewers, GDG members and the secretariat to discuss and promote the findings and the recommendations of the guidelines from May 2017 onwards.
- Manuals, training courses and standard operating procedures which will be developed to implement the recommendations in the guidelines in consultation with partners and end-users.

8.1. Monitoring and evaluation

Monitoring the use of the guidelines

The use of the guidelines will be monitored in five principle ways.

- Direct feedback from users during engagement in the marketing and dissemination methods described above.
- Online user survey of key global, regional and selected national stakeholders, at six and 12 months following the launch.
- Measurement of references made to the guidelines in related publications, documentations, emergency response strategies and action plans.
- Feedback from users of the OpenWHO courses.
- Feedback during the Joint External Evaluations (JEEs) regularly conducted to assess Member States' core capacities for managing public health emergencies, including risk communication. A question on knowledge about the use and utility of the guidelines will be incorporated into the JEE assessment tool.

8.2. Review by date

ERC is a rapidly evolving field. Many of the systematic reviews identified research gaps (described above and summarized in Table 5) suggesting that new evidence of better approaches and practice may arise. The review and updating of these recommendations should therefore be considered five years after publication (2022). If new evidence suggests there is a need for a change in any of the recommended practices in the interim, the guidelines will be updated accordingly.

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Annexes

Annex 1.
Composition of guideline groups

Table 6
Internal Steering Group members

Name	Location
Surangani Abeyesekera	AFRO[a]/United Nations Children's Fund (UNICEF)
Sylvain Aldighieri	AMRO[b]/Communicable Diseases Health Analysis
Henk Bekedam	EMRO[c]/WHO Country Office Egypt
Aphaluck Bhatiasevi	HQ[d]/Infectious Hazard Management
Funke Bolujoko	HQ[d]/Department of Country Cooperation & Collaboration with UN System
Sylvie Briand	HQ[d]/Infectious Hazard Management
Leticia Lin Campana	AMRO[b]/Media Relations
Zhanat Carr	HQ[d]/Interventions for Healthy Environments
Cintia Diaz-Herrera	HQ[d]/Emergency Response Management
Delanyo Dovlo	AFRO[a]/Health Systems and Services
Ibrahima-Soce Fall	AFRO[a]/Regional Emergency Director
Christy Feig	HQ[d]/Department of Communications: until end 2016 when left WHO
Pierre Formenty	HQ[d]/Epidemics in Vulnerable Settings/Infectious Hazard Management
Florence Fuchs	HQ[d]/Capacity Assessment, Maintenance and Development
Gaya Gamhewage (chair)	HQ[d]/Infectious Hazard Management
Monika Gehner	HQ[d]/Department of Communications
Vismita Gupta-Smith	SEARO[e]/Public Information Advocacy until 2016, then HQ/Department of Communications
Margaret Harris	HQ[d]/Infectious Hazard Management
Takeshi Kasai	WPRO[f]/Programme Management
Li Ailan	WPRO[f]/ Regional Emergency Director
Susan Mackay	WPRO[f]/ UN Interagency Communications Team, Viet Nam
Jaouad Mahjour	EMRO[c]/Director of Programme Management
Cristina Mana	AMRO[b]/Communicable Diseases and Health Analysis
Andreas Mlitzke	HQ[d]/Compliance, Risk Management and Ethics Office
Davison Munodawafad	AFRO[a]/Social Economic Determinants of Health
Tim Nguyen	EURO[g]/ Evidence Intelligence for Policy Making
Rafael Obregon	AMRO[b]/Chief of Communication for Development Section, United Nations Children's Fund (UNICEF)
Navaratnasamy Paranietharan	SEARO[e]/ Country Office Bangladesh
Cristiana Salvi	EURO[g]/Communicable Diseases, Health Security & Environment
Carmen Savelli	HQ[d]/Food Safety, Zoonosis and Foodborne diseases
Shamila Sharma	SEARO[e]/Public Information and Advocacy
Sameera Suri	HQ[d]/Preparedness, Surveillance and Response
Rebekah Bosco Thomas	HQ[d]/Gender, Equity and Human Rights
Hans Troedsson	HQ[d]/General Management

a. WHO Regional Office for Africa.
b. WHO Regional Office for the Americas.
c. WHO Regional Office for the Eastern Mediterranean.
d. WHO headquarters.
e. WHO Regional Office for South-East Asia.
f. WHO Regional Office for the Western Pacific.
g. WHO Regional Office for Europe.

Table 7
Guideline Development Group members

Name	Gender	Institution/Organization	Discipline	Location	Interests declared
Mesafint Alebachew	Male	Ministry of Health, Ethiopia	Health education and communications, M&E; communications training	Ethiopia AFRO[a]	None
Ombretta Baggio	Female	International Federation of Red Cross, Red Crescent Societies	Global health risk communication/ community engagement/implementer	Switzerland EURO[b]	None
Amrita Gill Bailey (co-chair)	Female	Johns Hopkins University, Baltimore, USA	Country emergency communication preparedness, preparedness communication tools and resources, behaviour change communication	USA AMRO/PAHO[c]	Research at Johns Hopkins funded by USAID[d]
Peter Banga (co-chair)	Male	Harare Polytechnic School of Journalism and Media Studies	Media training, M&E, advocacy, broadcast media	Zimbabwe AFRO[a]	None
Claudine Burton-Jeangros	Female	Université de Gèneve	Social science, risk perception and management, global health research	Switzerland/ EURO[b]	None
Bishakha Datta	Female	Point of View, (NGO)[e]	Communications, global health preparedness, women's rights and empowerment	India/SEARO[f]	None
Frode Forland	Male	Norwegian Institute of Public Health	Evidence-based guideline development, health preparedness; public health	Norway/EURO[b]	None
Natasha Howard	Female	London School of Hygiene & Tropical Medicine (LSHTM)	Health systems research, conflict and health research, evaluation	United Kingdom/EURO[b]	None
Akram Khayatzadeh-Mahani	Female	Kerman University of Medical Sciences	Health economics/modelling in health/health policy	Iran (Islamic Republic of)/ EMRO[g]	None
Nombulelo Leburu	Female	National Department of Health, South Africa	Strategic health communication, external and risk communication	South Africa/AFRO[a]	None
Sovann Ly	Male	Ministry of Health, Cambodia	Outbreak control and prevention	Cambodia/ WPRO[h]	None
Jenny Moberg	Female	Norwegian Knowledge Centre for Health Services	Development of online tools for communicating and facilitating health-care decision-making	Norway/EURO[b]	None
Mohamed Nour	Male	Supreme Council of Health, Qatar	Communications, communication for behavioural impact (COMBI) in health	Qatar/EMRO[g]	None
Nobuhiko Okabe	Male	Kawasaki City Institute for Public Health	Infectious diseases/IHR[h]/pandemic preparedness	Japan/WPRO[i]	None
Patricia Lima Pereira	Female	Ministry of Health, Paraguay	Strategic communication planning	Paraguay AMRO/PAHO[c]	None
Ortwin Renn	Male	University of Stuttgart	Communications theory-research into participation and communication	Netherlands/EURO[b]	Paid speaker on risk communication Board member of non-profit research
Maria-Isabel Rivero	Female	Inter-American Commission on Human Rights	Strategic communication planning	USA AMRO/PAHO[c]	None
Lisa Robinson	Female	Senior Adviser BBC Media	Action resilience and crisis response	EURO[b]	None
Caroline Rudisill	Female	London School of Economics and Political Science	Health economics; pandemics, health policy, risk perception and health choices	United Kingdom/EURO[b]	None
Matthew Seeger	Male	Wayne State University, Detroit	Applied risk communication research, global health security, crisis communications	USA/AMRO/ PAHO[c]	None
Luechai Sringernyuang	Male	Mahidol University, Bangkok, Thailand	Anthropology, qualitative research methodology	Thailand/ SEARO[f]	None
Karen Tan	Female	Ministry of Communications and Information, Singapore	Outbreak risk communication implementer, strategic communication planning	Singapore/ WPRO[i]	None
Chadin Tephaval	Male	The Bangkok Post	Communications, crisis communications and journalism	Thailand/ SEARO[f]	None
Theresa Thompson	Female	University of Dayton	Evaluation, communications theory; interpersonal/ intercultural communications.	USA/AMRO/ PAHO[c]	None
Marika Valtier	Female	French Ministry of Social Affairs, Health and Women's Rights	Communications, risk and crisis communication; global health security	France/EURO[b]	Paid for public speaking on risk communication (max. €500)
Marsha Vanderford[j]	Female	Centers for Disease Control and Prevention (CDC)	Risk communication theory, global health communications implementer, health security	USA/AMRO/ PAHO[c]	None
Sophia Wilkinson	Female	BBC Media Action	Design and implementation of health communication interventions, training,	United Kingdom/EURO[b]	None
Xie Ruiqian	Male	International Peking University/ Chinese Centre for Health Education	Risk communication, epidemiology, statistics, capacity building	China/WPRO[i]	None

M&E: monitoring and evaluation.
a WHO Regional Office for Africa.
b WHO Regional Office for Europe.
c WHO Regional Office for the Americas/Pan American Health Organization.
d U.S. Agency for International Development.
e nongovernmental organization.
f WHO Regional Office for South-East Asia.
g WHO Regional Office for the Eastern Mediterranean.
h International Health Regulations (2005).
i WHO Regional Office for the Western Pacific.
j Chair until end December 2015 when she became a WHO staff member and had to leave GDG.

Methodologist supporting GDG and overseeing evidence retrieval: Jane Noyes

Systematic review teams

Harvard T.H. Chan School of Public Health, Emergency Preparedness, Research, Evaluation and Practice Program, Boston, USA (Questions 1, 2, 6, 8): Giorgia Argentini (project consultant for Latin America and Brazil), Azan Jha, Noah Klein (editor), Leesa Lin, Elena Savoia (lead), and Sarah Short.
Nicholson School of Communication, University of Central Florida, Florida, USA, (Question 3): Rebecca Freihaut (grey literature search), Lindsay Neuberger, Ann Neville Miller, Timothy Sellnow (lead), and Andrew Todd.
Wayne State University, Detroit, Michigan, USA. (Questions 5, 7, 9, 10, 11, 12): Ashleigh Day, Stine Eckert, Julie Novak, Donyale Padgett, Pradeep Sopory, and Lillian Lee Wilkins (lead).
Question 4 and rapid grey literature update: Deborah Toppenberg-Pejcic, independent consultant.

Table 8
External Review Group members

Name	Affiliation	Country/WHO region	Expertise	Conflict of interest
Supriya Bezbaruah	NA	India/SEARO[a]	Emergency response	No
Christopher Colvin	NA	South Africa/AFRO[b]	Interface between communities and health systems; methodology of social science research in public health.	No
Joshua Greenberg	NA	Canada/AMRO[c]	Media coverage of infectious disease risks, risk communication activities and strategies of key public health actors	No
Ali Akbar Haghdoost	Kerman University of Medical Sciences	Iran (Islamic Republic of)/EMRO[d]	Epidemiology	No
Sarb Johal	Massey University	New Zealand	Crisis communications	No
Marwa Kamel	United Nations Children's Fund (UNICEF)	EMRO[d]	Risk communication implementer	No
Lucy Knight	Oxfam	United Kingdom/EURO[e]	Public health promotion	No
Li Richun	China Centre for Disease Control	China/WPRO[f]	Risk communication implementer	No
Abderrahmane Maaroufi	Ministry of Health, Morocco	Morocco/EMRO[d]	Emergency preparedness and response	No
Erma Manoncourt	Independent development consultant	Barbados/AMRO[c]	Community engagement/participatory decision making	No
Ki Soo Park	Korea Center for Disease Control	Republic of Korea/WPRO[f]	Risk communication implementer	No
Cynthia Sawe				
Anton Schneider	USAID	USA/AMRO[c]	Risk communication/community engagement	No
Thomas Tufte	University of Leicester	United Kingdom/EURO[e]	Academic risk communication theory	No

NA not applicable.
a WHO Regional Office for South-East Asia.
b WHO Regional Office for Africa.
c WHO Regional Office for the Americas.
d Regional Office for the Eastern Mediterranean.
e WHO Regional Office for Europe.
f WHO Regional Office for the Western Pacific.

Annex 2.
Guideline development methods

Development of these guidelines began in October 2014, with the establishment of an ISG and commissioning of a flash literature review of international and national guidance on ERC published between January 2006 and March 2015 *(2)*. The flash literature review (available at this link) aimed to provide:

- a 'snapshot map' of guidance in the field
- an overview of advice in existing guidance
- a brief review of potential areas for action or improvement.

The reviewers, a team from Evidence Aid, found 128 guidance documents, but none were explicitly evidence-based. Most guidance focused on capacity/strategy building, while least-explored areas were logistics and mobile technologies. Gaps also existed in: evaluation research; the assessment of the barriers to preparedness and ERC during disasters in LICs; understanding how best to build capacity for effective ERC during the preparedness phase; and the application of evidence and past experience to improve the practice of ERC.

While the flash review was underway, the guidelines secretariat, supported by the ISG, searched for suitable candidates for the GDG. Experts from all regions in the world specialising in risk communication, emergency response, public health policy, epidemiology and other domains relevant to ERC, were invited to join the panel (see Annex 1, Table 7 for full list of names, expertise and affiliations).

Findings of the flash scoping review were presented to the GDG during the first meeting held in Geneva, Switzerland, from 22 to 23 June, 2015. The review was used as a basis for setting the scope of the guidelines and determining which areas of ERC needed further exploration via a systematic evidence search. During this first meeting, 12 domains were identified and Jane Noyes, the methodologist supporting the GDG, guided the formulation of questions using the SPICE format. It was expected that much of the research in these domains would use qualitative, rather than quantitative methods. The SPICE format is considered more applicable to a qualitative and mixed-methods evidence search than the traditional PICO format. A detailed explanation of the SPICE evidence review question format is provided in Annex 3.

Once the SPICE questions had been formulated and agreed upon, requests for proposals were sent out and three systematic review teams (from Harvard University, led by Elena Savoia; the University of Central Florida led by Tim Sellnow; and Wayne State University, led by Lillian Lee Wilkins (see Annex 1 for full team details), and one individual, Deborah Toppenberg-Pejcic, was engaged to carry out the reviews based on the questions provided.

Throughout the search, analysis and reporting period, review teams were advised and supported by Jane Noyes, the WHO risk communication guidelines secretariat and Tomas Allen, WHO Information Scientist, who provided database and grey literature search support. During this period, the West African Ebola virus disease outbreak, emergence of Zika virus syndrome and other major public health emergencies generated considerable grey literature on risk communication. To capture this, a rapid grey literature evidence search (also performed by Deborah Toppenberg-Pejcic) was undertaken, examining reports relevant to the 12 questions, up to 31 December 2016.

All reviews were completed and submitted to the WHO secretariat by the end of January 2017, following which they were provided to all members of the GDG. To facilitate transparent, evidence-based recommendation development by the GDG, the review findings were used as the basis for adapting the DECIDE Evidence to Decision (EtD) framework tables *(11)*, and summarizing the evidence on what worked and what did not work, and on other essential issues, such as values, preferences, resource use and equity considerations. (The DECIDE tables provided to the GDG are available at this link.).

An initial anonymous electronic voting system was used to establish the group's position, and then recommendations were formulated and a consensus reached. Recommendations made at the GDG meeting were compiled and sent to the entire group for further review. This set of recommendations was then sent, within the guideline document, for review by the ERG made up of ERC practitioners,

emergency responders, academics and policy-makers (names and affiliations provided in Annex 1). Their comments were used to further refine the recommendations and the presentation of the guideline document in consultation with the GDG.

Priority questions

Using the scope and domains agreed at the first GDG meeting, the following 12 priority questions, covering trust and community engagement, building ERC into health systems, and establishing the best evidence-based ERC practices, were formulated by the GDG chair, the guideline methodologist and the secretariat, with support from the ISG.

Q1: Leadership and governance: How can emergency risk communication best be integrated into national leadership planning and execution for events and emergencies with public health implications?

Q2: Information systems: What are the best types of mechanism(s) to establish effective, cross-jurisdictional linkages for information sharing for emergency risk communication and internal coordination?

Q3: Human resources: How to best develop and sustain emergency risk communication staff capacity for preparedness and response?

Q4: Financing: How to ensure sufficient and sustainable financing for emergency risk communication?

Q5: Trust: What are the best and most generalizable emergency risk communication activities that build trust in health authorities as a source of health protection information among affected communities and other stakeholders?

Q6: Coordination: What are the best ways to ensure coordination of risk communication activities between responding agencies across organizations and levels of response?

Q7: Strategic communication planning: What are the elements and steps of effective, strategic communication planning?

Q8: Monitoring and evaluation: What are the best ways and most appropriate tools for gathering, analysing and interpreting emergency risk communication data and feedback, and integrating results into emergency risk communication planning, strategy development, execution and evaluation?

Q9: Community engagement: What are the best ways to engage communities in emergency risk communication activities to respond to events/contexts?

Q10: Social media: What are the best social media channels and practices to promote health protection measures and dispel rumours and misinformation during events and emergencies with public health implications?

Q11: Communicating uncertainty: What are the best ways to communicate uncertainties to public audiences, at-risk communities and stakeholders?

Q12: Messaging: What elements and timing of messages are best at influencing public/community levels of concern to motivate relevant actions to protect health?

These questions were further developed into potential search terms, using the SPICE framework. (Full details of SPICE terms used for each question are provided in Annex 3.)

The scoping flash literature review found that most WHO guidance was based on events prior to or during 2003, so the timeframe for the systematic reviews was set as 2003 onwards. Due to several major public health emergencies, such as the West African Ebola virus disease outbreak (2014–2015) and the global Zika virus outbreak (2015–2016), generating a large amount of grey literature on ERC, an additional rapid review of recent grey literature covering all 12 questions was commissioned towards the end of the process *(57)*.

Searching the evidence

Each systematic review team worked with Tomas Allen (WHO Information Scientist) to design and carry out extensive searches in research databases in English, other official UN languages (Arabic, Chinese, French, Russian, Spanish) and Portuguese, along with searches of the grey literature. A detailed account is included in each review report available at this link.

Production of a systematic knowledge map

For each question, review teams were asked to map the literature and identify gaps using the following categories:

- disaster type
- disaster phase
- geographical location
- low-, middle- and high-income settings
- equity considerations
- study type (by method)
- published systematic reviews
- grey literature.

Existing reviews

Existing reviews were appraised using A Measurement Tool to Assess Systematic Reviews (AMSTAR). AMSTAR is used to assess the methodological quality of systematic reviews *(58)*. Low-quality reviews were unpacked and their studies screened for potential inclusion in the WHO-commissioned reviews. Medium-high quality reviews were placed in a shared virtual folder and the key findings were used to contextualize the findings of the commissioned reviews.

Quality appraisal of studies and grey literature

Quality appraisal of primary studies was undertaken using the tools below.

- Quantitative – comparison groups – Cochrane's Effective Practice and Organisation of Care (EPOC) Risk of Bias (ROB) tool *(59).*
- Quantitative – descriptive survey – adaptation of Davids and Roman (2014) *(60),* or a similar tool.
- Qualitative – Critical Appraisal Skills Programme (CASP) for qualitative research *(61)*.
- Mixed-method and case study – McGill University Mixed Method Appraisal Tool (MMAT) *(62)*.

Studies reported in the grey literature were appraised using the appropriate method-specific tool. Grey literature that did not report a study was appraised using the Authority, Accuracy, Coverage, Objectivity, Date and Significance (AACODS) tool *(63)*. Each area in AACODS is assessed using 'yes', 'no', or 'can't tell'. Studies received a final rating of 'high' (no significant flaws), 'moderate' (minor flaws impacting credibility/validity), 'low' (some flaws likely to impact credibility/validity), or 'very low' (significant flaws impacting credibility/validity). An important AACODS weighting factor is given to aspects of authority.

Data extraction

The following study characteristics were extracted from individual data based on primary studies of all method types: country focus; disaster/emergency type; disaster/emergency phase; and whether at-risk/vulnerable populations had been addressed. Evidence of interest that mapped onto the phenomena of interest and the outcomes/effects relating to the review question were identified and extracted. For quantitative studies, numerical data, such as means, standard deviations and probability values, were extracted. For qualitative studies, key phrases, sentences and direct quotations, were extracted. For mixed-method studies and case studies, numerical data and key phrases, sentences and direct quotations, as appropriately related to each method, were extracted.

Review design

The overall purpose of the review design was to enable the review teams to sequentially assemble and configure the evidence in order to distinguish the 'signal from the noise' and to build up a picture of 'what happened, what worked, what were the consequences and impacts and what was effective?'

Studies were initially organized into four methodological streams:

- quantitative-comparison groups
- quantitative-descriptive survey
- qualitative
- mixed-method and case study.

Synthesis of findings within each methodological stream

A quantitative meta-analysis was not possible in any of the reviews due to the very small number of studies that used comparison groups (randomized or non-randomized) and study heterogeneity. The review teams therefore used a narrative summary approach for reporting quantitative studies. For the qualitative methodological stream, the framework synthesis model was used *(11, 12)*. The framework categories were generated from review objectives and phenomena of interest concepts outlined in the SPICE question. These were modified as appropriate based on prior subject knowledge and the analysis of individual studies. Supported by evidence from individual studies, synthesized findings were created by building explanatory and higher-level analytical statements.

For the mixed-method and case study methodological stream, individual studies typically did not differentiate their overall findings based on methodological type. For this stream, the teams used a narrative summary approach.

Evaluation of certainty/confidence in synthesized findings within methodological streams

The assessment of certainty/confidence of the synthesized findings was carried out separately for each methodological stream using the tools below.

- Quantitative – comparison groups (randomized, non-randomized) – GRADE.
- Quantitative – descriptive survey – principles of GRADE were applied.
- Qualitative – GRADE Confidence in the Evidence from Reviews of Qualitative Research (CERQual).
- Mixed-method and case study – the principles of GRADE and GRADE-CERQual were applied.

The GRADE approach *(11, 18)* was used to assess the synthesized findings within methodological stream of the quantitative-comparison groups. Findings were assessed on: allocation sequence and concealment; baseline outcomes and characteristics; protections against contamination(s); presence of selective outcome reporting; and other possible forms of bias. Each category was given a rating of 'low risk', 'high risk', or 'unclear risk'. Detailed information on the definitions of levels of risk used in this tool is available in section 12.2.2 of the *Cochrane Handbook for Systematic reviews of Interventions (13)*. Findings received a final rating of:

- high quality (it is highly likely that new research will not modify the finding substantially);
- moderate quality (it is somewhat likely that new research will not modify the finding substantially);
- low quality (it is somewhat likely that new research will modify the finding substantially); or
- very low quality (it is highly likely that new research will modify the finding substantially).

In reviews undertaken by the Wayne State and University of Central Florida teams' quantitative-descriptive survey within the methodological stream, synthesized findings were assessed for certainty using a tool developed specifically for these reviews, based on the principles of GRADE. The Wayne State team made adjustments, in collaboration with the GRADE methodologist, Jane Noyes, to create a tool for the evaluation of the certainty of findings from quantitative cross-sectional surveys lacking comparison groups for outcomes/phenomena of interest. Evaluation was based on an assessment of the factors considered likely to reduce the certainty of study findings: limitations in study design or execution; inconsistency of results; indirectness of evidence; imprecision of results; and publication bias. There were four evaluation categories:

- high quality – it is highly likely that new evidence will not substantially modify the study findings;
- moderate quality – it is somewhat likely that new evidence will not substantially modify the study findings;
- low quality – it is somewhat likely that new evidence will substantially modify the study findings;
- very low quality – it is highly likely that new evidence will substantially modify the study findings.

More information on the adapted GRADE tool is provided in the appendices of the review reports provided by Wayne State and University of Florida teams, available at this link. The GRADE-CERQual tool was used to assess confidence in the synthesized findings within the qualitative methodological stream by examining methodological limitations, relevance, coherence, and adequacy of data supporting the finding. Each finding was then given a rating of:

- high confidence – it is highly likely that the finding is a representation of the phenomena;
- moderate confidence – it is likely that the finding is a representation of the phenomena;
- low confidence – it is possible that the finding is a representation of the phenomena; or
- very low confidence – it was not clear if the finding is a representation of the phenomena;

Synthesized findings of mixed-method studies and case studies within methodological streams were assessed for certainty/confidence using GRADE and GRADE-CERQual approaches.

Synthesis of findings across methodological streams

Findings synthesized within a methodological stream were compared and contrasted with findings from the other methodological streams. Whenever the findings supported and amplified each other, they were combined into higher-order findings that represented syntheses across the methodological streams. The evaluation of certainty/confidence in the synthesized findings within the methodological stream was kept in mind during this process.

Subgroup and equity analyses

The synthesis of findings included subgroup analyses, involving the examination of the type and phase of the emergency event, country of emergency event, and the presence of vulnerable populations. Inclusion of the last two subgroups enabled considerations of equity in the synthesized findings.

Presentation of review findings

Within and across methodological findings are presented in the summary of findings tables with the corresponding assessment of confidence/certainty in the evidence. These are available in all the full systematic review reports available at this link.

COI 'flash check' for GDG nominees

The WHO Communications Capacity Building (CCB) unit conducted an online ad hoc search of the 25 individuals, nominated by the ISG as potential members of the GDG. The search, which was essentially a 'flash check' for possible COI, assessed each nominee for their involvement with private entities and corporate sources of funding, such as links to research projects funded by private sources. This particular search focused mainly on financial COI tied to any company that manufactures and/or distributes tobacco, firearms, oil and/or petroleum products, pharmaceuticals, and food and nutrition. According to the WHO Guidelines for Declaration of Interests (WHO Experts), COI are defined as,

> ...any interest declared by an expert that may affect or reasonably be perceived to affect the expert's objectivity and independence in providing advice to WHO, and/or create an unfair competitive advantage for the expert or persons or institutions with whom the expert has financial or business interests (such as adult children or siblings, close professional colleagues, administrative unit or department).

Searched sources

The sources of publicly available information assessed for the review included, but were not limited to the following data sources.

ResearchGate: A type of social networking site for researchers to publish and share works to which they have contributed, as well as connect with other researchers. Used to evaluate the nominees' publications for declared COI and funding sources.

PubMed: A free search engine that provides access to full text articles, references and abstracts on life sciences and biomedical topics; maintained by the United States National Library of Medicine (NLM). Used to evaluate the nominees' publications for declared COI and funding sources.

Journals: From various sites and pages; not all publications or journals explicitly stated COI. Used to evaluate the nominees' publications and editorial posts for declared COI and funding sources.

LinkedIn: A social networking site used mainly for professional networking, sharing personal history forms and applying for jobs. Used to evaluate the nominees' professional and occupational history.

Yasni: A German metasearch engine for the general public used to search for nominees' connections to COI.

Websites of universities, companies, organizations, and faculty or team members. Used to search for information on the nominees' publications, professional and personal affiliations, honours, awards, grants and occupational history.

Websites of governments, ministries, NGOs and international governmental organizations (IGOs). Used to search for those nominees holding positions within ministries of health or other governmental or institutional positions. The websites were also searched for funding sources, where publicly available.

Various other sites including those of partner sites or organizations connected to the nominees themselves, or their affiliated organizations, universities, societies, etc.

Search process

The CCB unit devised a simple search model to efficiently scan through the nominees' publicly available information and then utilized the Google search engine to implement that search model. The search process was conducted as follows:

1. assess the nominees' research on public publishing platforms such as PubMed;
2. discern the research funding source, note the disclosed conflicts;
3. identify if the nominee is affiliated with a university, IGO/NGO, government, journal/publication, and/or a company that produces and/or distributes tobacco, firearms, oil or petroleum products, pharmaceuticals, and/or any food and beverages;
4. evaluate the nominees' online profiles, available either on his or her own website, university website, or LinkedIn profile or personal history form for current and previous affiliations, grants, associations or bias;
5. identify nominees' publicly disclosed donations to schools/institutions/etc.;
6. save individual flash checks with relevant information;
7. distribute WHO DOI forms to the selected nominees following the flash check.

Two CCB team members carried out this flash check over three working days. The CCB unit and the WHO Office of Compliance, Risk Management and Ethics used the results to review the nominees' profiles and declarations of interest.

Annex 3.
SPICE questions

1.
Leadership and governance
How can emergency risk communication best be integrated into national and international leadership planning and execution for events and emergencies with public health implications?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.
Perspective: National governments.
Phenomenon of Interest: Integration of emergency risk communication functions into national government leadership for response to emergency events with public health implications.
Comparison: Varied placement of emergency risk communication functions in national leadership structure, organizational proximity of emergency risk communication practitioners to national health response leadership, distribution of emergency risk communication representation across national leadership sectors; equity considerations such as local contextual and population characteristics.
Evaluation: Impact on public trust in event/emergency related information, on reach of information to affected populations, on coordination of information sharing, ability of practitioners to influence decisions, on speed of information reaching the public during an event/emergency.
Time scope: From 2003.

2.
Information systems
What are the best types of mechanism(s) to establish effective, cross-jurisdictional linkages for information sharing for emergency risk communication and internal coordination?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.
Perspective: National governments and relevant subnational authorities (e.g. district and local health departments), responding and implementing partners.
Phenomenon of Interest: Establishment of formal, cross-jurisdictional, interagency, and communication linkages and mechanisms for information sharing and communication coordination; barriers and facilitators for such mechanisms and linkages.
Comparison: Varied approaches – networks, bureaucratic protocols and standard operating procedures, incident command models, and other approaches to organize and facilitate connections and coordination; equity considerations such as local contextual and population characteristics.
Evaluation: Impact on the speed and coverage of public information; release, consistency of shared information; impact on trust of shared information.
Time scope: From 2003.

3.
Human resources
How to best develop and sustain emergency risk communication staff capacity for preparedness and response?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.
Perspective: National governments and relevant subnational authorities (e.g. district and local health authorities).
Phenomena of Interest: Development and sustained capacity of staff for emergency risk communication.
Comparison: Varied tactics – in-service training, education, core competency programmes, and other development opportunities; equity considerations such as local contextual and population characteristics.

Evaluation: Impact on the number of staff with emergency risk communication skills, breadth/depth of skills, retention of staff.
Time scope: From 2003.

4.
Financing
How to ensure sufficient and sustainable financing for emergency risk communication?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.
Perspective: Donors, national budget holders.
Phenomena of Interest: Approaches and timing of funding for emergency risk communication, including models that prioritize and integrate this funding into the decision-making process for comprehensive emergency management and response budgets; barriers and facilitators to funding.
Comparison: Experiences in different political and economic contexts and related to different magnitude of events (e.g. outbreak versus earthquake); equity considerations such as local contextual and population characteristics.
Evaluation: Amount/proportion of funding for emergency risk communication relative to all funding allocated to emergency preparedness and management, and timing of this funding.
Time scope: 2003 onward.

5.
Trust
What are the best and most generalizable emergency risk communication activities that build trust in health authorities as a source of health protection information among affected communities and other stakeholders?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.
Perspective: National governments and relevant subnational authorities (e.g. local/district health departments), affected communities, and stakeholders.
Phenomena of Interest: Emergency risk communication activities that build trust in health authorities as a source of health protection information among affected communities and other stakeholders.
Comparison: Listening (acknowledging and responding to audience concerns/questions), early announcements, consistency of messages, strength of pre-existing relationships, use of skilled/credible spokespersons, admitting mistakes, acknowledging uncertainties, public release of evaluations and reviews, use of local spokespersons and influencers; equity considerations such as local contextual and population characteristics.
Evaluation: Impact on levels of accurate knowledge and compliance with health recommendations among affected populations, perceptions of credibility of health authorities among affected populations and other stakeholders.
Time scope: 2003 onward.

6.
Coordination
What are the best ways to ensure coordination of risk communication activities between responding agencies across organizations and levels of response?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.
Perspective: National governments and relevant subnational authorities (e.g. local/district health departments), responding and implementing partners.

Phenomena of Interest: Mechanisms and systems for coordination of risk communication activities between national government, subnational health authorities and other responding partners.
Comparison: Networks, standard operating procedures/joint planning, organizational structures, joint information centres, emergency operation centres, collaborative leadership, team-building skills; equity considerations such as local contextual and population characteristics.
Evaluation: Impact on message consistency and timing, reductions in redundant action, leveraged human and financial resources.
Time scope: 2003 onward.

7.
Strategic communication planning
What are the elements and steps of effective, strategic communication planning?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.
Perspective: National governments and relevant subnational authorities (e.g. local/district health departments), responding and implementing partners.
Phenomena of Interest: Approaches to strategic communication planning including types of participants, planning processes, and components of resulting plans.
Comparison: All hazards versus specific threats; varied development processes, data-driven versus best practices, inclusion of metrics/indicators; equity considerations such as local contextual and population characteristics.
Evaluation: Impact on breadth/generalizability of resulting plan, feasibility of implementation, buy-in of leadership and implementers.
Time scope: 2003 onward.

8.
Monitoring and evaluation
What are the best ways and most appropriate tools for gathering, analysing and interpreting emergency risk communication data and feedback, and for integrating the results into emergency risk communication planning, strategy development, execution and evaluation?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.
Perspective: National governments and relevant subnational authorities (e.g. local/district health departments), responding and implementing partners, at-risk communities, stakeholders.
Phenomena of Interest: Methods and systems for collection, analysis and application of emergency risk communication-related data.
Comparison: Between types of data and data gathering, community and audience feedback, message testing, public surveys, news and social media monitoring, rapid behavioural assessments, focus groups, key informant interviews, etc.; equity considerations such as local contextual and population characteristics.
Evaluation: Impact on level of integration of results into emergency risk communication plans, strategies and tactics; speed in modifying emergency risk communication messages and materials based on results; perceptions among concerned communities that health authorities are 'listening'; speed to address rumours; impact on public trust in health protection information; perception among at-risk communities and stakeholders of the relevance of the response.
Time scope: 2003 onward.

9.

Community engagement

What are the best ways to engage communities in emergency risk communication activities to respond to events/contexts?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.

Perspective: National governments and relevant subnational authorities (e.g. local/district health departments), responding and implementing partners, at-risk communities and stakeholders.

Phenomena of Interest: Strategies and tactics for encouraging participation of at-risk communities in emergency risk communication planning and response.

Comparison: Differing tactics – integration of at-risk communities into planning processes, providing incentives to community leadership, use of formal reporting systems and feedback loops, amongst others; equity considerations such as local contextual and population characteristics.

Evaluation: Impact on level of engagement and retention of community participation, public trust in health protection information, level of coverage of information sharing, perceived relevance among communities of national response to local questions/concerns.

Time scope: 2003 onward.

10.

Social media

What are the best social media channels and practices to promote health protection measures and dispel rumours and misinformation during events and emergencies with public health implications?

Setting: In the context of preparing for and responding to events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.

Perspective: National governments and relevant subnational authorities (e.g. local/district health departments), responding and implementing partners; at-risk communities and stakeholders.

Phenomena of Interest: Ability of different social media channels and practices to promote health protection information and dispel rumours and misinformation – extent of reach, level of influence, outcomes, types of audiences.

Comparison: Source of social media messages (health authorities, community leaders, celebrities, NGOs, etc.), types of social media (SMS, Twitter, Facebook, etc.); equity considerations such as local contextual and population characteristics.

Evaluation: Impact on public trust in health protection information, level of coverage of information sharing, unanticipated negative consequences, distortion of health protection messages/information, impact on community engagement.

Time scope: 2003 onward.

11.

Communicating uncertainty

What are the best ways to communicate uncertainties to public audiences, at-risk communities and stakeholders?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.

Perspective: National governments and relevant subnational authorities (e.g. local/district health departments), journalists, responding and implementing partners, communities, stakeholders.

Phenomena of Interest: Trust-building emergency risk communication tactics to communicate uncertainties inherent in events and emergencies with public health implications.

Comparison: Different sources of information (level of authority, local communities, national government authorities); timing of recommendations, announcements, alerts; consistency of messages; labelling recommendations as 'interim'; acknowledgement of unknowns; acknowledging what is known; equity considerations such as local contextual and population characteristics.

Evaluation: Impact on public trust in health protection information, acceptance and compliance with recommendation; changes and shifts of information during the course of events/emergency.

Time scope: 2003 onward.

12.

Messaging

What elements and timing of messages are best at influencing public/community levels of concern to motivate relevant actions to protect health?

Setting: In the context of preparing for and responding to national and international events/emergencies with public health implications in high-, low- and middle-income countries, and fragile states.

Perspective: National governments and relevant subnational authorities (e.g. local/district health departments), journalists, responding partners, communities.

Phenomena of Interest: Timing and content of emergency risk communication messages designed to raise/lower public and community concerns about threats.

Comparison: Different phases of event/emergency, different sources of information (level of authority, local communities, national government authorities), consistency and frequency of messages, different types of appeals; equity considerations such as local contextual and population characteristics.

Evaluation: Impact on public trust in health protection information, level of motivation to act on health recommendations, level of compliance with health recommendations.

Time scope: 2003 onward.

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