



Public Health Risk Communication (PHRC) Guide



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Introduction

Purpose of this Guide

Risks and threats to public health seem to be coming faster, are identified more quickly, and appear in today's information environment demanding quick response. The Centers for Disease Control and Prevention's (CDC's) work in this area has evolved from crisis and emergency risk communication (CERC), which is required in disease outbreaks and disaster response, to a need to encompass the broader health risks that CDC and other health organizations face every day, some of which last longer and can emerge but are not a "crisis."

CDC recognizes the need for guidance on how to effectively communicate about emerging, ongoing, and evolving public health risks in a complex and changing health information environment that don't require a full emergency crisis response.

The content in the Public Health Risk Communication (PHRC) guide was informed by the latest risk communication science and, most importantly, by conversations with public health communicators. A team of researchers and health communicators looked at the scientific literature to determine the top risk communication concerns and principles to address them. They created the PHRC guide to help public health practitioners identify those concerns in their communities and apply corresponding risk communication principles in their messaging.

This guide was evaluated by a risk communication expert and tested with public health department professionals at state and local levels and federal agencies.

This information is for public health practitioners working at the federal, state, local, and tribal/territorial levels who are responsible for communicating about risk. You can use information in this guide any time you're communicating about an emerging, ongoing, and evolving public health risk. Examples of public health risk communication situations include extreme heat or cold, increased incidence of mosquito-borne disease, or the emergence of a drug-resistant bacteria.



For situations that are crises, refer also to CDC Crisis and Emergency Communication (CERC) guidance. Crisis communication applies to an unexpected emergency, beyond an organization's control, which requires an immediate and scaled up response. Crisis communication needs to happen quickly and address a high level of concern among the public. These may be indicated by standing up of the emergency response capacity you have in the organization.



Understanding Risk Communication

Risk communication, within the public health context, is the process of sharing information or recommendations with the public so they can make informed decisions about risks to their health and safety. Several factors make health risk communication difficult and different from other types of health communication:

- **Risk is situational, and the choices on how to mitigate and reduce risk may be highly personal.** This means different circumstances may lend themselves to different types of messaging and dissemination channels. It also means different people may respond to the same risk message very differently.
- **Risk can involve hard decisions and trade-offs.** Often, decisions about risk communication are made when there is a sense of urgency or when emotions are running high among the public. Risks can also emerge and grow over time, or even come back again once handled.
- **People have emotional responses to risk.** These responses can influence the way people process and use information about risk.
- **Risk changes over time.** This could be because the science evolves, the threat evolves, or we learn new information...or all of the above.
- **Inaccurate health information about a risk can spread quickly through many channels.** People seek information online and through social media, where inaccurate information can spread quickly.

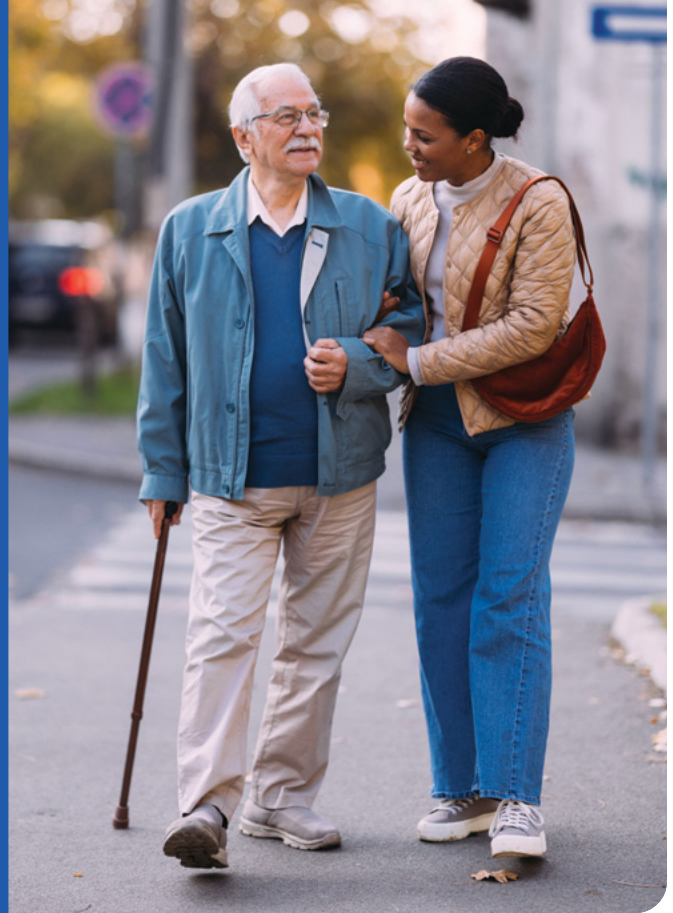
Risk communication, when done well, can:

- Build trust
- Create transparency
- Prevent communication crises
- Build shared understanding, decisions, and collective action that align the public's disease prevention and control behaviors with the risk



CDC's Public Health Risk Communication guide provides the latest guidance from risk communication science on how to effectively communicate about emerging, ongoing, and evolving public health risks. It's designed to help public health professionals:

- Identify challenges in the information environment (like scientific uncertainty) that will impact communication
- Determine how to prioritize and apply core risk communication principles to address these challenges
- Consider the longer-term investments that would be needed to build trust and improve risk communication practices over time. This guide refers to these practices as foundational health communication principles.



Foundational Health Communication Principles

We know that good risk communication starts long before a public health threat or risk emerges. The following foundational health communication principles present practices that are essential to successful public health communication before, during, and after a risk situation. In other words, these communication practices should be considered the “norm” rather than an “extra” activity during a public health risk. They require long-term investment in planning, time, and training.

- **Consider your audience:** Account for varying levels of health and digital literacy skills, access to high-speed internet, and abilities. Solicit input from community members and experts.
- **Practice clear communication:** Follow plain language best practices, use familiar language and examples, and apply information design principles like bulleted lists and short “chunks” of content. In a risk situation, clear communication signals transparency, builds rapport, and improves understanding.
- **Work with community partners:** Build trust with community members over time through empathy, transparency, and responsiveness. Take the time to understand the unique perspectives, experiences, values, and information preferences of the community.
- **Be open, transparent, and empathetic:** Communicate at regular intervals. Explain the decision-making process behind specific actions and recommendations. Invite questions and feedback.

Identifying Challenges in the Communication Environment

The Public Health Risk Communication guide is designed to address challenges in the communication environment. A communication environment (or context) refers to the circumstances that affect how a message is interpreted and understood. These challenges may affect your communication strategy:

- Scientific uncertainty
- Misaligned risk perception (i.e., when experts perceive risk differently than the public)
- Inaccurate health information
- Trust in sources



Assessing the Communication Context for Challenges

These contextual factors can be thought of as the background information for your risk communication—that is, the events, beliefs, and dynamics that occur in the broader public health environment and are largely outside of your control.

To gain this baseline understanding of your communication context, you can do the following:

- **Review data from multiple sources** to understand what has already been communicated about the health risk and what your audience thinks and feels about the health risk. These sources could include social media posts and comments, online surveys, focus groups, and town hall meetings.
- **Consult with subject matter experts** on where to identify new and historical data about the health risk. Subject matter experts may include community partners who know

and represent the aspects of your community. Also, identify experts and community partners that traditional media sources may turn to and prepare them with up to date and accurate information.

- **Use artificial intelligence tools with caution.** These tools can make analyzing large volumes of blogs, tweets, and news reports faster and easier, but they're not perfect and shouldn't replace human review.

By assessing the communication context, you can begin to identify which challenges may affect your communication strategy. The following sections describe four communication challenges identified by a team of researchers based on a review of recent risk communication literature and conversations with public health communicators.

Scientific Uncertainty

Risk situations almost always involve some level of uncertainty. This is especially true when a public health situation is new and evolving. Uncertainty plays a role in other situations, too. For example, uncertainty can arise when a public health emergency has subsided, but certain risks persist (like risks after a flood). Uncertainty is also common when the science is evolving.

When dealing with uncertainty, it is important to identify the source. Consider these questions: Is the uncertainty due to the absence of information or evolving information? Is it due to conflicting evidence or disagreement among experts about how to interpret the evidence? Knowing the source of the uncertainty can help you effectively communicate about it.

Misaligned Risk Perception

People process and use the same risk information in different ways. Some may interpret a risk as highly likely or very serious, while others will interpret the same risk as unlikely or insignificant. This inconsistent interpretation can make communicating about risk tricky and can lead to some people misunderstanding or misinterpreting their risk and when they should take actions to protect themselves and others.



Communication challenges also arise when people's perceptions of risk do not align with what the evidence suggests is the real or actual risk. This imbalance requires careful communication so that your audience can better understand the risk. Consider the following:

- When people perceive a threat as much **more likely or more serious** than it really is, emotions and outrage may run high and people may be stressed and scared. Managing their outrage and emotional reactions is important, as is communicating frequently—but with caution—so you avoid heightening people's fears and exaggerated perceptions of the threat.
- When people perceive a threat as **less likely or less serious** than it really is, they may dismiss your messages and not take protective measures with an appropriate sense of urgency.





Presence of Inaccurate Health Information

The spread of inaccurate health information is an important and growing public health concern. Often, rumors take root because people have questions or concerns they want addressed, and inaccurate information or misinterpretations can appear to address those needs. Other times, people or organizations intentionally spread false information to deceive and mislead audiences. It's important to look out for both with inaccurate health information.

You'll almost always find some level of inaccurate health information about a public health situation. The key is to watch for and address both inaccurate information and audience questions and concerns before rumors can start. Importantly, not all inaccurate health information needs to be addressed. Determine how prevalent or widespread the inaccuracy of health information is and whether it is influencing your audience's thoughts and behaviors.

Trust in Sources



Trust is an important factor that can influence people's confidence in the sources providing public health recommendations. If people don't trust the advice given to them, they might be less likely to follow it, which can affect their health. It's also important to consider whether your audience has had historical experiences that would lead to mistrust in your organization or in other public health agencies. How the public perceives an institution or organization affects trust.

These four challenges can make risk communication difficult. The Public Health Risk Communication guide describes five core risk communication principles to apply in messaging to address each of the four challenges.

Understanding and Applying Core Risk Communication Principles

A recent literature review of risk communication science confirms these five core principles are critical to public health risk communication:

- State what is known and still unknown.
- Use and explain numbers clearly.
- Make the risk personally relevant.
- Monitor and address inaccurate health information.
- Work with trusted partners and messengers.

Preview of Challenges and Principles

This table shows how each core principle aligns with the communication challenges.

		Risk Communication Principles				
		State what's known and unknown	Use and explain numbers clearly	Make the risk personally relevant	Monitor and address inaccurate health information	Work with trusted partners
Communication Challenges	 Scientific uncertainty	☒	☒	☐	☒	☐
	 Misaligned risk perceptions	☐	☒	☒	☐	☒
	 Inaccurate health information	☐	☐	☒	☒	☒
	 Trust in sources	☒	☐	☐	☒	☒

State What's Known and Still Unknown

Acknowledge uncertainty from the start. In situations where the science is incomplete or evolving, it's important to set the stage for changing guidance.

Tips

- Acknowledge uncertainty from the start and state when new information will be available. Tell your audience they'll get updates as new information becomes available and explain where they can find that information.
- Emphasize people's decision-making power in the face of uncertainty. When possible, recommend ways people can manage their worry and protect themselves and those they care about.
- Normalize the uncertainty. Explain what you have done or are doing to reduce the uncertainty.

Use and Explain Numbers Clearly

Most adults struggle with numeracy, and this can be compounded when people are experiencing stress or presented with new information. To help audiences understand your message, use both numbers and descriptive words to convey risk. Using descriptive information alone to convey risk (e.g. “low chance”) is an ineffective communication strategy. That’s because different people perceive their own risk differently. For one person, “low chance” may mean 1 in 100; for another person, the same phrase may mean 1 in 10.

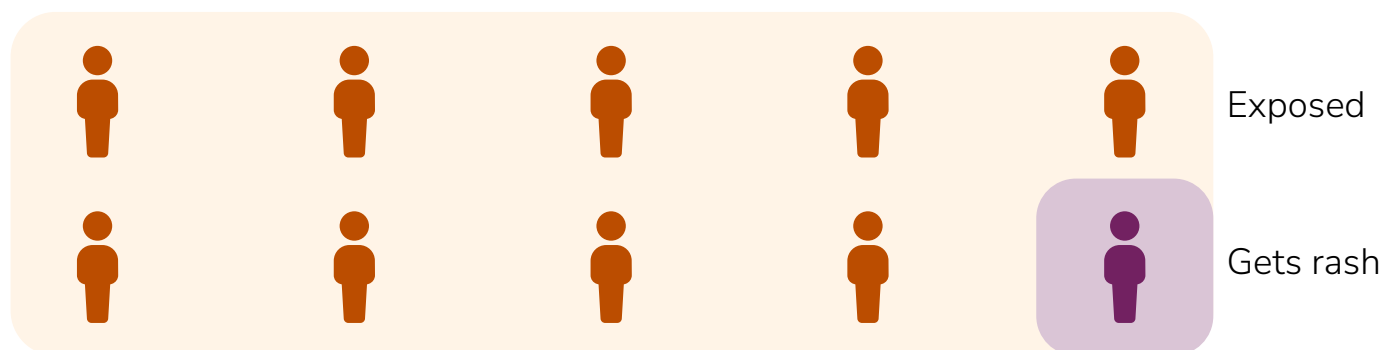
When people see descriptions about risk that don’t include numbers, they tend to think the threat is larger than it actually is. This is why it’s important to pair descriptive information with numeric information.

Tips

- **Use “natural frequencies” and consistent denominators.** People find it easier to grasp risk when they see numbers as natural frequencies, like “1 in 100 chance,” instead of percentages, like “1% chance.” When comparing two or more risks, use the same denominator to make the comparison clearer, like “1 in 100 chance” versus “2 in 100 chance.”
- **Consider presenting both perspectives or “frames.”** When the goal of your communication is to educate your audience so they can make an informed decision, consider using both a positive frame and negative frame when presenting numerical information. In other words, present both sides of the coin (e.g., 4 in 10 older adults did not receive a pneumococcal vaccine; this also means that 6 in 10 did). This is often a good strategy when uncertainty exists around the behavior about which you are communicating. If a goal is to persuade people to take action, presenting the negative frame is often the more effective approach.
- **Avoid using “relative risk” information.** Phrases like “doubles the risk” or “increases your chances by 50%” convey that a behavior is risky, but don’t tell the audience the actual or absolute risk. Presenting risk using relative terms can be misleading. To avoid this, present risk using absolute numbers and terms. For example, “This behavior increases your risk from 1 in 100 to 2 in 100” helps the reader understand that the risk is doubled but still very small. Presenting absolute risk information gives the audience a clearer understanding of the risk.
- **Put numbers in context.** Not everyone is comfortable thinking in terms of data. One way to overcome this barrier is to make the data speak to your audience by describing it in a more familiar context. When a number or concept is not what your audience may be accustomed to seeing, consider providing an equivalent example that is more familiar. For example, Apple’s CEO Steve Jobs once described the iPod’s 5GB storage capacity as “1,000 songs in your pocket.” Bridge the data gap by making the information relatable to everyday life.
- **Use visuals to supplement numeric risk information.** Supplementing your risk communication with visuals—like bar graphs or infographics—can increase your audience’s understanding of numerical information. Remember that visuals aren’t meant to replace written information about risk but rather to enhance it. When creating visuals, consider simple designs, which often do a better job of conveying risk than complex visuals.
- **Use color thoughtfully and ensure an adequate color contrast.** To ensure that those who see colors differently can understand your graphic, use techniques like “double encoding,” which uses two features (e.g., color and shape) to represent a single variable on your graphic. For example, a graphic that is double encoded might use a blue box for one variable and a yellow circle for another variable.

The following example demonstrates how to apply these tips, including using visuals, to a public health message:

10% of exposed people can get a blistering rash. This means out of 10 exposed people, 1 of those people will likely get the rash.



Make Risk Personally Relevant

If your audience doesn't relate to the information you're sharing, they may ignore it. Use personal narratives and conversational language to connect with your audience. Personal narratives or stories and a conversational tone can humanize the information being shared, bringing about emotional responses that deepen the audience's personal connection with the message.

Consider narratives that show the audience how someone like them resolved a conflict or used information to protect their health. Acknowledge and validate people's feelings and fears, and they may be more likely to listen.

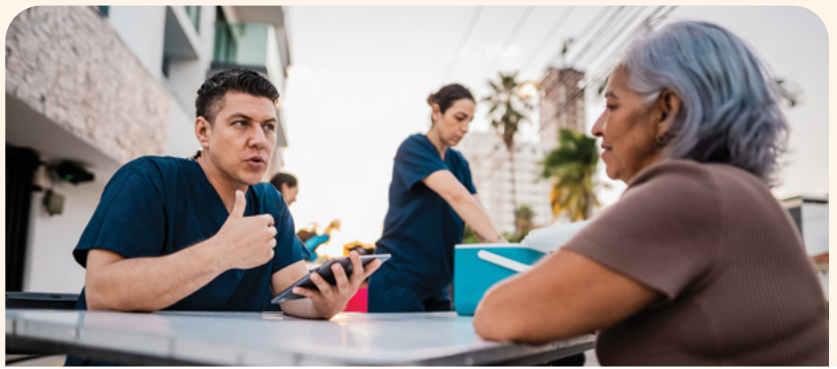
Tips

- **Express empathy.** When a message validates people's feelings and fears, they're more likely to pay attention to that message and act on it. In other words, if you help people feel heard and understood, they're more likely to listen.
- **Solicit feedback from key community members or people with lived experience.** Have community members who can relate to the public health concern you're addressing help shape and review the communication. People with lived experience can bring unique insights, and involving people in the community can help ensure your messaging is appropriate for different audiences.
- **Emphasize personal choice.** People are more likely to ignore or reject messages that feel threatening to them or tell them what to do. Even if your goal is to persuade your audience to take action, it's important to help them feel in control (for example, "decide what's right for you and your family"). However, this approach may not be suitable for all communities or public health situations, especially when the threat is large and certain.

Monitor and Address Inaccurate Health Information

False or inaccurate information about a public health threat can complicate communications or mislead people. As you detect audience's questions, concerns, and information voids, try to fill them. Filling information gaps as you detect them can help stop inaccurate health information from taking root.

When possible, prepare your audience for future encounters with inaccurate health information by helping them anticipate the possibility of misleading claims. You cannot always prevent audience exposure to inaccurate information, but you can help your audience by letting them know that problematic sources exist and that some information they can encounter is false. Importantly, not all false information needs to be addressed. Monitor and, when needed, address false information to prevent the spread of inaccurate health information.



Tips

- **Decide whether to address the inaccurate health information.** Not all inaccurate information or rumors can or should be addressed. Decide whether to take action based on the potential consequences of the rumor or inaccuracy of information and the prevalence of the inaccurate information, as well as the potential consequences of addressing or not addressing the inaccurate information.
- **Prepare your team to address and manage inaccurate information.** Think ahead—it's important to create a plan for managing inaccurate health information in advance. The plan should include strategies for identifying false and inaccurate information. Get out ahead of rumors by swiftly filling information gaps wherever possible. Consider what questions audiences might have and answer them.
- **Communicate with empathy.** People generally want accurate information, but they sometimes accept inaccurate health information while searching for accurate information. Rumors can take hold particularly in times of perceived danger and concern. Respond to your audience with empathy and caring.
- **Use the right communication channels.** Engage with community members to learn more about where they get their information (and potential inaccurate health information) on health threats. Use communication channels that your audience knows. Consider which channel would be most effective (i.e., through trusted partners or health care providers vs. social media) Correcting inaccurate health information isn't helpful if your corrections don't reach audiences affected by the inaccurate health information in the first place.

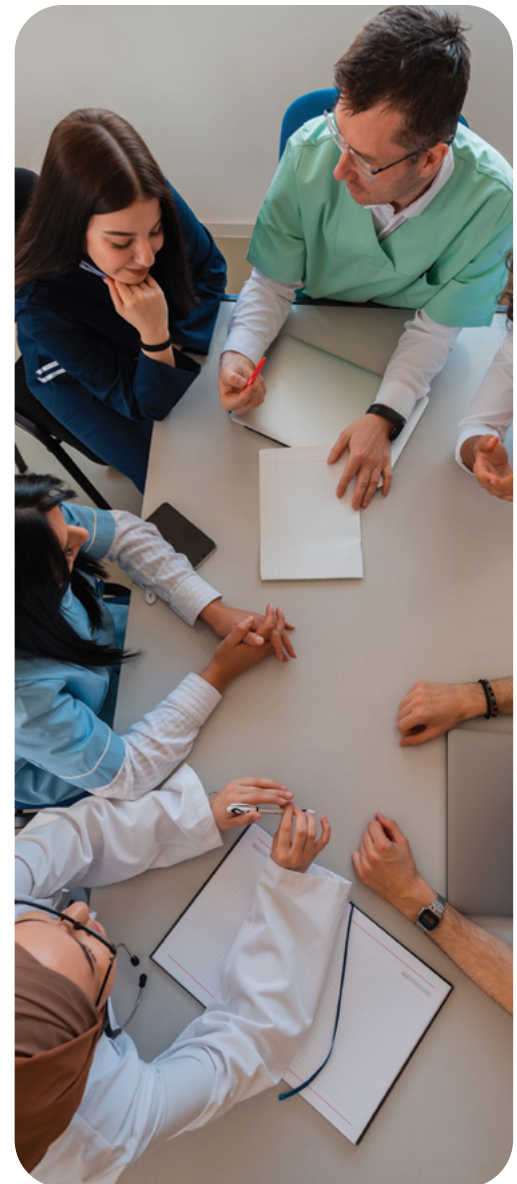
Work with Trusted Partners and Messengers

The person or organization that delivers the message can affect trust in the information and uptake of public health messaging. Working with trusted partners and messengers (e.g., health care providers, community members, representatives from local organizations) can help build and maintain trust.



Tips

- **Identify a pool of potential partners and messengers.** Trusted partners and messengers are people who community members regard as credible sources of information. Start by looking for people directly involved with their communities who already have a network or following. Consider demographics, social identities, and preferences when identifying trusted partners and messengers.
- **Work with partners to achieve agreement on goals and definition of audience.** Where is your audience on the journey from awareness to understanding to decision-making and action? Depending on your answer to these questions, you may look for **partners and messengers** who are best suited to introduce new ideas and knowledge (for example, a person with direct knowledge of or experience with an issue) or you may look at who your audience turns to for norm-setting and values affirmation (for example, someone who used to be a skeptic but had a personal experience that led them to change their beliefs).
- **Equip partners and messengers with information and tools.** Provide talking points and answers to frequently asked questions—along with the supporting studies and science—so that partners and messengers can communicate effectively about the issue in their own words.



Using the PHRC Guide in Message Construction

In an ideal world, we would apply all of the risk communication principles all the time, but with limited time and resources, this is not always realistic. The table below shows which principles to emphasize in your messages depending on which communication challenge you are facing.

By using the information in the PHRC guide and summary table, you can craft messages that emphasize the aligned core risk communication principles. The examples below illustrate this exercise and provide sample messaging. The core principles and additional message strategies are labeled and highlighted using a color-coded system to distinguish between different types of guidance.

		Risk Communication Principles				
		State what's known and unknown	Use and explain numbers clearly	Make the risk personally relevant	Monitor and address inaccurate health information	Work with trusted partners
Communication Challenges	Scientific uncertainty	☒	☒	☐	☒	☐
	Misaligned risk perceptions	☐	☒	☒	☐	☒
	Inaccurate health information	☐	☐	☒	☒	☒
	Trust in sources	☒	☐	☐	☒	☒

Messaging to Address Scientific Uncertainty

To address the challenge of scientific uncertainty, consider emphasizing the following principles.

- State what's known and unknown
- Use and explain numbers clearly
- Monitor and address inaccurate health information

Example:

In the last day, more than 12 people in Generic County have reported symptoms of food poisoning, such as diarrhea, stomach pain, nausea, vomiting, and fever **[state what's known]**. Five people have been hospitalized **[use and explain numbers clearly]**. Food poisoning can be very serious, especially for young children, older adults, and people with compromised immune systems. Based on what we know now, you should see a doctor if you have any severe symptoms of food poisoning. For more information about food poisoning symptoms, visit [url] **[monitor and address inaccurate health information]**.

Health officials are currently doing laboratory testing to understand what is making people sick and whether the cases are connected **[state what's unknown]**. We are also asking people what they ate to figure out the source of the illnesses. It is common for officials to need time to determine the cause of these illnesses **[normalize uncertainty]**.

We know that many of you may be concerned **[express empathy]**. We are working to get the information you need to keep you and your loved ones safe. As we learn about additional cases or the source of the illnesses, we'll give you updates. We're committed to sharing what we learn with you as quickly as possible. Visit [url] for updates.

Messaging to Address Misaligned Risk Perceptions

To address the challenge of misaligned risk perceptions, consider emphasizing the following principles:

- Use and explain numbers clearly
- Make the risk personally relevant
- Work with trusted partners and messengers



Example:

Studies by X show that drinking alcohol may increase your risk of X cancer **[work with trusted partners]**. Each year, about 20,000 U.S. adults die from X cancer. That's around the number of people in our whole county **[use and explain numbers clearly]**! Those at most risk are adults over the age of 55 who consume alcohol. The risk of alcohol-related cancers may also be influenced by genetic factors **[make the risk personally relevant]**. Talk with your doctor about your risk factors for alcohol-related cancer.



Messaging to Address Inaccurate Health Information

To address the challenge of inaccurate health information, consider emphasizing the following principles:

- Make the risk personally relevant
- Monitor and address inaccurate health information
- Work with trusted partners and messengers



Example:

Hi. This is Dr. Jane Doe with the Generic County Health Department. Thank you for inviting me to Talk HEALTH 105.7 Radio **[work with trusted partners]** to update you on the new animal flu X and to answer your questions **[monitor and address inaccurate health information]**. The health of Generic County residents is our highest priority.

We are working closely with X on this investigation. Health officials who have tracked animal flu for decades say that the risk to people remains low **[work with trusted partners]**. Only 2 people in the United States have tested positive for animal flu X.

Now I know this is a new flu virus, and some listeners may be concerned, that's understandable **[express empathy]**. Based on what we know today – the risk of most people getting animal flu X is very low. Right now, the animal flu X virus only spreads between infected animals, or from infected animals to humans. There have not been any confirmed cases of the virus spreading between humans **[monitor and address inaccurate health information]**. Public health officials are investigating every case to confirm the source and to limit the spread. We are also watching for any changes in how the virus behaves, because changes or mutations can happen with new viruses **[normalize uncertainty]**.

As we learn more information or if the risk to people changes, Generic County Health Department will inform the public by posting updates on our website. In the meantime, **to stay safe, avoid direct contact with wild animals and any animals (wild or domestic) that look sick or dead** **[make the risk personally relevant]**.

Messaging to Address Trust in Sources

To address the challenge of varying levels of trust in sources, consider emphasizing the following principles:

- State what is known and unknown
- Monitor and address inaccurate health information
- Work with trusted partners and messengers

Example:

We know many people are concerned about how exposure to Chemical X may affect your health **[monitor and address inaccurate health information]**. That's why we're working with the local Agency for Chemical Studies to investigate Chemical X and its impact on our health in our community **[work with trusted partners]**.

So far, we know Chemical X exposure (for example, from some food containers, cookware, and cleaning products) may be linked to:

- Higher cholesterol levels
- Weaker immune systems
- Changes in liver function

We need more research to better understand how Chemical X affects health. For example, we don't yet know what levels of Chemical X are safe and what levels can lead to health effects **[state what's known and unknown]**. Our partner, the Agency for Chemical Studies, is currently leading an integrated, multi-year toxicology study on the effects of Chemical X exposure, but answers to these complex questions will take time **[normalize uncertainty]**. We expect to have preliminary data by X.

Like you, we are eager to get answers and are committed to providing you with up-to-date information. Visit [\[link\]](#) for the latest information on our community progress on understanding Chemical X in our town.





Wrapping Up: Using PHRC in Your Work

This guide is based on the latest risk communication science literature, conversations with health communicators, and input from experts. Use the PHRC summary table any time you are communicating about an emerging, ongoing, or evolving public health risk, and leverage the PHRC guide as a resource when discussing message strategy with colleagues and leadership.



Risk Communication Principles					
	State what's known and unknown	Use and explain numbers clearly	Make the risk personally relevant	Monitor and address inaccurate health information	Work with trusted partners
Communication Challenges	Scientific uncertainty ☒	☒	☐	☒	☐
	Misaligned risk perceptions ☐	☒	☒	☐	☒
	Inaccurate health information ☐	☐	☒	☒	☒
	Trust in sources ☒	☐	☐	☒	☒

Additional Resources on Public Health Risk Communication

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Additional Resources on Public Health Risk Communication (continued)

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