Deliverable 8.3

Literature Review of Risk Communication Strategies for Future Pandemics

Date
14 May 2025

By
Dr. Alec Cali
University of Amsterdam & Amsterdam Institute for Global Health & Development

Funded by the European Union under grant agreement no. 101046314. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

1. Introduction

Clear and timely communication of risks and countermeasures is critical to an effective pandemic response. Outbreaks are marked by urgency, unpredictability, and the potential for far-reaching social and economic disruption. Regulators and public health authorities are often required to make rapid decisions with limited scientific evidence, while simultaneously communicating those decisions in ways that foster public understanding, trust, and cooperation. This is especially challenging in the face of common setbacks such as pathogen mutation, cross-border spread, or drug resistance—all of which can complicate containment and heighten public anxiety.

Adding to this complexity is the modern media landscape. In a 24-hour news cycle dominated by digital platforms, people are constantly exposed to a torrent of information—from traditional media to social networks and real-time alerts on mobile devices. As soon as an outbreak becomes known, the public demands answers: what is happening, who is at risk, and what actions should be taken? Especially when the threat is rare but potentially severe, media coverage can intensify quickly and remain sustained. In this environment, public health authorities must provide accurate, consistent, and accessible updates from the onset of an outbreak through to its resolution. Coordinated messaging—between regulators, communicators, and the media—is essential to ensure that technical information is translated into practical, culturally sensitive guidance that empowers communities and maintains public trust throughout the crisis.

To support the research on public preferences for pandemic preparedness regulation, a literature review was conducted into what is already known beyond existing public guidelines on risk communication for pandemics, and what factors may influence the success or failure of public communication in case of a pandemic. In the executive summary to this literature research, we outline 'Guidelines for Risk Communication Strategies for Future Pandemics' that incorporate both existing public communication strategies of the WHO,[1] OECD,[2,3] US CDC[4] and the EU[5,6] with the considerations we have found around the four factors that can affect the success of these strategies: cultural context, socioeconomic context, the clarity of the content and inclusivity.

---

[1] World Health Organization, *Communicating Risk in Public Health Emergencies: A WHO Guideline for Emergency Risk Communication (ERC) Policy and Practice* (Geneva: World Health Organization, 2017), https://iris.who.int/handle/10665/259807.
[2] OECD, *OECD Report on Public Communication: The Global Context and the Way Forward* (OECD, 2021), https://doi.org/10.1787/22f8031c-en.
[3] OECD, "Good Practice Principles for Public Communication Responses to Mis- and Disinformation," OECD Public Governance Policy Papers (OECD, 2022), https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/04/good-practice-principles-for-public-communication-responses-to-mis-and-disinformation_e047ea9c/6d141b44-en.pdf.
[4] Abbigail J. Trumpey, David Daigle, and Glen Nowak, "Communicating During an Outbreak or Public Health Investigation," in *Field Epidemiology Manual*, 2025, https://www.cdc.gov/field-epi-manual/php/chapters/communicating-investigation.html.
[5] ECDC, "Risk Communication and Community Engagement Approaches during the Monkeypox Outbreak in Europe, 2022" (European Centers for Disease Prevention and Control, 2022), https://www.ecdc.europa.eu/sites/default/files/documents/ECDC-WHO-Risk-communication-community-engagement-monkeypox-outbreak-Europe.pdf.
[6] ECDC, "Recommendations for Preparedness Planning for Public Health Threats: Learning from Recent Public Health Crises : March 2025." (LU: European Centers for Disease Prevention and Control, 2025), https://data.europa.eu/doi/10.2900/7416543.

2. Conceptualizing risk communication

Risk communication is defined by the World Health Organization as "the real-time exchange of information, advice and opinions between experts or officials and people who face a hazard or threat to their survival, health, or economic or social wellbeing."[7] While not examined exclusively in this report, risk and health communication strategies regarding vaccines are utilized as a framing tool for the following reasons. First, the COVID-19 pandemic demonstrated the importance of vaccination campaigns in comprehensive public health communication strategies. Second, vaccines often reflect the social, political, and economic contexts of a given population. Examining vaccine communication strategies allow us to illuminate how target populations relate biomedical facts to their social, economic, and political contexts.

There are two main streams of thought about which risk should be communicated, diverging on how risks should be calculated. The realist/biomedical approach identifies and calculates relevant risks based on objective factors like viral load, genetic factors, and other biomedical factors.[8] Most risk communication about vaccines adopt this approach, focusing heavily on biomedical factors to encourage vaccination. Research has found that presentation of biomedical information can lead to entrenchment of vaccine refusal or delay,[9] and that target audiences who accept biomedical communications either needed to believe the argument before being exposed to it or required translation into "real life terminology."[10] The social constructionist approach identifies social, political, and economic contexts as risk factors which can complicate or are independent of biomedical risks.[11] These factors go beyond race, gender, or sexuality to include class, immigration status, social beliefs about a disease, and gender roles (e.g., childcare).

While the WHO definition of risk communication includes space for "community engagement," placing the community on an equal level with the scientific community, literature finds that these guidelines remain relatively top-down.[12] Risk is universalized, with authority to determine it vested solely in the scientific community and health authorities, while "people who face a hazard or threat" are similarly flattened.[13] There is little space for dialogue between the identified community and the at-risk community, or to incorporate their feedback in future planning on a systematic level. Further, research (and experience) is increasingly finding that this top-down communication strategy is increasingly being met with resistance while strategies which inform or address socio-economic

[7] WHO Staff, "Risk Communication," Risk Communications, accessed October 14, 2024, https://www.who.int/emergencies/risk-communications.
[8] Elissa M. Abrams and Matthew Greenhawt, "Risk Communication During COVID-19," *The Journal of Allergy and Clinical Immunology: In Practice* 8, no. 6 (June 1, 2020): 1791–94, https://doi.org/10.1016/j.jaip.2020.04.012.
[9] C. Burton-Jeangros, M. Golay, and P. Sudre, "Compliance and resistance to child vaccination: a study among Swiss mothers," *Revue D'epidemiologie Et De Sante Publique* 53, no. 4 (September 2005): 341–50, https://doi.org/10.1016/s0398-7620(05)84616-4.
[10] Julie Brownlie and Alexandra Howson, "'Leaps of Faith' and MMR: An Empirical Study of Trust," *Sociology* 39, no. 2 (April 2005): 221–39, https://doi.org/10.1177/0038038505050536.
[11] Richard D. Smith, "Responding to Global Infectious Disease Outbreaks: Lessons from SARS on the Role of Risk Perception, Communication and Management," *Social Science & Medicine* 63, no. 12 (December 1, 2006): 3113–23, https://doi.org/10.1016/j.socscimed.2006.08.004.
[12] WHO Staff, "Risk Communication."
[13] Tom Sorell, *Scientism: Philosophy and the Infatuation with Science* (Routledge, 2013).

concerns are more successful.[14] This report uses four specific examples to explore how effective risk communication can be developed and implemented in preparation for future pandemics:

1. Cultural Context
2. Socioeconomic Context
3. Clear Communication Content
4. Inclusive Communication Style

3. *Cultural Context*

Culture is notoriously difficult to define but is best understood as a shared set of assumptions, ways of doing things, behavioural conventions, and values that influence a person's daily life.[15] In other words, it's the "common sense" explanations for daily life you grow up learning about. This can include language, gender norms, concepts of work-life balance, and ideas about disability and disease. For example, the initial response to the HIV/AIDS crisis was tainted by cultural ideas towards homosexuality and race, issues that continue to impact HIV treatment today.[16]

Research has shown that when communicating risks to patients who are "on the fence," doctor-patient conversations are the most effective,[17] highlighting the high level of trust patients place in their personal doctors when making medical decisions.[18] Further, this demonstrates the limits of current communication strategies, as many of these conversations often utilize complex risk calculation strategies that incorporate cultural risks like cultural values of diseases with little official guidance from health authorities on how to navigate them.[19]

In 1998, Andrew Wakefield published a now retracted article in The Lancet which claimed a link between the Measles-Mumps-Rubella (MMR) vaccine, inflammatory bowel disease, and Autism Spectrum Disorder (ASD). While this paper was thoroughly debunked almost immediately, its claims gave validation to a growing vaccine hesitancy movement by providing scientific legitimacy, if only temporary.[20] Though his paper has been retracted and numerous papers have been published demonstrating the safety of vaccines, on aggregate or their ingredients, this claim has never quite

[14] Susan Goldstein, Noni E. MacDonald, and Sherine Guirguis, "Health Communication and Vaccine Hesitancy," *Vaccine*, WHO Recommendations Regarding Vaccine Hesitancy, 33, no. 34 (August 14, 2015): 4212–14, https://doi.org/10.1016/j.vaccine.2015.04.042.
[15] Stuart Hall, "Culture, the Media, and the Ideological 'Effect,'" in *Essential Essays, Volume 1: Foundations of Cultural Studies*, ed. David Morley, Stuart Hall, Selected Writings (Durham: Duke University Press, 2019).
[16] Emily A. Arnold, Gregory M. Rebchook, and Susan M. Kegeles, "'Triply Cursed': Racism, Homophobia and HIV-Related Stigma Are Barriers to Regular HIV Testing, Treatment Adherence and Disclosure among Young Black Gay Men," *Culture, Health & Sexuality* 16, no. 6 (July 3, 2014): 710–22, https://doi.org/10.1080/13691058.2014.905706.
[17] Julie Leask, "Target the Fence-Sitters," *Nature* 473, no. 7348 (May 2011): 443–45, https://doi.org/10.1038/473443a.
[18] Laura M. Bogart et al., "COVID-19 Related Medical Mistrust, Health Impacts, and Potential Vaccine Hesitancy Among Black Americans Living With HIV," *JAIDS Journal of Acquired Immune Deficiency Syndromes* 86, no. 2 (February 1, 2021): 200, https://doi.org/10.1097/QAI.0000000000002570.
[19] Jennifer A. Reich, *Calling the Shots: Why Parents Reject Vaccines* (New York: New York University Press, 2016).
[20] Frank DeStefano and Tom T. Shimabukuro, "The MMR Vaccine and Autism," *Annual Review of Virology* 6, no. 1 (2019): 585–600, https://doi.org/10.1146/annurev-virology-092818-015515.

lost its power.[21] This claim took serious hold within in the Somali diaspora for several reasons. Research on Somali communities has found that the lack of a native word for "autism" in Somali compounds pre-existing cultural stigmas against developmental disorders and "mental illness," increasing vaccine distrust through the stigmatization of ASD, rather than the vaccines themselves.[22] Due to the influence of cultural perspectives on the understanding of autism, the risk of ASD is often perceived to be higher than the risk of the disease being vaccinated against by some in this community. A similar issue has been noted in non-immigrant American communities, where parents believe the side effects of vaccines post greater risks than the disease themselves.[23] Adding to the stigma of ASD, the effort of navigating the health system post-diagnosis is often part of parents' risk calculation.[24] This is especially important for racial/ethnic minority or immigrant groups, who are more likely to face access barriers like language, racial discrimination, and lower cultural capital that further exacerbate vaccine distrust and the health system itself.

Successful vaccination campaigns in Somali diaspora communities have tailored risk assessments to community needs. Risk communication campaigns in Somali diaspora have utilized a dual strategy. In the short term, trusted community figures, especially doctors, are used to delink the MMR vaccine from autism and destigmatize ASD, while simultaneously permitting unconvinced parents to delay vaccination to an age they are more comfortable with.[25] This approach builds trust between parents and health institutions, provides education on how autism develops and vaccine side effects work, and provides the opportunity for parents to alter their risk calculation in a non-confrontational manner.[26] Efforts to destigmatize ASD through community engagement and to reduce access barriers to health systems and social services will alter the risk calculation of patients over the long term. Usage of translated materials or by mentioning the availability of translators in communications can leverage preexisting services while building trust between patients and the health system.

4. *Socioeconomic Context*

Socioeconomic status (SES) can be most easily understood as the intersection of your income, educational attainment, and access to services to meet your basic needs, such as medical care. SES is meant to reflect the role resource access has on health outcomes.[27] Recent research has shown

[21] Lidia V. Gabis et al., "The Myth of Vaccination and Autism Spectrum," *European Journal of Paediatric Neurology* 36 (January 1, 2022): 151–58, https://doi.org/10.1016/j.ejpn.2021.12.011.
[22] Claire Laurier Decoteau, *The Western Disease: Contesting Autism in the Somali Diaspora* (Chicago (Ill.): The University of Chicago press, 2021).
[23] Jennifer A. Reich, "Vaccine Refusal and Pharmaceutical Acquiescence: Parental Control and Ambivalence in Managing Children's Health," *American Sociological Review* 85, no. 1 (February 2020): 106–27, https://doi.org/10.1177/0003122419899604.
[24] Catherine Linney et al., "'Crazy Person Is Crazy Person. It Doesn't Differentiate': An Exploration into Somali Views of Mental Health and Access to Healthcare in an Established UK Somali Community," *International Journal for Equity in Health* 19, no. 1 (October 27, 2020): 190, https://doi.org/10.1186/s12939-020-01295-0.
[25] Sibylle Herzig van Wees and Samira Dini, "The Silent Shot: An Analysis of the Origin, Sustenance and Implications of the MMR Vaccine – Autism Rumour in the Somali Diaspora in Sweden and Beyond," *Global Public Health* 18, no. 1 (January 2, 2023): 2257771, https://doi.org/10.1080/17441692.2023.2257771.
[26] Herzig van Wees and Dini.
[27] Nancy E. Adler and Joan M. Ostrove, "Socioeconomic Status and Health: What We Know and What We Don't," *Annals of the New York Academy of Sciences* 896, no. 1 (1999): 3–15, https://doi.org/10.1111/j.1749-6632.1999.tb08101.x.

SES to be a stronger predictor of health outcomes than biological factors, including genetic makeup,[28] while other work has linked SES with cultural norms.[29]

Like cultural norms, the socioeconomic context of a patient acts as a prism, altering how risk assessments are conducted by patients. This alteration can be impacted by things like cost of healthcare/vaccination,[30] availability of paid sick leave,[31] availability of childcare,[32] and how structural racism impacts access to care.[33] This is especially important in Low-and-Middle Income Nations, which often have less robust social service systems that would cushion the shock of public health emergencies. For example, while Nigeria's COVID-19 response was modelled after its highly successful Ebola response, a large portion of the population's reliance on day labor for income and out-of-pocket payment for care, altered their perception of the risk of COVID-19 compared to the risk of lost wages, making lockdown a relatively ineffective policy.[34] Even in nations with well-funded social supports, that cost burden of long-term care is often placed on the family and can alter how long-term disability is viewed.[35]

In both cases, abrupt health care costs or the prospect of long-term care can compound cultural stigmas of disease by creating economic stress for individuals and families. Research on American mothers has found that the incorporation of economic loss alters the risk calculation of a disease, medical treatment or side effects to sometimes prefer less harmful diseases to the riskier perceived side effects of long-term disabilities.[36] Conversely, when American public health officials began mandating childhood vaccines in the 1970s, support was garnered in part by emphasizing the ability of vaccines to prevent direct economic loss to the family unit by preventing children from getting sick (i.e., preventing the mother from taking an unpaid sick day).[37]

---

[28] Garth N. Graham, "Why Your ZIP Code Matters More Than Your Genetic Code: Promoting Healthy Outcomes from Mother to Child," *Breastfeeding Medicine* 11, no. 8 (October 2016): 396–97, https://doi.org/10.1089/bfm.2016.0113.
[29] Katie Attwell, Samantha Meyer, and Paul Ward, "The Social Basis of Vaccine Questioning and Refusal: A Qualitative Study Employing Bourdieu's Concepts of 'Capitals' and 'Habitus,'" *International Journal of Environmental Research and Public Health* 15, no. 5 (May 22, 2018): 1044, https://doi.org/10.3390/ijerph15051044.
[30] Cornelia Betsch et al., "Beyond Confidence: Development of a Measure Assessing the 5C Psychological Antecedents of Vaccination," *PLOS ONE* 13, no. 12 (December 7, 2018): e0208601, https://doi.org/10.1371/journal.pone.0208601.
[31] Stefan Pichler, Katherine Wen, and Nicolas R. Ziebarth, "COVID-19 Emergency Sick Leave Has Helped Flatten The Curve In The United States," *Health Affairs* 39, no. 12 (December 2020): 2197–2204, https://doi.org/10.1377/hlthaff.2020.00863.
[32] Elena Conis, *Vaccine Nation: America's Changing Relationship with Immunization*, 2016.
[33] Toni Z. Madorsky et al., "Vaccine Distrust: A Predictable Response to Structural Racism and an Inadequate Public Health Infrastructure," *American Journal of Public Health* 111, no. S3 (October 2021): S185–88, https://doi.org/10.2105/AJPH.2021.306411.
[34] Ezekiel Damilare Jacobs and Malachy Ifeanyi Okeke, "A Critical Evaluation of Nigeria's Response to the First Wave of COVID-19," *Bulletin of the National Research Centre* 46, no. 1 (2022): 44, https://doi.org/10.1186/s42269-022-00729-9.
[35] Nicky Rogge and Juliette Janssen, "The Economic Costs of Autism Spectrum Disorder: A Literature Review," *Journal of Autism and Developmental Disorders* 49, no. 7 (July 1, 2019): 2873–2900, https://doi.org/10.1007/s10803-019-04014-z.
[36] Reich, *Calling the Shots*.
[37] Conis, *Vaccine Nation*.

Successful risk communication strategies address real fears of economic loss caused by a disease, side effects, or medical treatment. Further, these strategies effectively communicate how services can be obtained with little travel and minimal disruption to employment, childcare, school, or other aspects of daily life. If significant cost is required (i.e., traveling a distance, or taking time from work), this should be directly addressed and explained why these costs are overcome by the tangible or intangible benefits of the treatment, vaccination, precaution, etc. and/or whether and how the government authorities can mitigate these costs (e.g. by providing short-term childcare). Care should be made not to overemphasize disease risks compared to immediate financial costs among communities who have high poverty rates, housing insecurity, etc.

5. *Clear Communication Content*

Clear and open communication strategies utilize unified talking points between health authorities, health practitioners, and medicine producers, quick responses to issues impacting/concerning the public, and transparent discussion of "hard truths." These strategies acknowledge the real or perceived risks held by people and relate them to the existing science in a tangible way.[38] Such a reality of perceived risks can be exacerbated by the "infodemic" we currently live in, where an overwhelming amount of information available to us makes it difficult to discern trustworthy sources from misinformation.[39]

Patients benefit from clear and open communication in two ways. First, when ununified, the infodemic caused by numerous jurisdictions and corporate/non-profit entities that make up the health system can lead to numerous misaligned messages, causing confusion, erode trust, and increase ability for patients to choose a message that suits their preexisting ideas.[40] Second, admitting the limitations of the current knowledge about the safety or efficacy of a vaccine, and the possible complications of a vaccine or mitigation strategy builds trust and narrows the perceived gap between scientists and the public.[41] As we saw with COVID-19, the proliferation of information from various sources saturated patients with information, making it difficult to discern what is the most accurate and up-to-date.[42] Additionally, an infodemic provides the opportunity for groups making harmful recommendations to present themselves as equally valid voices among the chorus. For example, during the 2016 dengue vaccine roll-out (and subsequent recall) in the Philippines, the split in messaging between the dengue vaccine manufacturer and Philippine health authorities provided fodder for misinformation and anti-vaccine discourses. This prevented a singular message

[38] Michael Bang Petersen et al., "Transparent Communication about Negative Features of COVID-19 Vaccines Decreases Acceptance but Increases Trust," *Proceedings of the National Academy of Sciences* 118, no. 29 (July 20, 2021): e2024597118, https://doi.org/10.1073/pnas.2024597118.
[39] John Zarocostas, "How to Fight an Infodemic," *The Lancet* 395, no. 10225 (February 29, 2020): 676, https://doi.org/10.1016/S0140-6736(20)30461-X.
[40] Zarocostas.
[41] Michael Bang Petersen, "COVID Lesson: Trust the Public with Hard Truths," *Nature* 598, no. 7880 (October 12, 2021): 237–237, https://doi.org/10.1038/d41586-021-02758-2.
[42] P. Christopher Palmedo et al., "Exploring Distrust in the Wait and See: Lessons for Vaccine Communication," *American Behavioral Scientist*, December 28, 2021, 00027642211062865, https://doi.org/10.1177/00027642211062865.

from being put forward which could have instilled confidence in the vaccine and health authorities by engaging with patient concerns.[43]

6. *Inclusive Communication Style*

The top-down tendency of mainstream risk communication has often resulted in criticism of standard medical practices negatively, regardless of the criticism's validity.[44] Often research presents science as factual, unbiased, and apolitical, with patients challenging communication narratives as politically motivated,[45] misinformed,[46] or otherwise biased.[47] This has led to many risk and health communication programs to utilize exclusive communication styles which, while informative, present patients simply needing to be explained "how things really work" rather than validating or directly addressing their concerns.[48] Research has found, however, that most patients who refuse a vaccine or treatment are well-educated about the medicine in question, including its development process, and the institutions responsible for its regulation/approval.[49] Often these patients found the top-down communication condescending and dismissive of their concerns.

Most recently, a nationally representative survey of the French population conducted in 2023 has found that about two-thirds trusted "science" and physicians to provide them correct information regarding mRNA vaccines, but not the institutions responsible for the COIVD-19 vaccine implementation and development in France like health authorities, pharmaceutical companies, and government actors.[50] This reflects research which has shown that a comparatively small number of patients in France refuse vaccines or medical treatments for political reasons.[51] Similarly, research has shown patients who are more likely to be "on the fence" about vaccination or a medical treatment, if they have had a negative experience with the health system,[52] including those who

[43] Manuel M. Dayrit, Ronald U. Mendoza, and Sheena A. Valenzuela, "The Importance of Effective Risk Communication and Transparency: Lessons from the Dengue Vaccine Controversy in the Philippines," *Journal of Public Health Policy* 41, no. 3 (September 1, 2020): 252–67, https://doi.org/10.1057/s41271-020-00232-3.
[44] Patrick Peretti-Watel, Pierre Verger, and Jeremy K. Ward, "To Understand mRNA Vaccine Hesitancy, Stop Calling the Public Anti-Science," *Nature Medicine* 30, no. 4 (April 2024): 923–24, https://doi.org/10.1038/s41591-024-02816-y.
[45] Bert Baumgaertner, Juliet E. Carlisle, and Florian Justwan, "The Influence of Political Ideology and Trust on Willingness to Vaccinate," *PLOS ONE* 13, no. 1 (January 25, 2018): e0191728, https://doi.org/10.1371/journal.pone.0191728.
[46] Brandi Collins-Dexter, "Canaries in the Coalmine: COVID-19 Misinformation and Black Communities" (Technology and Social Change Research Project, June 9, 2020), https://doi.org/10.37016/TASC-2020-01.
[47] Peretti-Watel, Verger, and Ward, "To Understand mRNA Vaccine Hesitancy, Stop Calling the Public Anti-Science."
[48] Palmedo et al., "Exploring Distrust in the Wait and See."
[49] Burton-Jeangros, Golay, and Sudre, "[Compliance and resistance to child vaccination."
[50] Patrick Peretti-Watel, Pierre Verger, and Jeremy K. Ward, "ICOVAC- Wave 1 Survey : A Look Back at the Health Crisis and Vaccination against Covid-19" (NRS-INSERM-ORS-PACA, 2023).
[51] Matt Motta, "Republicans, Not Democrats, Are More Likely to Endorse Anti-Vaccine Misinformation," *American Politics Research* 49, no. 5 (September 1, 2021): 428–38, https://doi.org/10.1177/1532673X211022639.
[52] Khai Hoan Tram et al., "Deliberation, Dissent, and Distrust: Understanding Distinct Drivers of Coronavirus Disease 2019 Vaccine Hesitancy in the United States," *Clinical Infectious Diseases* 74, no. 8 (April 15, 2022): 1429–41, https://doi.org/10.1093/cid/ciab633.

have experienced gendered discrimination,[53] racial discrimination,[54] and/or access barriers (e.g., lack of translation or cost).[55]

Inclusive communication style is important when presenting health communication. Clear and unified health communications can still have an exclusionary or top-down style or tone, which make target audiences less receptive to a message.[56] Inclusive communication improves trust and acceptance by adopting a dialogue-like style that presents positive and negative information in concrete terms of daily life that are important to the target audience.[57] Research has similarly found that "indirect," relational education has a greater impact on vaccine uptake than "direct," descriptive education.[58] In other words, it is better to *show* a patient how a vaccine will impact them by discussing health impacts (good and bad), and a reduction in sick days rather than *telling* them that vaccines are inherently good because they increase herd immunity and prevent serious illness. In a non-scientific example, when Apple first debuted the iPod, they advertised how many songs it could fit rather than how many GBs it had. When childhood vaccine mandates were systematically introduced in the United States, public health authorities and politicians won public support by tapping into the growing number of women entering the workforce. One of the primary campaigns to build support was linking childhood vaccination to the prevention of unpaid sick leave.[59] In this example, not only are the benefits and drawbacks made more real, but vaccines are also presented with the same information in a way that validate daily issues people face.

Finally, a powerful tool in creating inclusive health communication is leveraging doctors and community leaders who interact with patients every day, know their concerns, have their trust, and know how the scientific community can demonstrate support. For this reason, they can facilitate dialogue, provide space to receive and respond to feedback, and be a bridge between health authorities, government institutions, international institutions, and pharmaceutical companies. Importantly, the value of doctors and community leaders comes from the feeling patients get that their opinion is being herd and valued.[60] This provides the opportunity to learn about the daily concerns of target groups, not only to incorporate into risk and health communication strategies but to build a stronger connection with the public over the long term. It is important for the scientific community to demonstrate a real interest in establishing active dialogue with communities, which incorporates their feedback, over the long-term to build trust with the public and prevent distrust against doctors and community leaders forming.[61] To establish a long-term strategy of inclusive

[53] Ève Dubé et al., "Vaccine Hesitancy, Acceptance, and Anti-Vaccination: Trends and Future Prospects for Public Health," *Annual Review of Public Health* 42, no. Volume 42, 2021 (April 1, 2021): 175–91, https://doi.org/10.1146/annurev-publhealth-090419-102240.
[54] Bogart et al., "COVID-19 Related Medical Mistrust, Health Impacts, and Potential Vaccine Hesitancy Among Black Americans Living With HIV."
[55] Herzig van Wees and Dini, "The Silent Shot."
[56] Jeremy K. Ward et al., "Context Matters: How to Research Vaccine Attitudes and Uptake after the COVID-19 Crisis," *Human Vaccines & Immunotherapeutics* 20, no. 1 (December 31, 2024): 2367268, https://doi.org/10.1080/21645515.2024.2367268.
[57] Palmedo et al., "Exploring Distrust in the Wait and See."
[58] Mark R. Miller, "Language Choice about COVID-19 Vaccines Can Save Lives," *Journal of Communication in Healthcare* 14, no. 2 (April 3, 2021): 99–101, https://doi.org/10.1080/17538068.2021.1892285.
[59] Conis, *Vaccine Nation*.
[60] Leask, "Target the Fence-Sitters."
[61] Madorsky et al., "Vaccine Distrust."

health communication, health authorities should utilize hotlines, call centers, and other forms of communication that permit the public to provide direct feedback to the relevant health agency and receive information that addresses their concerns.[62]

7. Conclusion

This literature review highlights the multifaceted nature of risk communication in the context of pandemic preparedness and response. The literature suggests that successful communication strategies cannot rely solely on biomedical framing or top-down dissemination models. Instead, effective risk communication requires a multidimensional approach that considers cultural beliefs, socioeconomic conditions, and the relational dynamics between institutions and the public.

From a regulatory perspective, this raises important considerations for how communication practices are institutionalized and coordinated. Risk communication does not operate in isolation but is shaped by broader governance arrangements, including how regulatory agencies define and manage scientific uncertainty, engage with stakeholders, and coordinate inter-institutional messaging. The literature reviewed suggests that the legitimacy and effectiveness of public health communication are contingent not only on its content but also on the perceived responsiveness and inclusivity of the institutions behind it.

Moreover, the reviewed studies point to a tension between standardized, centralised communication frameworks and the need for localized, adaptive messaging strategies that reflect diverse social realities. This has implications for how regulatory authorities structure their communication mandates, particularly in relation to stakeholder engagement, coordination with local actors, and integration of feedback mechanisms. The role of regulators thus extends beyond approval and enforcement to include facilitating conditions under which communication can be contextually meaningful and socially credible.

Finally, the literature points to a growing recognition of communication as a governance function that intersects with issues of trust, accountability, and transparency. As such, further research is warranted into how regulatory institutions can support communicative practices that are both technically robust and socially responsive. Understanding the institutional and procedural dimensions of risk communication – particularly in high-stakes, high-uncertainty contexts – remains a key area for future inquiry in both public health and regulatory studies.

[62] Maryam Eslami Jahromi, Haleh Ayatollahi, and Ali Ebrazeh, "Covid-19 Hotlines, Helplines and Call Centers: A Systematic Review of Characteristics, Challenges and Lessons Learned," *BMC Public Health* 24, no. 1 (April 28, 2024): 1191, https://doi.org/10.1186/s12889-024-18702-8.