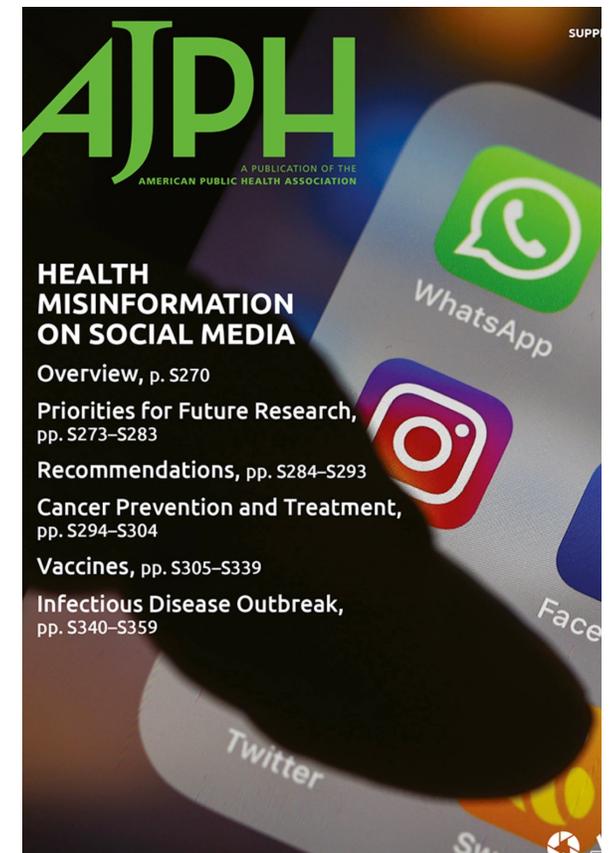


Health Misinformation on Social Media: Current Evidence and Remaining Gaps

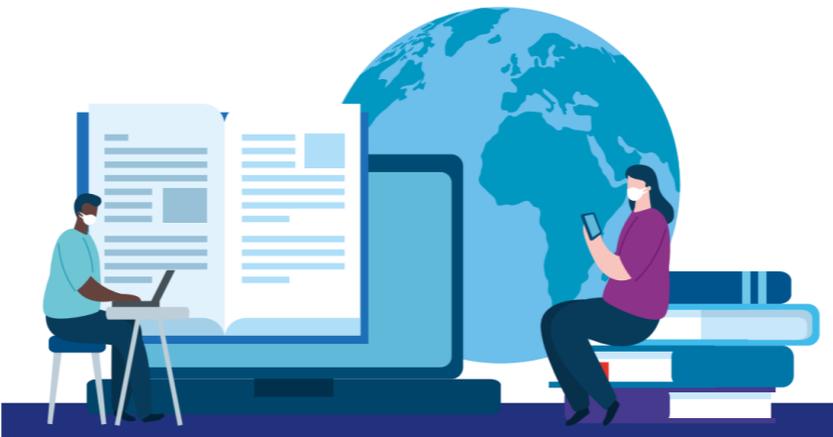
Wen-Ying Sylvia Chou, PhD, MPH
National Cancer Institute

SRP Risk e-Learning Webinar Series
October 8, 2021



Agenda

1. Current research on health misinformation
2. Misinformation during the COVID-19 pandemic
3. A multi-level, multi-sector approach to addressing misinformation
4. Considerations for environmental risk communication



Current research on health misinformation

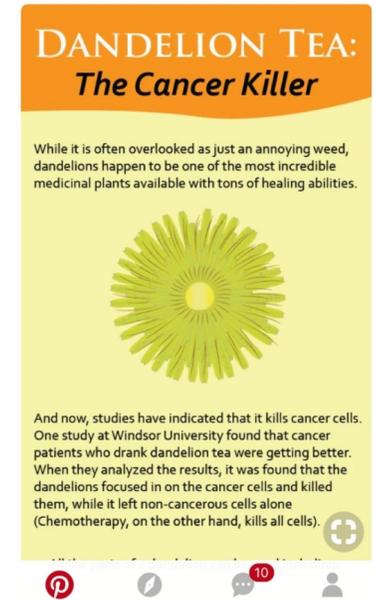


The Social Media Environment

- Over 72% of American adults reported using social media in 2021
 - 15 years ago, only ~5% of Americans used social media
 - Prevalent across gender, racial/ethnic groups, and education and income levels, and older adults' use continues to increase
 - Many rely on social media for news and information
 - Using SM for news is associated with having less accurate knowledge about important topics (e.g., COVID-19)
- Platform algorithms suggest content and accounts based on user data and engagement behaviors
 - To increase engagement, such practices may [lead users to more extreme content](#), or reduce the likelihood of seeing opposing viewpoints
- Visual content (e.g., Pinterest and Instagram) increasingly prominent

“Misinfodemics” online: A perfect storm?

- Ubiquitous health content online
- Falsehoods spread faster than truths and garner more engagement, whereas credible scientific information is more complex, nuanced, evolving, and uncertain
- Growing mistrust in science, experts, government, and institutions
- Ongoing disinformation campaigns erode a sense of consensus and drive divisions
- Emotion, identity, and ideology at play



Ditch the Toxic Sunscreen; Use Coconut Oil Instead

See More

by haveseen



Research on health misinformation

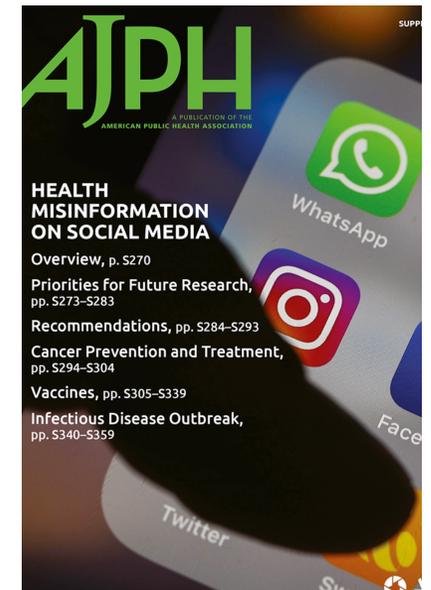
Definition: *“A health-related claim of fact that is false based on current scientific consensus”*

(Chou et al. 2020 *AJPH*)

In addition:

- **Intent** of misinformation sharing
- **Impact of exposure** (e.g., are people being harmed by misinformation?)
- **Medium & format** of communication
- The **broader socio-cultural context**

<https://ajph.aphapublications.org/toc/ajph/110/S3>

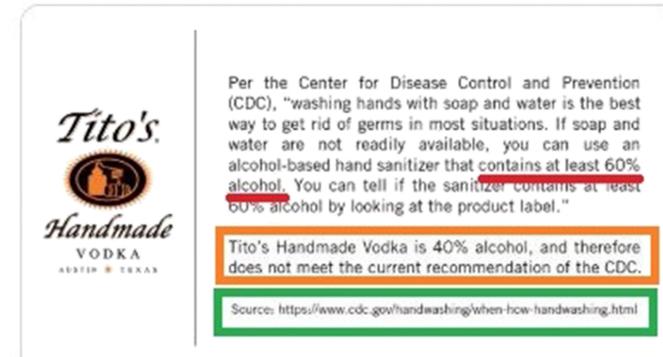
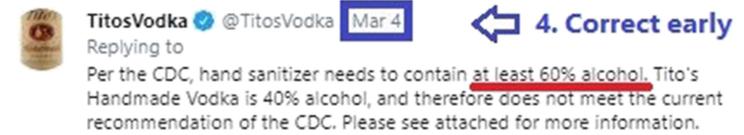


What have we learned about health misinformation?

- False claims are **not easy to identify** (nuanced, embedded in videos or images), though technologies and analytic approaches are maturing
- In the case of vaccines, a **small group of actors are responsible** for the majority of misinformation being spread online [automated accounts & human users]
- **Repeated exposure over time** increases misinformation impact
- Information **sources** matter: healthcare professionals remain highly trusted
- There are observed **differences** in misinformation sharing **across SM platforms** due to different user behaviors and platform policies and engagement features
- Certain characteristics may make individuals **more susceptible** to misinformation (e.g., lower educational attainment/literacy, distrust)

Mitigating the harms of misinformation: Promising approaches

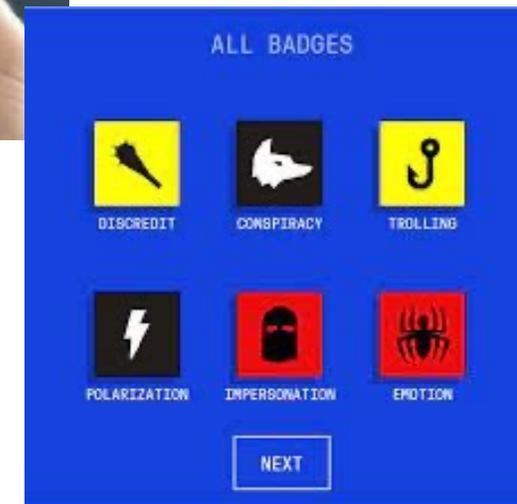
- **Corrections do work – to an extent**
 - Can *reduce* reliance in misinformation, but may have “continued influence effect”
 - May not be as effective for polarizing issues or entrenched views
 - Techniques to increase the effectiveness of corrections
- **“Pre-bunking”** (proactively inoculate users against misinformation) may effectively reduce vulnerability
 - Warning of potential misinformation and exposing people to weakened examples of misleading arguments
 - Targeting specific pieces of misinformation or general techniques of manipulation (e.g., flawed argumentation) are both effective, but the latter is more scalable
 - An online game teaches common manipulation techniques. Data shows users’ improved ability to identify and resist misinformation across education, age, political ideology, and cognitive styles (Roozenbeek & van der Linden 2019)



3. Repeat corrections

2. Offer an alternative explanation

1. Include a credible source



Research priorities for addressing misinformation

Improve Surveillance



- Information poverty/communities most at risk
- Real-time monitoring of rumors
- Understudied platforms; non-textual content, implied misinformation
- Dynamics of misinformation sharing (*the misinformation lifecycle*)
- Movement across platforms (*misinformation ecosystem*)

Focus on Consequences



- Health behaviors/health outcomes
- Attitudes (e.g., apathy, confusion, mistrust)
- Patient-provider relationships
- Decision-making

Understand and respond to psychological drivers



- Cognitive biases
- Emotions (e.g., anger)
- Values, ideology, and identity
- Trust and trustworthiness

Innovative Intervention Development



- When and how to respond
- Penetrate information silos
- Health/science/media literacy initiatives
- Multi-sector policies on content moderation
- Moving beyond fact-checking (e.g., inoculation)

Misinformation during the COVID-19 pandemic

COVID-19 Misinformation: Examples

- Disease Characteristics

- Denial of pandemic (“overblown”)
- Downplay susceptibility/severity

- Origins and spread of virus

- Conspiracy theories
- Xenophobic/stigmatizing sentiment

- Policy responses

- Casting doubt on motives behind or effectiveness of mask and vaccination policies
- Vilifying scientists and health professionals

- Individual behaviors

- Casting doubt on or opposing mask wearing or social distancing practices

- Unproven treatments

- Unproven drugs or dangerous products

- COVID-19 vaccine

- Vaccine development process, risks, safety, efficacy, motives
- False/misleading legal arguments against vaccine mandates
- Continued politicization

Practical Guidance



- Trusted sources
- Social norms
- Nudges
- Unity
- No “silver bullet” but multi-pronged approach to pandemic control
- Positive emotions
- Infographics, videos, narratives

COVID-19 Vaccination Communication

Applying Behavioral and Social Science to Address Vaccine Hesitancy and Foster Vaccine Confidence

Wen-Ying Sylvia Chou, Ph.D., M.P.H.,¹ Caitlin E. Burgdon, M.P.H.,¹ Anna Gaysynsky, M.P.H.,¹ Christine M. Hunter, Ph.D.,¹ and David Asch, M.D., M.P.H.,¹

Three Communication Considerations



Do's	Don'ts
------	--------

message to the information needs and the intended audience.
 positive emotions (hope, caring).
 vaccination the easy choice.
 engaging formats: simple graphics, personal narratives.
 accessible language and ensure sensitive translation into other languages.
 vaccination as a social norm.
 people in making informed decisions about vaccination.
 ensure unity and message consistency across the political spectrum.
 use diverse platforms by partnering with traditional and social media outlets.

- ✗ Use a “one size fits all” approach.
- ✗ Incite negative emotions, such as fear and shame.
- ✗ Use judgmental language that may alienate some people.
- ✗ Use directive language to suggest vaccination is a requirement or mandate.
- ✗ Overwhelm with complicated statistics and lengthy scientific explanations.
- ✗ Set unrealistic expectations about vaccine availability.
- ✗ Exaggerate the vaccine's ability to instantly end the pandemic.
- ✗ Dismiss widely shared concerns about side effects or adverse outcomes.
- ✗ Repeat the same message in the same way, inducing message fatigue.
- ✗ Politicize COVID-19 vaccination.

✓ Monitor misinformation and respond when appropriate.

https://obssr.od.nih.gov/wp-content/uploads/2020/12/OBSSR_VaccineWhitePaper_FINAL_508.pdf

Not all communication efforts are following these recommendations

- “Don’t incite negative emotions such as fear and shame”
- For example, an advertising agency created an ad campaign on behalf of a non-existent funeral home
 - Landing page: “Get vaccinated now. If not, see you soon” and provided a link to local vaccine provider
 - Provocative ad quickly went viral
- What outcomes can be expected?
could it backfire?



Challenges to health communication during an evolving pandemic

- **Changing** virus, variants, guidelines, behavioral **recommendations**
- **Booster** shots and **children** under 12
- **Variability** in vaccination rates and **vulnerable localities**
- **Societal divisions** and **fragmented media environment** with **many messengers and messages**
- **Continued politicization** of pandemic responses including masks and vaccine mandates
- Ongoing **disinformation campaigns**
- Shifting from providing **information**, to **persuasion, incentives, and mandates**

Role of Social Media in COVID communication – the Good, Bad, & Ugly

- Platforms' content moderation efforts constantly change and have mixed results
- Online influencers
 - Links between anti-vaccine messages and groups focused on parenting, alternative health practices and concerns over genetically modified food
 - Difficulty in monitoring accounts of “microinfluencers” who post other non-vaccine-related health content
- SM can also offer a space for real conversations to take place

A multi-level, multi-sector approach to addressing misinformation



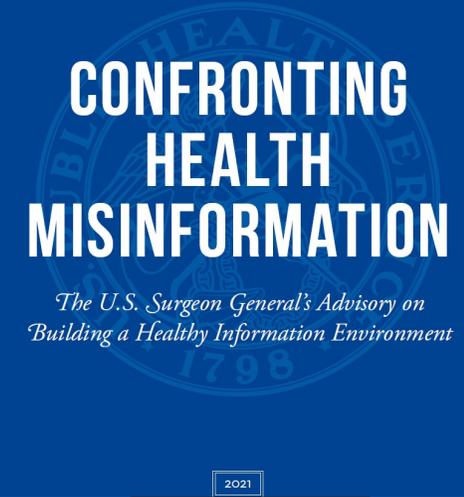
ADDRESSING HEALTH MISINFORMATION WILL REQUIRE A WHOLE-OF-SOCIETY EFFORT.



Read the Surgeon General's Advisory on CONFRONTING HEALTH MISINFORMATION
[SurgeonGeneral.gov](https://www.surgeongeneral.gov)

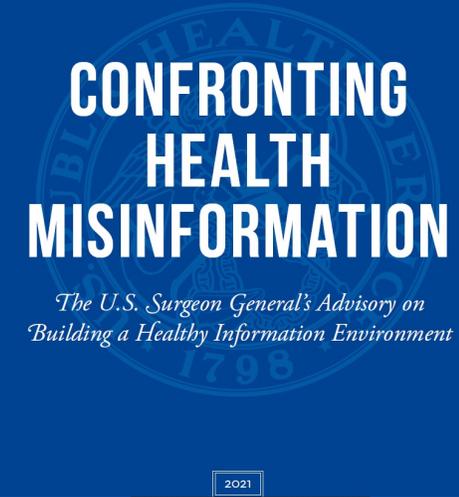
Key Areas of action

- **Equip Americans with the tools to identify misinformation**, make informed choices information sharing, and engage with trusted sources
- **Expand research on health misinformation**
- **Implement product design and policy changes on technology platforms** to slow the spread
- **Invest in longer-term efforts to build resilience against health misinformation** (e.g., media, science, digital, data, and health literacy programs and training for health practitioners, journalists, etc.)
- **Convene federal, state, local, territorial, tribal, private, nonprofit, and research partners to identify best practices** (e.g., legal and regulatory measures while protecting privacy and freedom of expression)



Key Levers

- **Individuals, Families, and Communities**
 - Learn how to identify and avoid sharing health misinformation
- **Educators**
 - Educate students and the public on common tactics used by those who spread misinformation online
- **Health Professionals and Health Organizations**
 - Proactively engage with patients and the public
 - Partner with community groups
- **Journalists and Media Organizations**
 - Recognize, correct, and avoid amplifying misinformation
 - Provide context to avoid skewing perceptions about ongoing debates
 - Consider use of headlines and images



- **Technology Platforms (NAM Paper)**

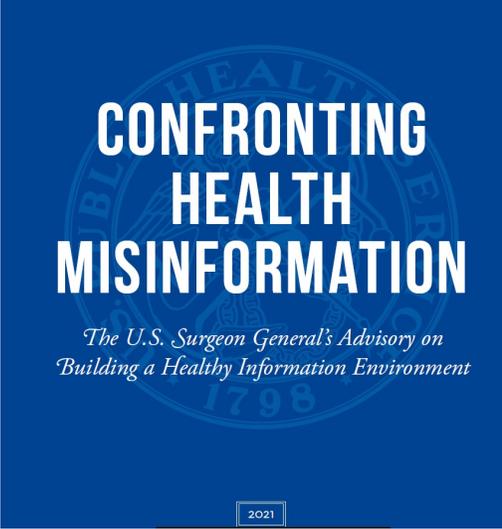
- Assess benefits and harms of current practices and share findings
- Enable researchers access to data
- Strengthen monitoring of misinformation
- Prioritize early detection of "super-spreaders" and repeat offenders
- Amplify communications from trusted messengers/subject matter experts

- **Researchers**

- Strengthen surveillance
- Assess the impact of health misinformation
- Prioritize vulnerable communities
- Evaluate the effectiveness of ongoing strategies and policies

- **Governments and foundations**

- Convene federal, state, local, territorial, tribal, private, nonprofit, and research partners
- Expand and coordinated efforts to build long-term resilience to misinformation



CONFRONTING HEALTH MISINFORMATION

*The U.S. Surgeon General's Advisory on
Building a Healthy Information Environment*

2021

 NATIONAL ACADEMY of MEDICINE

Identifying Credible Sources of Health Information in Social Media: Principles and Attributes

By Raynard S. Kington, Stacey Arnesen, Wen-Ying Sylvia Chou, Susan J. Curry, David Lazer, and Antonia M. Villarruel

July 16, 2021 | Discussion Paper



<https://nam.edu/identifying-credible-sources-of-health-information-in-social-media-principles-and-attributes/>

ADDRESSING COVID-19 MISINFORMATION



ADDRESSING COVID-19 MISINFORMATION

A Tip Sheet for Health Professionals Working with Community Members

Identify Key Misinformation in Your Community

- Listen to misinformation circulating as community concerns—for example, from trusted messengers, in town halls, as rumors, and on social media.
- Stay up on the most current and widespread misinformation circulating, for example, in questions to physicians and community health workers, and call-ins to local talk radio.
- Create a priority list of misinformation and develop fact-based responses.

Choose Which Misinformation to Address

- While all misinformation could be problematic and may need to be addressed, prioritize the most urgent.
 - Select misinformation commonly circulating in the community.
 - Select misinformation shared by sources such as physicians, faith leaders, public figures, community stakeholders (e.g., teachers) and social media influencers.
 - Select misinformation that presents a barrier to action or promotes risky behaviors.
- Distinguish between general disagreement (for example, the vaccine isn't completely safe) and specific falsehoods (for example, the vaccine will alter DNA because of the mRNA approach¹).
- Prioritize specific misinformation for fact-based correction.

Acknowledge and Empathize

- Sometimes even the most knowledgeable people may believe, and transmit, misinformation.
- Acknowledge prior institutional wrongs and historical facts that reduce credibility and trust, while also advocating for the acceptance and uptake of approved vaccines.
- Do not make assumptions; inquire to understand values, concerns and past experiences.
- In responding to misinformation, consider acknowledging, empathizing with and affirming the person's (or audience's) perspective first, then offer fact-based correction. Here's an example:

"I understand what you are saying and why you might have concerns. Because of things that have happened in the past, many people have shared similar thoughts. We want to make decisions that we are comfortable with, while avoiding the blind trust of the past. So, when

Debunk and Explain

- Use plain language; be responsive to literacy levels and culturally acceptable language.
- When possible, proactively provide transparent and easily understandable information before misinformation is circulated widely.
- Debunk misinformation using fact-based information and persuasive strategies to support the facts. Here's an example:

"You care about your community and you want to make an informed decision for yourself, your loved ones, and your community. Here's what people we know and trust say about the facts behind this decision..."

- Avoid reinforcing the misinformation. Instead, state the accepted facts.
- Tap credible community members and trusted messengers willing to tell their stories but don't oversell their stories or sugarcoat real and common physical reactions.
 - "The vaccine went fine but I had a sore shoulder for a day or so. Overall, I felt relieved to get my first shot and be on the road to immunity."*
- Accurate claims can be interpreted in misleading ways. The same facts have more than one explanation. Don't change the facts; challenge the story behind the facts. Here's an example of a response to a concern that politicians influenced quick approval of the vaccine for their own benefit:

"It is true that the vaccines were developed at a historically fast pace. Developers and independent review committees worked very carefully and fast to decide whether approval was warranted in order to stop the spread of COVID-19 and save lives."

Environmental health risk communication



Misinformation around environmental health risks

- Science misinformation has been deployed to confuse people about evidence regarding environmental topics [Farrell et al., 2019]
 - e.g., the causes of acid rain, the role of chlorofluorocarbons (CFCs) on ozone depletion, and climate change
- A coordinated network of organizations and actors with specific political and/or industry interests -- parallel to vaccine disinformation efforts?
- Factors impacting people's interpretation of scientific information
 - religiosity, political affiliation, beliefs and ideology, trust in sources of science information (news media, government)

nature
climate change

PERSPECTIVE

<https://doi.org/10.1038/s41558-018-0368-6>

Evidence-based strategies to combat scientific misinformation

Justin Farrell^{1*}, Kathryn McConnell¹ and Robert Brulle²

Considerations for Addressing Environmental Health Misinformation

- Deep listening and tailored communication
- Foster trust and address mistrust
- Communicating uncertainty
- Environmental science denial—4 types [Björnberg et al., 2017]
 1. Trend; 2. Attribution; 3. Impact; 4. Consensus denial
- Correction or Inoculation can be effective
 - Rebuttals based on facts or rhetorical techniques are both effective (no backfire effects) [Schmid & Betsch, 2019]
 - One study successfully prebunked misinformation regarding the lack of scientific consensus on climate change (“*some politically motivated groups use misleading tactics to try to convince the public that there is a lot of disagreement among scientists*”; “*there is virtually no disagreement that humans are causing climate change*”) [van der Linden et al., 2017]



Thank you!



Sylvia Chou
chouws@mail.nih.gov