

Introduction to Infodemiology: The Study of the Spread of Information

Julie Corwin, MA, Information Director Laboratory Sciences and Infectious Disease Division

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Vermont Immunization & Infectious Disease Conference Hotel Champlain, Burlington, VT May 21, 2025 Session I – Introduction to Infodemiology: The Study of the Spread of Information Speaker: Julie Corwin, MA



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Vermont Immunization & Infectious Disease Conference Hotel Champlain, Burlington, VT May 21, 2025



In support of improving patient care, this activity has been planned and implemented by The Robert Larner College of Medicine at the University of Vermont is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME) and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

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This activity was planned by and for the healthcare team, and learners will receive 5.0 Interprofessional Continuing Education (IPCE) credit for learning and change.

After this session, you will be able to...

- 1. Understand the basics of infodemiology and its importance in public health.
- 2. Identify tactics used to spread misinformation.
- 3. Apply evidence-based approaches to counter misinformation and build trust.



My Role at the Health Department: Communications

Information Director, Laboratory Sciences and Infectious Disease Vermont Department of Health

- Develop and implement communication and marketing campaigns
- Lead crisis and emergency communications
- Oversee web, social media, and other digital content
- Ensure messaging is consistent across platforms
- Translate scientific information into health messages for the public
- Maintain Health Department's brand to build trust and credibility

Information + Epidemiology = Infodemiology

What is Infodemiology?

- The study of how health information spreads online and its impact on public health
- Introduced in the early 2000s by Gunther Eysenbach
- Gained relevance during major health crises
- JMIR Infodemiology journal launched in 2021
- Uses technology and digital tools to monitor and analyze information online, with the goal of improving public health
 - Asks, where, when, why, and to whom information is spreading and how that information impacts populations
- Use insights to guide communication strategies, correct misinformation, and shape policy

Background

- Infodemiology.com
- <u>Public Health Communications Collaborative</u>



Welcome to the first U.S.based training for public health professionals on the evolving field of infodemiology



The Public Health Communicators Guide to Misinformation



Contents

PUBLIC HEALTH 🔛

COMMUNICATIONS

COLLABORATIVE



INFORMATION MADE ACTIONABLE

Learn how to identify and respond to trending health narratives in four focused modules

Introduction to infodemiology

tand the basics of infodemiology and the science that explains why people believe what they do. Media monitoring Learn how media monitoring has evolved and best practices for creating your own monitoring system. Analysis and reporting Explore how to triangulate and analyze data and build reports for others in your department. Communications

Learn how to build resiliency to false information and communicate data-informed messaging.

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Why Infodemiology Matters to Public Health

- 1. Modernizes public health practices
- 2. Helps address health inequities
- 3. Combats misinformation
- 4. Helps improve communication and interventions

"Science isn't finished until it's communicated."

Misinformation vs. Disinformation

Misinformation



- False or inaccurate information shared without malicious intent
- Behavioral theories help us understand why people share and believe false information
- Example: sharing an outdated, debunked medical remedy on social media, believing it to be helpful

Disinformation \$\$

- False information that is deliberately created and shared with the intention of deceiving, misleading or manipulating people
- Primary reasons: profit, politics, or power
- Example: A political group creates a fake news article to sway public opinion or sow confusion during an election

Information + Surveillance = Infoveillance



Combines methods of data science, epidemiology, and communication studies

Media Monitoring/Social Listening

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- Tools and systems
- Ethical considerations
- Analysis and reporting

Examples of Applications in Public Health

- Google Flu Trends project, 2008: Analysis of internet search queries to predict disease outbreaks in near real-time
- World Health Organization's EARS platform during the pandemic, 2021: Tracking online conversations in real time to detect misinformation and guide targeted public health responses worldwide

How Misinformation Spreads

People who spread disinformation are very good at getting people to believe it.

Five tactics:

- 1. Emotional or sensationalized language
- 2. Cherry-picking data
- 3. Manufacturing uncertainty
- 4. Conspiracy theories
- 5. Logical fallacies

Social, behavioral and cognitive factors influence our beliefs and behaviors.

What influences what we believe?

- Intuitive thinking
- Fuzzy-trace theory
- Processing fluency
- Echo chambers
- Worldview
- Confirmation bias
- Attractive source cues
- Negativity bias
- Continued influence effect
- Anchoring bias

What influences why we share?

- Social media algorithms
- Habitual sharing
- Poor media literacy education
- Lack of attention

Tools for Countering Misinformation

Inoculation Theory

Exposing people to weakened versions of arguments against their beliefs can build resistance to stronger, future attacks on those beliefs.

Prebunking and Debunking Methods

	Prebunking Method	Debunking Method
Timing	Before exposure to misinformation	After exposure to misinformation
Goal	Prevent belief in false information	Correct false beliefs that have already formed
Method	Warn about misinformation and explain how to spot it	Explain why a specific claim is false using facts
Effectiveness	Often more effective for preventing misinformation uptake	Useful, but sometimes less effective if belief is strong

The "Truth Sandwich" Method

Fact \rightarrow Myth \rightarrow Fact



Truth Sandwich Method for Debunking

Break down debunking with the Truth Sandwich method:

- 1. Always start your Truth Sandwich with a **fact**
- 2. Introduce a **warning** that you are resharing a false claim
- 3. **Explain the misinformation**, including any tactics that helped it spread
- 4. Finish your Truth Sandwich with a **fact**, replacing the misinformation with correct information

FACT	Childhood vaccines are extremely safe and effective at preventing the spread of disease.
WARNING	You might have heard an old myth
MISINFORMATION	that falsely connects vaccines and autism.
FACT	This is not true. Research shows there is no link between vaccination and autism. In fact, vaccines are the best way to keep your child safe from deadly diseases.

	Low Risk	Medium Risk	High Risk
Direct threat to public health?	No	Yes	Yes, significantly
Spreading rapidly?	No	Yes, potentially	Yes, exponentially
Circulating among priority populations	No	Yes	Yes
Tactics are being used?	No. Genuine confusion or gaps in knowledge	Yes, i.e., cherry-picking, using emotional language	Yes, i.e., preying on poor media skills, targeting people with certain worldviews
Influences people's health decisions	No	Yes, potentially	Yes, significantly
Memorable narrative?	Not really	Yes/maybe	Yes

Low Risk			
Direct threat to public health?	No		
Spreading rapidly?	No		
Circulating among priority populations	No		
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Memorable narrative?	Not really		

Medium Risk		
Direct threat to public health?	Yes	
Spreading rapidly?	Yes, potentially	
Circulating among priority populations	Yes	
Tactics are being used?	Yes (i.e., cherry-picking, using emotional language)	
Influences people's health decisions	Yes, potentially	
Memorable narrative?	Yes/Maybe	

High Risk		
Direct threat to public health?	Yes, significantly	
Spreading rapidly?	Yes, exponentially	
Circulating among priority populations	Yes	
Tactics are being used?	Yes (i.e., preying on poor media skills, targeting people with certain worldviews)	
Influences people's health decisions	Yes, significantly	
Memorable narrative?	Yes	

Strategies at the Health Department

- Small-scale media monitoring/social listening
- Assessing risk level; prebunking and debunking when appropriate
- Partner with trusted messengers to reach audiences
- Focus on strengthening trust in public health

Example: Routine Childhood Vaccinations Marketing Campaign

Encouraging parents of infants (ages 0-2) to follow the recommended vaccine schedule.

Clear and supportive information for parents.

Protect Early. Prote<u>ct Fully.</u>____

Why the Infant Vaccine Schedule Matters

It's okay to have **questions** & concerns about vaccines. Vaccine Timing Matters. Learn Why Sticking to the Schedule Is So Important. Built on Research.

Built for Protection.

Common Qs on

Infant Vaccines.

Example: Vitamin A and Measles

Using the "debunking" method to address false information.

What is vitamin A used for?

You may be hearing lots of information about how to protect your child from measles and it can be hard to know what's true and what's not true. Here's what's true:

Vitamins and supplements, including cod liver oil and vitamin A, do not prevent measles.

It is true that vitamin A may be used by a doctor when treating a child with measles. There is evidence – from countries where vitamin A deficiency is a major public health issue (not the U.S.) – that giving certain amounts of vitamin A by a provider can lower the risk of death among children with measles who do not have enough vitamin A.

Too much vitamin A can cause serious health problems.

Do not give your child vitamin A or any supplements, unless your doctor prescribes it. Too much vitamin A can be dangerous and can lead to liver damage and other serious issues. Vitamin A is not well regulated in the U.S. It is not tested for consistency or purity. So, it's not always possible to know how much you are giving. Most children get enough vitamin A in their diet. Talk to your doctor before giving vitamin A or any other supplements to your child.

Cod liver oil has high amounts of vitamin A, much higher than the recommended daily amounts. Too much cod liver oil can make children sick. It's also high in vitamin D—another nutrient that can be dangerous if children take more than the recommended daily amount. Do not give your child cod liver oil, unless your doctor prescribes it.

The measles vaccine is the absolute best way to prevent measles.

In fact, one dose is 93% effective, and two doses are 97% effective. The measles vaccine has been around for a long time. It doesn't change from year to year. And it's the reason why measles was almost completely eliminated from the U.S. As a routine childhood vaccine, most parents choose to protect their children through vaccination.

Read more from HealthyChildren.org \bigcirc

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HealthVermont.gov/Measles

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HealthVermont.gov/Measles

Example: Relying on Partnerships to Share Information

We often rely on our partners to get critical information to the people who need it most, from the people they trust.

Measles Messaging Toolkit for Schools and Child Care Facilities Measles Messaging Toolkit for

Measles Messaging Toolkit for Schools and Child Care Facilities - March 2

Sample Social Media Posts

How to use: Use the suggested post copy or customize as needed. The to download the graphic or video and add to your post.

		Facisiteet with franstations	Your child needs vaccines as they grow!
Suggested Post Copy Measles, one of the most contagious viruses, is on the rise in the U.S. An infected person will spread measles to about 9 out of 10 people they <u>come into contact with</u> who are not vaccinated. Thankfully, the measles, mumps, and rubella (MMR) vaccine is highly effective at protecting your family against severe illness. Is your family up-to-date? Learn more at <u>HealthVermont.gov/measles</u>	Link to Graphics	<section-header><image/><image/><image/><image/><image/><image/><image/><image/><image/><image/><image/></section-header>	Considerational and
Measles cases are on the rise in the U.S. and worldwide. Measles is not just a little rash. It can be dangerous, especially in children younger than five years old. Nearly 1 to 3 of every 1,000 children who become infected with measles will die from respiratory and neurologic complications. The best way to protect your family against serious illness is with the measles, mumps, and rubella (MMR) vaccine. MMR is safe and effective. Two doses of MMR vaccine are about 97% effective at preventing measles; one dose is about 93% effective. Check to make sure your family is up-to- date, especially if you plan to travel outside	Measles can be dangerous, esper babies & young Click to downloar	<section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header><section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header></section-header>	
of the <u>U.S</u> .earn more at <u>HealthVermont.gov/measles</u> age 4 arch 2025	~	Page 6 March 2025	DEPARTME

Schools and Child Care Facilities - March 2025

"What to Know about Measles"

Factsheet with Translations

Printable Resources: Factsheets, Poster and Vaccine Schedule

Printable Vaccine Schedule for Children

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How to use: Print to post or share these resources. Find more resources at www.cdc.gov/measles/resources.

What can you do?

When you encounter misinformation...

- 1. What misinformation tactics might be at play?
- 2. What's influencing their beliefs?
- 3. How can I respond with empathy?

Conversation Tips

- Build a truth sandwich (Fact \rightarrow Myth \rightarrow Fact)
- Focus on shared values
- Lead with empathy: acknowledge real-life concerns, questions, and obstacles
- Be transparent about any risks or uncertainties
- Encourage asking questions
- Share personal experiences
- Consider using less technical language
- Focus on the health and safety benefits of an intervention rather than the negative outcomes of not doing the intervention

Key Takeaways

1 Infodemiology helps us better understand people's health beliefs and behaviors in real time, so we can respond more effectively.

2 We are all vulnerable to believing false claims; our identity influences the way we interpret information.

3 There are effective communication tools you can use right now to build trust and credibility.

Sample Communication Materials and Resources



Measles Messaging Toolkit for Schools and Child Care Facilities - March 2025 Sample Social Media Posts How to use: Use the suggested post copy or customize as needed. Then, click on the links to download the graphic or video and add to your post. Suggested Post Copy Measles Messaging Toolkit for Measles, one of the m Schools and Child Care Facilities - March 2025 viruses, is on the rise in person will spread of 10 people they com Printable Resources: Factsheets, Poster and Vaccine Schedule who are not vaccina How to use: Print to post or share these resources. Find more resources at Thankfully, the meas www.cdc.gov/measles/resources. rubella (MMR) vaco protecting your family illness. Is your family "What to Know about Measles" Printable Vaccine Schedule for Childre Learn more at Health **Factsheet with Translations** hild needs vaccines as they growt Measles cases are on and worldwide. Meas rash. It can be danger = children vounger than 1 to 3 of every 1,000 ch infected with measles respiratory and neuro The best way to prof [Download vaccine schedule] serious illness is with t and rubella (MMR) vac and effective. Two doe [Click to translated factsheets] are about 97% effecti measles: one dose is CDC Factsheet Translated in Ukrainia Vaccine Poste Check to make sure y date, especially if you of the U.S., Learn more at Health Page 4 March 2025 216 ------[Download factsheet] [Download poster] VERMONT Page 6 March 2025 DEPARTMENT OF HEALTH





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Resources

- Journal of Medical Internet Research: Infodemiology
 - Infodemiology and Infoveillance: Framework for an Emerging Set of Public Health Informatics Methods to Analyze Search, Communication and Publication Behavior on the Internet (2009)
- <u>The Public Health Communicators Guide to Misinformation</u> -- Public Health Communications Collaborative (PHCC)
- <u>Infodemiology.com</u> a project of the "The Public Good Projects," with partnerships and contributions from de Beaumont, American Public Health Association (APHA), PHCC, etc.
 - <u>Monitoring Lab Dashboards</u> Real-time information on trending health narratives
 - <u>Training Program for Health Care Providers</u>
- <u>De Beaumont Foundation</u> An organization focused on strengthening and advancing public health systems and workforce
- <u>Frameworks Institute</u> An organization specializing in strategic communications research



Thank you!

Let's stay in touch.

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