Medical Misinformation:
How Information Environments are Social Determinants of Health

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Disclosures

David Scales M.Phil., M.D., Ph.D., faculty for this educational activity, is a consultant for US Office of the Surgeon General and the American Board of Internal Medicine Foundation. Dr. Scales is CMO for Critica, an NGO focused on science literacy. Funded by the Robert Wood Johnson Foundation. He has indicated that the presentation or discussion will not include off-label or unapproved product usage.

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Learning Objectives

1. Understand the relationship between information and social determinants of health.

2. Understand how taking an "environmental" approach helps address the problem of medical misinformation

3. Recognize how to identify medical misperceptions at the point of care and develop frameworks for effective responses

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Outline

Defining misinformation and information distortion

From traditional to networked health communication

From message-based to environmental models of information health

Operationalizing an information environment framework
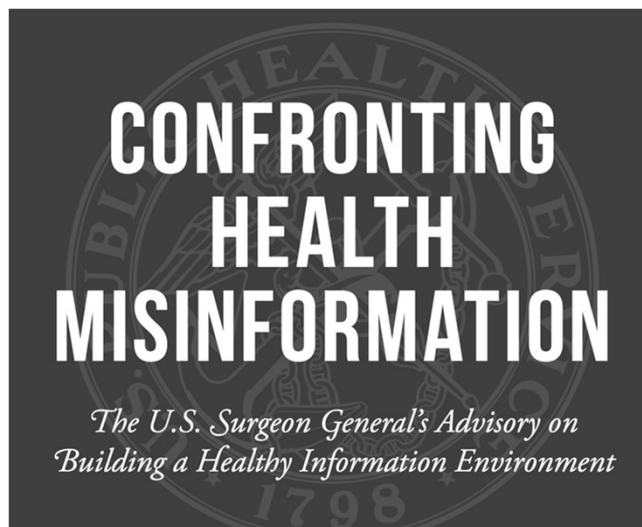
Community-oriented Motivational Interviewing

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Health Misinformation

Health misinformation is...

- **false**
- **inaccurate**
- **misleading**

... based on the best available evidence or scientific consensus at the time.

CONFRONTING HEALTH MISINFORMATION

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

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Two cases

- 29F hx of Crohns dz w/ anal fistulas, multiple admits for inability to tolerate PO, refusing biologic therapy & asking for TPN

- 58F w/ dx of Ehlers-Danlos Syndrome p/w multiple admissions 2/2 SOB & acute on chronic lymphedema
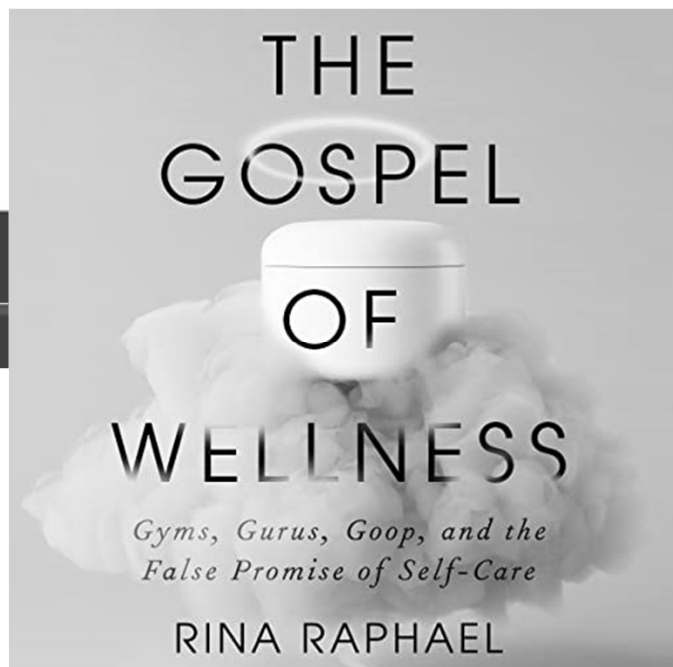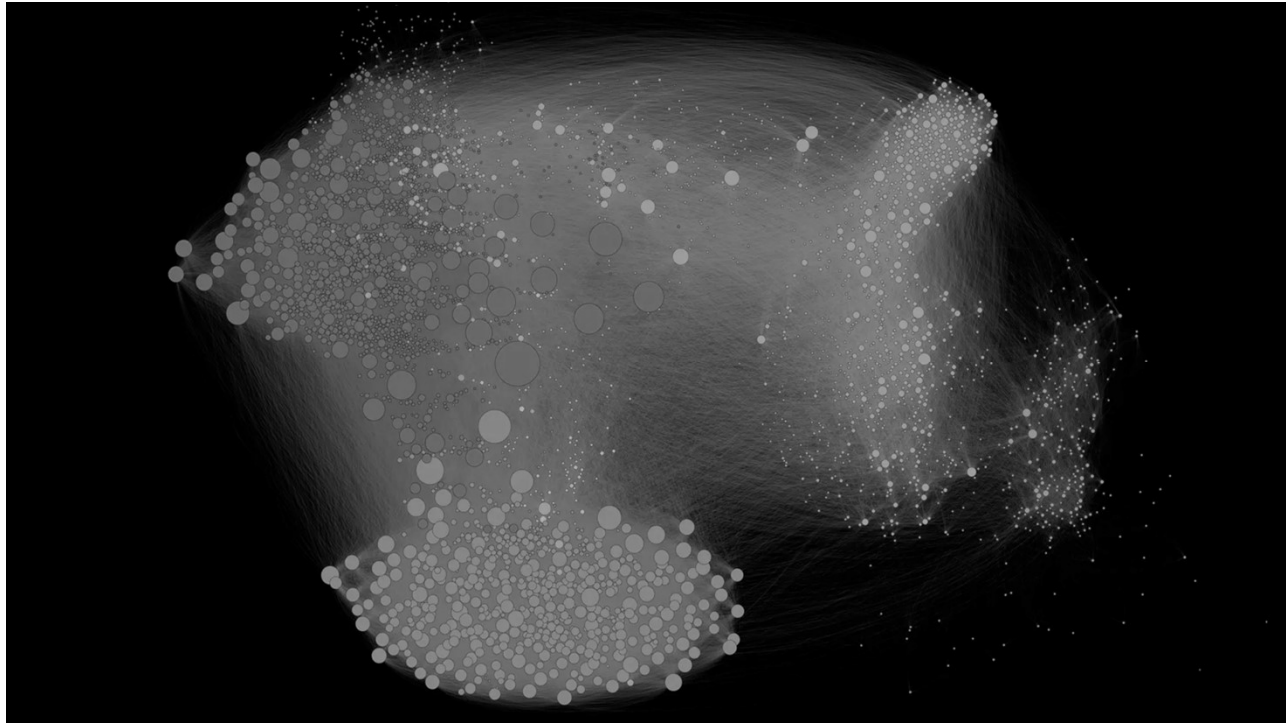
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Manifestations of Medical Misinformation

CONTESTED ILLNESSES

Citizens, Science, and Health Social Movements

Phil Brown, Rachel Morello-Frosch, Stephen Zavestoksi, and the Contested Illnesses Research Group
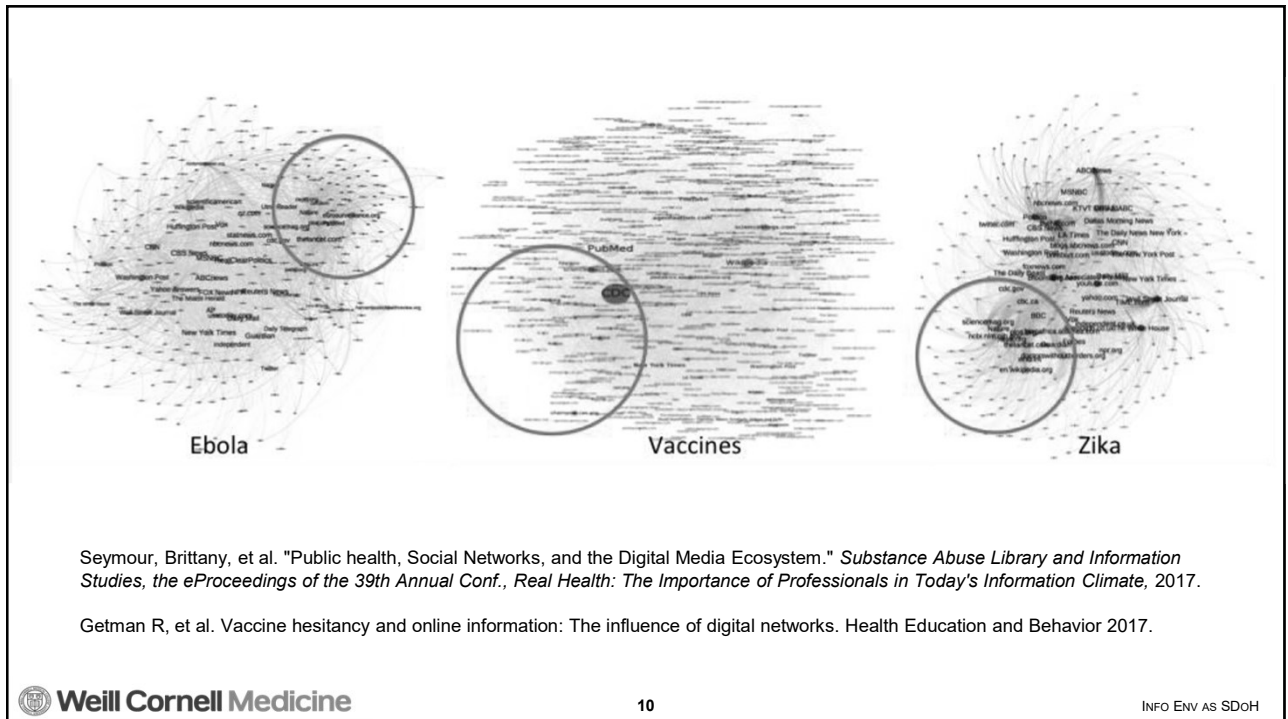
- "Chronic" Lyme
- IBS/IBD
- Ehlers-Danlos Syndrome
- ME/CFS
- Gulf War Syndrome
- Mast Cell Activation Syndrome (MCAS)
- Long Covid

THE GOSPEL OF WELLNESS

Gyms, Gurus, Goop, and the False Promise of Self-Care

RINA RAPHAEL

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Seymour, Brittany, et al. "Public health, Social Networks, and the Digital Media Ecosystem." *Substance Abuse Library and Information Studies, the eProceedings of the 39th Annual Conf., Real Health: The Importance of Professionals in Today's Information Climate,* 2017.

Getman R, et al. Vaccine hesitancy and online information: The influence of digital networks. Health Education and Behavior 2017.

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The Distrust Ecosystem

"Post-pandemic, their discourse interconnected multiple non-vaccine topics and geographic scales **within and across communities**. This interconnection confers a unique, system-level (i.e., at the scale of the full network) resistance to mitigations targeting isolated topics or geographic scales—an approach many schemes take due to constrained funding."

Illari, L., Restrepo, N. J., & Johnson, N. F. (2023). Rise of post-pandemic resilience across the distrust ecosystem. *Scientific Reports, 13*(1), 15640.
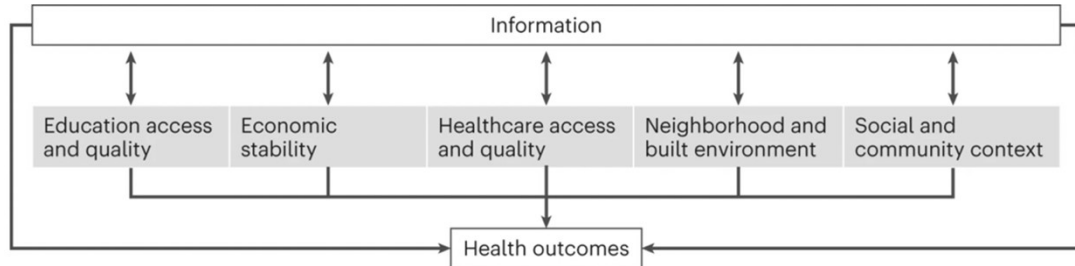
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Social Determinants of Health

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Healthy People 2030

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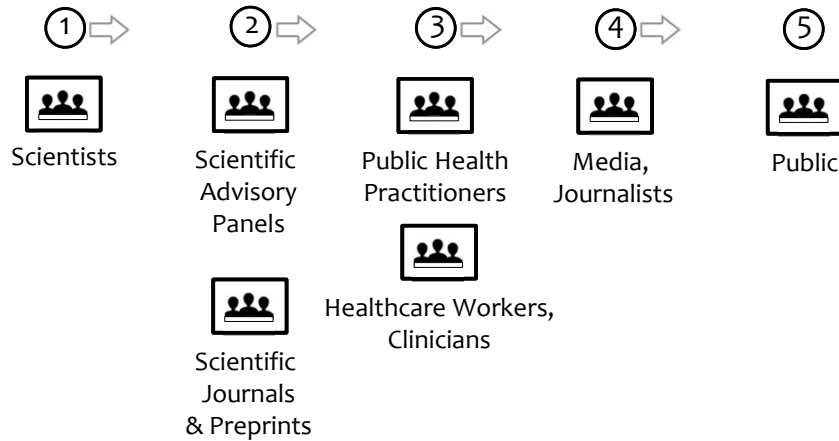
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Information is a determinant of health

Information directly and indirectly affects health outcomes via several routes.

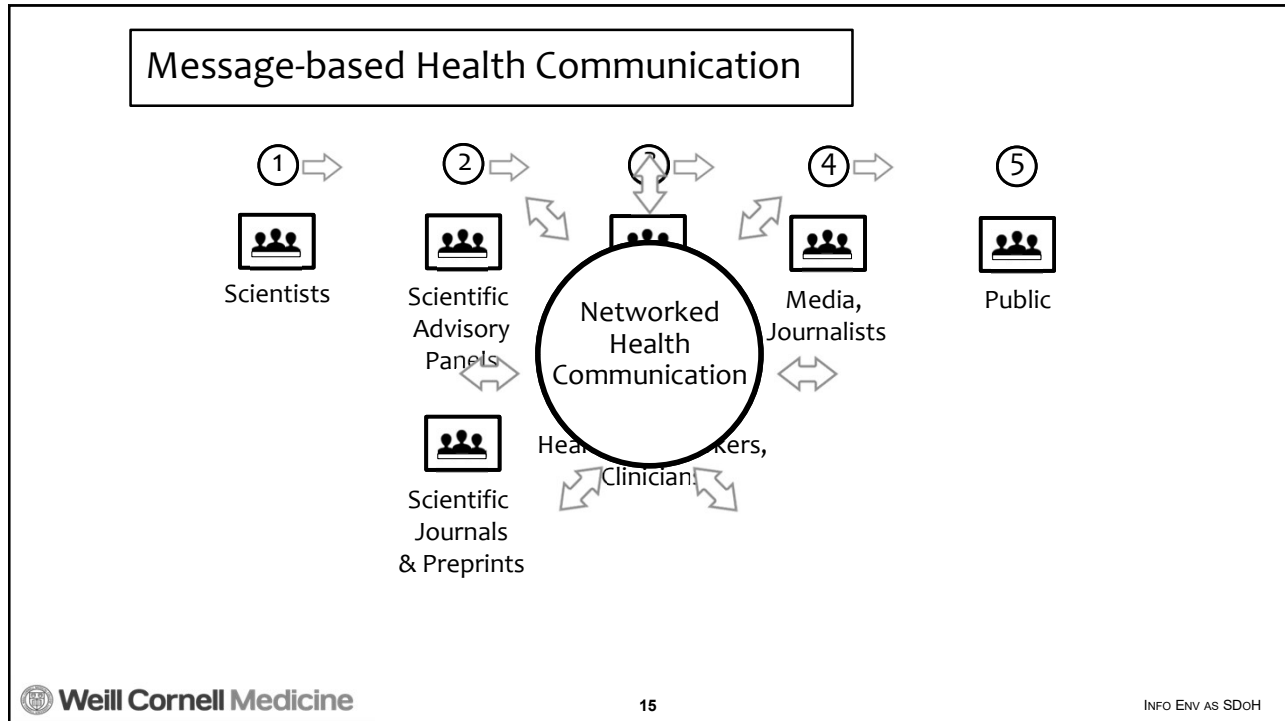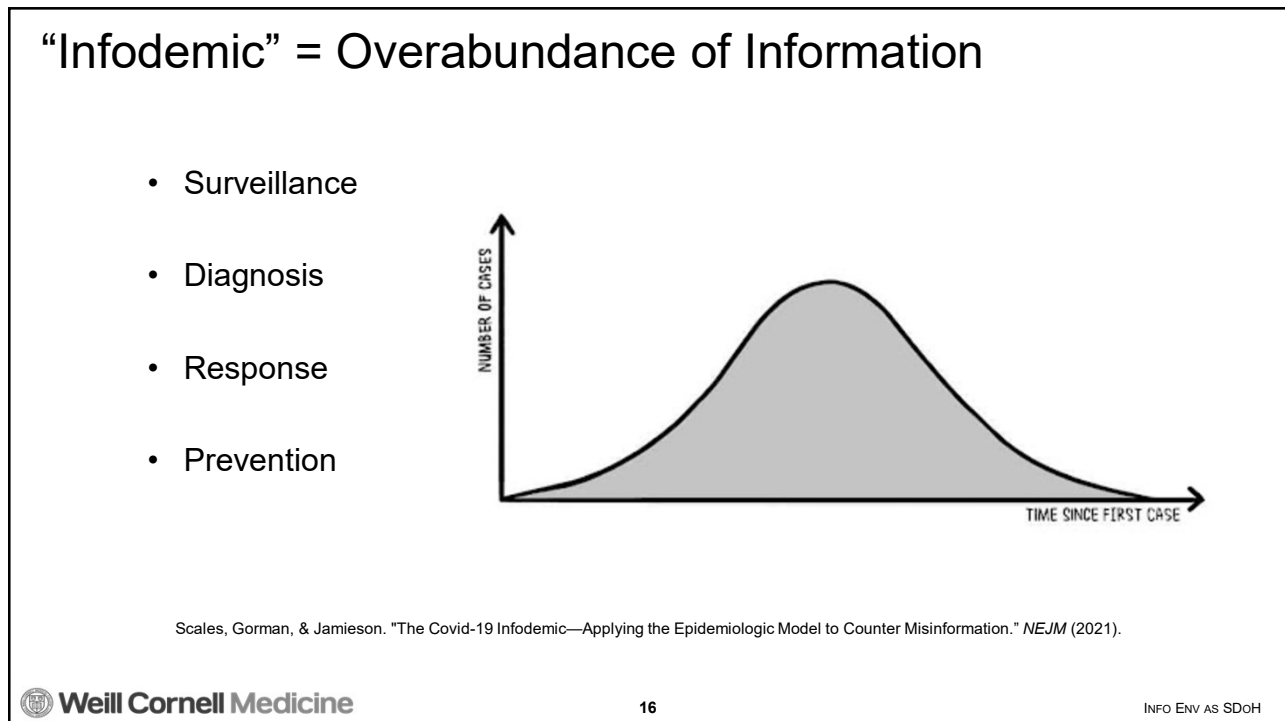Graham, Garth, et al. "Information is a determinant of health." Nature Medicine (2024): 1-2.

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Message-based Health Communication

① ➡ Scientists

② ➡ Scientific Advisory Panels

③ ➡ Public Health Practitioners

④ ➡ Media, Journalists

⑤ Public

Scientific Journals & Preprints

Healthcare Workers, Clinicians

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Message-based Health Communication

① Scientists
② Scientific Advisory Panels
Scientific Journals & Preprints
③ Networked Health Communication
Health Workers, Clinicians
④ Media, Journalists
⑤ Public

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"Infodemic" = Overabundance of Information

- Surveillance
- Diagnosis
- Response
- Prevention

Scales, Gorman, & Jamieson. "The Covid-19 Infodemic—Applying the Epidemiologic Model to Counter Misinformation." *NEJM* (2021).

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Environmental Health Framework

"Message" vs "environment" models of information health

Render misinformation as harmless as possible

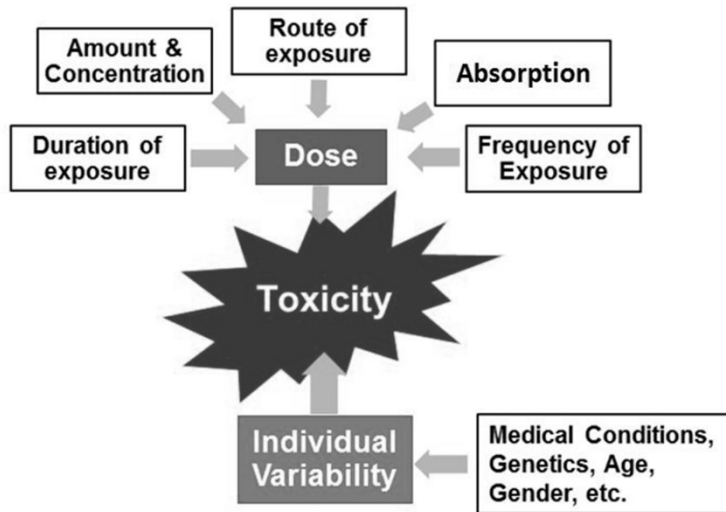Columbia Journalism Review.

The Toxins We Carry

Disinformation is polluting our media environment. Facts won't save us.

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Principles of Toxicology

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"Dose makes the poison"

WATER	CAFFEINE	1080
very low toxicity	moderate toxicity	high toxicity
90,000 mg/kg	250 mg/kg	2 mg/kg

sodium fluoroacetate

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Why take an environmental health approach?

- Modified conception of risk
  - **Focus shift: From atoms of misinformation to overall exposure**
  - **Intrinsic toxicity to context-dependent**
    - Lead vs information distortion

- Epidemiological concepts
  - **e.g. Population attributable risk**

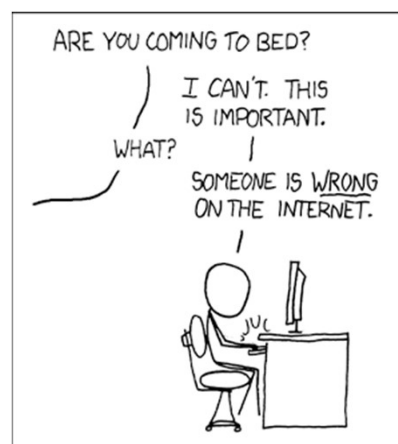- Equity lens
  - **Access – Digital redlining**
  - **Deserts & swamps**

Image credit: Randall Munroe, xkcd

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Receptivity to misinformation

- Bias – confirmation, anchoring, implicit
- Misunderstanding causality, risk, probability
- Avoiding complexity/uncertainty
- Charismatic leaders
- Conspiracy
- Ignorance

Often NOT a knowledge deficit!

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Prevention
(Minimizing toxic exposures)

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Identifying Credible Sources of Health Information on Digital Platforms

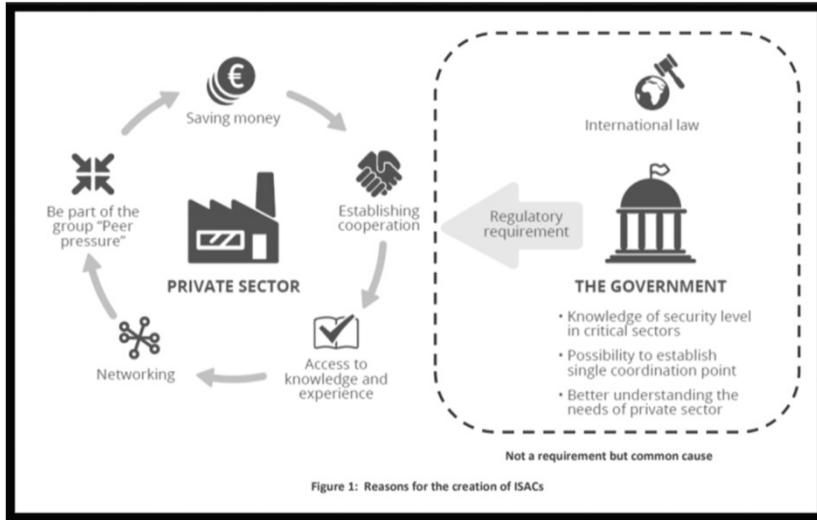### NATIONAL ACADEMY OF MEDICINE

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Potential Social Listening & Response Models

- Information Sharing & Analysis Centers (ISACs)

- Public Health Emergency Operations Centers (PHEOCs)

Medicine and Public Issues | August 2023   **Annals of Internal Medicine**®
Addressing Viral Medical Rumors and False or Misleading Information FREE
Hussain S. Lalani, MD, MPH, MSc, Renée DiResta, BS, Richard J. Baron, MD, and David Scales, MD, PhD

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ISAC Model

Figure 1: Reasons for the creation of ISACs

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PHEOC Model

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Maximizing Exposure to Healthy Information

- **Screen for information environments at the point of care like other SDoH**

- **Techniques for communicating on contentious issues**

- **Infodemiologists**

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Screening for Information Environments

- "Where do you get your health information?"

- "How do you decide what (or who) is trustworthy?" or "How do you sort between good and bad information?"

- Goal: Understand individual receptivity, exposure to toxic information and access to high-quality health information

Scales, David, and Jack Gorman. "Screening for Information Environments: A Role for Health Systems to Address the Misinformation Crisis." *Journal of Primary Care & Community Health* 13 (2022): 21501319221087870.

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Techniques for Communicating on Contentious Issues

- Motivational Interviewing

- Acknowledge complexity and nuance

- Retain trust by emphasizing your clinician role and your patient's unique circumstances

Gagneur, Arnaud, Virginie Gosselin, and Ève Dubé. "Motivational interviewing: A promising tool to address vaccine hesitancy." *Vaccine* 36.44 (2018): 6553-6555.

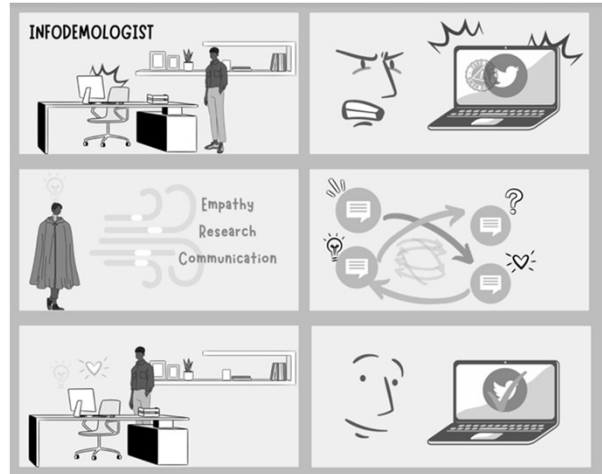Martin, Lisa A., et al. "Dangertalk: voices of abortion providers." *Social Science & Medicine* 184 (2017): 75-83.

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What is an Infodemiologist?

Epidemiologists respond to epidemics....

...Infodemiologists respond to infodemics

Image Credit: Azubuike Akunne
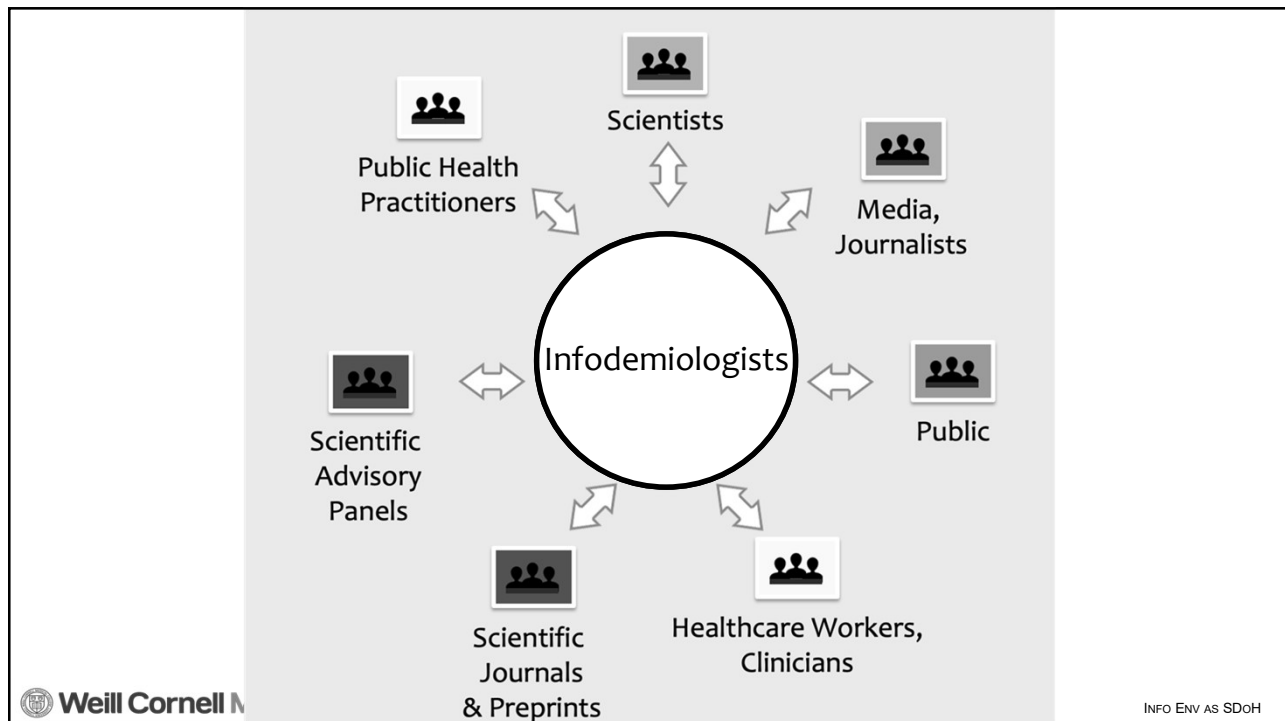
| Motivational Interviewing | Inoculation | Narratives | Community-trusted Sources | Evidence-based Rebuttals | Self-Efficacy | Repetition |

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Take Home Message(s)

1. Information is fundamental to social determinants of health.

2. Misinformation is only one piece of the puzzle. An "environmental" approach helps address the larger issue of information distortion.

3. Medical misperceptions manifest in myriad ways and can lead people to health decisions at odds with their health goals.

4. Effective responses at the point of care require patience and include motivational interviewing

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Thank you!
Thoughts? Questions?

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