

Information disorder in the context of health and science: How bad is the problem and what can we do about it?



What is misinformation
(about health or science)?

Is this
misinformation?



Pfizer's COVID "vaccine" responsible for hepatitis outbreak in children

Wednesday, April 13, 2022 by: Ethan Huff

 **18K**
VIEWS



Is this
misinformation?

**Boiling tap water causes
fluoride in the water to
be “more toxic.”**

Is this
misinformation?

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◆ WSJ NEWS EXCLUSIVE | NATIONAL SECURITY

Lab Leak Most Likely Origin of Covid-19 Pandemic, Energy Department Now Says

U.S. agency's revised assessment is based on new intelligence



Is this
misinformation?





Plan for this session



What are “misinformation” and “information disorder”?



Why are we talking about misinformation now?



How much of a problem is science and health misinformation?



Can we do anything about the problem?



Activity



Getting started

In groups of 2-3, spend a few minutes discussing the following:

- Are you worried about health (and science) misinformation?
 - If so, why?
 - If not, why not?
- Is misinformation a problem that you encounter in your work?
 - If so, what are the most common forms of misinformation that you come across?
 - Is the misinformation you or your patients/communities interact with consequential? If so, in what ways?



Defining misinformation

“Any information that is demonstrably false or otherwise misleading, regardless of its source or intention”

(definition from [APA 2023](#) statement on health misinformation)

The seal of the U.S. Surgeon General is visible in the background of the blue box. It features a central figure holding a staff with a snake, surrounded by the text "DEPARTMENT OF HEALTH AND HUMAN SERVICES" and "U.S. SURGEON GENERAL" with the year "1798" at the bottom.

CONFRONTING HEALTH MISINFORMATION

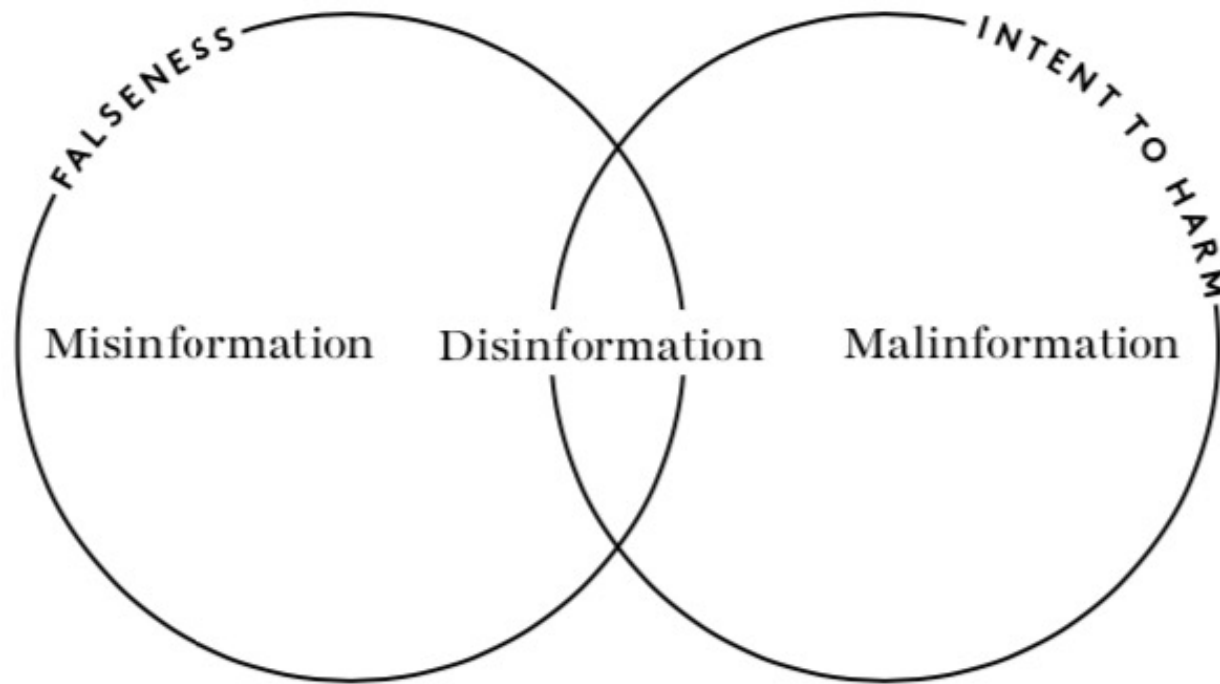
*The U.S. Surgeon General's Advisory on
Building a Healthy Information Environment*

Health misinformation is...

- false
- inaccurate
- misleading

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

Information disorder





Misinformation comes in different ‘flavors’

- **Flat out false claims**
 - e.g., “mRNA vaccines change your DNA”
- **Claims not aligned with scientific consensus**
 - e.g., “Climate change is happening mostly due to natural cycles”
- **True but misleading claims due to lack of context**
 - e.g., “Vaccines have killed people”
- **Oversimplified claims that are misleading**
 - e.g., “Many medical tests are inaccurate”
- **Framing claims in ways that grab attention but mislead**
 - e.g., “Healthy doctor died two weeks after getting a COVID-19 vaccine; CDC is investigating why”

The image shows a close-up of an ECG tracing on standard grid paper. The grid consists of small squares and larger squares. A blue line represents the ECG trace, showing several vertical spikes (QRS complexes) and a wavy line (T waves). An orange rectangular box is overlaid on the center of the image, containing the text "misperception ≠ misinformation" in white. The background is slightly blurred, focusing attention on the text and the ECG trace.

misperception ≠ misinformation

Why are we talking about health and science misinformation *now*?

- **WHO** declared a worldwide “**infodemic**” in 2020; US Surgeon General’s advisory
- **Rising concern** about the **pervasiveness** and rapid spread of misinformation, particularly on social media
- Lots of **anecdotal evidence** regarding negative impacts on health decision-making (e.g., vaccine refusal; use of dubious treatments)
- Concern over **confusion**, **mistrust** in health experts, **undermining** public health efforts





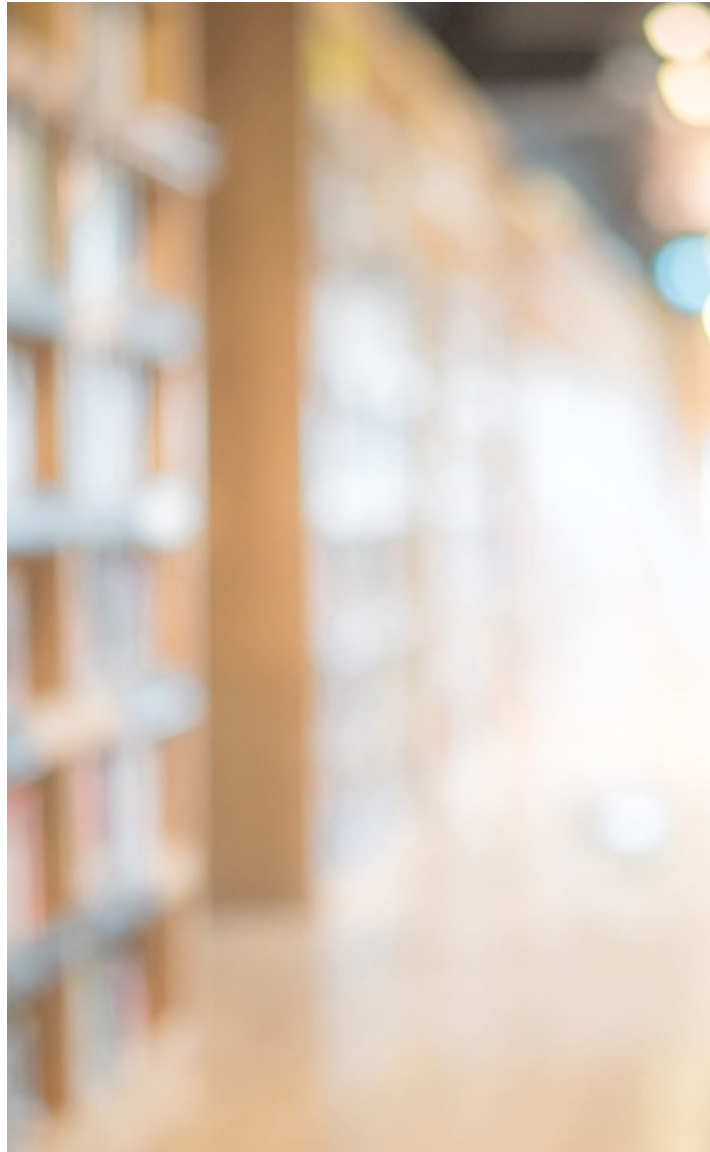
Why now?

- **We're in a moment of rapid, widespread change**
 - Decreased trust and confidence in many big institutions
 - Rising polarization
 - Increasing individualism around the world
 - Decreases in some forms of social cohesion and capital
 - Immediate access to vast amounts of information
 - Shifting cultural norms

Misinformation is **not** a new phenomenon

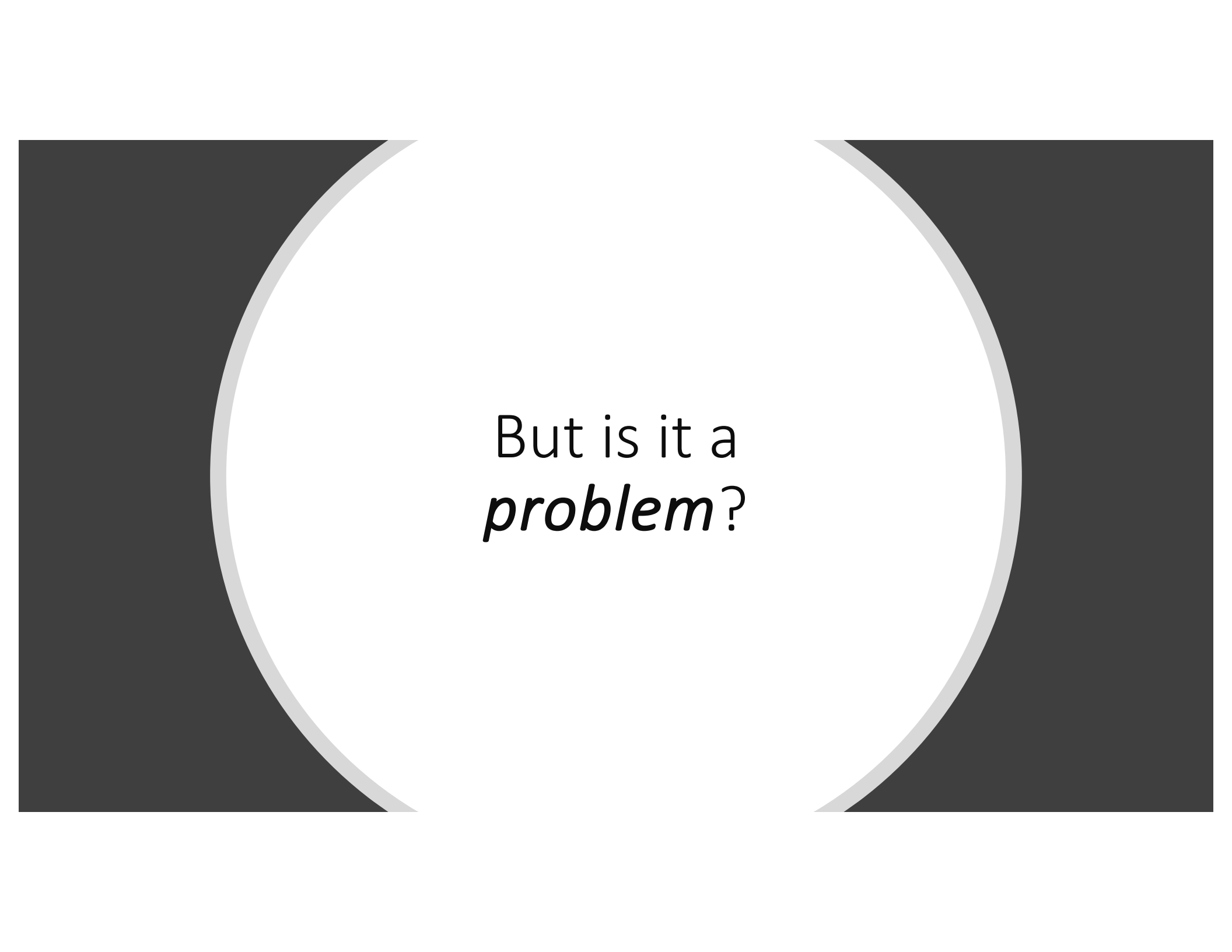
- As long as humans have communicated with one another, mis-, dis- and mal-information have been around
- Long history of false and misleading claims about health and well-being, health products, science of health
- “Panics” around misinformation are also not new, come and go over course of 19th-21st centuries in particular





Study of misinformation is *also* not new

- Long history of scientific research on the topic
- Crosses many fields and disciplinary approaches, levels of analysis
- Thousands of studies on origins, spread, mechanisms, consequences and interventions



But is it a
problem?

Some things are clear

- There is a TON of health and science misinformation out in the “information environment”
- And many people harbor **misperceptions** and **misbeliefs** about health and science
- Sometimes being misinformed → bad decision-making

But that's not the entire story

- There is **way MORE truthful, accurate** information that people encounter in course of daily life
- MOST science and health information MOST people encounter is **accurate**
- The causal path from misinformation → misperception → bad decision-making is NOT simple
- AND we know that other well-established mechanisms can explain a lot of misperception and associated decision-making





Health misinformation
is not equally
distributed across
communities

So, should we worry (so much) about science misinformation?

“Gut feeling” among many is that misinfo causes a lot of problems

- Climate change denial and lack of urgency and political will
- Vaccine hesitancy and other public health problems
- Generalized mistrust and societal breakdown

The actual evidence base is much more mixed and nuanced

- Clear there are impacts of exposure at individual level, especially on misperception and misbelief
- Impacts on actual behavior are much less clear, harder to tease apart
- Some evidence of community-scale negative impacts in certain cases

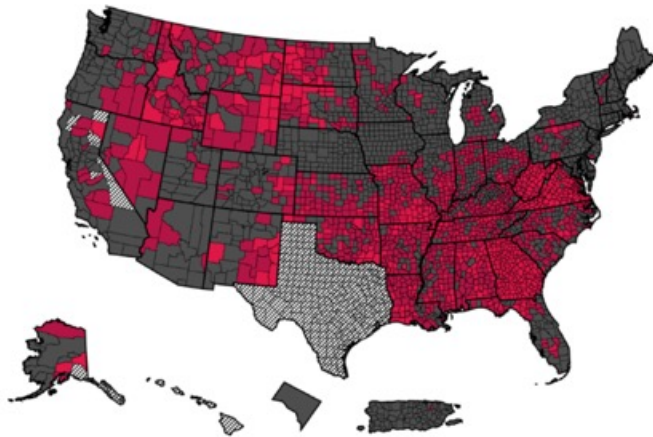


On the plus side

- Vast majority of **misinformation is consumed by a small group** of hyper-partisan dogmatists
- **Most people don't encounter** a lot of misinformation in their "info diets"
- Direct **evidence** of broad negative impacts is **fairly limited**
- **Most people are not that gullible!** Mass persuasion/propaganda efforts tend to not work that well!

County Vaccination Coverage and COVID-19 Case Rates

Counties with Low Vaccination Coverage and High Case Rates



■ Counties with 30-39.9% vaccination rates and 100+ cases per 100k
■ Counties with 0-29.9% vaccination rates and 100+ cases per 100k
▨ No data
■ Data not shown on this map

Find the latest data on
CDC's COVID Data Tracker

Data as of August 30, 2021



On the other hand...

- **Misinfo is out there in the world** and does **sometimes impact** individuals and communities
 - Those effects can be **truly devastating**
- Oftentimes **it is targeted** at already **vulnerable communities** and groups
- AND, even when misinfo and misbelief are “corrected,” there can **still be negative impacts** on actual decision-making 😞



So what can and
should we do?

Many large-scale efforts already under way



Reduce the quantity of misinformation



Increase access to high-quality information



Make it harder to find bad information relative to good



Slow down the spread through online social networks



Flag misinformation to encourage healthy skepticism



Warn people and arm them with media literacy skills

—

There are
things each of
us can do as
well



1) Make accurate, useful information easily available from trusted sources

- “Best defense is a good offense”
- Misinformation *loves* a vacuum—if we can avoid information gaps, we can avoid much of the harmful impact misinformation can have on people



2) Become a trusted messenger

- Building trust and solid relationships takes time, commitment, repeated (positive) interactions, true listening and communication
- One-off, rushed interactions don't lend themselves to dislodging misperceptions nor preventing future misinformation exposures from taking hold



3) Recognize the problem for what it is— not mere lack of “good information”

- Many factors at play
 - Polluted information environment
 - Routes of exposure
 - Frequency of exposure
 - Individual differences
 - Social learning and motivation
- Time to ditch knowledge deficit thinking: “if only people had the right facts...”



4) Help people understand their lives and world in ways that are compelling and useful

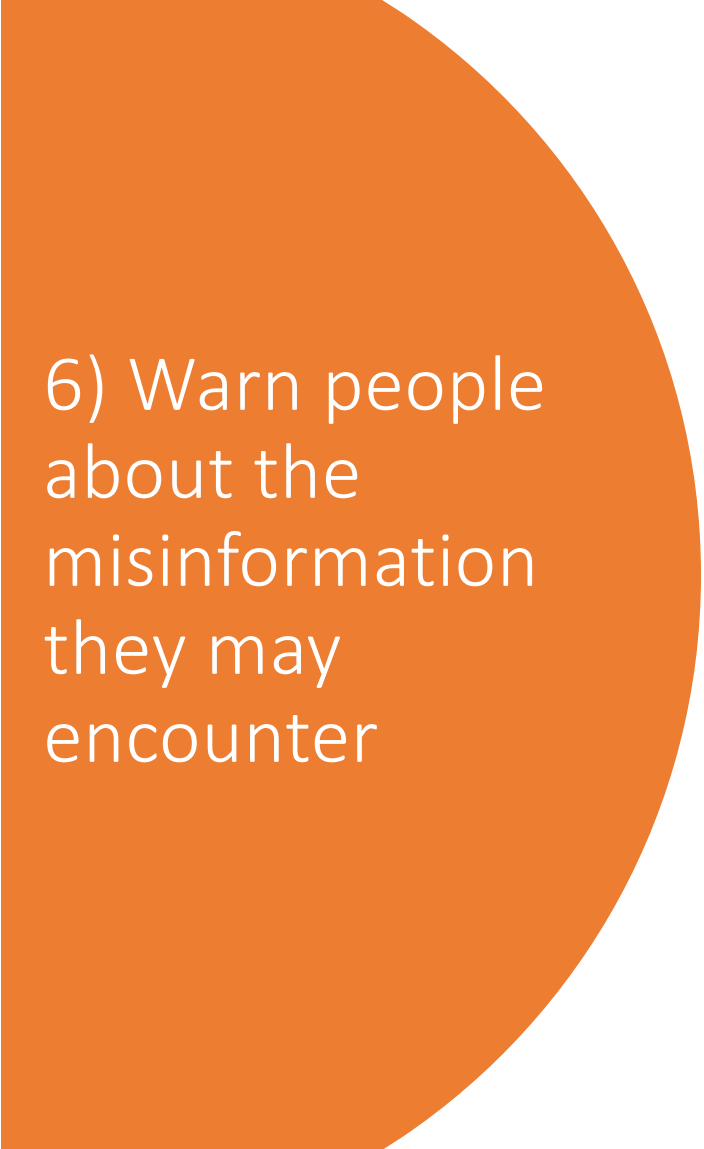
- Humans are storytellers; we naturally communicate through narrative
 - Characters, motives, conflict, resolution
- Individual facts don't speak for themselves—people need coherent structures within which to fit the key facts our science provides




5) Repeatedly debunk misinformation; don't ignore it and hope it'll go away

- Information vacuums are bad; if we want to tell people that something they've heard or believe is wrong, we need to simultaneously give them a more compelling explanation
- *This can be hard when we have high uncertainty or lack clear causal explanations, but we still have to try*



A large orange shape on the left side of the slide, consisting of a vertical rectangle on the left and a quarter-circle on the right. The text is written in white inside this shape.

6) Warn people about the misinformation they may encounter

- Concept of “prebunking” is straightforward: put people on guard about the possibility of encountering bad information and they are more likely to be cautious, more sophisticated information consumers moving forward
 - No need to be afraid you are going to “plant the seed” of misinformation by warning people
- 
- A decorative yellow dashed line in the bottom right corner, consisting of several short, curved segments.

Questions?

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