



# Vaccine Hesitancy and Networked Information

REBEKAH GETMAN, M.A., M.ED.

# Questions

- ▶ How does bad information about vaccines **enter** information networks?
  - ▶ Disguised as or paired with good science
- ▶ What helps it **move** through these networks?
  - ▶ Social Proof
  - ▶ Effective messaging



# Network types

## ▶ Web

- ▶ Online linking

- ▶ Influence: links from other sources to your source (Jackson, 2008)

## ▶ Social Media

- ▶ Following/followers

- ▶ Influence: Both # of followers and interactions (Goel et al, 2013)

# Study 1: Fluoride on Facebook

- ▶ 2014: Reaction on Facebook to “the Harvard Fluoride study”
- ▶ Joined 9 anti-fluoride Facebook groups and followed threads in which the study was linked
- ▶ Sentiment analysis on comments

Seymour et al, 2015



# Study 2: Vaccine information online

- ▶ With MediaCloud ([mediacloud.org](http://mediacloud.org)), conducted keyword search of stem “vaccin” of 50,000 English-language sources on the web, June 1 2014-March 1 2015
- ▶ Network analysis on top 500 sources

Getman et al, 2018

# Study 3: Vaccine information on Twitter

- ▶ 100 most influential stories on the web by inlink, tracked across Twitter
  - ▶ 20 stories were vaccine-hesitant; 79 pro-vaccine
  - ▶ 517 shares on Twitter across 479 users with 23,127,350 followers
  - ▶ Top 10 Twitter Shares (by user followers) were coded for link, tweet, and user sentiment

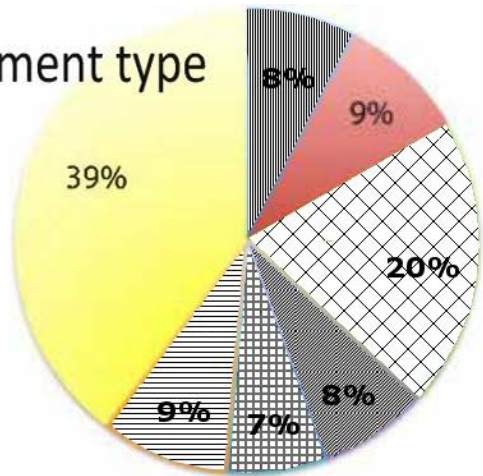


Q1: How  
does bad  
information  
get into  
good  
networks?

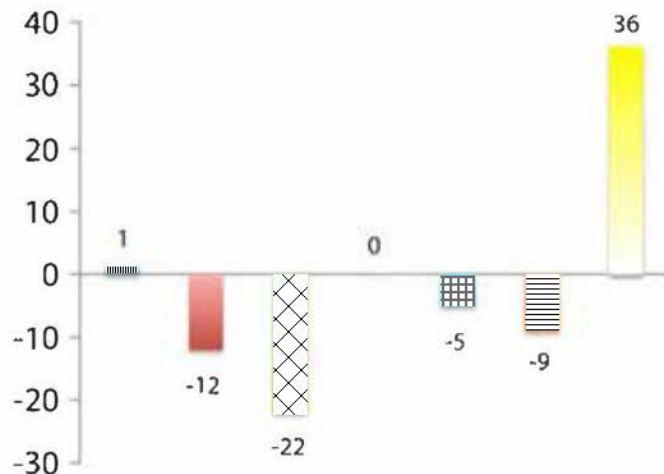
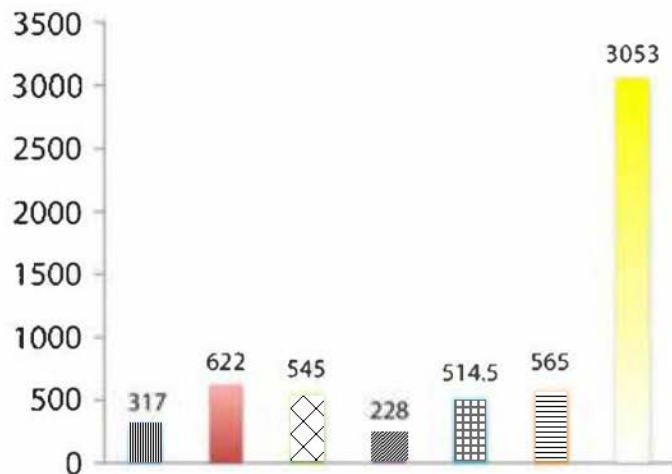
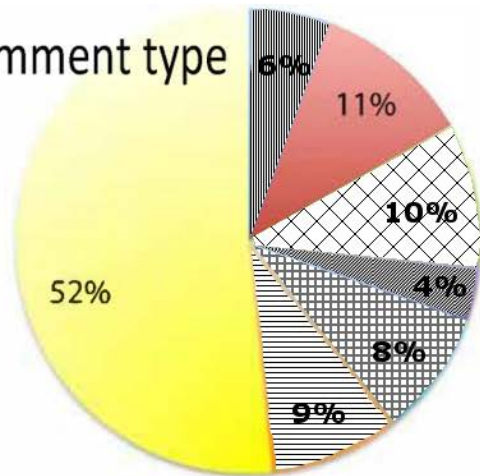




Comment type

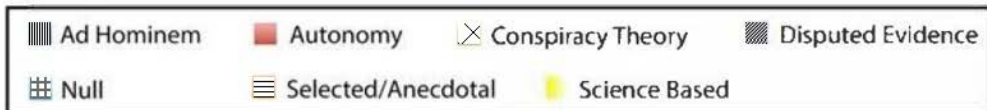


Likes by comment type



Engagement score

Sentiment score

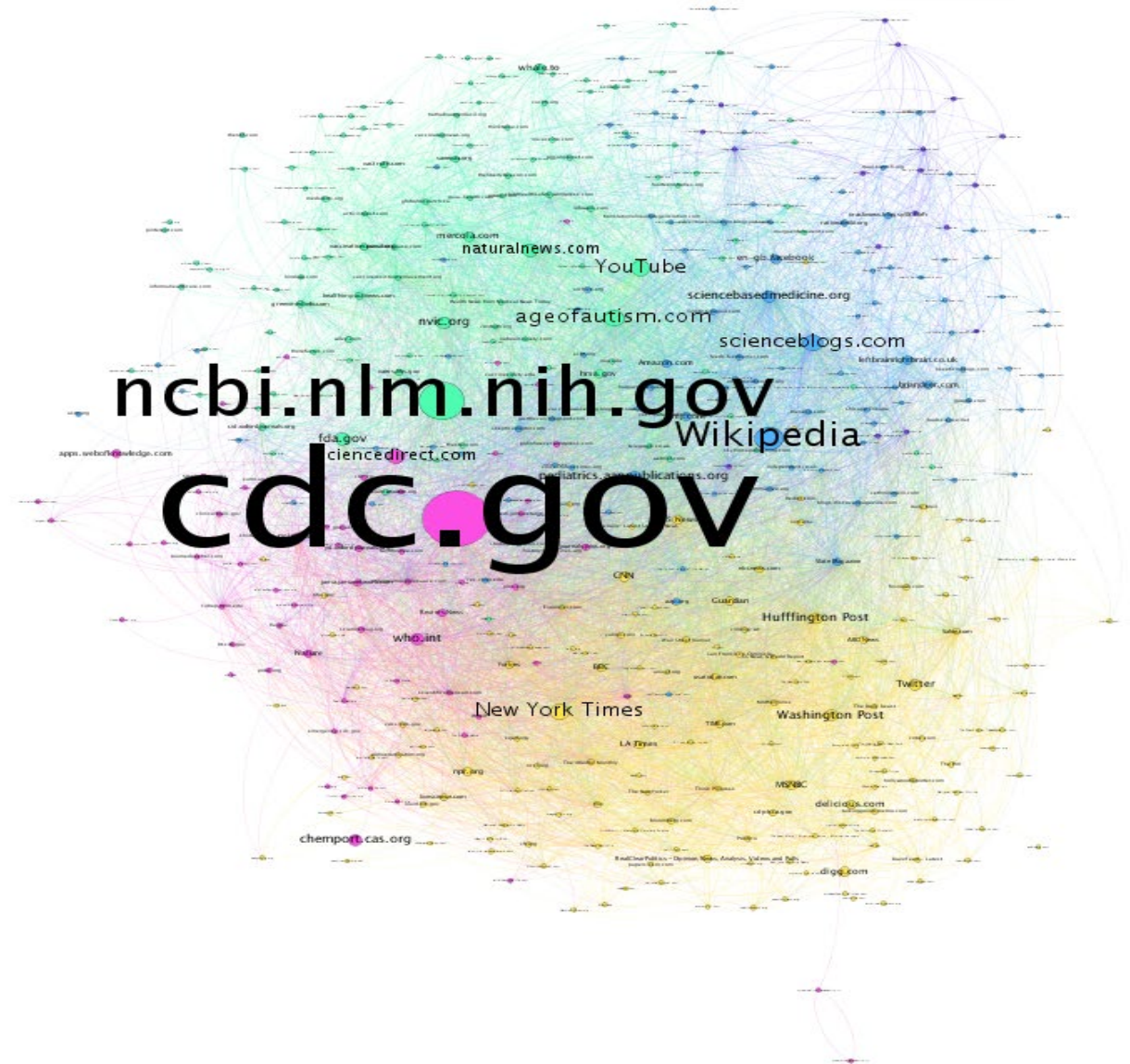


# Study 1: Facebook Comments on Fluoride




# Study 2: Online Network of Vaccine Information

Vaccine-Hesitant  
Public Health  
Pro-Vaccine  
Mainstream Media



# Study 3: Vaccine information on Twitter



## Educate4theInjured

Scientific Research provided In honor of those injured by the massive "one size fits all" vaccine public health policy

Home Injured Children The FACTS/SCIENCE Vaccine FAQs Superbugs from Vaccines Articles Video Library Eczema/Shedding More

[Package Inserts](#) [Exemptions](#) [Refusal Form](#) [Affidavits](#) [Documents/Proof](#)

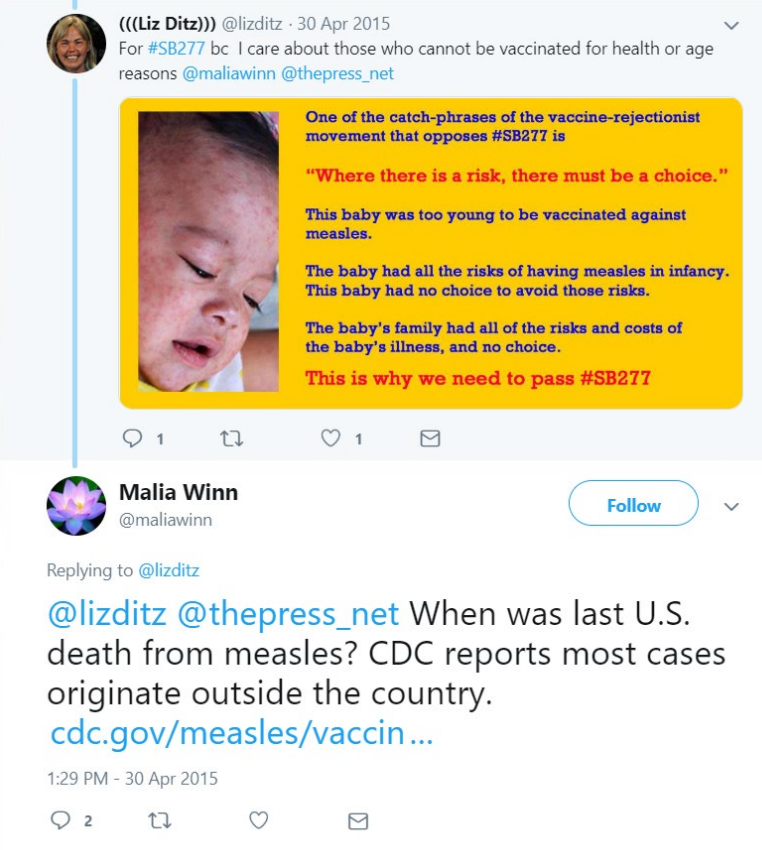
Facebook Twitter YouTube

## WE WANT THE FACTS

Where did this science come from? NLM, NIH, CDC, FDA, OXFORD JOURNALS, PUBMED...WHERE YOUR DR GETS HIS INFORMATION. (Besides the sales reps selling the vaccines to him)

[NLM.NCBI.NIH.GOV](http://NLM.NCBI.NIH.GOV)- The United States National Library of Medicine (NLM), operated by the United States federal government, is the world's largest medical library. The NLM is a division of the National Institutes of Health. Its collections include more than seven million books, journals, technical reports, manuscripts, microfilms, photographs, and images on medicine and related sciences including some of the world's oldest and rarest works.

[FDA.GOV](http://FDA.GOV)- The Food and Drug Administration (FDA or USFDA) is an agency of the United States Department of Health and Human Services, one of the United States federal executive departments.



(((Liz Ditz))) @lizditz · 30 Apr 2015  
For #SB277 bc I care about those who cannot be vaccinated for health or age reasons @maliawinn @the\_press\_net

One of the catch-phrases of the vaccine-rejectionist movement that opposes #SB277 is  
"Where there is a risk, there must be a choice."  
This baby was too young to be vaccinated against measles.  
The baby had all the risks of having measles in infancy. This baby had no choice to avoid those risks.  
The baby's family had all of the risks and costs of the baby's illness, and no choice.  
This is why we need to pass #SB277

Malia Winn @maliawinn  
Replying to @lizditz  
@lizditz @the\_press\_net When was last U.S. death from measles? CDC reports most cases originate outside the country.  
[cdc.gov/measles/vaccin...](http://cdc.gov/measles/vaccin...)



## Q2: Why does misinformation travel within the network?



SOCIAL PROOF



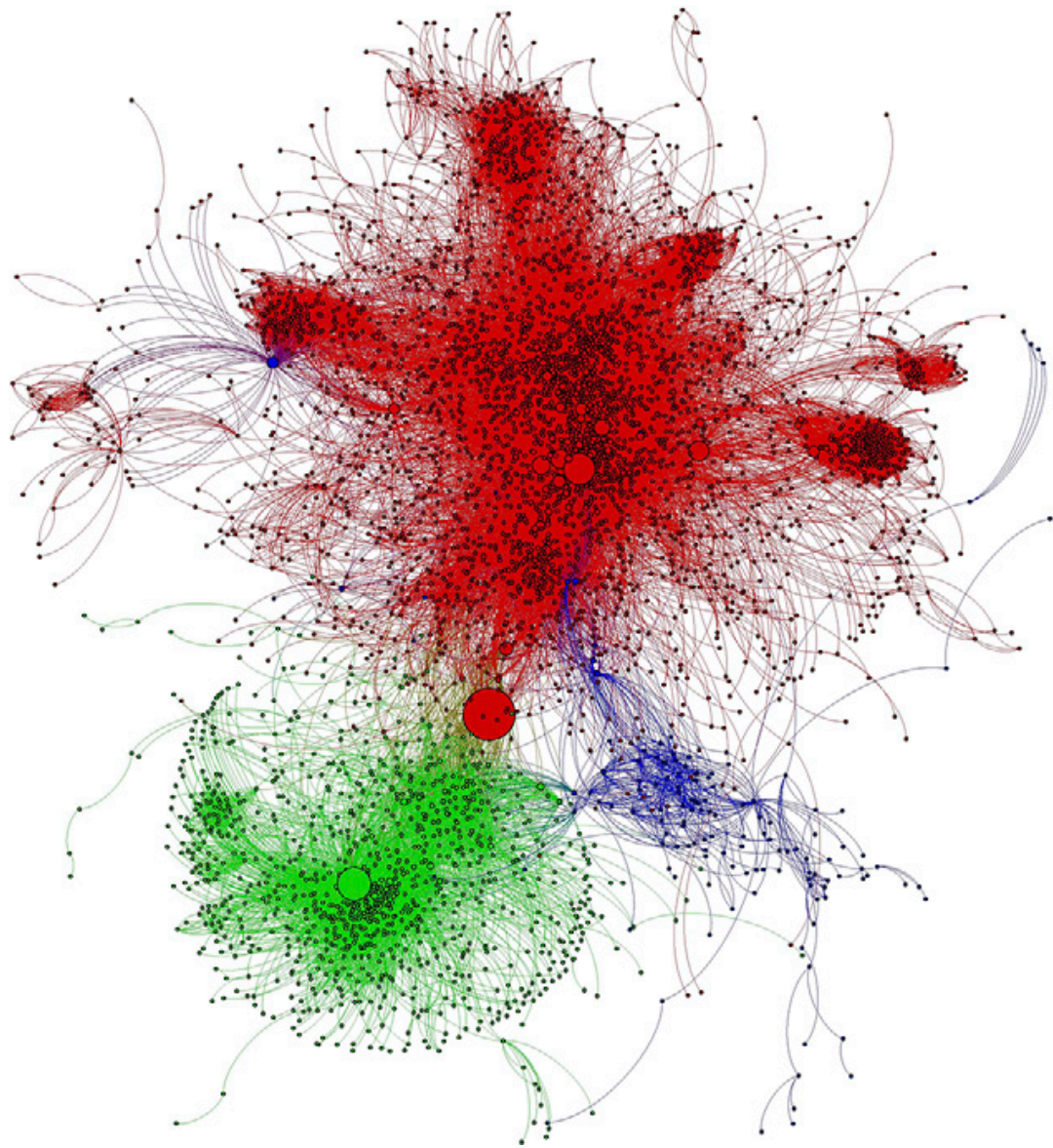
EFFECTIVE MESSAGING

Q2: Why does misinformation travel within the network?



SOCIAL PROOF





Network of users in three anti-fluoride Facebook Groups

# Study 1: Social Proof

Q2: Why does misinformation travel within the network?

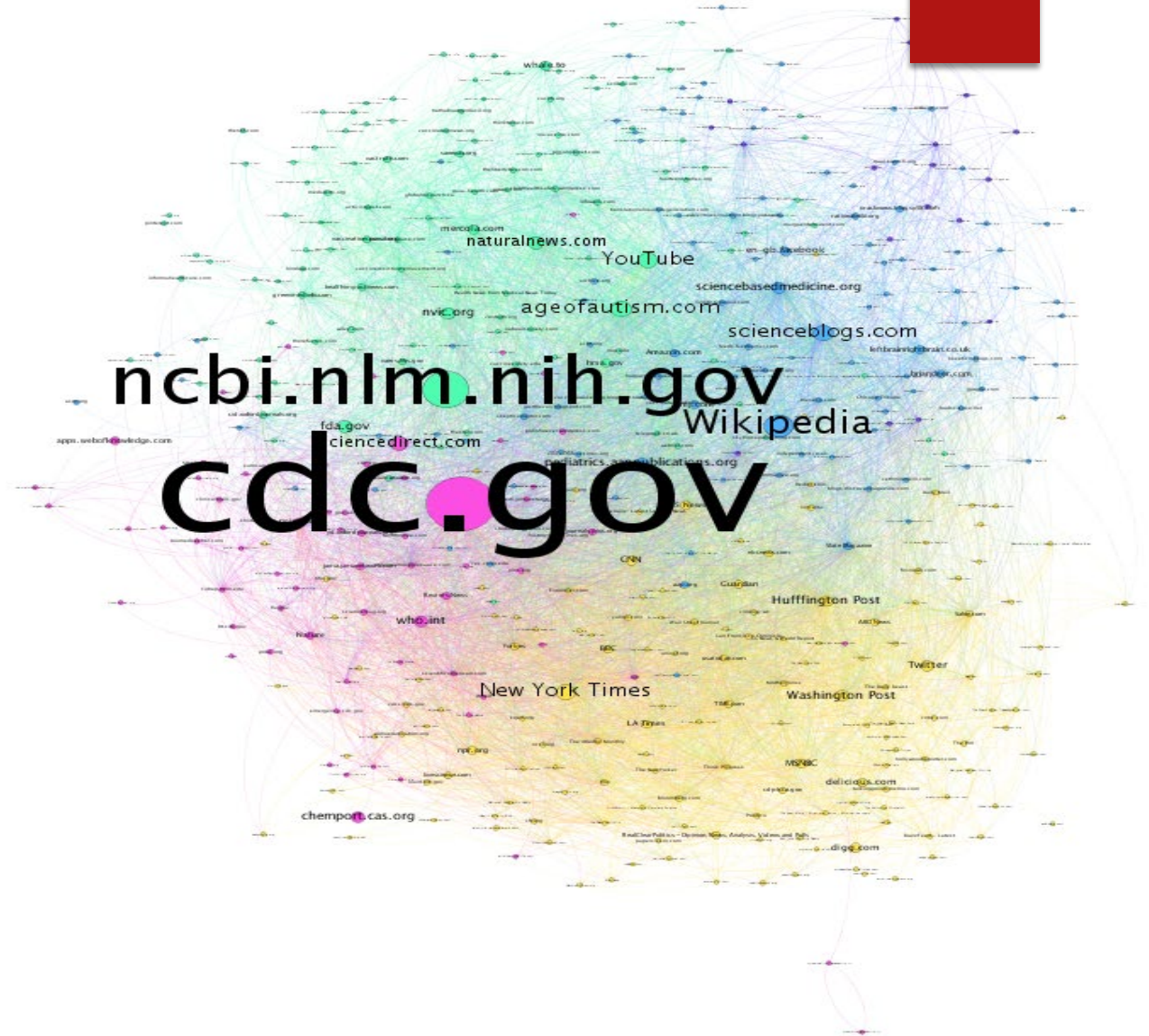


EFFECTIVE MESSAGING



# Study 2: Online Network of Vaccine Information

Vaccine-Hesitant  
Public Health  
Pro-Vaccine  
Mainstream Media





# How does effective messaging move information?



Sentiment of Tweeter	Total Users	Average Twitter Followers	% Users with followers above the mean
Pro-Vaccine	328	56,080	53%
Vaccine-Hesitant	147	20,575	39%

Pro-vaccine users are 10% more likely to have followers above the mean ( $p = 0.024$ )

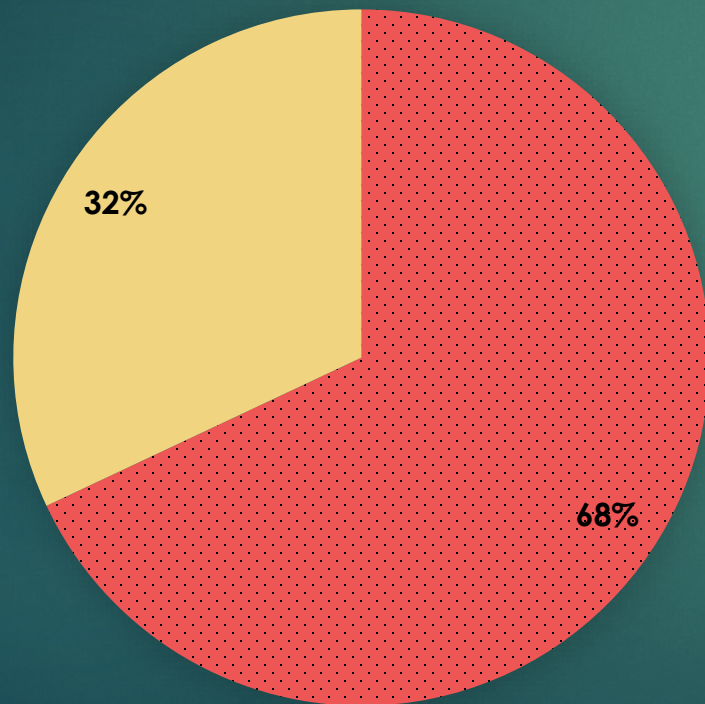


# How does effective messaging move information?

Web Community	Total Twitter Shares	% Total
Pro-Vaccine	39	8%
Vaccine-Hesitant	146	28%
Public Health	141	27%
Mainstream Media	191	37%

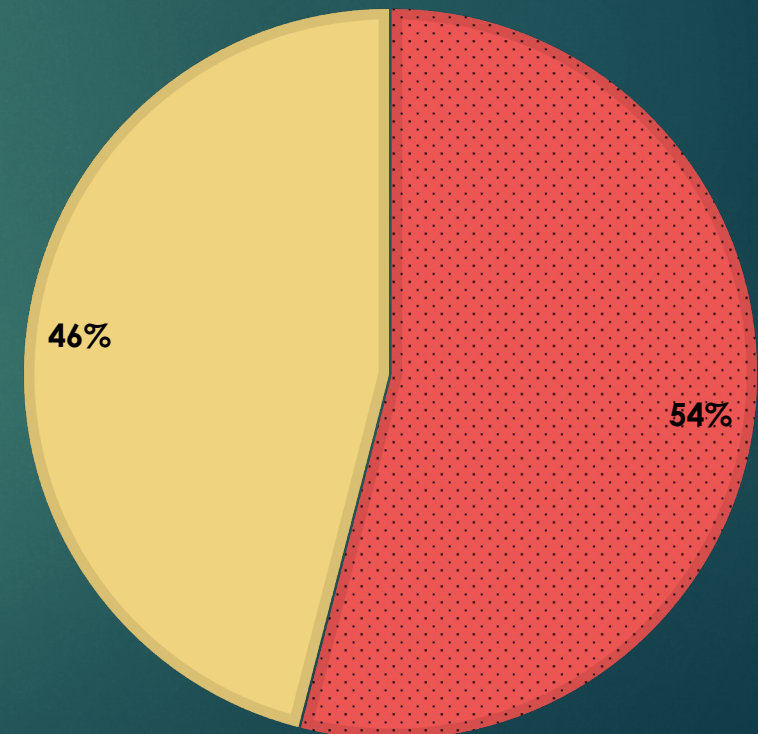
# How does effective messaging move information?

LINKS ON VACCINE-HESITANT WEB PAGES



■ Vaccine-Hesitant content

TWITTER SHARES BY VACCINE-HESITANT USERS



■ Science or Gov websites



# Why does vaccine- hesitant messaging move?

- ▶ “Anti-Vaxxers are thriving – because we live in a fact-phobic wild west” – Zoe Williams, *The Guardian*

<https://www.theguardian.com/commentisfree/2019/jan/25/anti-vaxxers-social-media-vaccine-climate-change>

- ▶ “Dr. Peter J. Hotez: ‘A Scary Anti-Science Movement Has Become Very Strong in Texas’ – Andy Langer, *Texas Monthly*

<https://www.texasmonthly.com/podcast/peter-j-hotez-scary-anti-science-movement-strong-texas/>

- ▶ “People Who Don't Vaccinate Their Kids Are Selfish: I understand that some can't because of medical reasons, but the rest don't seem to care that they're damaging public health” – Jinny Suh, *Cosmopolitan*

<https://www.cosmopolitan.com/politics/a9256115/vaccinations-mandate-anti-vaxxers-selfish/>

# Why does vaccine-hesitant messaging move?

- ▶ “Protecting the Health of 7 Billion people on the planet (National Health Federation).
- ▶ “A group of ducks is known as a team, which is exactly what the autism community needs” (Safeminds.com).



When: NOW!  
Where: Every house, every city.  
Why: It's time to take back our health.  
How: One. Thought. at. a. Time.

## VIVA LA REVOLUTION!

A generation of children has been written off. Today we say NO more.

Our children speak to us daily. They cry out. They are in pain. Some physically. Some emotionally. They've been forgotten. Neglected. Used. Why? All for the 'greater good'.

We bring you their stories. Stories of healing. Of truth. Of justice. And of HOPE.

Listen to the children. Hear their message. Join us as we help them learn, grow, live and be.

Together, we can fix their pain. Heal their bodies. Make them whole again. Join our community. Get to know us. Our children. Our reality. And, our dream.

Thinking Moms' Revolution. Live it. Learn it. Believe it.

Think with us. Walk with us. Hand in hand. Together. For our children.



# Conclusions

- ▶ Despite minority status, vaccine-hesitant narratives persist in information networks
- ▶ Both peer-reviewed science and collective language are common among vaccine-hesitant activists.
- ▶ These frames are used for resource mobilization and to shield from harm, humiliation, and discontent; both help to move information through the network as others look for the same.



Thank you!

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# The Risks of Misinformation in the Age of Online Social Networks

Amelia Burke-Garcia, PhD  
Amy Leader, PhD

February 14, 2020

# Social Media Has Radically Transformed Today's Communication Landscape





50 percent of Internet users report that they hear about the latest news via social media before ever hearing about it on a news station.



An average user will only read an article for 15 seconds or less and the average video watch time online is 10 seconds.



**This is Influencing How Information is  
Communicated and Misinformation is Spread**



Social media users tend to promote their favorite narratives, form polarized groups and resist information that doesn't conform to their beliefs.



*“Falsehood diffused significantly farther, faster, deeper, and more broadly than the truth in all categories of information.”*

*~Sinan Aral, Massachusetts  
Institute of Technology*

The age of social media has enabled a new era of creators... It's a new world of heavily opinionated content.





# But What Is An “Online Influencer” Anyway & Why Are They So... Influential?

Opinion leadership is based on the premise that most people form their opinions under the influence of others whom they hold in high esteem.







And with the advent of social media, these opinion leaders have migrated online.



Influencer marketing is booming – between 2017 and 2019, companies will have increased their spending on social media influencers by around 250%, up to a whopping \$2.4B in 2019.



# Not All Influencers Are Created Equal

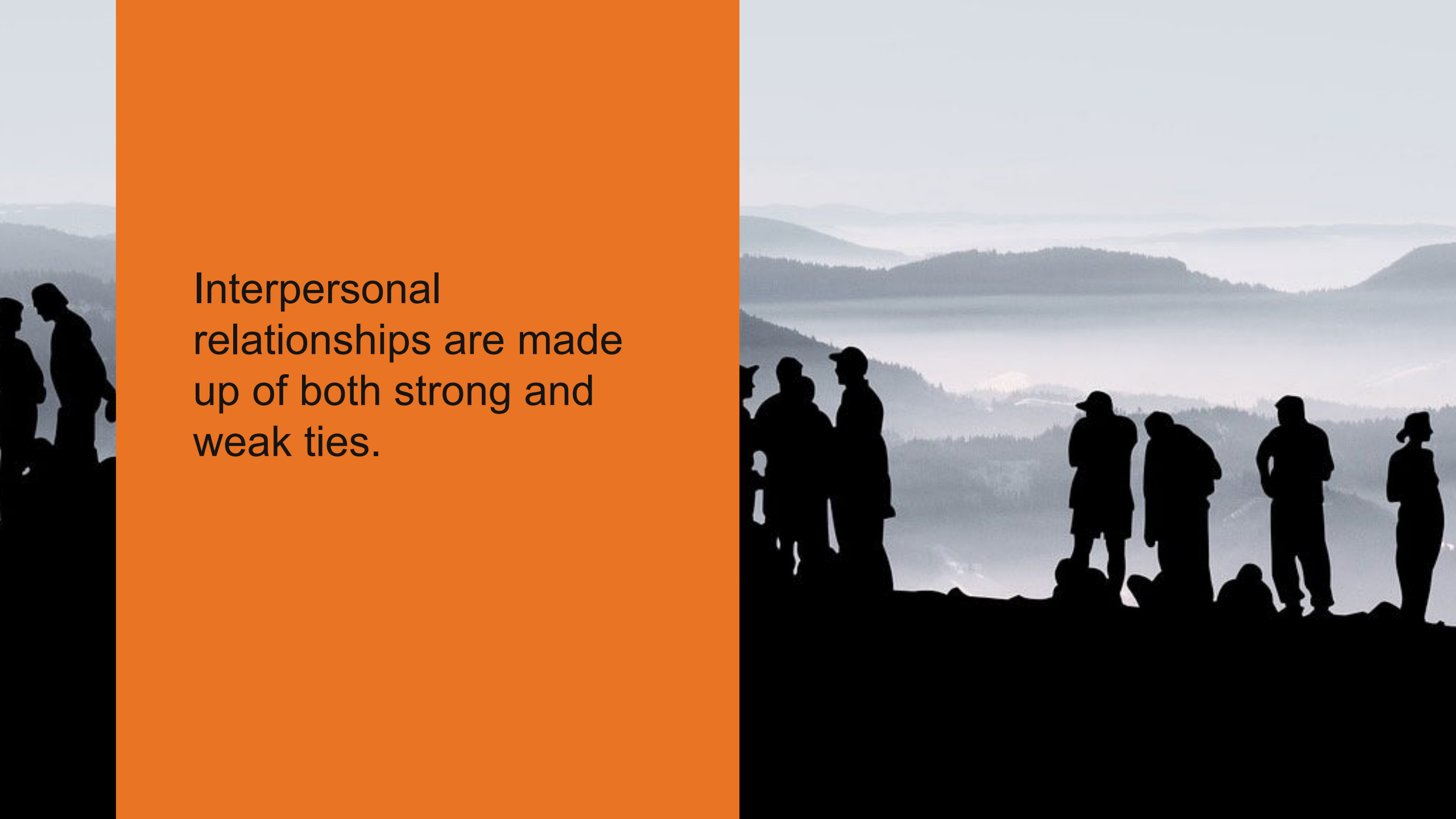


*“Online influencers are everyday people who are incredibly influential within their online social networks. What makes them so unique however is the medium in which they operate and wield this influence. While you could argue that lots of everyday people are influential to us, these online opinion leaders are especially influential because they have established online profiles, talk about a topic or set of topics they are familiar with, and have a cohort of followers who trust their thoughts, opinions, and perspectives.”*

*~Amelia Burke-Garcia, Influencing Health*



Interpersonal relationships are made up of both strong and weak ties.





*“A plethora of inaccurate and even potentially lifethreatening content [is] readily accessible to anyone with a modem and an Internet browser.”*

~ Risk and Petersen (2002, p.2713)





MAKE AMERICA GREAT AGAIN

TR  
MAKE A

ANON

Thank you, Be  
We rather enjoyed this  
WWG1WGA!





The Internet plays a large role in disseminating anti-vaccination information.



The World Health Organization has identified vaccine resistance and hesitancy as a top threat to public health.





# EMILY HENDERSON

STYLE • PLAY • EVERY DAY

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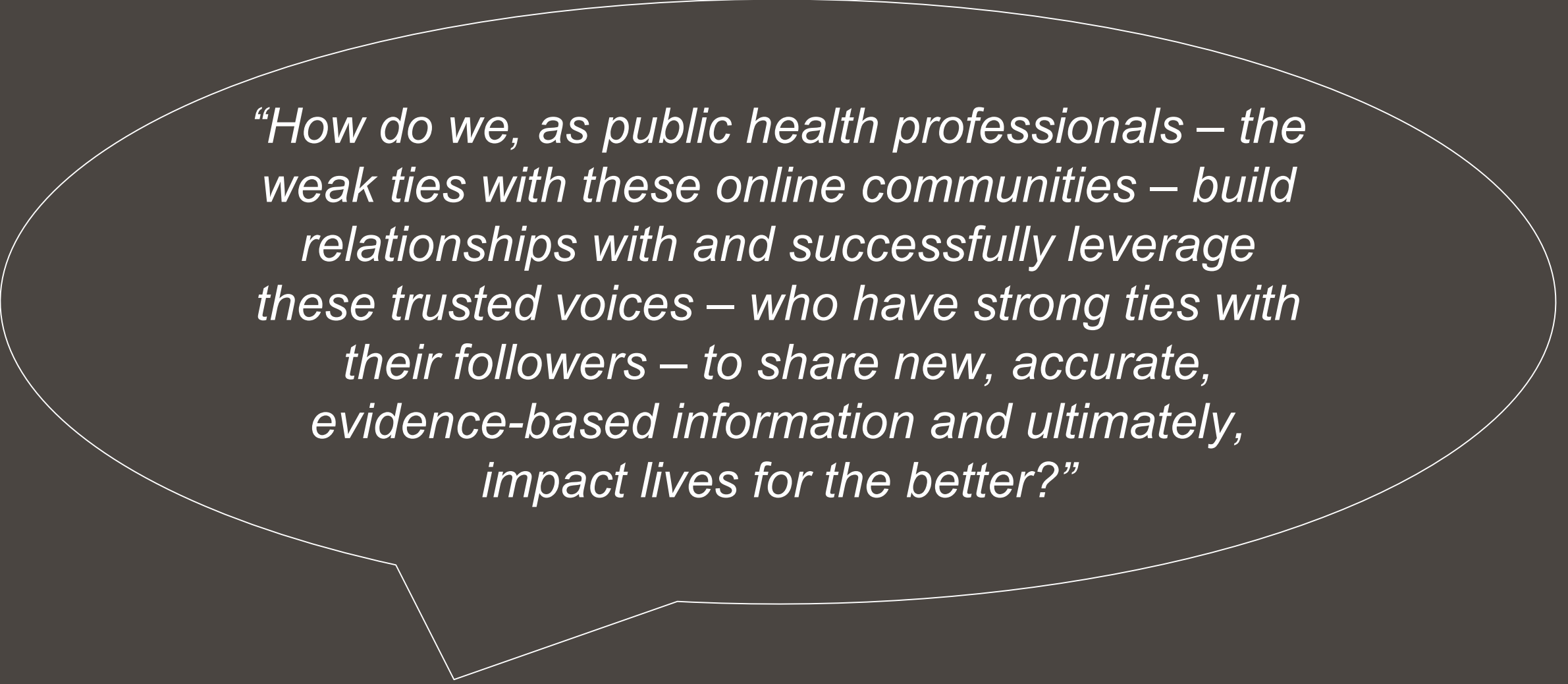
## THE PAINTED TRIM – HIGH IMPACT, LOW COST (ONE GIRL'S JOURNEY + ALL THE TIPS & TRICKS)

*by Sara Tramp*

FEBRUARY 3, 2020







*“How do we, as public health professionals – the weak ties with these online communities – build relationships with and successfully leverage these trusted voices – who have strong ties with their followers – to share new, accurate, evidence-based information and ultimately, impact lives for the better?”*



# **The Study: Exploratory Research with Online Influencers Who Are Anti-Vaccinators**

# Recruitment

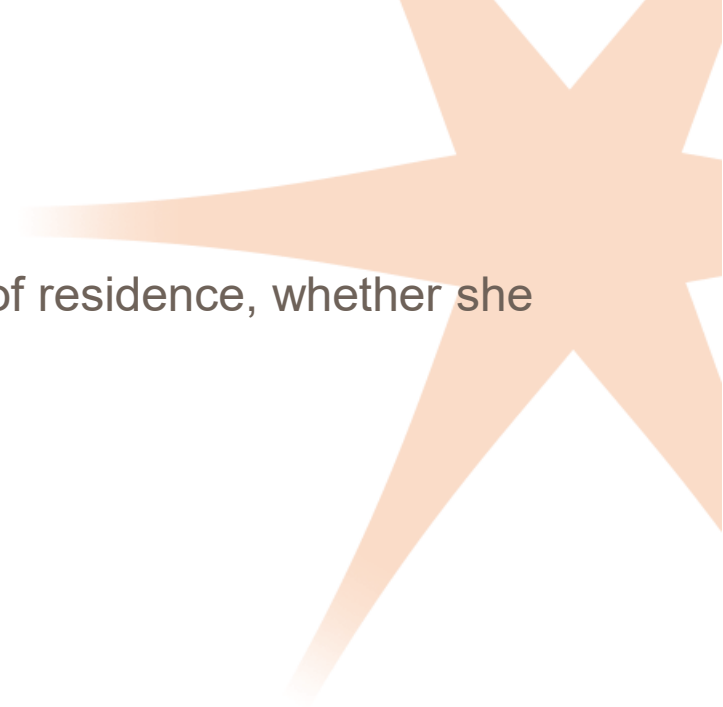
- Participants were recruited via a network of online influencers called The Motherhood
- The Motherhood is a network comprised of approximately 3,000 bloggers and influencers which are comprised of a mix of race/ethnicities and geographically diverse
- To identify non-vaccinators within this network, the following screening questions were used:
  - If your doctor recommends a vaccine for your child, how likely are you to get it?
  - Do you write about your position on vaccinations on your blog or social media?





# Data Collection

- We collected the following demographic data:
  - Age of the mother and the age and gender of each child
  - Mother's race and ethnicity, marital status, educational attainment, state of residence, whether she resided in an urban, suburban or rural community
  - When the blogger started blogging and her frequency of posting
- The interview guide was divided into three parts:
  - Discussions about their experiences with blogging
  - Discussions about their experiences with vaccination
  - Discussions about their perceptions of risk and autonomy
- We ended the interview by asking:
  - Are there any credible arguments in favor of vaccination?
  - What do they wish those who favor vaccination would stop saying about those who are against vaccination?



# Sample Characteristics

- The final sample for this study was 15 influencers
- All of them were women and married (n=15)
- The majority of them were Caucasian (n=13)
- The age range for the sample 27 years old to 53 years old, with the average age being 39 years old
- The sample included a mix of education levels, although most were well-educated (college or above & 2 had PhDs)
- There was a mix of geographic locations & level of urbanicity
  - Most lived in rural areas; in fact, some reported living in remote areas
  - Yet, despite this, all participants appeared well connected socially
- The majority of the participants reported being Christian
- Finally, all had pretty stable childhoods, having reported that they had what you might call “traditional American upbringings”

# What We Learned

There were 4 main themes that emerged from the research:

**Traditional  
Messengers are  
Not as Effective as  
They Once Were**

**The Old  
Communication &  
Messaging Do Not  
Work Anymore**

**Technology  
Supports &  
Amplifies These  
Beliefs**

**The Conversation  
about Risk is  
Multifaceted**



# Theme #1: Traditional Messengers are Not as Effective as They Once Were

- Today, parents have access to an overwhelming amount of information – whether accurate or not
- Parents will network with other parents to gather vaccination-related information
- In some cases, parents feel that they are more knowledgeable about vaccines – and their children – than pediatricians
  - Parents feel that they should be making vaccination decisions for their child and pediatricians are there to support their decisions
- They will also network with other parents to find pediatricians who align with their vaccination views

***“I’m not just gonna be told by an expert in the medical field that this is an important shot.”***

# Theme #2: The Old Communication & Messaging Do Not Work Anymore

- Some of the traditional messages that have been used have tended to focus on:
  - Altruistic reasons for getting vaccinated
  - The benefits of herd immunity
  - The risk of the disease
- These messages do not resonate with this group of parents
- We are also living in a *customizable* reality now
  - We have targeted ads
  - And video on-demand
  - And precision medicine
- So the one-size-fits-all approach of vaccination raises questions for these parents
  - Want customized vaccines
  - Want “clean” vaccines
- The current messaging is also leading to feelings of polarization & alienation within this community

***“I think parents have a right to do what they feel is best for their child and their home, not really keeping in mind the community aspect.”***

# Theme #3: Technology Supports & Amplifies These Beliefs

- Supporting these beliefs are tech advancements that:
  - Support alternative science
    - The advent of genetic testing technologies like *23&me* means that genetic profiles can be accessed, downloaded and analyzed by any number of applications
    - This audience is using this technology to identify so-called predispositions for vaccine injury and justify non-vaccination
  - Support alternative information
    - This audience seeks out sources that support their own beliefs
    - They actively avoid sources that they think might be “biased”
      - **Google and Pinterest’s decision to remove or lower the prominence of certain posts/websites if they are questionable sources was seen as censorship to them**
    - As well, they just seek out alternative methods for accessing the information they are trying to find
      - **“Duck, Duck, Go” search engine**

***“I go [to Facebook] because I know I can't go to Google and search something, because it's censored, and I'm not going to find true information.”***



# Theme #4: The Conversation about Risk is Complex & Multifaceted

- Perceptions of risk are not simple or straight forward within this group
  - This audience weighs the risk of the disease against the risk of the vaccine
  - Almost always, the risk of the vaccine outweighs the risk of the disease
- These parents argue that they love their own kids and their primary goal is to protect their own child first
- Thus, there is a fundamental ideological shift going on between the importance of the community versus the importance of the individual
  - The individual trumps the community

***“I’ve weighed the risk: the known risk of HPV against what I see as the unknown risk of the vaccination.”***

# Key Take Aways

- Social media is a powerful force for health communication and messaging
  - The way it works though supports the broad circulation of misinformation
- For health, this has life and death implications
  - Specifically, vaccination is a vital public health issue where we have seen this play out for decades
- Working with influencers can help this
  - But the public health community needs to adapt their communication strategies to incorporate influencers into their planning and programs
  - We need to understand their pain points – in order to figure out how to address them
- Ultimately, we need new messages AND new messengers
  - The public health community must recognize the importance of these trusted online voices
  - We must work with them to change behavior for the better with communities across the U.S. and globally

# Future Directions

- Our work is not done yet! Moving forward, we intend to:
  - Conduct additional research with online influencers with a wide variety of perspectives about vaccination (pro-, hesitant, and non-vaccinating)
  - Develop new messages that are developed and adapted through user-centered design, working in collaboration with these established online influencers as trusted sources using a community-based participatory approach
  - Design a communication intervention to test the effects of these messages on the followers of these influencers
  - Assess influencer and follower reactions to these messages using:
    - Qualitative interviews with the influencers themselves
    - A survey of the followers
    - Analysis of the blog/social media post content
    - Analysis of social media comments



# Sources

- <https://www.meltwater.com/blog/pr-and-marketing-trends-what-the-changing-media-landscape-means-for-brands/>
- <https://time.com/3858309/attention-spans-goldfish/>
- [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2795110](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2795110)
- <https://science.sciencemag.org/content/359/6380/1146.full>
- <https://www.socialbakers.com/blog/fake-social-media-influencers>
- [https://www.vice.com/en\\_us/article/qjdvvd/a-disturbing-number-of-people-think-coronavirus-is-related-to-corona-beer?utm\\_source=vicfbus](https://www.vice.com/en_us/article/qjdvvd/a-disturbing-number-of-people-think-coronavirus-is-related-to-corona-beer?utm_source=vicfbus)
- <https://www.sciencedirect.com/science/article/pii/S0264410X09019264>
- <https://www.who.int/news-room/feature-stories/ten-threats-to-global-health-in-2019>
- <https://stylebyemilyhenderson.com/blog/7-things-learned-posting-photo-obama-random-saturday-night-losing-4k-instagram-followers>
- <https://www.amazon.com/Influencing-Health-Comprehensive-Working-Influencers/dp/0367249928>

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**Thank You!**



**NORC**  
*at the UNIVERSITY of CHICAGO*

 insight for informed decisions™

# **Vaccine Information in a “Post-Fact” World**

**Rupali J. Limaye, PhD, MPH, MA**

**Department of International Health**

**Department of Epidemiology**

**Department of Health, Behavior & Society**

**Associate Director, Institute for Vaccine Safety**

**Johns Hopkins Bloomberg School of Public Health**



# Roadmap

- **Where** are people getting their vaccine information?
- **Why** are people choosing the sources they choose to obtain vaccine information?
- **What** are the implications of people seeking vaccine information in the sources that they do?
- **How** should providers engage online?



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**Where are people getting their vaccine information?**

# Social media and vaccine information

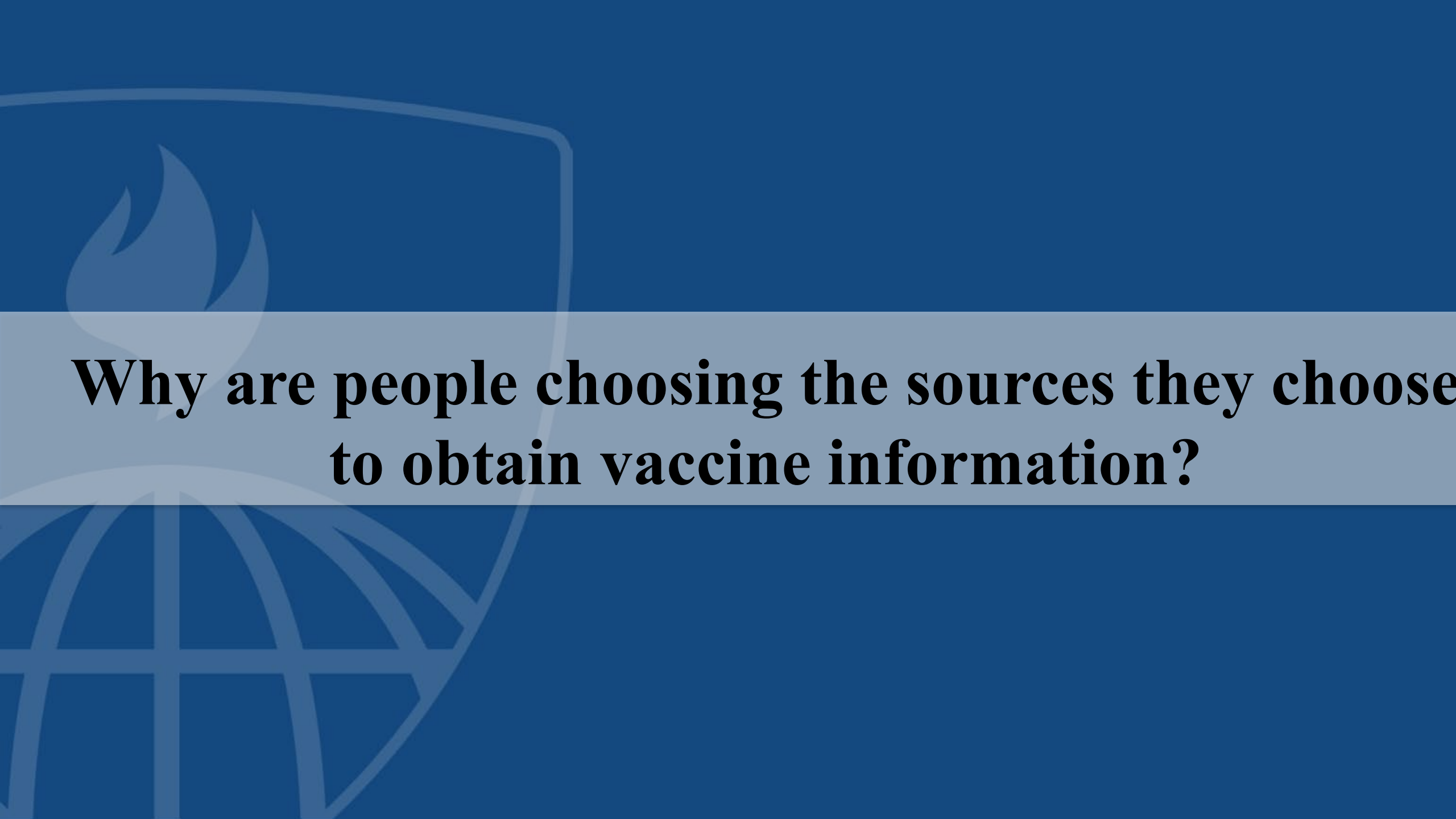
- We live in post-fact world: objective facts are less influential in shaping public opinion than appeals to emotion/personal belief
- Everyone is an expert in Web 2.0 health care
- The Internet was named as one of the most preferred places to get vaccine information (uncertainty)
- With the popularity of social media networks and “Mommy Blogs”, parents are increasingly seeking vaccine information on these user-generated platforms, and parents with vaccine safety concerns and those who delay/refuse vaccines are more likely to seek health information online

Gust, D., Brown, C., Sheedy, K., Hibbs, B., Weaver, D., & Nowak, G. (2005). Immunization attitudes and beliefs among parents: beyond a dichotomous perspective. *American journal of health behavior*, 29(1), 81-92.

Kata, A. (2010). A postmodern Pandora's box: anti-vaccination misinformation on the Internet. *Vaccine*, 28(7), 1709-1716.





The background features a dark blue gradient. On the left side, there are two faint, light blue icons: a flame at the top and a globe at the bottom. A horizontal light blue band spans the width of the image, containing the main text.

**Why are people choosing the sources they choose  
to obtain vaccine information?**

# Trust and democratic exchange

- Providers report increasing challenges to building a trustful relationship with patients within the vaccine context
- Trust in providers generally has been declining
- Communication strategies that providers employ during conversations about vaccines are important in establishing trust
- Because content is user-generated, information sharing is seen as more democratic on social media, creating echo chambers within networks

Yaqub, O., Castle-Clarke, S., Sevdalis, N., & Chataway, J. (2014). Attitudes to vaccination: a critical review. *Social science & medicine*, 112, 1-11.

Holroyd, T., Oloko, O., Omer, S.B., Salmon, D.A., Limaye, R.J. (In press). Communicating Recommendations in Public Health Emergencies: The Role Of Public Health Authorities. *Health Security*.



The background is a solid blue color. On the left side, there is a faint, light blue graphic. The top part of this graphic is a stylized flame with three distinct points. Below the flame is a stylized globe showing latitude and longitude lines. The globe is partially obscured by a horizontal white band that contains the text.

**What are the implications of people seeking vaccine information in the sources that they do?**



# Misinformation and Disinformation

## Dictionary.com's 2018 Word of the Year: *Misinformation*

- When people spread misinformation, they often believe the information they are sharing
- Disinformation is crafted and disseminated with the intent to mislead others
- Example: If a politician strategically spreads information that they know to be false in the form of articles, photos, memes, etc., that's *disinformation*. When an individual sees this disinformation, believes it, and then shares it, that's *misinformation*.



# Why are we seeing more misinformation and disinformation?

- While the participatory nature of social media enables information exchange, it simultaneously increases the possibility of rapid dissemination of inaccurate health information
- No vetting/fact-checking of information
- Proliferation of influence bots: anonymous, automated agents unattached to a real individual and sharing disinformation

Witteman, H. O., & Zikmund-Fisher, B. J. (2012). The defining characteristics of Web 2.0 and their potential influence in the online vaccination debate. *Vaccine*, 30(25), 3734-3740.





**How should providers engage online?**

# 1. Do not correct misperceptions

- The instinctive response to vaccine-related misinformation is to provide correct information, but this approach can backfire
- When discussing a controversial topic, presenting a message challenging an individual's pre-existing beliefs may lead them to supporting their original opinion even more





## 2. Tap into the availability heuristic

- **Availability heuristic:** describes our propensity to estimate the probability of an event based on how easily an instance of that event comes to mind
  - People tend to overestimate the importance of information that is available to them
  - Example: A person may argue that smoking is not unhealthy because they know someone who smoked two packs a day and lived to 100



# 3. Focus on the disease

- Pivot the conversation to the disease, including the risks of acquiring the disease, itself

**MEASLES CAN BE DANGEROUS**  
*Especially for babies and young children*

Measles can lead to...

- PNEUMONIA**  
(A SERIOUS LUNG INFECTION)
- BRAIN DAMAGE**
- DEAFNESS**
- DEATH**

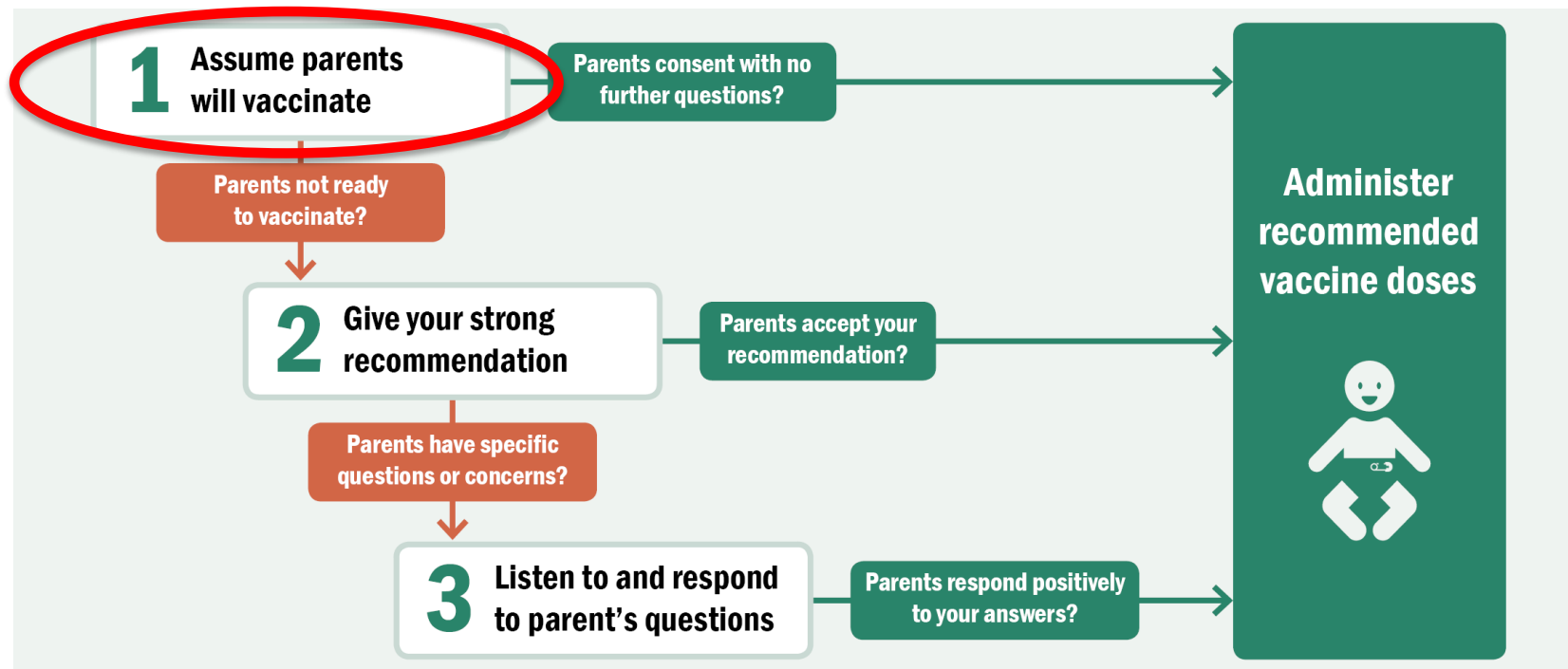
**ABOUT 1 OUT OF 4** people who get measles will be hospitalized.

**IMMUNIZATION. POWER TO PROTECT.**  
*Learn more at [www.cdc.gov/vaccines/parents](http://www.cdc.gov/vaccines/parents)*

Omer, S. B., Amin, A. B., Limaye, R. J. (2017). Communicating about Vaccines in a "Post-Fact" World. *JAMA Pediatrics*, 171 (10), 929-930  
Source: Centers for Disease Control

# 4. Use nudges/defaults

- Use presumptive communication as the default



Omer, S. B., Amin, A. B., Limaye, R. J. (2017). Communicating about Vaccines in a "Post-Fact" World. *JAMA Pediatrics*, 171 (10), 929-930

Source: Centers for Disease Control

## Example of A Story Arc for Providers using a Social/Behavioral Pathway Approach

Establish trust	Convey empathy about vaccine concern	Pivot to disease risk (severity and susceptibility) and salience	Enhance self-efficacy to protect from vaccine preventable disease	Call to action	Personal/normative appeal
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Dudley, M. Z., Salmon, D. A., Halsey, N. A., Orenstein, W. A., Limaye, R. J., O'Leary, S. T., & Omer, S. B. (2019). *The Clinician's Vaccine Safety Resource Guide Optimizing Prevention of Vaccine-Preventable Diseases Across the Lifespan*. New York: Springer.





# Social Media and the Health Professional

## Austin Lee Chiang, MD MPH

Assistant Professor of Medicine, Div. Gastroenterology & Hepatology  
Director, Endoscopic Bariatric Program, Thomas Jefferson Univ. Hospital  
Chief Medical Social Media Officer, Jefferson Health

**National Vaccine Advisory Committee Meeting**

**February 14, 2020**

**Washington, D.C.**

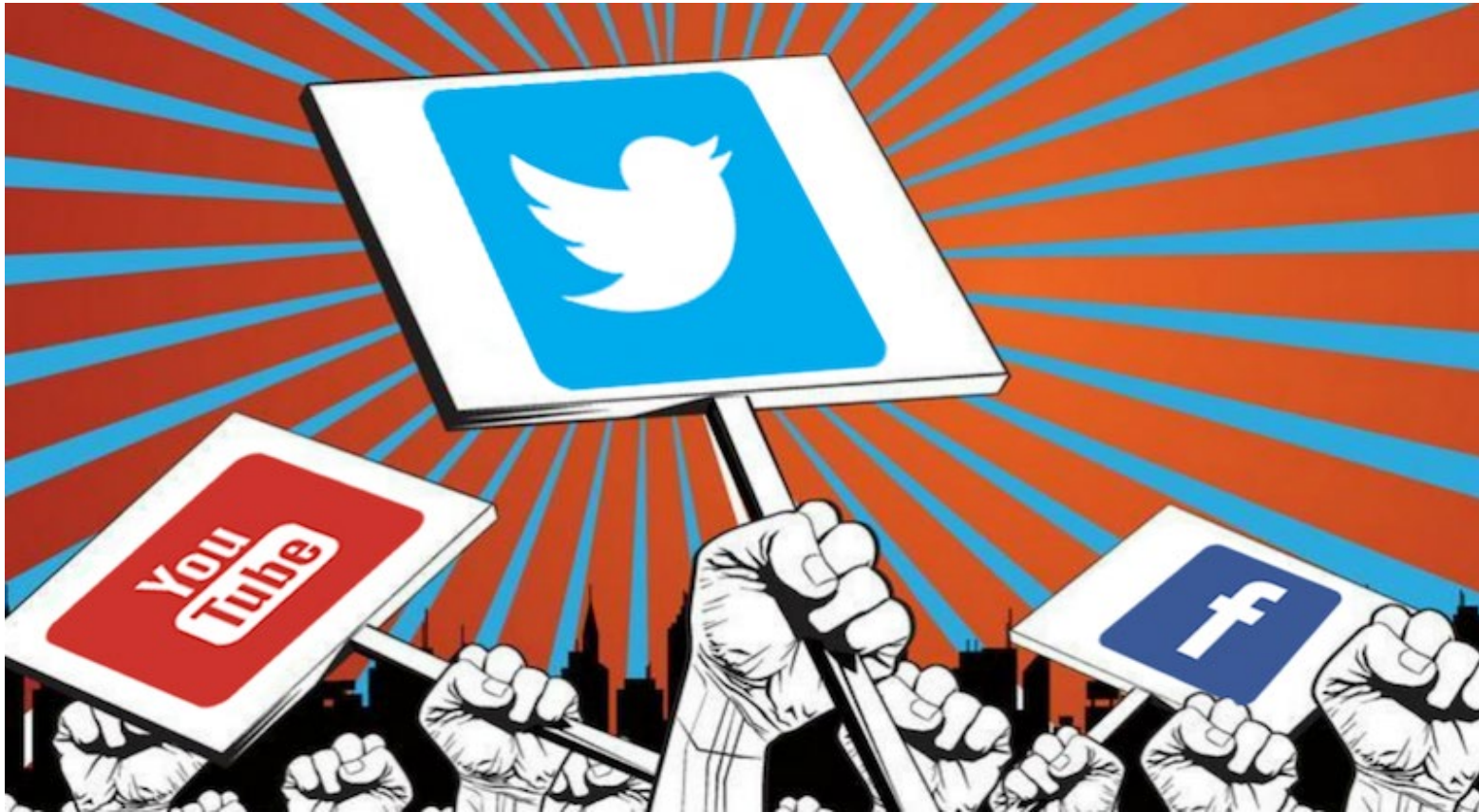
# Disclosures

- None relevant to this talk

# Agenda

- How we think about social media
- My motivation as a health professional
- Challenges we face





<https://kclpolitics.org/2018/08/28/social-movements-and-asymmetrical-warfare-in-an-information-era/>



# How do you think about social media?

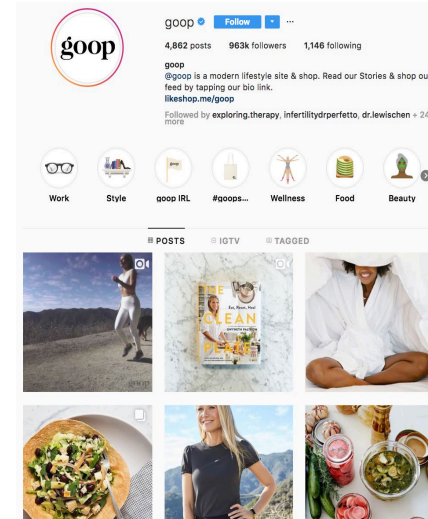
This?



Or this?



What about this?



# How do you think about social media?

How about this?



Or this?

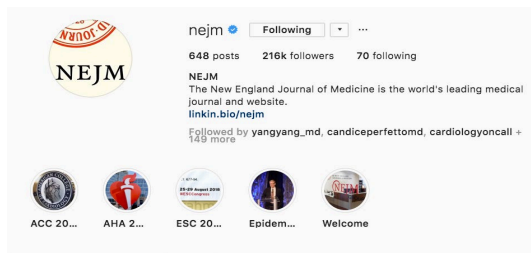
This is a screenshot of the CDC's official Twitter profile. The profile picture is the CDC logo. The bio states: "CDC's official Twitter source for daily credible health &amp; safety updates from Centers for Disease Control &amp; Prevention. Privacy policy: bit.ly/2MhQ6Hp". It lists the location as Atlanta, GA, the website as cdc.gov, and that it was joined in May 2010. The profile has 266 following and 1.2M followers. A pinned tweet from @CDCgov dated Oct 22 is visible, mentioning a new CDCMMWR report on interviews with Utah patients with e-cigarette or vaping product use associated lung injury. The tweet text reads: "A new @CDCMMWR reports on interviews with Utah patients with e-cigarette, or vaping, product use associated lung injury. The vast majority (92%) reported using products containing THC obtained from informal sources, such as friends or dealers. Learn more: bit.ly/2pDThIR".

What about this?

This is a screenshot of the NEJM (New England Journal of Medicine) social media page. The profile picture is the NEJM logo. The bio states: "The New England Journal of Medicine is the world's leading medical journal and website. linkin.bio/nejm". It is followed by yangyang\_md, candiceperfetomd, cardiologyoncall, and 149 more. The page shows a grid of posts. One post features a quote: "Promoting women and underrepresented minorities to leadership positions may well enable academic medicine to better serve our diverse population." Another post shows a close-up of a tongue. A third post shows a person's torso with a large, dark, irregular lesion on the chest.

# Medicine and social media

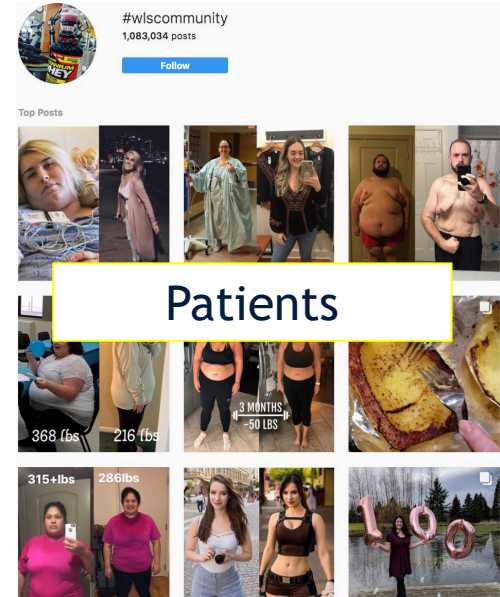
This?



Major journals



Thought leaders and colleagues



Patients



# Influencers versus spokespeople

*Vox*

## The rise of the nursefluencer

The doctor will fave you now.

By Rebecca Jennings | @rebexxxa | May 10, 2019, 11:00am EDT



# You're probably already using social media

- Not just Twitter, Facebook, Instagram, Snapchat, LinkedIn, etc.

But also:

- Wikipedia
- YouTube
- Yelp



JAN 2019

## SOCIAL MEDIA USERS OVER TIME

NUMBER OF SOCIAL MEDIA USERS (IN MILLIONS), WITH YEAR-ON-YEAR CHANGE



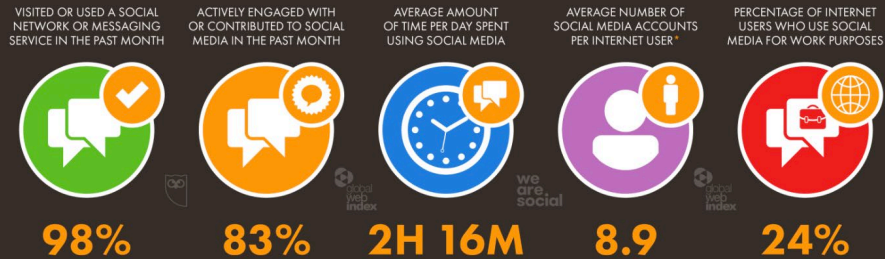
73 SOURCE: BASED ON DATA PUBLISHED IN PREVIOUS 'GLOBAL DIGITAL' REPORTS. SEE [HTTPS://DATAREPORTAL.COM/](https://datareportal.com/) FOR FULL DETAILS.

Hootsuite we are social

JAN 2019

## SOCIAL MEDIA BEHAVIOURS

HOW INTERNET USERS ENGAGE WITH SOCIAL MEDIA [SURVEY BASED]



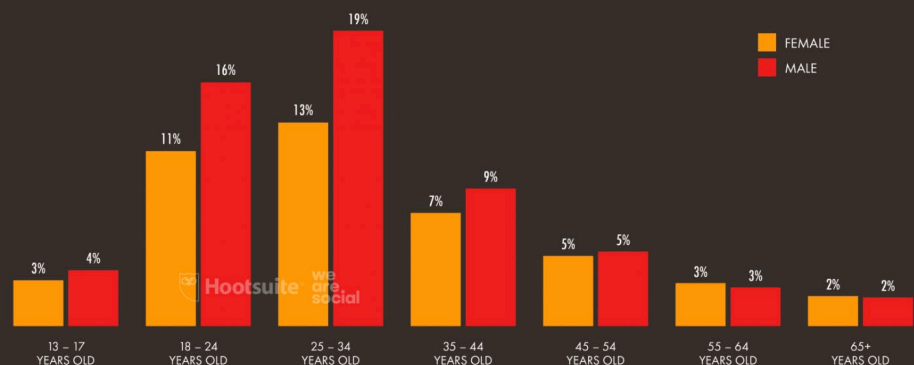
76 SOURCE: GLOBALWEBINDEX (Q2 & Q3 2018). FIGURES REPRESENT THE FINDINGS OF A BROAD SURVEY OF INTERNET USERS AGED 16-64. \*NOTE: FIGURE FOR SOCIAL MEDIA ACCOUNTS MAY NOT INDICATE ACTIVE USE OF ALL ACCOUNTS EVERY MONTH.

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JAN 2019

## SOCIAL MEDIA AUDIENCE PROFILE

BASED ON THE COMBINED ADVERTISING AUDIENCES OF FACEBOOK, INSTAGRAM, AND FACEBOOK MESSENGER



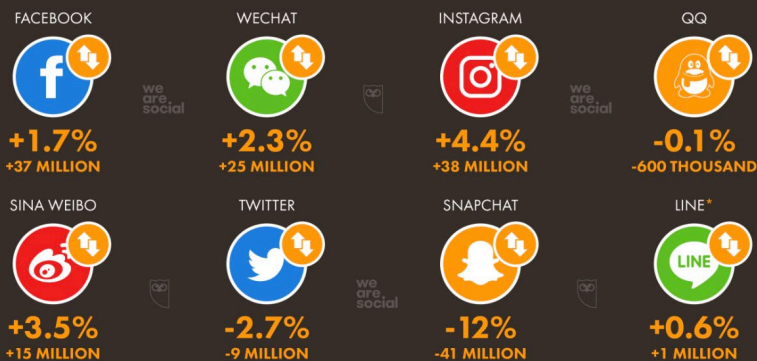
74 SOURCE: EXTRAPOLATED FROM FACEBOOK DATA (JANUARY 2019); KEVIN ANALYTICS. NOTE: FACEBOOK DOES NOT PUBLISH AUDIENCE DATA FOR GENDERS OTHER THAN 'MALE' OR 'FEMALE'. FIGURES MAY NOT SUM TO 100% DUE TO ROUNDING.

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JAN 2019

## CHANGE IN ACTIVE USERS BY SOCIAL PLATFORM

QUARTER-ON-QUARTER CHANGE IN THE NUMBER OF ACTIVE USERS\* REPORTED BY EACH SOCIAL PLATFORM



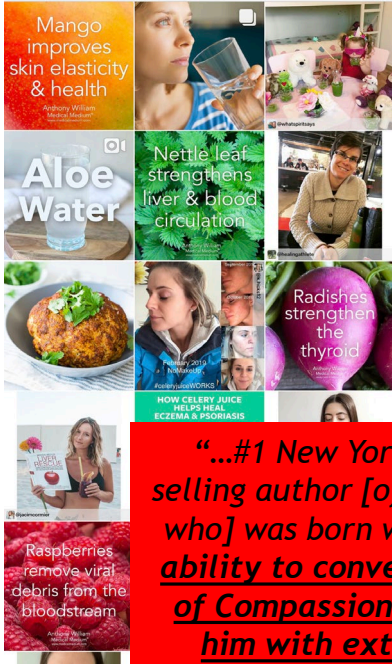
82 SOURCES: FACEBOOK, WECHAT, QQ, SINA WEIBO, TWITTER, LINE, LATEST EARNINGS ANNOUNCEMENTS (AS AT JANUARY 2019); INSTAGRAM, SNAPCHAT, LATEST DATA FROM SELF-SERVE ADVERTISING TOOLS (JANUARY 2019). \*ADVISORY: FIGURES FOR EACH PLATFORM ARE DERIVED FROM VARYING DEFINITIONS OF 'ACTIVE USER'. ACTIVE USERS MAY NOT REPRESENT UNIQUE INDIVIDUALS. FIGURES FOR LINE ARE BASED ON THE COMPANY'S SELF-DECLARED 'FOUR KEY COUNTRIES' (AS REPORTED IN COMPANY EARNINGS RELEASES), NOT TOTAL GLOBAL USERS.

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# What motivated me?

- Meeting patients where medical information is encountered and health knowledge is sought
- Being an accurate source of health information
- Humanizing the profession

But *this* is the world we live in



**“...#1 New York Times best-selling author [of multiple books who] was born with the unique ability to converse with Spirit of Compassion who provides him with extraordinarily accurate health information that’s often far ahead of its time.”**

## VOICE PHILLY

JANUARY 09, 2019

### As medical misinformation infects the internet, doctors seek a cure

Online advice has proven dangerous and, in some cases, even deadly. And it poses serious questions for patients and professionals



BY JOHN KOPP  
PhillyVoice Staff



COURTESY CHILDREN'S HOSPITAL OF PHILADELPHIA  
Dr. Paul Offit, of the Children's Hospital of Philadelphia, says he treats children with preventable diseases every year. Often times, he says, their parents refused to vaccinate them because of bad information they found online.

#### 'WE'RE COMPELLED BY STORIES'

In his latest book, titled "**Bad Advice**," Offit wrote that the problem isn't that there's so much conflicting information out there. Rather, it's that there is so much misleading information. And without a medical background, it can be challenging to differentiate between the two.

If a parent wanted to thoroughly research the effects of the chicken pox vaccine, they would need to read several hundred medical papers, Offit said. And that would require them to have knowledge in all sorts of areas – virology, immunology, epidemiology and clinical medicine, among others.

The vast majority neither have the knowledge, nor the time, to do so.

That's why both the the CDC and the American Academy of Pediatric have advisory boards filled with experts who can read those papers and make appropriate recommendations. As unpopular as it may be, Offit urged people to trust them.

"That is just not a message that sells in the 21st century – "Trust us, we're the experts," Offit said.

Only 34 percent of Americans express great confidence in medical leaders, according to *The New York Times*. That's down from more than 75 percent in 1966.



# What I discovered

Erroneous  
information is easily  
perpetuated on  
social media

Clinicians (and thought  
leaders) need to be on  
social media to be heard  
or risk having narrative  
told by others

Clinicians need  
incentives to  
participate in public  
dialogue to impact  
public health

# What I discovered

Clinicians also need guidance on how to **responsibly and effectively** use social media to **prevent further erosion of trust in healthcare**

09.29.19

## I study vaccine misinformation. Big tech must do more to fight it

Facebook, Twitter, and Pinterest have made inroads in preventing their platforms from being overrun with disinformation. But more change is still needed.

By Ana Santos Rutschman at SLU

### MALICIOUS BOTS TARGETING VACCINE INFO

Bots account for a large percentage of online activity overall.

Calculations suggest that **between 40% and 52% of all internet traffic** is automated. A study analyzing online bot activity in 2018 estimated that **20.4% of bots were malicious**. Researchers estimate that between 9% and 15% of active Twitter accounts, for instance, are **run by bots**, instead of people.

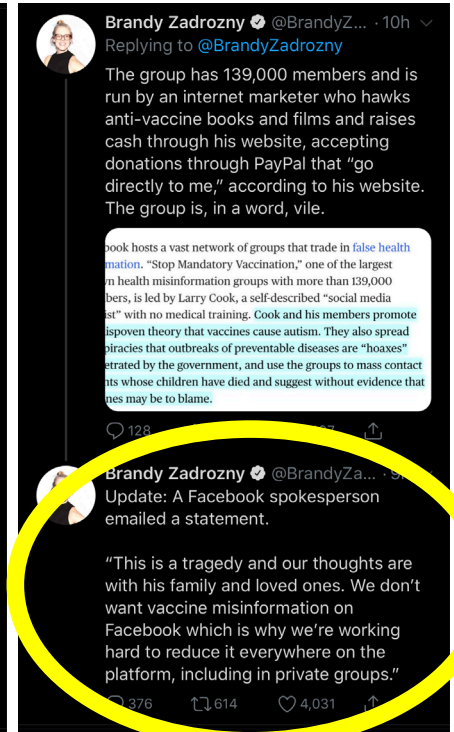
A 2018 **study analyzing Twitter data** examined the role of **bots and Russian trolls** in spreading vaccine misinformation. Researchers looked at over 1.7 million vaccine-related tweets between July 2014 and September 2017. Accounts associated with these two categories tweeted at a higher rate about vaccines than average users. While there are no published studies about other social media, researchers have **warned of similar activity** on Facebook and YouTube.

# 2019: Social media platforms taking action

- **Pinterest** removed all vaccine content, reintroduced content from CDC, WHO, AAP
- **Facebook** removing anti-vaccine ads and content
- **YouTube** removing anti-vaccine ads, promoting pro-vaccine content



Feb. 6, 2020







# Twitter

# Twitter chats

# Polls




# LinkedIn



# Facebook



**Austin Chiang, MD MPH**  
Gastroenterologist . Advanced Endoscopist . Millennial Doctor



Austin Chiang MD MPH  
1.61K subscribers

[CUSTOMIZE CHANNEL](#) [YOUTUBE STUDIO](#)

HOME VIDEOS PLAYLISTS COMMUNITY CHANNELS ABOUT

Popular uploads [▶ PLAY ALL](#)



GI DOCTOR reacts to Grey's Anatomy | Pancreatic cancer  
17K views • 6 months ago



A DAY IN THE LIFE of a Doctor: Gastroenterologist ...  
15K views • 6 months ago



MED SCHOOL Interview, RESIDENCY Interview: TIPS...  
11K views • 5 months ago



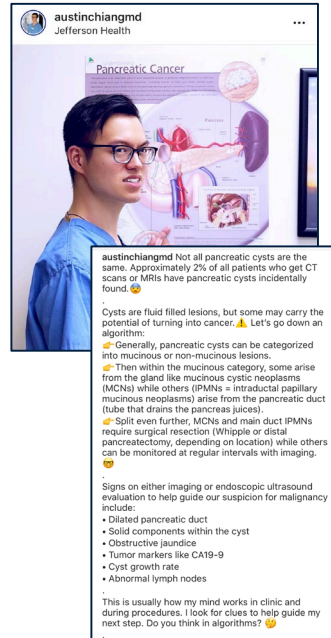
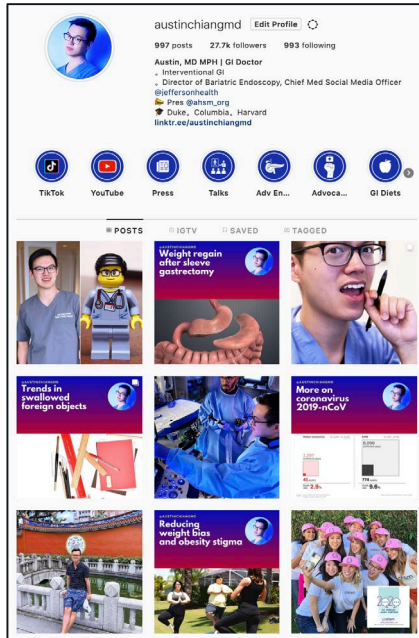
Real doctor reacts to HOUSE M.D. | Bleeding stomach an...  
9.8K views • 5 months ago



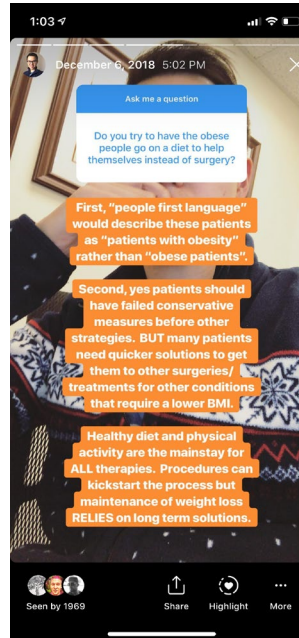
WHY GASTROENTEROLOGY | TOP 5 reasons why I chose ...  
5.1K views • 10 months ago



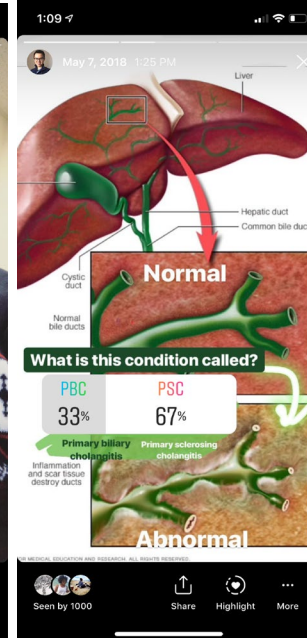
# Instagram



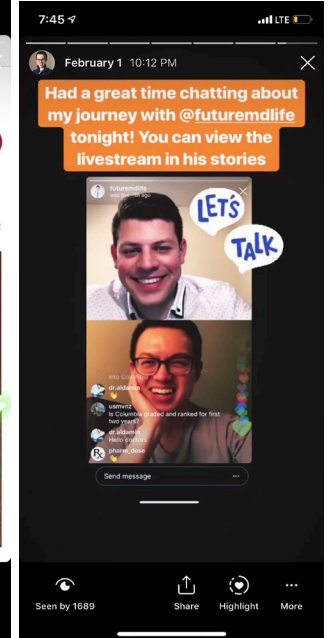
## Q&A



## Polls



## IG Live







TikTok



## The New York Times

### Doctors on TikTok Try to Go Viral

They have M.D.s, but are they up for this challenge?



Ignoring the platform isn't an option, especially given the prevalence of disinformation on the app, Dr. Chiang said. Two of his more popular posts have countered the use of essential oils to cure diseases and exposed the failings of the celery juice fad diet.

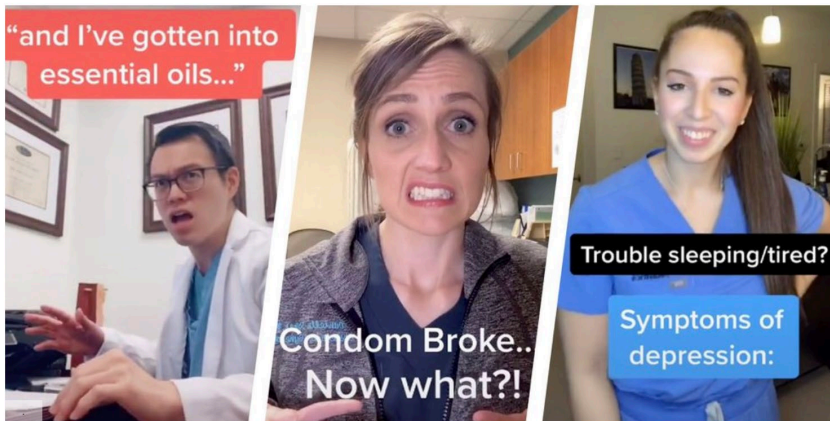


# Men's Health

## TikDocs Are Using TikTok to Spread the Word About Sex Ed and Vaccinations








These doctors are making health fun and meme-able, for a change.

BY MARTY MUNSON JAN 16, 2020



Telling a teen about vaping, birth control, what happens when a condom breaks, and even vaccines is sure to get you an OK, Boomer look.

## Platform vs. Purpose vs. Audience

Platform		Purpose	Audience
Twitter		Academic discussion, education, self expression, networking	Colleagues, trainees, patients
Instagram		Education, creative expression, marketing	Colleagues, public/patients
Facebook		Marketing, community building	Patients
LinkedIn		Professional networking, showcase	Colleagues
YouTube		Education, creative expression	Public/Patients
TikTok		Education, creative expression	Public/Patients
Reddit		Discussion	Public/Patients

# Getting started = getting into a marketing, communications, PR mindset

- A leap of faith
- Good branding
- Audience identification
- Social engagement
- Finding a role model

# Optimization strategies

- Hashtag utilization
  - Hashtag campaigns
- Collaborations
- Cross platform promotion
- Analytics/self-reflection
- Google Ads
- Maximize platform features

austinchiangmd

820 posts 17K followers 996 following

Promotions Edit Profile

Dr. Austin Chiang • GI Doctor  
Doctor  
MD MPH  
@jeffersonhealth  
• Advanced Endoscopy  
• Director, #WeightLoss Endoscopy  
• Chief Med Social Media Officer  
Pres, @ahsm\_org  
Duke•Harvard•Columbia  
www.austinchiang.com/  
Philadelphia, Pennsylvania

Adv Endo GI Diets Press GI Toolbox About

Call Directions

austinchiangmd Insights Pt. 1 from reading 85 advanced endoscopy fellowship applications (🚩 This might not apply to med school, residency, or general fellowship applications):

🚩 Inflation: Inflating achievements is easily detected. Being content with selling your accomplishments is important, but overplaying certain items comes across as disingenuous. Listing abstracts in the same section as publications because they were printed in a journal is one such example.

📄 Recommendations: Who and where they are from are critical. This is a tight knit community and leaders in the field are putting their reputation on the line to vouch for certain applicants. If you don't have a recommendation from the premier advanced endoscopist from your fellowship, that's a red flag!

📄 CV: Please format your CV in a way that is easy to read. I prefer seeing a list of publications all in one place, rather than reading paragraphs of each research project, and searching for its current status. Unlike ERAS, this is more traditional in how there's no standardized format.

📄 Personal statement: Honestly not as important at this super-specialized stage (maybe more important for general GI). You wouldn't be paying to apply if you weren't interested. There's really only so much you can possibly say. Plus, even though advanced endoscopy is super-specialized, expecting to learn sub-sub-subspecialty techniques like endobariatrics and third space endoscopy should not be the focus on your application. This year is meant to master therapeutic EUS and ERCP skills first and foremost (believe me, EUS takes years to master)



# Benefits of health professional social media use

## For PROFESSIONAL:

### Journals, societies, news:

Stay ahead and be notified in real time

### Discussion:

Don't miss out on the online conversation

### Networking:

Meet and talk to peers/leaders in your field

## For OTHERS:

**Marketing, Education, Recruitment:**  
Promote what you do and recruit patients

**Combat physician rating sites:**  
Online platforms can show up earlier on Google

**Institution:**  
Indirectly boost institution reputation

Humanizing the profession

# Challenges of social media use

Protecting patient privacy, HIPAA

Avoiding individualized medical advice

Sponsored content, conflicts of interest

Professionalism concerns

Misrepresentation/Misleading the public

Psychological strain

Consistency and time commitment

Personal safety and well-being

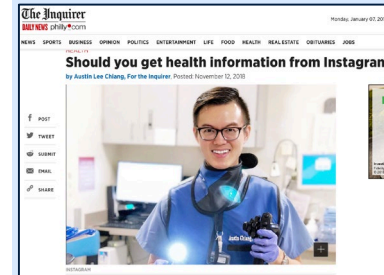


**Nurses and doctors are flocking to TikTok to crack jokes and lip sync. But are they eroding patients' trust?**

By Scottie Andrew, CNN  
Updated 5:06 AM ET, Sat, January 18, 2020

**BUSINESS INSIDER**

**The 9 best nurse TikTok accounts to follow right now for great health tips and a good laugh**



**This doctor is recruiting an army of medical experts to drown out fake health news on Instagram and Twitter**

PUBLISHED SUN, JUN 2 2019-9:30 AM EDT | UPDATED SUN, JUN 2 2019-11:11 AM EDT

Christina Farr  
@CHRISTYFARR

SHARE

KEY POINTS

- Austin Chiang is a doctor with a passion for Instagram and Twitter.
- He has a unique role as a chief medical social media officer at Jefferson Health.
- His mission is to get more doctors and other health professionals on social media to drown out health misinformation.

Ad created by Google



Austin Chiang has a unique role as a chief medical social media officer at Jefferson Health.

**TRENDING NOW**  
Coronavirus live updates: China sends more to Wuhan after outcry over...  
www.cnn.com

# Risks of social media use

Protecting patient privacy, HIPAA

Avoiding individualized medical advice

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Personal safety and well-being



Daily **Mail**  
.com

## Pediatrician gets DEATH THREATS after posting a pro-vaccination video on TikTok reassuring young people that they don't cause autism

- Dr. Nicole Baldwin shows young people what getting vaccinated can prevent in a video shared on social media last Saturday
- The doctor dances to Cupid Shuffle and says vaccines prevent' measles, polio, influenza, pertussis, hepatitis, HPV, meningitis, mumps, among other things
- She says at the end of the clip that vaccines don't cause autism
- Anti-vaxxers responded with bad reviews on Google and Yelp, and threatened to shut down The Blue Ash in Cincinnati, Ohio, where she has a satellite office
- 'Dr. Baldwin said: 'It has taken a team working around the clock to ban over 5000 attackers from my Facebook page alone'



## THE KIDS PLUS ANTI-ANTI-VAXX TOOLKIT

strategy guide to prepare for, defend against, and clean up after a Facebook anti-vaxx attack.

Another project to emerge from our attack is the Kids Plus Anti-Anti-Vaxx Toolkit, a comprehensive strategy guide that contains all the lessons we learned from fighting off our attack, and all the things we wish we'd known before it happened.

With a complete case study for context, plus a complete, step-by-step battle plan for what to do (and when and how to do it), the Toolkit provides everything you need to know to prepare for, defend against, and clean up after an anti-vaxx attack on your Facebook page.



**kids+**  
Anti-Anti-Vaxx Toolkit

A Strategy Guide to Prepare to Defend Against and Clean up After a Facebook Anti-Vaxx Attack

DOWNLOAD

# Take home points

- Social media use by health professionals may redirect public to accurate sources
- Social media is a critical in public health messaging
- Social media may play a role in shaping perception of health professionals
- Risks and concerns constantly evolving with platforms
- More incentives and guidance necessary



# Additional guidance

- **NEW:** Association for Healthcare Social Media
  - [www.ahsm.org](http://www.ahsm.org)



# THE NEW YORKER



*“Bile exits the gallbladder, passes through the cystic duct, gets released into the intestines, and, ultimately, winds up on the Internet.”*

August 15, 2018

# Thank you!



@austinchiangmd

