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EDITORIAL



Tackling medical misinformation in allergy and immunology practice

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Social media and widespread use of the internet has fundamentally changed the way information is obtained and shared. Billions of people from across the world have instant access to anything they would like to search for at any given moment. Unfortunately, it has become more challenging to separate opinion from fact and credible information from misinformation. Misinformation is defined by Dictionary.com as 'false information that is spread, regardless of whether there is intent to mislead' [1]. In 2018, Dictionary.com named 'misinformation' the word of the year to reflect upon the significant impact it was having across all realms. Along similar lines, but with different intent, 'disinformation' has to do with deliberate spread of incorrect information. Regardless of intent, the spread of incorrect information dilutes credible information, creates a false sense of equivalency, and leads to distrust of experts.

Prior to the COVID-19 pandemic, misinformation negatively affected patients through false offers of miracle cures and with conspiracy theories regarding the 'hidden' causes of various chronic health conditions [2]. Throughout the pandemic, misinformation has negatively impacted public health measures implemented to mitigate viral spread and affected personal health decisions related to COVID vaccines, masking in public, and testing [3]. Medical professionals with well-intended evidence-based messages are often met with disillusion or refusal to accept advice or information that contradicts one's ideologies. The ways that this permeates not only our culture, but our interpersonal interactions, is complex. While there may not be any easy answers, if medical professionals can better understand the ways in which misinformation impacts medical decision making, then they can take proactive approaches to combat it on different levels [4].

When patients seek non-emergent medical care, they often wait a period of time before their evaluation takes place. During this time, they are likely seeking information pertaining to their symptoms online. Across various socioeconomic demographics, the vast majority of people not only have internet access, but use it to search health-related information for themselves or loved ones [5]. As such, it behooves all medical professionals to assume that each patient has preconceived notions regarding their diagnosis, testing, or management. This can be approached with proactive dialogue and asking patients about where they tend to seek information

and what questions they have pertaining to their evaluation. In addition, clinicians should present evidence-based information as such, as well as delineate when they are providing perspective based upon their clinical experience. When there is discordance between the information clinicians provide with the previously held beliefs of their patient, an open and non-judgmental dialogue can often lead to improved understanding from both sides and a mutually agreed upon course of action. This is not to suggest that clinicians offer whatever testing or treatment their patients demand, but it is a path toward shared decision making, improved patient satisfaction, and ideally improved adherence with treatment and follow up.

Cognitive biases are systematic methods that people employ as they process information [6]. These biases often lead to errors in judgment and can negatively affect decision making. Information shared on social media is often presented as a snippet that lacks context or perspective. While links to vetted resources can be shared along with social media posts, all too often, the reader takes whatever incomplete thought is shared and uses their own cognitive biases to create a narrative. As such, the intersection between online searches and cognitive biases can amplify the negative effect of misinformation. One powerful cognitive bias is recency bias, which is the tendency to place more emphasis on experiences or knowledge that is encountered most recently, while placing less emphasis on prior experiences. For instance, if someone with peanut allergy has successfully avoided accidental ingestion during years of travel and dining at restaurants but then happens to read an article about a fatal allergic reaction to peanut that occurred after dining out, they may suddenly inflate their own personal risk while ignoring their past experiences and decide to no longer dine at restaurants. A common cognitive bias related to online searches for information is confirmation bias. Confirmation bias leads people to accept information, regardless of the source or credibility, that reinforces their previously held beliefs while negating information that contradicts their beliefs, regardless of the strength of evidence suggesting otherwise. It is uncomfortable to learn when we are wrong and that naturally provokes a desire to find any source of information that supports our viewpoint. The COVID-19 pandemic has also demonstrated how political and religious ideologies strongly influence confirmation bias [7].

Table 1. Examples of cognitive biases.

Cognitive Bias	Explanation
Gambler's fallacy	Tendency to believe something will happen because it hasn't happened yet
Group attribution error	Tendency to overgeneralize how a group of people will behave based upon an interaction with only one person from that group
Anchoring effect	Over-reliance on the first piece of information offered, even if it is incorrect or an inaccurate representation
Misinformation effect	Memories can be heavily influenced by things that happened after the actual event
Actor-Observer bias	Tendency to attribute our own actions to external influences and other people's actions to internal ones
False consensus effect	Overestimate how much other people agree with one's own beliefs, behaviors, attitudes, or values
Optimism bias	Tendency to overestimate the likelihood that good things will happen while underestimating the probability of how negative events will impact our lives

There are dozens of additional cognitive biases that impact how we each perceive the world, [Table 1](#). Healthcare professionals can help patients understand how these biases may impact their decision making [6]. For instance, at each encounter, clinicians could ask a standard question along the lines of 'Have you encountered any information since our last discussion that has changed how you feel about the way we are managing your condition?'. Listening to the reply and observing body language can both offer insight. Most importantly, if healthcare professionals expand their own knowledge of cognitive biases, then they will be more apt to recognize them during conversations with patients. This can be addressed in a manner similar to conversations surrounding misinformation online and by approaching it as a normal part of each visit and discussion.

Unfortunately, there is not enough space in this editorial for a complete discussion of the myriad of ways in which misinformation impacts medical decision making, as well as ways medical professionals can combat it. However, there are resources available, including the United States Surgeon General's report published in July, 2021 titled 'Confronting Health Misinformation' [8]. As Dr. Murthy states in the opening quotation 'Limiting the spread of health misinformation is a moral and civic imperative that will require a whole-of-society effort.'

What does this mean for healthcare professionals in allergy and immunology practice? For starters, we all need to increase our awareness of the various sources of misinformation our patients encounter online. Recent studies have demonstrated unreliable information associated with YouTube videos, social media, and mobile health applications surrounding asthma and food allergy [9,10]. Clinicians should proactively address misinformation during encounters and provide vetted resources. This may add time to an already busy schedule but with practice and a dedicated approach, it can hopefully increase trust between patients and clinicians.

The manner in which medical experts convey information impacts how patients both perceive it and also how they apply to their own care. Allergic conditions require knowledge and self-management skills, including monitoring for changes to one's health, proper medication use, proper technique with various medication delivery devices, and knowing when to seek evaluation for acute symptoms. In today's day and age, successful self-management also entails the ability to apply critical thinking skills when seeking and reading information pertaining to one's own health.

The late Carl Sagan was a strong proponent of advocating for science and critical thinking. In 1979, he popularized the aphorism 'Extraordinary claims require extraordinary evidence.' By holding the tenets of evidence-based medicine at the heart of each shared decision-making encounter, healthcare professionals can help tackle misinformation one patient at a time.

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