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Editorial

☐ SEARCH AT YOUR OWN RISK: ONLINE HEALTH QUERIES AND YOUR PATIENT

During a recent, busy evening shift I found myself spending a bit more time in the room of a child with an uncomplicated viral upper respiratory infection. Instead of explaining my expected course of illness or supportive care, the bulk of my time was spent sitting with the young parents reviewing a collection of websites on their smartphone, all with information they had collected on caring for fever and cough for their toddler.

The wedge of online health information seems to be pushing further and further into the patient–physician relationship, supporting and enhancing it in some ways, challenging it in others (1). Patients have taken hold of the relative ease of obtaining this information, making it no surprise that patients frequently query the Internet for such information in advance of visits with physicians (2). And who are we to shudder at this? Online health information is largely free and easily accessible, especially when compared with the time and cost of a doctor's visit for you or your ill child.

In this comprehensive evaluation of websites highlighting health information and guidance on common pediatric complaints, Rothrock et al. report findings from a cohort study that evaluated the overall quality of disease guidance and health information (3). This study found overall low readability, lack of high-quality information, and low trustworthiness in their evaluation of the top 20 sites queried for common acute pediatric symptoms. Using novel approaches to methodically score websites for accuracy, readability, and trustworthiness, the authors provide an excellent glimpse of the content our patients freely browse and, potentially, use to make decisions regarding health care and self-treatment.

In their evaluation of websites, via three different search engines, related to keyword searches for common pediatric complaints presenting to emergency departments, the researchers found significant lapses in the accuracy, trustworthiness, and readability of the online information. Nonmedical professionals were the most frequent contributors to the online health information queried (38%), with hospitals or hospital systems (31%), health care professionals (11%), and academic or specialty societies (10%) trailing behind. Although physicians authored a sizeable portion of the sites queried (36%), the majority listed no author. Further complicating the organization of this information for patients was the finding that site ranking bore no relation to website accuracy, readability, or trustworthiness.

The methods used to score quality and trustworthiness of websites set this study apart from many others while also highlighting the complexity of standardizing information available on the Internet. Though the accuracy of all websites queried was 60%, sites written by professional medical organizations were more likely to be accurate than others. As noted by the investigators, various search engines may not account for these types of differences, adding to the complexity of how patients determine which sites they navigate to.

Overall, the study by Rothrock and colleagues suggests that there is work to be done in the arena of online health information for patients (3). We know that our patients search for information, and these searches seem likely to grow as the technologically enabled population ages. Yet, medicine, as a field, has been somewhat unsure how to handle this evolution. Though it was less than 20 years ago that the American Medical Association listed "Trust your doctor, not a chat-room" in its top 10 New Year's resolutions, the tides have largely shifted—in the American Medical Association's December 2018 New Year's resolutions, 2 of the 10 link to online health information for patients (4,5).

Where do we start and who takes the reins in the improvement and standardization of this readily accessible and vast information? Is it the responsibility of physicians, medical associations, technology companies, or government? Most recently, there are signs that these challenges have sparked collaboration across fields. For example, in 2015, Google, a unit of Alphabet Inc., dramatically changed the structure of its search results visualization for searches related to disease information. Partnering with the Mayo Clinic, a side-bar is now presented to users with nicely organized information regarding symptoms and treatment for many common diseases (e.g., tonsillitis, mono, or influenza) (6) (Figure 1). The information is presented in a congruent manner, regardless of the disease queried, adding a nice reference point for patients. This step is critical in building the structure and accuracy of online health

information, given that at least three-quarters of all health-related searches begin with a search engine and 1 in 20 searches on Google are regarding health information (6,7).

Still, notable challenges exist. Most recently, our public health system has been attacked by vaccine-related controversy as well as outbreaks of vaccine-preventable diseases such as measles. Patients' online behavior and information regarding vaccines can be dangerously misinformed, and the quality and trustworthiness of these information sources very well may mirror those in the current study. Recently, some social media companies have taken steps to limit searches regarding vaccines in an effort to block access to floods of misinformation (8). But efforts like these seem to emphasize the frank challenges more than provide tenable solutions. After all, blocking information and potentially valuable searches seems like a slippery slope in the broader quest to provide information access to all.

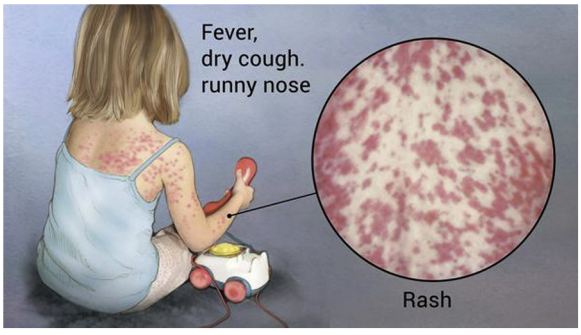

Figure 1. The latest update to Google's medical search algorithm shows information organized similarly throughout diseases. Source: Google.

Recently, I attended a conference on health care and artificial intelligence. Speakers from companies, as well as academicians, convened to jointly discuss and showcase instruments using data science and decision support algorithms to help patients navigate their symptoms and diseases. Though we may view the static Internet, with its blogs and variably updated websites, as a complex accuracy issue, the very real phase of algorithmic diagnostics and symptom checkers for patient use online and via "apps" will present even greater challenges (and opportunities) to us and our patients.

As evidenced by the improvement efforts at Google on health-related searches, it's going to take collaboration and understanding to ensure that our collective growth of information for patients underscores principles of accuracy, trustworthiness, and readability. As practitioners, we should continue to anticipate the evolution of online health information and be prepared for dynamic changes, both constructive and challenging, that it brings to our patient population.

Israel Green-Hopkins, MD
Department of Emergency Medicine
UCSF Benioff Children's Hospital
San Francisco, California

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