

## Rostrum

## Risk Communication During COVID-19

Elissa M. Abrams, MD<sup>a</sup>, and Matthew Greenhawt, MD, MBA, MSc<sup>b</sup> *Winnipeg, MB, Canada; and Aurora, Colo*

**During the unprecedented times caused by the novel coronavirus disease 2019, there is rapidly evolving information and guidance. However, a focus must also be on proper and effective risk communication. This is especially the case during pandemics that have high rates of infection, significant morbidity, lack of therapeutic measures, and rapid increases in cases, all of which apply to the current coronavirus disease 2019 pandemic. A consequence of poor risk communication and heightened risk perception is hoarding behavior, which can lead to lack of medications and personal protective equipment. One potential way to ensure appropriate risk communication is using social media channels, and ensuring an ongoing consistent media presence. Another important step is to include all stakeholders including members of the allergy community in broader public health messaging. As we continue to face unprecedented times in the allergy community, an understanding and appreciation of risk communication will be essential as we communicate with, and inform, our patients, and our colleagues, moving forward.** © 2020 American Academy of Allergy, Asthma & Immunology (J Allergy Clin Immunol Pract 2020;■-■-■)

**Key words:** COVID-19; SARS-CoV-2; Risk communication; Health policy; Pandemic

## INTRODUCTION

The novel coronavirus disease 2019 (COVID-19), caused by the pathogen severe acute respiratory syndrome (SARS) coronavirus 2, originated in Wuhan, China and more than 2.3 million cases and more than 164,000 deaths internationally.<sup>1,2</sup> Within the United States, the Institute for Health Metrics and Evaluation has predicted this pandemic to far exceed current health care capacity, with a total of 81,114 deaths (95% uncertainty interval [UI], 38,242-162,106) over the next 4 months.<sup>3</sup> COVID-19 has led to unprecedented international

public health measures, including mandatory social distancing, and prolonged school closures. Health care resource reallocation at this time includes restricting access to all but the most essential ambulatory visits by shifting this to virtual visits for most ongoing primary and specialty care.<sup>4-6</sup> Multiple guidelines have emerged from international societies on the management of care during COVID-19, including a North American guideline on contingency planning for allergy and immunology clinics during a pandemic and a Canadian Pediatric Society statement on asthma management during COVID-19.<sup>7,8</sup>

In such unequaled and unstable times, circumstances are changing and information rapidly evolving. A focus must not be just on the transmission of reliable and up-to-date information but also on the role of proper and effective risk communication.

Risk communication, as defined by the World Health Organization, is “the exchange of real-time information, advice and opinions between experts and people facing threats to their health, economic or social well-being.”<sup>9</sup> There are 2 broad risk models that are commonly used. The first is the realist approach, whereby risk is seen to be objective and independent of social context. The second is the social constructionist approach, whereby risk is seen to be interrelated with sociocultural context.<sup>10</sup> It is increasingly recognized that society, communities, and our patients view risk from a social constructionist approach.<sup>10</sup>

The importance of risk management and effective risk communication cannot be overstated. At the 20th anniversary of the Chernobyl nuclear accident, the United Nations released a 600-page report incorporating the works of hundreds of health experts, finding that the mental health impact of Chernobyl was “the largest public health problem created by the accident,” attributing that profound impact to the “lack of accurate information,” or improper risk communication.<sup>11,12</sup> As a reporter poignantly stated in response to the Fukushima nuclear crisis, “risk management in a crisis has to include not just the threat itself but also how people perceive and respond to the threat ...

<sup>a</sup>Department of Pediatrics, Section of Allergy and Clinical Immunology, University of Manitoba, Winnipeg, MB, Canada

<sup>b</sup>Children’s Hospital Colorado, University of Colorado School of Medicine, Aurora, Colo

M.G. is supported by the Agency for Healthcare Research and Quality (grant no. 5K08HS024599-02).

Conflicts of interest: E. M. Abrams is a collaborator with the Institute for Health Metrics and Evaluation, is on the National Advisory Board for Food Allergy Canada, and is on the National Food Allergy Action Plan Action Steering Team for Food Allergy Canada. M. Greenhawt is supported by the Agency for Healthcare Research and Quality (grant no. 5K08HS024599-02); is an expert panel and coordinating committee member of the National Institute of Allergy and Infectious Diseases—sponsored Guidelines for Peanut Allergy Prevention; has served as a consultant for the Canadian Transportation Agency, Thermo Fisher, Intromune, and Aimmune Therapeutics; is a member of physician/medical advisory boards for Aimmune Therapeutics, DBV Technologies, Sanofi/Genzyme, Genentech, Nutricia, Kaleo Pharmaceutical, Nestle, Acquestive, Allergy

Therapeutics, Allergenis, Aravax, and Monsanto; is a member of the Scientific Advisory Council for the National Peanut Board; has received honorarium for lectures from Thermo Fisher, Aimmune Therapeutics, DBV Technologies, Before Brands, multiple state allergy societies, the American College of Allergy, Asthma & Immunology, and the European Academy of Allergy and Clinical Immunology; is an associate editor for *the Annals of Allergy, Asthma, and Immunology*; and is a member of the Joint Taskforce on Allergy Practice Parameters.

Received for publication March 31, 2020; revised April 4, 2020; accepted for publication April 6, 2020.

Available online ■ ■

Corresponding author: Elissa M. Abrams, MD, Department of Pediatrics, Section of Allergy and Clinical Immunology, University of Manitoba, FE125-685 William Ave, Winnipeg, MB, Canada R2A 5L9. E-mail: [elissa.abrams@gmail.com](mailto:elissa.abrams@gmail.com). 2213-2198

© 2020 American Academy of Allergy, Asthma & Immunology  
<https://doi.org/10.1016/j.jaip.2020.04.012>

*Abbreviations used**COVID-19- Coronavirus disease 2019**PPE- Personal protective equipment**SARS- Severe acute respiratory syndrome*

The risk from how people perceive risk, is as real as the physical danger itself ... Far too little respect has been paid to the risk caused by the way people perceive and respond to risk.”<sup>13</sup>

There are aspects to pandemics that can heighten risk perception, so-called dread factors that largely apply to the current pandemic caused by SARS coronavirus 2.<sup>10</sup> These include high rates of infection, significant morbidity and mortality, lack of protective or therapeutic measures, and rapid increases in cases or case-fatality rates.<sup>10</sup> These factors can be drivers of serious, and often unmeasurable, consequences resulting from heightened risk perception. In our specialty, a salient and poignant example is the recent shortage of metered-dose inhaler asthma quick-relief medications (eg, albuterol/salbutamol) all over the world including Canada, the United States, and Australia, given the high risk of nebulized versions of these medications increasing the risk of viral aerosolization and infection transmission.<sup>8,14-16</sup> Multiple countries have been required to place restrictions on prescription medications such as bronchodilators (as well as antimalarial and certain antibiotics) due to “hoarding” and in an attempt “to control stockpiling by customers.”<sup>15,17</sup> An Australian news article from March 25, 2020, highlights the concern of patients with asthma in Australia who have run out of their albuterol supply, noting this to be “endangering the lives of people with chronic illnesses” such as our patients with allergy.<sup>17</sup>

Another example is insufficient personal protective equipment (PPE) to protect physicians from infection risk, including allergists and immunologists, at this time.<sup>18</sup> The World Health Organization has noted that PPE shortages “are leaving doctors, nurses..dangerously ill-equipped to care for ... patients, due to limited access to supplies” largely as a result of “panic buying, hoarding and misuse.”<sup>18</sup> This global lack of PPE is attributed, at least in part, to high public consumer fear and demand.<sup>19</sup> Lack of access to PPE has far-reaching consequences. PPE is recommended in the care of anyone with suspected COVID-19 by multiple health organizations including the World Health Organization and the Centers for Disease Control and Prevention, forcing physicians to choose between protecting themselves and caring for their patients.<sup>20</sup> In a recent poignant editorial in *The Lancet*, the global shortage of PPE was described, noting that medical staff are seeing infected, or possibly infected, patients without proper protective equipment.<sup>21</sup> Data out of China suggest that more than 3300 health care workers have been infected by COVID-19 as of early March, with at least 22 fatalities, though this number has exceeded 50 in Italy by late March.<sup>21,22</sup> North American health care worker fatality numbers remain unclear at present.

It must also be appreciated that there is a “trickle up” effect of risk perception, as the public informs policymakers, who to some degree must adhere to the requests and perceptions of their constituents. As a result, the public’s perception of risk informs policymakers, who are inherently subject to a broader sociocultural context when communicating and responding to information.<sup>10</sup>

Lessons in risk communication are usually retroactive, and therefore cannot be informed by the current COVID-19 pandemic. However, the SARS 2003 epidemic in Canada provides our specialty lessons that are useful in how to communicate risk effectively in these times, and that we could integrate both with our patients directly and more broadly within policy and public health realms.

One potential way to ensure appropriate risk communication is through use of social media, because the public largely relies on media and social relationships to inform their level of risk perception.<sup>23-26</sup> A significant lack of mitigation of the SARS epidemic was the degree of fear and uncertainty of families in Canada, heightened as health care was “unable to provide them with much information.”<sup>27</sup> The Centers for Disease Control and Prevention states that utilization of social media for public health messaging accomplishes several goals of successful risk communication including reaching diverse audiences, establishing interactive and ongoing community engagement, facilitating public control and empowerment, and increasing the likely impact/broadening the transmission of urgent public health communications.<sup>28,29</sup> Recommendations include that allergy societies should have their Web sites contain as up-to-date information as possible, and serve as educational platforms both for physicians and for our patients. Using multiple forms of social media including Facebook, Twitter, and YouTube videos allows the message to be dispersed more widely within the general public.<sup>30,31</sup>

A second important lesson learned from SARS is to ensure an ongoing, consistent relationship with the media, as with SARS “daily headlines generated widespread fear and panic.”<sup>27</sup> It is recommended that “efforts to decrease sensationalism, to portray an honest picture, and to elicit the help and understanding of the public” are lessons that can be applied to any epidemic or pandemic.<sup>27</sup> As noted by the World Health Organization, a significant part of effective risk communication involves the “identification and management of rumours, and misinformation.”<sup>9</sup> Assigning 1 team from each allergy society to be a media resource and presence, with ongoing communication between these groups, helps ensure a consistent message is conveyed through the media for our patients who are most concerned about the effects of this virus with their underlying conditions, in particular our immunocompromised and asthmatic patients.<sup>32,33</sup> A COVID-19 taskforce was recently appointed by the American Academy of Allergy, Asthma & Immunology, to handle these issues.<sup>34</sup>

Another important step moving forward is involving all stakeholders, including members of the allergy community, in the broader public health messaging. The goal of risk communication is its bidirectional nature, which is meant to be inherently collaborative and not a didactic message from physician to public.<sup>35</sup> Finally, it is important to remember with all public health messaging through our specialty that risk is composed of actual hazard, and the public perception of hazard. As noted in a recent book on risk communication, “We have these two very different activities, both called risk communication: alerting people and reassuring them.”<sup>36</sup>

Clear and pertinent guidance is emerging from allergy societies about the management of allergic conditions during COVID-19 (Table I). As we continue to face unprecedented times in the allergy community, an understanding and appreciation of risk communication will be essential as we

**TABLE I.** Messaging and management of allergic conditions during COVID-19<sup>7,8</sup>

Allergic condition	COVID19 recommendations
Asthma	There is no evidence that asthma predisposes to COVID-19, but it is a theoretical risk factor for morbidity Remain on current asthma medications Avoid nebulization because it can increase viral transmission Oral corticosteroids can be used if required for asthma exacerbations
Allergic rhinitis	Allergic rhinitis can be differentiated from COVID-19 due to absence of fever and myalgias Service reduction in rhinitis management is strongly recommended Immunotherapy should not be initiated during COVID-19 with rare exceptions
Food allergy	Follow current food allergy management plan Emergency care after using epinephrine autoinjectors should be avoided unless symptoms do not improve Immunotherapy initiation and up dosing should be deferred With rare exceptions oral challenges should be deferred With rare exceptions follow-up visits should be deferred or held virtually

communicate with, and inform, our patients, and our colleagues, moving forward.

#### REFERENCES

- Wu D, Wu T, Liu Q, Yang Z. The SARS-CoV-2 outbreak: what we know [published online ahead of print March 11, 2020]. *Int J Infect Dis*, <https://doi.org/10.1016/j.ijid.2020.03.004>.
- Johns Hopkins Coronavirus Resource Center. Available from: <https://coronavirus.jhu.edu/map.html>. Accessed March 29, 2020.
- Institute for Health Metrics and Evaluation. Forecasting COVID-19 impact on hospital bed-days, ICU-days, ventilator days and deaths by US state in the next 4 months. Available from: <http://www.healthdata.org/research-article/forecasting-covid-19-impact-hospital-bed-days-icu-days-ventilator-days-and-deaths>. Accessed March 29, 2020.
- UNESCO. COVID-19 educational disruption and response. Available from: <https://en.unesco.org/themes/education-emergencies/coronavirus-school-closures>. Accessed March 29, 2020.
- Government of Canada. Community-based measures to mitigate the spread of coronavirus disease (COVID-19) in Canada. Available from: <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/public-health-measures-mitigate-covid-19.html>. Accessed March 29, 2020.
- Harvard Health Publishing. Can telehealth help flatten the curve of COVID-19?. Available from: <https://www.health.harvard.edu.uml.idm.oclc.org/blog/can-telehealth-help-flatten-the-curve-of-covid-19-2020032419288>. Accessed March 29, 2020.
- Shaker MS, Oppenheimer J, Grayson M, Stukus D, Hartog N, Hsieh E, et al. COVID-19: Pandemic contingency planning for the allergy and immunology clinic [published online ahead of print March 11, 2020]. *J Allergy Clin Immunol Pract*, <https://doi.org/10.1016/j.jcid.2020.03.004>.
- Abrams E, T'Jong G, Yang C. Canadian Pediatric Society Practice Point: paediatric asthma and COVID-19. Available from: <https://www.cps.ca/en/documents/position/paediatric-asthma-and-covid-19>. Accessed March 29, 2020.
- World Health Organization. General information on risk communication. Available from: <https://www.who.int/risk-communication/background/en/>. Accessed March 29, 2020.
- Smith RD. Responding to global infectious disease outbreaks: lessons from SARS on the role of risk perception, communication and management. *Soc Sci Med* 2006;63:3113-23.
- Chernobyl's legacy: health, environmental and socio-economic impacts. Available from: <https://www.iaea.org/sites/default/files/chernobyl.pdf>. Accessed March 29, 2020.
- World Health Organization. Chernobyl: the true scale of the accident. Available from: <https://www.who.int/mediacentre/news/releases/2005/pr38/en/>. Accessed March 29, 2020.
- Ropeik D. Poor risk communication in Japan is making the risk much worse. *Scientific American*; 2017. Available from: <https://blogs.scientificamerican.com/guest-blog/poor-risk-communication-in-japan-is-making-the-risk-much-worse/>. Accessed March 29, 2020.
- American College of Allergy, Asthma & Immunology. A message to asthma sufferers about a shortage of albuterol metered dose inhalers. Available from: <https://acaai.org/news/message-asthma-sufferers-about-shortage-albuterol-metered-dose-inhalers>. Accessed March 29, 2020.
- The Guardian. Paracetamol and Ventolin limited to one per customer as Australia combats coronavirus hoarding. Available from: <https://www.theguardian.com/world/2020/mar/19/paracetamol-and-ventolin-limited-to-one-per-customer-as-australia-combats-coronavirus-hoarding>. Accessed March 29, 2020.
- Amirav I. Transmission of corona virus by nebulizer—a serious, underappreciated risk! *CMAJ* 2020;192:E346.
- ABC News. Coronavirus sees pharmacies run out of critical medication, endangering the lives of people with chronic illnesses. Available from: <https://www.abc.net.au/news/2020-03-24/coronavirus-panic-buying-sees-shortage-of-vital-medicine/12081436>. Accessed March 29, 2020.
- World Health Organization. Shortage of personal protective equipment endangering health workers worldwide. Available from: <https://www.who.int/news-room/detail/03-03-2020-shortage-of-personal-protective-equipment-endangering-health-workers-worldwide>. Accessed March 29, 2020.
- Time Magazine. There aren't enough medical masks to fight coronavirus: here's why it's not going to get better anytime soon. Available from: <https://time.com/5785223/medical-masks-coronavirus-covid-19/>. Accessed March 29, 2020.
- Centers for Disease Control and Prevention. Coronavirus disease 2019 (COVID-19) infection control. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/infection-control/index.html>. Accessed March 29, 2020.
- Lo D. COVID-19: protecting health-care workers. *Lancet* 2020;395:922.
- Newsweek. More than 50 doctors in Italy have now died from coronavirus. Available from: <https://www.newsweek.com/more-50-doctors-italy-have-now-died-coronavirus-1494781>. Accessed March 29, 2020.
- Slovic P. The perception of risk. London, UK: Earthscan Publications; 2000.
- Dieckmann NF, Johnson BB, Gregory R, Mayorga M, Han PKJ, Slovic P. Public perceptions of expert disagreement: bias and incompetence or a complex and random world? *Public Underst Sci* 2017;26:325-38.
- Johnson BB, Dieckmann NF. Lay Americans' views of why scientists disagree with each other. *Public Underst Sci* 2018;27:824-35.
- Jacobs LR, Mettler S. Why public opinion changes: the implications for health and health policy. *J Health Polit Policy Law* 2011;36:917-33.
- Hawryluck L, Lapinsky SE, Stewart TE. Clinical review: SARS—lessons in disaster management. *Crit Care* 2005;9:384-9.
- Ng K-H, Lean M-L. The Fukushima nuclear crisis reemphasizes the need for improved risk communication and better use of social media. *Heal Phys* 2012; 103:307-10.
- Heldman A, Schindelar J, Weaver J. Social media engagement and public health communication: implications for public health organizations being truly “social. *Public Health Rev* 2013;35:1-18.
- Houston JB, Hawthorne J, Perreault MF, Park EH, Goldstein Hode M, Halliwell MR, et al. Social media and disasters: a functional framework for social media use in disaster planning, response, and research. *Disasters* 2015;39: 1-22.

31. Chan JL, Purohit H. Challenges to transforming unconventional social media data into actionable knowledge for public health systems during disasters. *Disaster Med Public Health Prep* 2019:1-8.
32. American College of Allergy, Asthma & Immunology. COVID-19 and asthma: what you need to know moving forward. Available from: <https://acaai.org/news/covid-19-and-asthma-what-you-need-know-moving-forward>. Accessed March 29, 2020.
33. Baker A. I've seen wars and epidemics unfold. But now that I have an immunocompromised partner, the coronavirus makes me truly scared. *Time Magazine*. March 27, 2020. Available from: <https://time.com/5811348/immunocompromised-coronavirus/>. Accessed March 29, 2020.
34. American Academy of Allergy, Asthma & Immunology. Messages from the COVID-19 Response Task Force. Available from: [https://education.aaaai.org/task-force-messages\\_COVID-19#overlay-context=](https://education.aaaai.org/task-force-messages_COVID-19#overlay-context=). Accessed March 29, 2020.
35. DiClemente R, Jackson J. *International Encyclopedia of Public Health: Risk Communication*. Philadelphia, PA: Elsevier; 2017.
36. Sandman PM. *Responding to Community Outrage: Strategies for Effective Risk Communication*. Falls Church, VA: AIHA Press; 2012.