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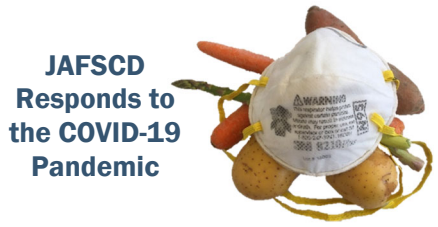
COMMENTARY ON COVID-19 AND THE FOOD SYSTEM

Interventions and compliance: How the response to COVID-19 reflects decades of retail food protection efforts



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Abstract

Preventing the spread of infectious disease relies heavily upon the development and implementation of public health interventions. The requisite debate over the effectiveness of these interventions is accompanied by discussions about which, if any, should be made mandatory. We contend that efforts to mandate interventions in the fight to prevent the spread of COVID-19 have clear similarities to the long-standing efforts to establish and promote retail food safety interventions. Specific similarities are that science is rarely the sole driver in deciding public health mandates and individuals' responses to them, compliance is key but can be difficult to achieve, and the concurrent incorporation of two or more interventions is a barrier against poor compliance. As these factors have a direct effect on the success of public health mandates, understanding the role and relationships among them can aid government and public health officials in ongoing efforts to prevent foodborne illness and slow the spread of COVID-19.

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Author Note

The conclusions in this article are those of the author(s) and do not necessarily represent the views of the FDA, Baltimore City Health Department, or Johns Hopkins University.

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Retail Food Safety, COVID-19, Pandemic, Interventions, Compliance, Decision-making, Hurdle Approach, FDA Food Code, Face Coverings, Handwashing, Policy Debate

The ongoing pandemic of SARS-CoV-2, the virus that causes COVID-19, has demanded the full attention, resources, and coordinated response of government agencies throughout the United States. From just a few confirmed cases in January 2020, the number of confirmed cases in the U.S. reached nearly 800,000 by the end of April 2020 (Schuchat, 2020). Government officials worked quickly to inform the public that the virus was predominantly spread from person to person via respiratory droplets and that there was no evidence of food being associated with the transmission of COVID-19 (Rizou, Galanakis, Aldawoud, & Galanakis, 2020). However, despite guidance and recommendations for mitigation being issued in early March, confirmed cases of COVID-19 had reached some three million by July 1 and some five million, with over 180,000 deaths, by August 27, 2020 (Johns Hopkins University [JHU], 2020; Schuchat, 2020).

While a compendium and critique of the many factors that have contributed to the acceleration and prevalence of COVID-19 are beyond the scope of this article, key community mitigation strategies have included quarantine, business closures, physical distancing, and use of facial coverings, as well as frequent handwashing and surface disinfection (Burris et al., 2020; Krishnamachari et al., 2020). Individuals as well as state, local, tribal, and territorial governments have varied in their support for implementing, mandating, and abiding by mitigation strategies recommended by public health officials. These variations in the acceptance and application of, and compliance with, mitigation strategies have undoubtedly had an impact on the spread of COVID-19 and is reminiscent of challenges encountered during decades of work to prevent foodborne illness associated with retail and foodservice establishments. Efforts to establish and promote food safety practices consistently encounter three factors that are also impacting the current COVID-19 response. These are (1) science is rarely the sole driver in deciding public health mandates and individuals' response to them, (2) compliance is key but can be difficult to achieve, and (3) the hurdle approach—incorporating two or more interventions—is a firewall against poor compliance.

Science has played a key role in understanding and addressing food safety issues in retail food establishments. By identifying and investigating the impact of food safety interventions, research evidence has allowed regulators and the industry to make critical improvements in the control of foodborne illness risk factors. What is often overlooked, however, is that science and research evidence, while instrumental in identifying effective food safety interventions, are rarely the only determinants of whether food safety interventions are made mandatory (Liggans, Carrington, & Otto, 2020). Decisions about what interventions should be made mandatory, through public or organizational policy, are often the outgrowth of a scientific foundation upon which a myriad of nonscientific considerations are discussed and weighed. Considerations such as politics, societal norms, economics, logistics, and even moral values interplay with the science and research evidence to inform decision-making.

The strife over mandating interventions to combat the current spread of COVID-19 is a great example of the interaction between science and nonscientific considerations. Prevailing evidence from the growing amount of scientific data published regarding SARS-CoV-2 (Zuber & Brüssow, 2020) has led many researchers and public health officials to assert handwashing, surface disinfection, physical distancing, and use of face coverings as viable public health interventions. While scientific disagreements and misinformation persists, and irrespective of debate over the effectiveness of each intervention, support for voluntary implementation and compliance has been widespread (Fisher et al., 2020; Pennycook, McPhetres, Zhang, Lu, & Rand, 2020). However, in various parts of the country, pushback, public back-

lash, and variation in compliance has accompanied the efforts to make such interventions mandatory. Countries including the U.S. have witnessed protests, political debates, lawsuits, criticism, and even threats of bodily harm to business owners and government officials over mandatory measures (Alund, 2020; Briscese, Lacetera, Macis, & Tonin, 2020; Burris et al., 2020; Gallion, 2020; Gharib, 2020).

The effectiveness of any intervention or mitigation strategy, be it voluntary or mandatory, is dependent to a large extent on the ability and willingness of individuals, communities, and organizations to comply. However, decades of work to prevent foodborne illness have shown that compliance is essential but often difficult to obtain (Harris, DiPietro, Line, & Murphy, 2019; U.S Food and Drug Administration [FDA], 2018). For instance, handwashing and the longstanding effort to prevent food employees from touching ready-to-eat food with their bare hands are well established food safety practices, but are not always complied with. Although known to be effective at preventing contamination of food and food contact surfaces, not all regulatory agencies or individuals have agreed with or supported requiring that there be no bare-hand contact with exposed, ready-to-eat food (Zuraw, 2014). Even where mandated and enforced, 100% compliance with proper handwashing and no bare-hand contact has been elusive. Ironically, although COVID-19 is a respiratory illness, the emphasis placed on more frequent handwashing to combat its spread may have both an immediate and lasting impact on improving food employee hand-washing practices.

The refusal of some individuals to comply with mandated and voluntary interventions during this global COVID-19 pandemic illustrates the complexity of compliance. Take the issue of face coverings. Even with public health officials promoting the use of face coverings to reduce the incidence of transmission (Brooks, Butler, & Redfield, 2020), moving from merely a voluntary recommendation to mandatory use sparked heated debate (Lyu & Wehby, 2020). Moreover, in both cases, as in previous pandemics, compliance has varied (Abbott, Greenhalgh, St. Clair, & Bush, 2020; Fisher et al., 2020). The common denominator is the human element. Individuals weigh a myriad of scientific and nonscientific considerations to help shape their behaviors and determine their willingness to comply. In fact, research suggests that sanctions, norms, moral values, and legitimacy are four key factors that drive compliance (Tyler, 2017). For some time now, behavior theories have been used in the development and implementation of public health interventions (Glanz & Bishop, 2010). Increasingly, enforcement strategies and outreach efforts are using insights from behavioral science to encourage compliance with established food safety interventions (Green, 2008; Lin & Roberts, 2020). Organizations have recognized the need for taking a similar approach to drive compliance with interventions designed to limit the spread of COVID-19 (Van Bavel et al., 2020; West, Michie, Rubin, & Amlôt, 2020).

In addition to the fact that individual compliance with interventions will vary, a single intervention may not completely control or eliminate a food safety hazard. For this reason, food safety regulators have long promoted the hurdle approach—incorporating two or more interventions—to reduce or eliminate food safety risks (Mogren et al., 2018). By layering interventions, with each receiving different degrees of compliance, we hope to more fully control risks. The hurdle approach can thus serve as a firewall against poor compliance with any single intervention.

Use of the hurdle approach in mandating the concurrent use of restricting or excluding ill food employees from working with food, proper handwashing procedures, and eliminating bare-hand contact with exposed, ready-to-eat food (as outlined in the U.S. Food and Drug Administration Food Code, 2017), has been a success in food safety. Together, these three interventions have been described as a three-legged stool. Each leg is needed to be completely effective at reducing the transmission of foodborne pathogens to food. If any leg is removed, the stool will fall. Similarly, in the fight against COVID-19, handwashing, surface disinfection, physical distancing, and the use of face coverings are not completely effective alone, which makes their concurrent use a means of more fully controlling risk. The

ongoing difficulties in implementation and variation in compliance with any one intervention supports the need for continuous application of the hurdle approach during the global coronavirus pandemic and in the ongoing fight against foodborne illness.

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