



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Why “good enough” is not good enough: scientific data, not supply chain deficiencies, should be driving Centers for Disease Control and Prevention recommendations



Elizabeth A. Morgan, MD; Diana Rodríguez, MD, MPH, FACOG

Obstetricians and clinicians previously requested clarification from the Centers for Disease Control and Prevention on the need for full personal protective equipment including N95 respirators during the second stage of labor. The Centers for Disease Control and Prevention responded with new guidance excluding the second stage of labor from its list of aerosol-generating procedures based on research from which experience on labor and delivery units was notably absent. Additional literature that explores other modes of aerosol generation, such as coughing, vomiting, passing flatus, and loud vocalization, all of which are prevalent during the labor course, was notably omitted.

It is clear that the Centers for Disease Control and Prevention based their guidance not from the application of scientific principles but from pragmatism owing to the lack of equipment, and our colleagues were urged to follow suit. If we replace recommendations based on scientific principles with recommendations based on supply chain deficiencies, we become complacent with that which is “good enough under the circumstances.” This is a dangerous precedent on which to base our professional society guidelines. We should continue to address these inadequate responses even as Centers for Disease Control and Prevention guidelines evolve and the pandemic winds down. We will certainly face similar conflict again, whether during a fall resurgence of the current pandemic or a future infectious disease outbreak.

The current severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has strained our healthcare system, most notoriously with the lack of personal protective equipment (PPE) available for frontline healthcare workers. The Centers for Disease Control and Prevention (CDC) have implemented strategies to optimize available PPE under crisis conditions, including sanctioning less efficient PPE and the reuse of PPE intended for single use, with scant supportive data. Months after this crisis began, the safety and effectiveness of these measures remain unproven. Tellingly, the Food and Drug Administration recently rescinded approval of the decontamination and reuse of certain N95 respirators owing to safety concerns.

Currently, SARS-CoV-2, like SARS-CoV, is thought to be transmitted via large respiratory droplets as opposed to via an

airborne route of transmission.¹ However, even infections transmitted primarily through large respiratory droplets indicate airborne transmission under the right conditions. Despite data from the previous SARS-CoV epidemic, many of these conditions remain unclear.¹

Previous research indicates that transmission not only depends on the mode (eg, droplet vs airborne) but also on the duration of time spent in close proximity to an infected person. The United States Department of Labor Occupational Safety and Health Administration recognizes this and recommends N95 use for all those who, “work within 6 feet of patients known to be, or suspected of being, infected with SARS-CoV-2.”² This has led many obstetricians and their parent organizations to question their occupational infection risk on labor and delivery.

Accordingly, on March 31, 2020, a multidisciplinary group of obstetricians and clinicians penned a letter to Dr Romeo Galang of the CDC to express their concern regarding personal protective gear needs of their colleagues. They requested specific guidance for the second stage of labor, recommending its inclusion as a procedure requiring full PPE including N95 respirators. The CDC response noted that “forceful exhalation during the second stage of labor would not be expected to generate aerosols to the same extent as procedures more commonly considered to be aerosol generating. . . .” They also added that “when respirator supplies are restored . . . HCP [healthcare providers] should use respirators (or facemasks if a respirator is not available), eye protection, gloves, and gowns during the second stage of labor, in

From the Department of Maternal-Fetal Medicine, Baystate Medical Center, Springfield, MA (Drs Morgan and Rodríguez).

Received April 20, 2020; revised June 12, 2020; accepted June 14, 2020.

This paper is part of a supplement that represents a collection of COVID-related articles selected for publication by the editors of AJOG MFM without additional financial support.

The authors report no conflict of interest.

Corresponding author: Elizabeth A. Morgan, MD. Elizabeth.Morgan@baystatehealth.org

2589-9333/\$36.00

© 2020 Elsevier Inc. All rights reserved.

<https://doi.org/10.1016/j.ajogmf.2020.100165>

addition to other personal protective equipment that may be typically indicated for labor and delivery.”³ Although the CDC’s guidance is continuously changing and the American College of Obstetricians and Gynecologists is continuing to review this recommendation with the government, the underlying motivation for the guidance regrettably remains the same. Pragmatism owing to lack of equipment, rather than recommendations based on scientific data, continues to guide our pandemic response.

The limited data on which the CDC based its statement are focused primarily on a meta-analysis published after the initial SARS epidemic by Tran et al.⁴ This paper analyzed procedures thought to generate infectious aerosols (aerosol-generating procedures [AGPs]) such as manual ventilation, positive-pressure ventilation, intubation, and tracheotomy. The authors themselves noted a lack of precision in the ability to accurately define AGPs. Furthermore, their dataset was limited to small case series and retrospective reviews of exposures to healthcare providers on medical floors and critical care units; pregnant women were notably absent from this review. This meta-analysis cannot be used as a historical precedent to make educated decisions on the risk of transmission during the second stage of labor because it simply did not include this unique scenario.

As healthcare professionals, we understand that the absence of data does not equate to negative data. The CDC’s response does not consider newer studies that examine transmission of other respiratory infections and have reported that coughing, sneezing, breathing, and even loud vocalizations may also produce infectious aerosols.⁵ These actions are universal throughout labor and delivery and deserve consideration. By limiting the guidance about the second stage of labor to only forceful exhalation, the CDC ignores these other ways infectious aerosols may be transmitted.

The CDC’s suboptimal recommendations and overall lack of transparency during the current pandemic place the Society for Maternal-Fetal Medicine and the Society for Obstetric Anesthesia and Perinatology in the position of promulgating recommendations to their members that may be misconstrued as evidence-based best practices for optimal staff protection when in fact the protections are most likely

inadequate based on the available data regarding the increased risks of spread from comparable behaviors that occur during labor and delivery.

If we replace recommendations based on science with recommendations based on supply chain, we become complacent with that which is “good enough under the circumstances,” a concept known as satisficing. Satisficing under these circumstances is dangerous because it hampers our response.

Applying pragmatism to science is the practice of public health. Although public health is important for the application of scientific principles into actionable policies and must acknowledge supply constraints, the underlying best practice recommendations should still be driven by science, not supply chain deficiencies. Making the distinction is critical because it prioritizes the urgency of acquiring optimal PPE before the expected fall resurgence. To do otherwise unnecessarily risks the lives of our labor and delivery workforce and their families.

ACKNOWLEDGMENTS

We thank Jennifer Jury McIntosh, DO, Assistant Professor, Maternal-Fetal Medicine, Medical College of Wisconsin, Milwaukee, WI, for her assistance in the preparation of this article. ■

REFERENCES

1. Judson SD, Munster VJ. Nosocomial Transmission of emerging viruses via aerosol-generating medical procedures. *Viruses* 2019;11:940.
2. United States Department of Labor Occupational Safety and Health Administration. Guidance on preparing workplaces for COVID-19. Available at: <https://www.osha.gov/Publications/OSHA3990.pdf> 2020. Accessed April 10, 2020.
3. Centers for disease control and prevention. Clinical questions about COVID-19: questions and answers. Section on obstetrical-care. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html#Obstetrical-Care> 2019. Accessed April 10, 2020.
4. Tran K, Cimon K, Severn M, Pessoa-Silva CL, Conly J. Aerosol generating procedures and risk of transmission of acute respiratory infections to healthcare workers: a systematic review. *PLoS One* 2012;7:e35797.
5. Asadi S, Wexler AS, Cappa CD, Barreda S, Bouvier NM, Ristenpart WD. Aerosol emission and superemission during human speech increase with voice loudness. *Sci Rep* 2019;9:2348.