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## Whatever happened to universal/standard precautions?

David L. Carr-Locke, MA, MD, DRCOG, FRCP, FACG, FASGE, AGAF, NYSGEF,<sup>1</sup> Roy Soetikno, MD, MS,<sup>2</sup>  
Reem Z. Sharaiha, MD, MSc<sup>3</sup>

New York, New York; San Francisco, California, USA

For almost 30 years the principles of “standard precautions” have governed the way healthcare workers have protected their patients and themselves from transmitting infection. At times of crisis, these principles should not change. What happened? For coronavirus disease 2019 (COVID-19), this is day 91 for the world, day 71 for the United States, and day 31 for New York state.

For those of us who have worked in the GI endoscopy world for more than 4 decades, we have seen the risk of infection transmission to personnel and other patients undergo a series of transformations based on knowledge of risks, complexities of procedures and equipment, and need to reprocess reusable endoscopes and devices. In the developed world, accessories became almost entirely single-use disposables, and, until recently, endoscopes remained the only devices that required reprocessing, although this now is also undergoing a transformation to single use.

Although the risk of endoscope-associated infection from patient to patient has always been the driving force of infection control and prevention in endoscopy, little attention was paid to endoscopy personnel protection until the onset of the HIV epidemic in the early 1980s. In 1987 a Centers for Disease Control and Prevention document<sup>1</sup> explicitly acknowledged that a history and physical examination alone were insufficient to identify the presence of a potential bloodborne illness in a patient. The Occupational Safety and Health Administration

developed a standard in 1991<sup>2</sup> stating that all blood and bodily fluids of all patients were to be considered as a risk for transmitting HIV, hepatitis B, staphylococcus, streptococcus, tuberculosis, salmonella, and other infectious agents. So was born the concept of “universal precautions” applying to potential exposure from blood and certain bodily fluids,<sup>3</sup> later modified to include blood and *all* bodily fluids under the banner “standard precautions.”<sup>4</sup> The standard required use of handwashing and appropriate personal protective equipment (PPE)—gloves, gowns, and masks with eye protection or face shields. Additional protections were to be taken for airborne precautions, droplet precautions, and contact precautions. In the absence of specific endoscopy-risk recommendations, the American Society for Gastrointestinal Endoscopy Technology Committee reviewed the topic in 1998<sup>5</sup> and again in 2010.<sup>6</sup> Standard precautions were accepted by all medical and nursing GI Societies, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Joint Commission on Accreditation of Healthcare Organizations, and other regulatory bodies. They remain in effect to this day. Outbreaks of highly contagious diseases like severe acute respiratory syndrome (SARS), Middle East respiratory syndrome, and Ebola required modifications to the PPE to include respirator-type masks.

The current pandemic of SARS-coronavirus 2 has created a unique risk environment for endoscopy. The response to this threat by individual endoscopists, institutions, national societies, and local, regional, and national government agencies was prompt<sup>7-12</sup> but inconsistent, and for some inexplicable reason the principle of standard precautions was completely abandoned. This decision, whether deliberate or pragmatic, was almost certainly because there was, and still is, insufficient PPE for everyone who needs it. This is not a valid reason to take such a course of action. In the absence of virus testing, there were and still are valiant attempts to stratify risk for the likelihood of patient infectivity initially based first on travel, then symptoms and known contact with COVID-19 cases, and, most recently, regional prevalence. As certain regions of the world became more community-infected and the disease

*Abbreviations:* COVID-19, coronavirus disease 2019; NIOSH, National Institute for Occupational Safety and Health; PPE, personal protective equipment; SARS, severe acute respiratory syndrome.

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Current affiliations: New York Presbyterian Hospital, Division of Gastroenterology & Hepatology, Weill Cornell Medicine, New York, New York, USA (1); Division of Gastroenterology and Hepatology, San Francisco Veterans Affairs Medical Center, San Francisco, California, USA (2); Division of Gastroenterology and Hepatology, Weill Cornell Medicine, New York, New York, USA (3)

became endemic, such as in New York State and New York City, it is clear that there are potentially so many infected asymptomatic individuals who are contagious that stratification of risk is neither possible nor safe. Although all elements of PPE for this pandemic are important, the protection of the endoscopy team's (endoscopist, assistant, technician, fellow, nurse, anesthesia provider, radiology technician) faces and airways have become the dominant strategy requiring respirator-type masks (N95, KN95, FFP2, FFP3, etc) and face shields or eye/face protection. There continues to be a shortage of such equipment, necessitating compromise strategies for reusing and reesterilizing respirator-type masks in ways for which they were never intended. The natural predicate of standard precautions is sufficient availability of appropriate PPE. The design and composition of PPE have changed little over the years. Why has this not been addressed? Why are we double- or triple-layering materials and using up to 10 separate items of protective equipment using complicated "on and off" sequences, not to mention radiation protection when needed, when a purpose-designed all-enclosing virus-resistant suit might be sufficient? Perhaps this pandemic might be the stimulus to create such protection.

Were we too slow and too busy to demand current PPE of sufficient quality and in sufficient quantity, or was it just that our local stocks and national supplies at every level were woefully inadequate? History will analyze the reasons why this happened and how institutions were desperately creative in filling the safety void. Many people have surely suffered as a consequence<sup>13,14</sup> and will continue to do so until this problem is solved. To win this war, we need to prevent healthcare providers from becoming infected and prevent cross-contaminating healthy patients who then bring the disease back to their communities. Social isolation is insufficient if healthcare workers, who are constantly exposed, develop COVID-19, and are unavailable to treat patients, can spread it to colleagues and to healthy patients.

We must apply the principles of standard precautions and assume that, during the height of this pandemic and probably for some time afterward, every patient requiring endoscopy carries SARS-coronavirus 2.<sup>15</sup> We should protect ourselves accordingly.

## DISCLOSURE

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## REFERENCES

- Centers for Disease Control and Prevention. Recommendations for prevention of HIV transmission in health-care settings. *MMWR Morb Mortal Wkly Rep* 1987;36(Suppl 2S).
- Occupational Safety and Health Administration, 29CFR (Code of Federal Regulations) Part 1910.1030. Occupational exposure to bloodborne pathogens: final rule. *Federal Register* 1991;56(sec6): 640040-182.
- Centers for Disease Control and Prevention. Perspectives in disease prevention and health promotion update: universal precautions for prevention of transmission of human immunodeficiency virus, hepatitis B virus, and other bloodborne pathogens in health-care settings. *MMWR Morb Mortal Wkly Rep* 1988;37:377-88.
- United States Department of Labor. Occupational Safety and Health Administration. Healthcare wide hazards. (Lack of) universal precautions. Available at: <https://www.osha.gov/SLTC/etools/hospital/hazards/univprec/univ.html>.
- Carr-Locke DL, Conn MI, Faigel DO, et al. Personal protective equipment. *ASGE Technology Committee. Gastrointest Endosc* 1999;49:854-7.
- Pedrosa MC, Farraye FA, Shergill AK, et al. Minimizing occupational hazards in endoscopy: personal protective equipment, radiation safety, and ergonomics. *ASGE Technology Committee. Gastrointest Endosc* 2010;72:227-35.
- Repici A, Maselli R, Colombo M, et al. Coronavirus (COVID-19) outbreak: what the department of endoscopy should know. *Gastrointest Endosc. Epub* 2020 Mar 19.
- American Society for Gastrointestinal Endoscopy. ASGE releases recommendations for endoscopy units in the era of COVID-19. Available at: [https://www.asge.org/docs/default-source/default-document-library/press-release\\_impact-of-covid-19-on-endoscopy.pdf](https://www.asge.org/docs/default-source/default-document-library/press-release_impact-of-covid-19-on-endoscopy.pdf). Accessed March 13, 2020.
- Bezerra JA, Pochapin MB, El-Serag HB, et al. Joint GI Society Message on COVID-19: COVID-19 clinical insights for our community of gastroenterologists and gastroenterology care providers. Available at: <https://gi.org/2020/03/15/joint-gi-society-message-on-covid-19>. Accessed March 15, 2020.
- British Society of Gastroenterology. Endoscopy activity and COVID-19: BSG and JAG guidance—update 22.03.20. Available at: <https://www.bsg.org.uk/covid-19-advice/endoscopy-activity-and-covid-19-bsg-and-jag-guidance>. Accessed March 20, 2020.
- ESGE and ESGENA position statement on gastrointestinal endoscopy and the COVID-19 pandemic. Available at: [https://www.esge.com/assets/downloads/pdfs/general/ESGE\\_ESGENA\\_Position\\_Statement\\_gastrointestinal\\_endoscopy\\_COVID\\_19\\_pandemic.pdf](https://www.esge.com/assets/downloads/pdfs/general/ESGE_ESGENA_Position_Statement_gastrointestinal_endoscopy_COVID_19_pandemic.pdf). Accessed March 18, 2020.
- New York Society for Gastrointestinal Endoscopy. Guidelines for endoscopy units during the COVID-19 Pandemic. Available at: <https://www.nysge.org/Files/NYSGE%20Guidelines%20for%20Endoscopy%20Units%20During%20the%20COVID-19%20Pandemic.pdf>. Accessed March 16, 2020.
- Schwartz M. Nurses die, doctors fall sick and panic rises on virus front lines. *New York Times*, March 30, 2020. Available at: <https://www.nytimes.com/2020/03/30/nyregion/ny-coronavirus-doctors-sick.html>. Accessed March 30, 2020.
- Yong E. How the pandemic will end. *The Atlantic*, March 25, 2020. Available at: <https://www.theatlantic.com/health/archive/2020/03/how-will-coronavirus-end/608719/>.
- Thompson CC, Shen L, Lee LS. COVID-19 in endoscopy: Time to do more? *Gastrointest Endosc.* 2020 Epub Mar 29.