

COMMENTARY

On Contact Precautions: The Good, the Bad, and the Ugly

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(See the article by Dhar et al, on pages 213–221.)

Contact precautions are designed to reduce opportunities for pathogen transmission by direct and indirect contact with the patient or the patient's environment. Contact precautions typically include patient placement in a private room, the wearing of gloves and gowns by healthcare personnel while in the room, and proper hand hygiene before room entry and after gloves are removed.¹ Contact precautions have been demonstrated to be effective during outbreaks^{1,2} and, as a result, are widely used as an intensified control measure for multidrug-resistant organisms (MDROs) during outbreak situations.

Target pathogens for implementation of contact precautions include methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant *Enterococcus* (VRE), *C. difficile*, and multidrug-resistant gram-negative bacilli. There is no one way to implement contact precautions, however. The Healthcare Infection Control Practices Advisory Committee guideline for management of MDROs in healthcare settings does not specify precisely when to use contact precautions;¹ the appropriate duration of contact precautions for patients who are colonized or infected with an MDRO is undefined; and the definition of an MDRO varies between facilities.

Importantly, the use of contact precautions may lead to unintended consequences. Morgan et al³ identified 4 main adverse outcomes related to contact precautions: less patient-healthcare provider contact, changes in systems of care that produce delays and more noninfectious adverse events, increased symptoms of depression and anxiety, and decreased patient satisfaction with care. Since this review was published in 2009, other reports have confirmed these findings,^{4–7} while additional reports have added to the list of adverse outcomes due to contact precautions, including increased risk of delirium,⁸ hypoglycemia, hyperglycemia, and anticoagulant prescribing errors.⁹

In this issue, Dhar et al¹⁰ assessed 5 measures of compliance with contact precaution practices in 11 teaching hospitals. These measures included rates of hygiene prior to donning

gloves/gowns, gowning, gloving, removal of gloves/gowns, and hand hygiene after gown/glove removal. We believe that readers should draw 2 main conclusions from their analysis. First, compliance with contact precautions was strikingly poor. Overall compliance with all 5 measures was only 28.9% after 1,103 observations. In a multivariate analysis, increasing burden of isolation was associated with (1) an increase in noncompliance with all 5 components of the recommended contact isolation practices and (2) an increase in noncompliance with hand hygiene prior to donning gloves and gowns. That is, not surprisingly, compliance with contact isolation decreased as the burden of isolation increased. Second, there was substantial heterogeneity in the different approaches to contact precautions among the study hospitals. For example, 4 sites required masks in addition to gowns and gloves, 4 sites included infectivity in their local criteria for use of contact precautions, and different hospitals required contact precautions for different organisms (eg, 7 hospitals required contact precautions for MRSA but only 4 for VRE).

The multicenter approach and total number of observations are strengths of this study. Other strengths include the use of undercover observers and statistical controls to ensure that results were not driven by individual hospitals. Importantly, these data represent real-world research that confirms most epidemiologists' fears. The authors acknowledge weaknesses of their study but fail to mention 4 additional problems. First, it is unclear how many observations occurred in the setting of a high (greater than 40%) burden of isolation. Given the wide confidence intervals of the estimate in their model, we presume that few observations occurred when the burden of isolation was high. Second, there was no assessment of interobserver reliability or description of the protocol used by the observers. Lack of such assessment may have biased the observed performance toward higher rates of compliance.¹¹ Third, observations were excluded if one of the 5 activities were not observed, but it is unclear how many observations were excluded. Finally, overall compliance required

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performing all 5 activities. Recently published data suggest that hand hygiene prior to donning gloves may not be of benefit.¹² Because lack of hand hygiene before using gloves was the criteria most likely to lead to noncompliance, deleting the requirement for hand hygiene before glove use would have substantially increased the rates of compliance in this study. Together, these weaknesses infer that the conclusions from this article need further validation.

Previous editorials in this and other journals have described much of the controversy surrounding contact precautions.¹³ Little has changed in the decade since these editorials were first written. We still do not know the best circumstances for using contact precautions, but we do know that contact precautions can lead to patient harm and decreased patient satisfaction. More importantly, we still do not know whether contact precautions are effective outside of outbreak settings, but, given the results of Dhar et al, we now know that contact precautions are poorly implemented.

Given the confusion surrounding the topic, it is no surprise that hospitals regularly take different approaches to the implementation of contact precautions. There are 2 ends of the spectrum. On one end, some hospitals use syndromic criteria for use of contact precautions. Patients with certain conditions (eg, diarrhea or uncontrolled secretions) are placed in contact precautions. Conversely, some hospital units use universal contact precautions, in which gowns and gloves are required for room entry for all patients in a unit. Interestingly, both of these extremes seem to be potentially effective. For example, 1 hospital lowered healthcare-associated bloodstream infections and *S. aureus* infections over 5 years solely through increased attention to standard precautions (ie, hand hygiene).¹⁴ In contrast, Harris et al¹⁵ recently reported that universal glove and gown use decreased rates of MRSA acquisition and led to increased hand hygiene compliance upon room exit. In the burn intensive care unit at the University of North Carolina at Chapel Hill, universal glove and gown use for all patients is standard. The rate of compliance with appropriate hand hygiene in this specialized unit was greater than 90% during 2012 and 2013. These observations suggest that it might be advantageous to use universal glove and gowning rather than targeted contact precautions when the burden of contact isolation is high and/or if a pervasive culture with attention to infection prevention is present.

Do we change practice on the basis of the findings of Dhar et al? No, that would be similar to raising the speed limit simply because everyone drives faster than 65 miles per hour. So, what do we do? The authors suggest that hospitals should prioritize the types of pathogens targeted for contact precautions and improve education and feedback to providers. We agree with these suggestions but also note that better enforcement of current policies could also improve compliance. Frankly, we are not convinced that any of these 3 suggestions will improve compliance with contact precautions or patient care. Instead, we propose that guidelines change to concentrate effort and resources on areas where there is proof for

the benefit of contact precautions. By our review, contact precautions are most likely to be beneficial in settings where the risk of transmission is highest or where transmission could be catastrophic. These settings include outbreaks with epidemiologically important organisms and syndromes/illnesses with high risk of environmental contamination (eg, diarrhea and purulent secretions). In addition, burden of isolation, which is a proxy for the prevalence of MDRO carriage, should be used to guide when isolation measures should become universal for patients in a given location. We believe that focused implementation in the above scenarios will decrease compliance fatigue among healthcare personnel.

In conclusion, the data presented by Dhar et al are further evidence that passive reliance on current guidelines and policies is an ineffective way to achieve compliance with interventions such as contact precautions. Contact precautions are logically perceived by healthcare providers as burdensome with negative consequences for the patient. In light of the growing evidence against contact precautions as a basic practice for preventing transmission, we believe healthcare facilities should focus on implementing policies with known benefit; contact precautions should be used for MDRO in outbreak or high-risk situations. Even in these evidence-based scenarios, it is likely that staff will not automatically comply with contact precautions. Thus, hospital epidemiologists must continue to pursue a pervasive culture of compliance through education, immediate feedback, positive enforcement, and negative enforcement. By focusing on the use of contact precautions in limited and well-defined high-risk settings, we may be able reduce the number of bad patient outcomes from those ugly yellow gowns.

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