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Letters to the Editor

Preventing avoidable central line–associated bloodstream infections: Implications for probiotic administration and surveillance

Central line–associated bloodstream infections (CLABSIs) are a source of morbidity and impose an important financial burden.[1] As a public safety net health system, we continually strive to improve the quality of our care and to minimize cost. Every health care–associated infection is scrutinized to assess whether it could have been prevented. To our surprise, one patient recently fulfilled the National Healthcare Safety Network (NHSN) surveillance definition for a CLABSI in a situation which could have been avoided if probiotics were more carefully handled.[2] Consequently, by highlighting this case, we aim to demonstrate the necessity for standardized instructions for the administration of probiotics and propose that *Lactobacillus* GG be added to the NHSN list of commensals.

A 78-year-old woman with type II diabetes mellitus underwent an urgent exploratory laparotomy for ischemic bowel from an incarcerated ventral hernia and volvulus. Postoperatively, her course was complicated by fever and hypotension; therefore, she was treated for septic shock with fluids, vasopressors, and empirical broad-spectrum antibiotics. Cultures from urine, respiratory tract, and abdominal cavity–draining Jackson-Pratt drains were all negative, as was a *Clostridium difficile* polymerase chain reaction of stool. Blood cultures were also persistently negative, except 1 of 2 sets which grew *Lactobacillus*. During this time, she had a central venous catheter (CVC) and was receiving *Lactobacillus* GG probiotic (Culturelle; i-Health, Cromwell, CT) for the prevention of antibiotic-associated diarrhea. The isolate was sent for gene sequencing and identified as *Lactobacillus zeae* (99.7% identity) and *Lactobacillus rhamnosus* (99.8% identity), thereby matching the bacteria identified on the *Lactobacillus* GG product label. In discussion with nursing staff, it was determined that the probiotic capsules were being opened in the patient's room, dissolved in sterile water, and administered via an orogastric tube. As a result, we believe there was inadvertent environmental contamination with aerosolized bacteria. Because *Lactobacillus* GG was isolated from a single blood culture, it was not believed to represent a clinically significant infection. Nonetheless, it was accounted for as a CLABSI for our hospital.

Recommendations in the literature have been made regarding the proper administration of probiotics and allude to the potential risk of bloodstream infections.[3] However, there are no formal instructions or warnings to heighten awareness about the possibility of environmental contamination or cross-transmission from hands to other sites from *Lactobacillus*, specifically. Therefore, to prevent avoidable CLABSIs in patients receiving probiotics who have a CVC and a feeding tube, capsules must be opened in a room separate from the patient, and staff should engage in proper hand hygiene before and after administration.

It is worth mentioning that prior studies of *Lactobacillus* bacteremia did not support an association with catheter-related bloodstream infections.[4] There have since been 2 reported cases of catheter-related *Lactobacillus* GG bacteremia: one was in a lung transplant recipient and another, interestingly, was in a child with short gut syndrome who was receiving *Lactobacillus* GG probiotic via a gastrojejunostomy tube.[5,6] Similarly, there have been 6 cases of primary *Lactobacillus* bacteremia where the isolated strain was indistinguishable from the administered probiotic.[6-8] Accordingly, we believe that *Lactobacillus* GG should be added to the NHSN list of commensals so that one positive blood culture does not result in a reportable CLABSI. This merits particular consideration given the increasing use of probiotics in patients with CVCs. Just one misclassified health care–associated infection has detrimental effects on staff morale, consumer confidence, and hospital reimbursement.

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Call for improvement in personal protective equipment guidance and research

To the Editor:

There is urgent need for improvements to the current guidance on personal protective equipment (PPE) use for health care workers from the Centers for Disease Control and Prevention.[1] The guidance informs health care professions' curriculum and professional examinations throughout the United States. Standards from other international partners differ, particularly in the doffing sequence.[2,3] Health care workers are known to inconsistently or inadequately use PPE, even in the face of epidemic diseases, such as severe acute respiratory syndrome and pandemic influenza A (H1N1) virus.[4,5] One clear and safe standard which moves seamlessly from preventing health care–associated infections to protecting health care workers in the care of patients with highly infectious diseases is needed. An expert consortium should be formed to focus on agreeing to a standard step-by-step process, but also identifying essential safety concepts in the event that a breach, contamination situation, or unexpected clinical event warrants a slight change in process. The standard should include the use of PPE for special circumstances, such as chemotherapy administration,[6] patient transportation of an isolation patient for ancillary medical services, and visitors of isolation patients.[7] A specific list of inappropriate behaviors would also be helpful for clinicians, such as wearing isolation gowns for warmth or wearing surgical PPE in the cafeteria or public hospital areas.

The current Centers for Disease Control and Prevention guidance for prevention of health care–associated infections for donning and doffing sequence of PPE present critical concerns for clinicians and health care workers (http://www.cdc.gov/hai/pdfs/ppe/PPE-Sequence.pdf). The concerns relate to safe doffing processes used after patient care or other use of PPE. In example 1, the facial PPE (goggles or face shield) is removed before the gown is removed. In the care of patients with Ebola virus disease, a key principle was to remove all body PPE before removing the facial PPE in the event of aerosolization as the gown is removed, protecting mucous membranes.[8] Example 2 shows the jumbled removal of gown and gloves together. This method is ripe with opportunities for losing control of the gloves, which are the most contaminated elements of the PPE worn. Good glove-in-glove technique keeping the cuffs of the gown clean is a much safer alternative. Clean cuffs can then be slid over the hands before gown removal to prevent the dirty side of the sleeves from coming into contact with skin.[9]

A clear standard for PPE use is critical to safe and cohesive practices when the infectious risk for an illness is great or the mortality rate for a newly emerging pathogen is high. Current and future health care professionals deserve clear and concise guidance on how best to protect themselves in light of the many infectious threats which will likely emerge in the coming years. More research into clinical actions that generate aerosols and what role PPE plays in prevention is also needed. No health care–associated infection of a health care worker or the patients in their care should be acceptable when the tools are available to protect them if used and used correctly.

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