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## Reply to Parcell et al

*To the Editor*—We thank Parcell et al<sup>1</sup> for their kind words regarding our recent article.<sup>2</sup> The authors share their findings from a retrospective cohort analysis of hospitalized patients finding infection rates that (when taking into account the confidence intervals) do not appear dissimilar to our analysis. While the authors do mention some limitations, however, they neglect to include denominator data so as to express infections per catheter day, descriptions as to how peripherally inserted central catheters (PICCs) were used (inpatient only vs inpatient and outpatient), and whether losses to follow-up occurred in their cohort. These data would have been useful to make robust conclusions about the relative risk of central line-associated bloodstream infection (CLABSI) with PICCs compared with other types of central venous catheters.

How best to move forward to improve PICO care in hospitalized settings remains an important question. On the one hand, it is clear that these devices play important roles, and simply removing them from the armamentarium of venous access in hospitalized patients is not logical or wise. However, on the other hand, it is also becoming more apparent that these devices pose a considerable risk of CLABSI, and inattention to this risk can result in adverse outcomes.<sup>3,4</sup> As pointed out by Parcell et al,<sup>1</sup> insertion practices represent just the tip of the iceberg when it comes to these events. Meticulous attention to site care, device management, and prompt removal of PICCs that are clinically no longer warranted are cornerstones to the prevention of downstream complications.<sup>5</sup> How best to leverage existing resources to attain this important, longer-term objective is unknown. While the authors suggest that a core PICO team involving interventional radiologists may prove valuable, PICO insertions in the United States have largely become the purview and practice of specially trained, vascular access nurses who have made significant advances in venous access.<sup>6</sup> At many centers (ours included), vascular nurses provide insertion and the majority of subsequent care (scheduled dressing changes, line troubleshooting) for PICCs. Given this backdrop, the feasibility of having highly trained radiologists to assist with PICO care by conducting daily ward rounds and surveillance of lines remains debatable.

Nevertheless, the point brought forth by these authors is well taken. A homogenous care team is a critical aspect in the battle against PICO complications, and several local and institutional reports of such success can be found in the peer-reviewed literature.<sup>7,8</sup> These reports share three common themes: defining which practices are most valuable, standardizing these care processes, and consolidating monitoring and benchmarking efforts. In the United States, the Infusion Nursing Society and the Association for Vascular Access have initiated and developed standards of practice that have influenced policy and practice for vascular access specialists.<sup>9</sup> While the Infusion Nurses Society guidelines are an important advance, their diffusion across domains to other providers (eg, physicians) and dissimilar settings (eg, the United Kingdom) may represent important barriers. Multidisciplinary collaborations engaging all relevant stakeholders—physicians, interventional radiologists, nursing staff, infection preventionists, patients, and institutional leadership—may represent the best approach forward.

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## Mucosal Barrier Injury Laboratory-Confirmed Bloodstream Infection or Contaminant?

*To the Editor*—Dr. See and colleagues<sup>1</sup> published the results of field testing of mucosal barrier injury laboratory-confirmed bloodstream infection (MBI-LCBI), a newly defined subset of bloodstream infection (BSI) designed to capture

bacteremia or fungemia due to translocation of gut organisms in a subgroup of patients who have undergone an allogeneic stem cell transplantation within the previous year plus graft versus host disease or significant diarrhea or neutropenia. Only a single positive blood culture for a “recognized pathogen” (eg, *Staphylococcus aureus*, *Escherichia coli*, and *Candida albicans*) is required for a BSI to be considered laboratory confirmed (according to the current National Healthcare Safety Network [NHSN] definition).<sup>2</sup> It is hoped that, by incorporating this new definition, infections attributable to translocation will be distinguished from those due to central line-associated BSI.

In a retrospective study of blood cultures obtained at our institution in 2007,<sup>3</sup> it was reported that blood specimens obtained through a central venous catheter were 2.5 times more likely to have growth and 5.6 times more likely to be contaminated than blood specimens obtained by venipuncture. Importantly, it was found that contaminants were diverse and included Enterobacteriaceae, *Pseudomonas* species, *Acinetobacter* species, and *Candida* species. It was postulated that contamination was the result of inadequate sterilization of the central catheter hub and reflected the skin flora of hospitalized patients and/or transmission via the hands of healthcare workers.

Thus, I am concerned that a single positive blood culture of a specimen obtained via central venous catheter and positive for a recognized pathogen could be categorized as evidence of MBI-LCBI when, in fact, the positive culture result is due to contamination. Furthermore, although Centers for Disease Control and Prevention and NHSN guidelines also note that catheter-drawn blood specimens have a higher rate of contamination, it is my experience that many oncology units often obtain blood specimens via central catheter (typically, 1 venipuncture and 1 via central catheter). Given the population addressed by the new guideline (stem cell transplant recipients or patients with neutropenia), a patient with a single positive blood culture of a specimen obtained from a central venous catheter would be defined as having BNI-LCBI. Our study would suggest that many of those isolates are attributable to contaminants. In this population, I believe that MBI-LCBI would be more accurately defined by at least 2 positive culture specimens obtained via venipuncture.

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