To the Editor—The recently published Infectious Diseases Society of America (IDSA) clinical practice guidelines for the diagnosis and management of intravascular catheter-related bloodstream infection (CR-BSI) [1] is a welcome updated document that is likely to be very useful to many clinicians caring for febrile patients with intravascular catheters. One issue that I believe the authors could have addressed more clearly revolves around drawing blood cultures through vascular catheters when CR-BSI is suspected. Specifically, the guidelines suggest that for suspected CR-BSI, paired blood samples, one set drawn from the catheter and another set through a peripheral vein, should be obtained while simultaneously stressing that the diagnosis of CR-BSI without removal of the catheter is only possible by performing quantitative blood cultures or calculating the differential time to positivity [1]. In addition, the guidelines affirm that definite diagnosis of CR-BSI requires the growth of the same organism from a peripheral (not catheter) blood culture and catheter tip culture, and that the management of patients with a positive blood culture from an intravascular catheter and a negative result from peripheral blood draw remains an “unresolved issue” [1]. Collectively, these statements suggest that, without availability of quantitative blood cultures (as is the case in most laboratories [2]) or calculation of the differential time to positivity (also not widely embraced [3]), or the presence of patient factors impacting venous puncture (eg, patient preference or difficult venous access), routine culturing of blood samples obtained from intravascular catheters cannot be regarded as a preferred practice in the evaluation of CR-BSI. In fact, given the higher likelihood of contamination associated with catheter-drawn blood cultures [3, 4], with their attendant additional unnecessary cost of care [5] and their relatively poor positive predictive value for CR-BSI [6–8] without greater negative predictive values compared with those of peripheral blood cultures [8], the “2 sets (1 peripheral)” practice should generally be avoided [3, 4] instead of encouraged as was done throughout the document [1]. The guidelines’ recommendation to study the frequency of compliance with such practice as a “performance measure” for evaluation of CR-BSI further implies that it should be adopted universally by health care facilities, seemingly without regards to laboratory capabilities or patient factors.

This is not a trivial issue. On the basis of my experience of >20 years at a large tertiary care community teaching medical center, the “knee-jerk” response of many clinicians to fever in a patient with a central venous line is often to order 2 sets of blood cultures, 1 through the intravascular catheter and another peripherally, even though no quantitative blood culture or differential time to positivity services are available. When I ask the ordering physician about the rationale for such practice, they often respond that “a positive blood culture from the line and a negative one from peripheral draw means the line is infected.” I hope that future guidelines avoid the “1 size fits all” approach to the evaluation of CR-BSI and seize the opportunity to dispel, not perpetuate, this practice myth in many centers.

Acknowledgments


Farrin A. Manian
Division of Infectious Diseases, St John’s Mercy Medical Center, St Louis, Missouri

References


Reply to Collins et al and Manian

To the Editor—We thank Collins et al for their data regarding the incidence of catheter-related candidemia in their patients receiving total parenteral nutrition through short-term, non-tunneled, non-antimicrobial-coated central venous catheters [1]. All such infections at their institution were due to Candida albicans. As noted, Chow et al [2] found that duration of total parenteral nutrition is independently associated with a decreased risk of candidemia due to non- albicans Candida species, compared with C. albicans. Chow et al [3] also found that total parenteral nutrition duration was an independent risk factor for non- albicans candidemia, compared with controls without candidemia. Thus, prolonged total parenteral nutrition administration increases risk of candidemia, especially, but not solely, due to C. albicans.

Guidelines are a framework to clinical decision making. We agree with Collins and colleagues that the interpretation of our guidelines [4] should be done in the context of local epidemiology, and we are happy that our guidelines are not in conflict with this truism.

We thank Dr Manian for his reflections on the “2 sets (1 peripheral)” recommendation of our updated Infectious Diseases Society of America guideline [4]. The primary reason to continue to recommend this policy is that, in theory, this may allow for the calculation of the differential time to positivity (DTP). In addition, in some patients, obtaining 2 peripheral blood cultures may be difficult. In our opinion, most, if not all, modern microbiology laboratories use a blood culture system with continuous monitoring for positivity and should, therefore, be able to report on the DTP. However, it is true that the use and interpretation of the DTP is only possible when both the clinician and laboratory handle blood cultures correctly, and we agree that this is not always simple. The peripheral and catheter-drawn blood cultures need to be obtained within a few minutes of each other, before antibiotic therapy is initiated, and the blood culture vehicles (eg, bottles) should be inoculated with the same volume of blood. The blood culture bottles should be properly labeled regarding the site where the blood cultures were obtained and the time the blood cultures were taken should be accurately noted. When these cultures arrive in the laboratory they both need to be placed in the incubator at the same time and the time to positivity has to be reported back to the clinician together with the time the blood culture was taken. This latter detail is important in the event that other blood cultures are taken on the same day, so that the DTP can be calculated based on blood cultures that were sampled within a few minutes of each other.

The DTP cannot always be calculated in hospitals with up-to-date microbiology equipment. Dr Manian correctly highlights the practical problems that can occur when paired blood cultures are obtained. The DTP can only be calculated when both blood cultures reveal growth. In a study on DTP in intensive care unit patients, the positive predictive value for true catheter-related bloodstream infection was poor when only the blood culture taken through the catheter demonstrated growth [5]. Unfortunately, this occurs frequently. In 1 DTP study, at least 1 of 1010 paired blood cultures revealed growth, but most often (n = 603), only the blood culture drawn through the catheter was positive [6]. We agree with Dr Manian that an isolated positive catheter-drawn blood culture on its own is not proof of catheter-related bloodstream infection and does not necessarily connote the need for catheter removal. However, the opposite situation (positive peripheral blood culture with a negative catheter-drawn culture) makes it very unlikely that the catheter is the source of a bloodstream infection [7]. As such, this may be an additional reason to recommend the “2 sets (1 peripheral)” policy even if the laboratory is unwilling or unable to report the DTP. In a recent review, other authors also suggest that “based on the available evidence, at least 1 blood culture should be obtained from the intravascular catheter” [8, p 1].

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Leonard A. Mermel,1 Michael Allon,2 Emilio Bouza,3 Donald E. Craven,2 Patricia Flynn,4 Naomi P. O’Grady,5 Issam I. Raad,4 Bart J. A. Rijnders,10 Robert J. Sherertz,2 and David K. Warren6

1Division of Infectious Diseases, Warren Alpert Medical School of Brown University, Providence, Rhode Island; 2University of Alabama, Birmingham Hospital, Birmingham; 3Tufts University School of Medicine, Lahey Clinic Medical Center, Burlington, Massachusetts; 4St. Jude Children’s Research Hospital, Children’s Infection Defense Center, Memphis, Tennessee; 5National Institutes of Health, Critical Care Medicine Department, Bethesda, Maryland; 6Section of Infectious Diseases, University of Texas Cancer Center, Houston; 7Section of Infectious Diseases, Wake Forest University School of Medicine, Winston-Salem, North Carolina; 8Division of Infectious Diseases, Washington University School of Medicine, St Louis, Missouri; 9Servicio de Microbiología Clínica y E. Infecciosas Hospital General “Gregorio Marañón,” Madrid, Spain; and 10Internal Medicine and Infectious Diseases, Erasmus University Medical Center, Rotterdam, the Netherlands

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