

CORRESPONDENCE

Reduction of blood culture contamination rate by an educational intervention

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We read with considerable interest the recent article in *CMI* by Eskira *et al.* [1], in which the authors described the use of an educational intervention to significantly reduce blood culture contamination (BCC) rates. We agree that this protocol should be considered in settings where BCC rates are a major difficulty, such as the intensive care unit (ICU). Particularly in the ICU, favourable evolutions in healthcare have resulted in a change in the profile of critically-ill patients, making them highly susceptible to infection by opportunistic pathogens. The risk of severe infection means that broad-spectrum empirical antimicrobial agents are administered frequently (and often incorrectly), thereby increasing selection pressure and drug resistance [2]. To focus empirical treatment, site-specific surveillance cultures are taken in our hospital on a routine, thrice-weekly basis [3]. As colonisation with resistant pathogens often precedes infection, these surveillance cultures have proven to be useful in the choice of empirical regimen [4,5]. Eskira *et al.* [1] reported that 1420 pre-intervention blood cultures and 1618 post-intervention blood cultures were retained for analysis, from which bloodstream infection was diagnosed in 30 (3.6%) and 36 (4.5%) patients, respectively, but no information was provided concerning the pathogens isolated or the number of patients already receiving antimicrobial agents when the blood cultures were obtained.

Furthermore, although blood cultures should be taken at the time of spiking fever, they are often negative at this point. Therefore, the collection of blood cultures should be spread over time to increase the likelihood of microbiological confirmation of bacteraemia or candidaemia [6]. Because of the low sensitivity of blood cultures for detection of microorganisms, this strategy can also be useful in distinguishing true from contaminant bloodstream infection. With these suggestions in mind, we would be interested to know if Eskira and colleagues can elaborate on the indications for which blood cultures were performed.

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REPLY FROM DR GILAD

We appreciate the comments of Vandijck and colleagues. The performance of surveillance cultures in the intensive care setting is indeed of great value in directing empirical antimicrobial therapy. However, our study was performed in the internal medicine setting, in which routine microbiological surveillance is not common practice because of a lower colonisation pressure and questionable cost-effectiveness. Moreover, it should be noted that skin colonisation with nosocomial pathogens can also lead to blood culture contamination, especially if inadequate techniques are employed, and thus knowledge of pre-existing colonisation may not always be helpful in the interpretation of blood culture results. As for the species distribution of true bloodstream infection in our study population, the rates of isolation, in decreasing order of frequency, were: *Escherichia coli* (28.8%); *Staphylococcus aureus* (24.2%); *Streptococcus* spp. (7.6%); *Acinetobacter* spp. (7.6%); *Klebsiella pneumoniae* (6%); *Enterobacter* spp. (6%); *Pseudomonas aeruginosa* (4.5%); *Proteus mirabilis* (4.5%); *Candida albicans* (3%); *Bacteroides* spp. (3%); *Brucella melitensis* (3%), and *Enterococcus* spp. (1.5%). Of 66 true bloodstream infections, 6% were hospital-acquired.

Vandijck and colleagues also discuss the limited sensitivity and specificity of blood cultures and stress the importance of obtaining blood cultures over time. Undoubtedly, interpretation of blood culture results should be based not only on the identity of bacterial isolates, but also on additional parameters such as the proportion of positive blood culture sets, the number of positive bottles within each set and the time to positivity. In our study, blood cultures were obtained at the discretion of attending doctors when infection was suspected, either upon admission or during a hospital stay. According to our institutional guidelines (unrelated to the current intervention), more than one blood culture set should be obtained in such cases. Although, for the sake of sample