The blood culture contamination rate is often used to validate specimen-collection procedures. CUMITECH has set its optimal target to be 2% to 3%. However, the term “contamination rate” has been defined in many ways, limiting its generalizability” Morii et al (2016).

Abstract:

The blood culture contamination rate is often used to validate specimen-collection procedures. CUMITECH has set its optimal target to be 2% to 3%. However, the term “contamination rate” has been defined in many ways, limiting its generalizability. The definitions used in earlier studies can be divided into two categories; definitions based on clinical judgements, and those based on preset rules.

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According to each principle, the equation must be composed of a defined numerator and denominator. The problem with clinical definitions is that the decision is inevitably subjective, and the process is too cumbersome. Also, if the number of positive cultures is used as the denominator, the value would be equivalent to the positive predictive value, given that contamination is regarded as a “positive case.” Thus, the value would not be useful for validating a procedure. On the other hand, when the preset algorithm was adopted, true infection would, to some degree, inevitably be classified as contamination. Also, if the algorithm adopted the number of blood culture sets as the denominator and contamination was defined as the identification of 1 or more specified organisms in only 1 of multiple sets of blood cultures, its theoretical maximum value would not be 100%. This is a problem because the value is a mixture of several numbers with different scales. In other words, whether the blood cultures are collected once, twice, or thrice or more a day would affect the result. The study cited by CUMITECH aimed to evaluate the equivalence between the clinical definition and the laboratory definition with preset rules, rather than to establish a benchmark for the contamination rate. It is undesirable for the number to be perceived as a benchmark. “A Guide to Blood Culture” (2013) by the Japanese Society for Clinical

Microbiology introduced a calculation for the contamination rate, but the definition of the term “number of specimens” in the formula is ambiguous. In addition, the references cited in the guide do not concern contamination and do not even mention the definition of contamination rate. Thus, it is impossible to confirm the definition. In view of the weaknesses of these previous works, we defined the contamination rate as a benchmark for the validation of blood culture procedures as follows. / *coagulase-negative staphylococci, Propionibacterium acnes, Micrococcus spp., Viridans-group streptococci, Corynebacterium spp., and Bacillus spp., but not B. anthracis.

Reference:

Morii, D., Yokozawa, T., Ichinose, N. and Oda, T. (2016) Confusion Over the Term “Contamination Rate” as It Pertains to Blood Cultures. Kansenshogaku Zasshi. 90(3), p.340-5. .

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