

CORRESPONDENCE



Do not forget the blood cultures!

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We read the new international guideline on the management of sepsis and septic shock 2021 [1] with excitement and interest, as the regular updates represent the framework for sepsis therapy.

However, we were very surprised to find that blood cultures are no longer explicitly mentioned in the “Diagnosis of infection” section. The current recommendation, that “appropriate routine microbiologic cultures (including blood) should be obtained”, meanwhile seems like a footnote. Is it wise not to explicitly recommend “taking blood cultures, if possible before administering any antibiotics”? We believe that in particular, many young doctors rely on clear recommendations. However, if you look for “blood cultures”, you get no result in the current guidelines.

In the 2017 guideline [2], it was pointed out that “obtaining cultures before antibiotic administration significantly increases the yield of cultures and makes the identification of a pathogen more likely”. In fact, there was little evidence to support this recommendation in 2017. However, in 2021, there is evidence that underlines the influence of antibiotic administration on blood culture positivity in septic patients [3–6]. These studies show that taking blood cultures after the start of antibiotic therapy can lead to a reduction in the detection of pathogens by up to 50%.

It is well known that the compliance for obtaining blood cultures before antibiotics is often low [7]. It cannot be emphasized strongly enough that obtaining blood cultures is currently still a core element of sepsis diagnosis. To give away this diagnostic possibility would be foolish.

Knowledge of the pathogen is essential for bespoke anti-infective therapy, strategies for de-escalation and reduction of unjustified anti-infective therapies.

These strategies can be implemented in a more informed way based on blood cultures before antimicrobials, as they have a significantly higher sensitivity [3–6]. The practical remark 2017 about the number of blood cultures was deleted too. This decision also may have been made on the basis of lack of evidence, but in this way, the importance of blood cultures disappears and is only clear if previous recommendations are known.

From our point of view, the importance of obtaining blood cultures in the right way and with an adequate number of sets is an elementary and crucial part of sepsis therapy. A single set is certainly not sufficient with regard to detection of contamination or especially at the onset of sepsis. For example, in case of staphylococcal bacteremia, de-escalation based on a single negative blood culture obtained during antimicrobial treatment would be detrimental. We consider such practical advice to be very valuable. The start of antimicrobial therapy should be very well considered and this aspect is finely worked out in the 2021 sepsis guidelines. However, it is precisely with this approach that this time should be used to obtain blood cultures before antimicrobials with appropriate accuracy and appropriate number in all patients suspicious for sepsis.

Funding

Open Access funding enabled and organized by Projekt DEAL.

Declarations

Conflicts of interest

On behalf of all the authors, the corresponding author states that there is no conflict of interest.

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Accepted: 24 December 2021

Published: 17 January 2022

References

1. Evans LE, Rhodes A, Alhazzani W et al (2021) Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. *Intensive Care Med* 47:1181–1247
2. Rhodes A, Evans LE, Alhazzani W et al (2017) Surviving sepsis campaign: international guidelines for management of sepsis and septic shock: 2016. *Intensive Care Med* 43(3):304–377
3. Scheer CS, Fuchs C, Gründling M et al (2019) Impact of antibiotic administration on blood culture positivity at the beginning of sepsis: a prospective clinical cohort study. *Clin Microbiol Infect* 25(3):326–331
4. Rand KH, Beal SG, Rivera K et al (2019) Hourly effect of pretreatment with IV antibiotics on blood culture positivity rate in emergency department patients. *Open Forum Infect Dis* 6(5):179
5. Cheng MP, Stenstrom R, Paquette K et al (2019) Blood culture results before and after antimicrobial administration in patients with severe manifestations of sepsis: a diagnostic study. *Ann Intern Med* 171(8):547–554
6. Cascone VJ, Cohen RS, Dodson NP et al (2019) Implications of culture collection after the first antimicrobial dose in septic emergency department patients. *Am J Emerg Med* 37(5):947–951
7. Rhodes A, Phillips G, Beale R et al (2015) The surviving sepsis campaign bundles and outcome: results from the international multicentre prevalence study on sepsis (the IMPReSS study). *Intensive Care Med* 41(9):1620–1628