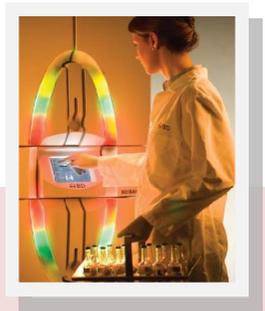
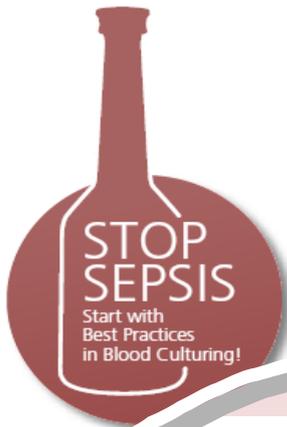


Best Practices in Blood Culture Collection



Stop Sepsis - start with Best Practices in blood culturing.

DELAYED VIAL ENTRY FEATURE FOR BACTEC BLOOD CULTURE BOTTLES



Best Practices in Blood Culture:

Incubate inoculated blood culture bottles as soon as possible after blood collection for optimal performance.

Does this apply all the time?

NO!

Why?

Due to some financial, geographical and other unforeseen circumstances, delays often occur prior to incubating inoculated blood culture bottles into automated blood culture instruments for continuous monitoring of microorganism growth at a constant incubation temperature which is 35°C. This is even more obvious in those satellite laboratory settings where they need to deliver their inoculated blood culture bottles to the reference laboratories.

Therefore, it is very important that the automated blood culture monitoring system has the feature known as Delayed Vial Entry (DVE) which enable it to detect microorganism growth even though the bottle is being delayed loading into the system. Sautter R.L. et al. proposed that the term delayed entry be specifically reserved for a time period greater than the time period for which there is an acceptable rate of recovery for a particular bottle type and blood culture instrument system¹. Besides, Akan OA and co-authors also reported there is an increased risk of false negativity due to delayed vial entry which is 5.5 times and 8.5 times at 24 hour and 48 hour delay respectively². Thus it is important to verify that the automated blood culture monitoring system should have reliable DVE feature so that we do not compromise the patient care outcome.

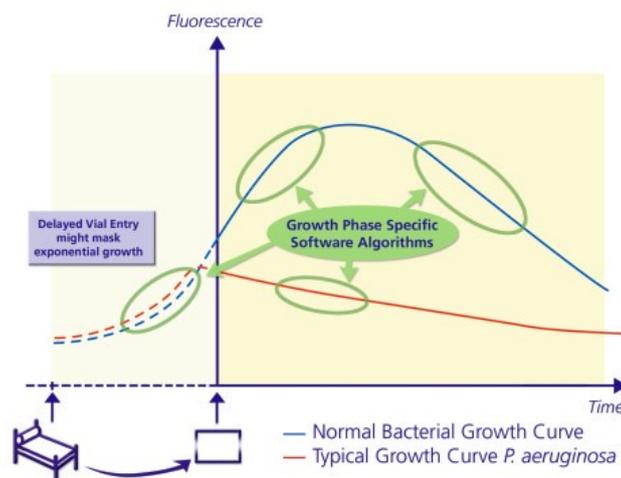
BD BACTEC™ Series Blood Culture System with its BD BACTEC™ Media range have been proven to be an effective system to recover isolates from blood culture to help identify sepsis episodes sooner. By using the proven highly sensitive fluorescent detection and resin antibiotic neutralization technology with built-in algorithms, BD BACTEC™ blood culture system is able to recover microorganisms even in the case of delayed vial entry. It does not utilise threshold algorithm as it has demonstrated that this can lead to false negative³ and false positive. BD has claimed that BD BACTEC™ Series Blood Culture System is able to handle delayed vial entry:

- ◆ Up to 48 hours storage at room temperature for all BD BACTEC™ Media⁴,
- ◆ Up to 20 hours pre-incubated at 35°C for Plus Aerobic/F, Plus Anaerobic/F, Peds Plus/F, Lytic/10 Anaerobic/F and Myco/F Lytic media⁴.

According to the study by Chapin and Lauderdale, the following sensitivities of detection were seen: 97.9% up to 24 hours at 35°C and 98.2% up to 48 hours at room temperature for BACTEC 9240⁴.

With the increase of peripheral or satellite laboratories, DVE feature plays a significant role able to detect sepsis episode the soonest possible by not compromise patient care. BD BACTEC™ Series Blood Culture System with its BD BACTEC™ Media range back up by Becton Dickinson more than 40 years experiences in blood culture testing and media specific algorithms will help the laboratories to maintain and increase the detection even though delayed incubation of the blood culture bottles into the automated blood culture systems.

Fluorescence Technology and Sophisticated Algorithms: A Powerful Combination!



The combination of media-specific algorithms with growth phase-specific algorithms enhances the sensitivity and time to detection, even in case of delayed vial entry, and for bacteria that only generate limited amounts of CO₂ (e.g. *P. aeruginosa*).

Other blood culture systems with more limited algorithms might not detect the presence of bacteria in such specific circumstances.

References

1. Sautter RL, et al. Effects of delayed-entry conditions on the recovery and detection of microorganisms from BacT/ALERT and BACTEC blood culture bottles. J Clin Microbiol 2006; 44: 1245-9.
2. Akan OA, Yildiz E. Comparison of the effect of delayed entry into 2 different blood culture systems (BACTEC 9240 and BacT/ALERT 3D) on culture positivity. Diagn Microbiol Infect Dis 2006; 54: 193-6.
3. Klaerner H-G, Eschenbach U, Kamereck K, Lehn N, Wagner H, Miethke T. Failure of an automated blood culture system to detect nonfermentative gram-negative bacteria. J Clin Microbiol. 2000;38:1036-1041.
4. Chapin, K., and T.-L. Lauderdale. 1996. Comparison of Bactec 9240 and Difco ESP blood culture systems for the detection of organisms from vials whose entry was delayed. J. Clin. Microbiol. 34:543-549.

