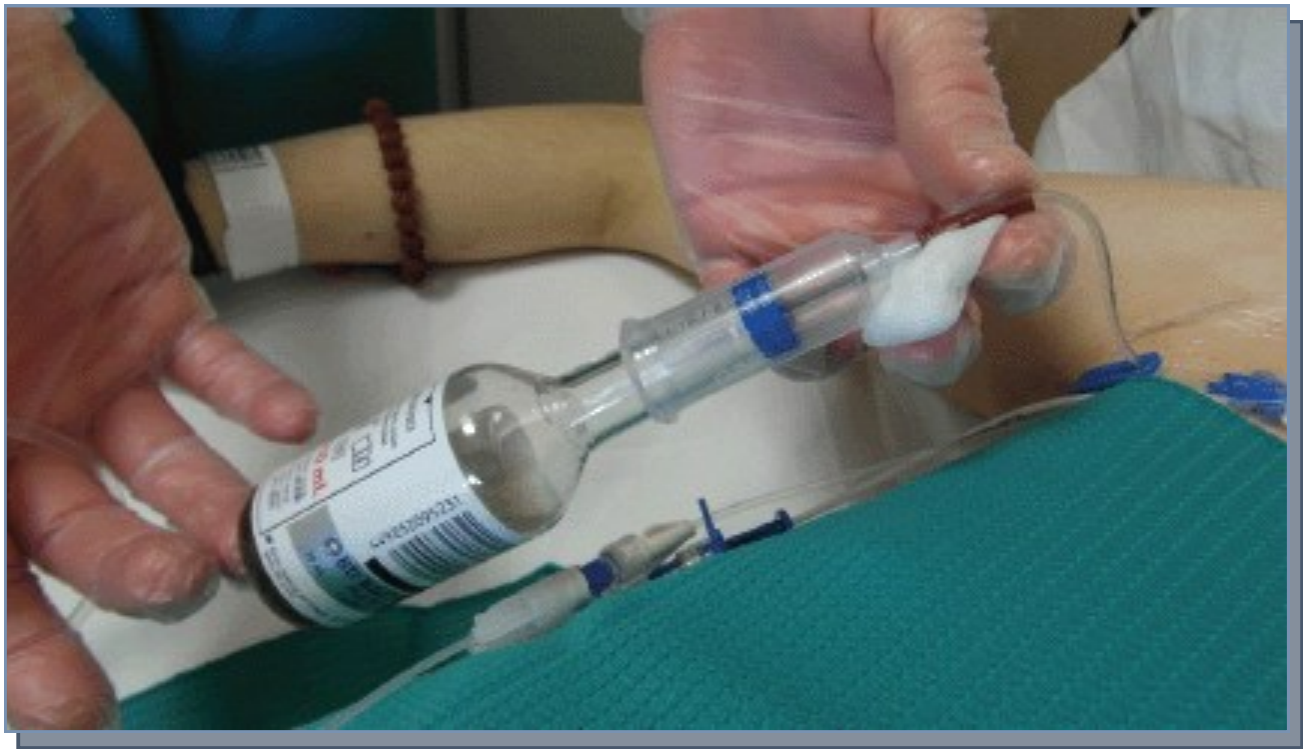
NEWSLETTER
Best Practices in Blood Culture Collection



Should we collect a "waste" blood specimen when drawing blood culture from an intravascular device?

Blood cultures drawn from the catheters have been shown to have higher contamination rates (i.e., false-positive results) than cultures drawn by venipunture [1, 2, 3, 4]. Contaminated blood cultures can lead to unnecessary antibiotic treatments and diagnostic testing. H. Lee Moffitt Cancer Centre and Research Institute is practising to collect 5 mL of blood for waste and discard when drawing blood from central lines prior to inoculating blood culture bottles [4], whereas others do not [5].

It is a questionable value if collecting a "waste" blood specimen before collecting blood for culture will reduce contamination rates. The reasons for discarding the first 5 to 10 mL of blood are based on the following: (i) heparin could be antimicrobial; (ii) it removes "colonizing" bacteria in the port or line, which may result in false-positive cultures; (iii) it removes residual solutions (antibiotics and chemotherapy agents) that may have antimicrobial activity; and (iv) blood from the line is diluted with infusate, resulting in less volume for culture [6, 7].

Several studies demonstrated that discarding the initial aliquot of blood does not reduce contamination rates or increase the blood cultures sensitivity, as heparin in concentrations found in the blood culture bottles does not inhibit bacteria or yeast, and the quantity of antibiotic or chemotherapeutic agent in the line is low, and if the appropriate volume of blood is collected (8 to 10 mL for adults), the dilution factor of 1 mL in the line would be miniscule [6,7]. A recent study by Dwivedi et al. reported that discarding the first 10 mL of blood before drawing blood for culture from intravascular-access devices has no effect on decreasing contamination rates [6]. In conclusion, it is not necessary to collect a "waste" specimen when collecting blood for culture from an intravascular device [7].

References

1. Bryant, J. K., and C. L. Strand. 1987. Reliability of blood cultures collected from intravascular catheter versus venipuncture. Am. J. Clin. Pathol. 88:113–116.
2. Everts, R. J., E. N. Vinson, P. O. Adholla, and L. B. Reller. 2001. Contamination of catheter-drawn blood cultures. J. Clin. Microbiol. 39:3393–3394.
3. Norberg, A., N. C. Christopher, M. L. Ramundo, J. R. Bower, and S. A. Berman. 2003. Contamination rates of blood cultures obtained by dedicate phlebotomy versus intravenous catheter. JAMA 289:726–729.
4. Ruge, D. G., R. L. Sandin, S. A. Siegelski, J. N. Greene, and N. Johnson. 2002. Reduction in blood culture contamination rates establishment of policy for central intravenous catheters. Lab. Med. 33:797–800.
5. Everts, R. J., and H. Harding. 2004. Catheter drawn blood cultures: is withdrawing the heparin lock beneficial? Pathology 36:170–173.
6. Dwivedi, S. et al. 2009. Discarding the initial aliquot of blood does not reduce contamination rates in intravenous-catheter-drawn blood cultures. J. Clin. Microbiol. 47:2950-2951.
7. Synder J.W. 2015. Blood Cultures: the Importance of Meeting Pre-Analytical Requirements in Reducing Contamination, Optimizing Sensitivity of Detection, and Clinical Relevance. Clinical Microbiology Newsletter Vol. 37, No. 7, 1 April 2015, pages 53–57.

BMS DIAGNOSTICS (M) SDN BHD (485573-V)
19, Jalan 4/62A, Bandar Menjalara, Kepong, 52200 Kuala Lumpur, Malaysia.
Website: www.bmsd.com.my Email: info@bmsd.com.my
Tel: +603- 6272 0236 Fax: +603- 6277 0750