

Reducing the Laboratory Cost of False Positive Blood Cultures in the Adult Emergency Department

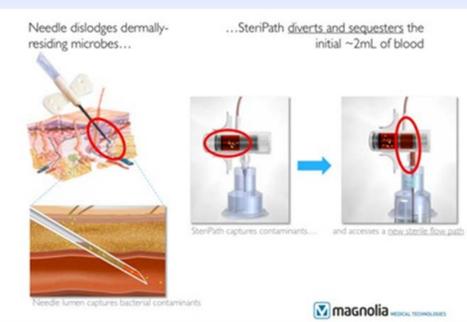


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DESCRIPTION

Blood cultures (BC) are obtained to diagnose the etiology of bacteremia/ fungemia and severe sepsis in order to optimize timely, appropriate antibiotic therapy. False positive blood cultures (FPBC) lead to inappropriate antibiotic treatment, incorrect diagnoses, and increased healthcare costs of \$8,720 per FPBC culture (Gander et al., J Clin Microbiol, 47:1021-24). While the acceptable rate of FPBC in hospitals is < 3%, BC collected in emergency departments (ED) are more likely to be falsely positive than elsewhere in the hospital due to the critical illnesses of patients who frequently have poor venous access for blood collection, the speed with which patients are handled, rapid staff turnover, and the lack of on-unit phlebotomy.

After multi-disciplinary efforts had lowered FPBC rates in the MUSC ED as far as possible, the SteriPath (Magnolia Medical Technologies, Seattle, WA) device was evaluated as a Performance Improvement effort to reduce FPBC further. The SteriPath device is an all-in-one collection device with a diversion chamber that captures the skin plug and the bacteria attached to significantly reduce contaminating bacteria that enter BC bottles. ED-dedicated nursing personnel were trained by the vendor to use the SteriPath device while floating nursing personnel were not, creating an internal control within the patient care unit.



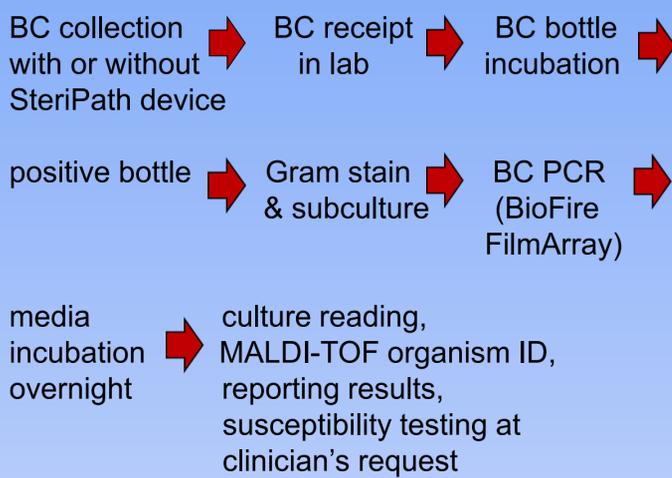
AIM

The rate of FPBC drawn in the adult ED with and without the SteriPath device were determined and the difference in cost to the Diagnostic Microbiology Laboratory (DML) was measured.

ACTIONS TAKEN

The Adult ED, the Performance Improvement champion (SM), and DML leadership worked together on the SteriPath evaluation. DML documented which BC were obtained with the SteriPath device and which were not. Monthly FPBC rates with and without the SteriPath device as well as rates of device use compliance were provided to SM, the ED manager, nursing quality council, nursing administration, and the sponsor.

The cost per FPBC was determined based on cost to perform testing according to the protocol below:



Total tech time: 35 min

SUMMARY

The SteriPath device successfully reduced the number of FPBC over the 8-month trial period (average of 0.57% with vs 4.17% without). We suspect that vendor training lead to an increased focus on proper BC collection technique by all nursing personnel, resulting in a 50% decrease in FPBC rate for all adult ED BC (4.6% in FY2015 to 2.3% in FY2016).

Fewer FPBC drawn with the SteriPath device allowed DML to avoid spending \$2,654. An additional \$191,832 in costs avoided could be predicted based on the healthcare costs for laboratory testing, pharmacy expenses, and radiology testing reported as \$8,720 per FPBC culture by Gander et al. (J Clin Microbiol, 2009, 47:1021-24).

NEXT STEPS

Use of the SteriPath device continues in the adult ED; has expanded to a second, separate adult ED; and is planned to be introduced into an ICU this fall.

RESULTS

