



# THE CONNECTOR OR NOT THE CONNECTOR: REDUCTION OF BLOOD CULTURE CONTAMINATION



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*NOTHING TO DISCLOSE*

## ABSTRACT

**Issue:** Contaminated blood cultures drawn from a central line frequently increase cost of care to the patient, increase the need for repeat cultures, and add risk to the patient by subjecting them to unnecessary antimicrobial therapy. Each contaminated culture costs our facility \$13,600, yet there is no reliable research validating that drawing blood cultures hub-to-hub is an effective practice to reduce contamination rates. Additionally, there is no reliable research to suggest that leaving the neutral displacement connector with low volume, internal blunt cannula, in place following blood draws may increase the risk of CLABSI.

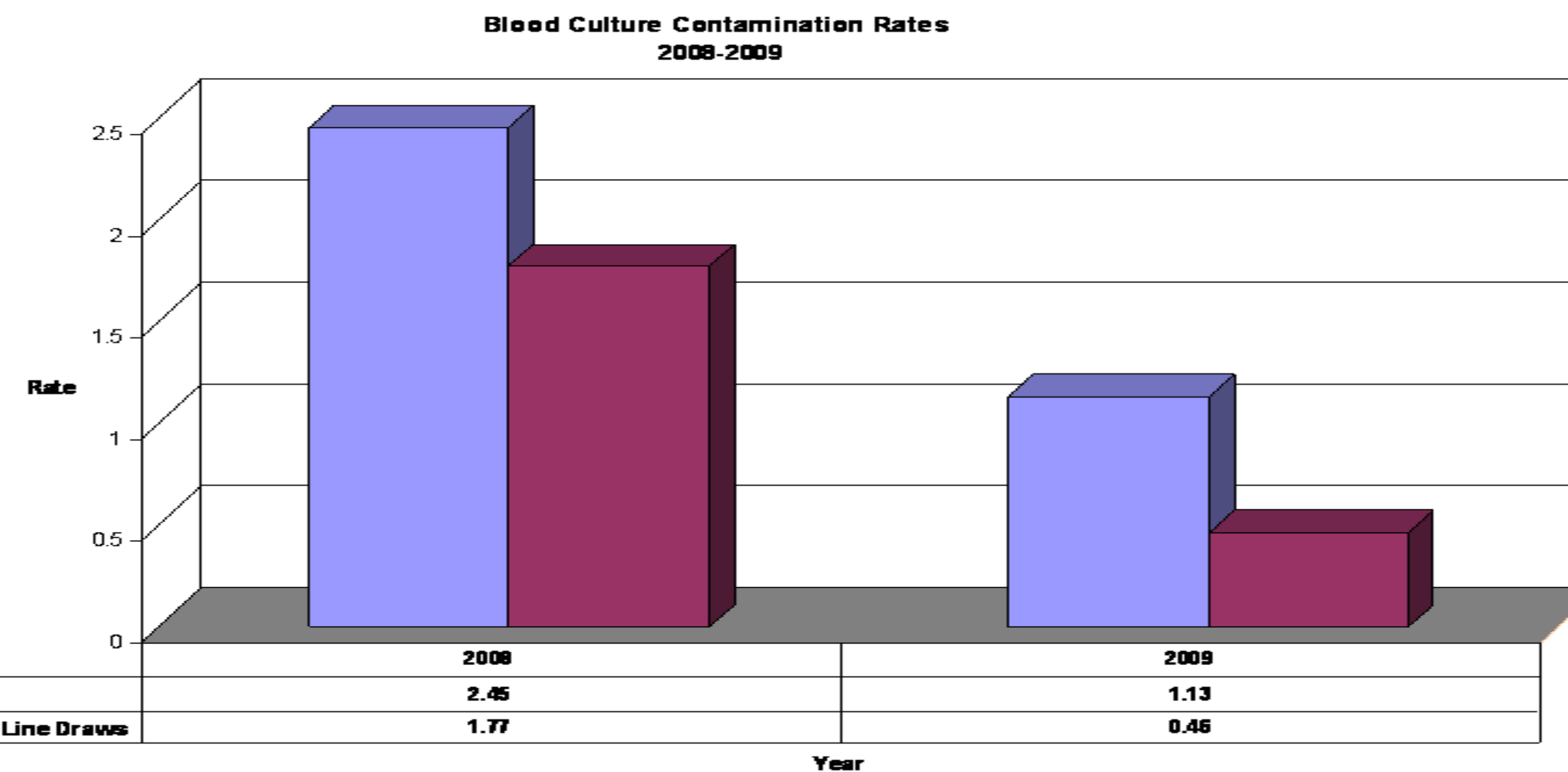
**Project:** In 2008 the Pediatric Out-Patient Bone Marrow Transplant Unit (Ped OPBMT) experienced from 1 to 6 blood culture contaminations (BCC) per month; cultures are drawn exclusively from central lines. January 2009, we asked clinical staff to cleanse the MicroCLAVE needle-free connector with a 2% chlorhexidine gluconate and 70% isopropyl alcohol solution, draw blood cultures with the connector in place, followed by a saline flush per protocol. The MicroCLAVE was otherwise changed at intervals per hospital protocol. In July 2009 we included two in-patient adult ICUs in the study after aggressive education on the study protocol in June.

**Results:** January to June 2009, the Ped OPBMT had no blood culture contaminants. The second half of 2009 saw intermittent contaminants attributable to new hires and changes in patient acuity, as a result, additional remediation was conducted. Data collected from the two in-patient ICUs and the Ped OPBMT Clinic showed a reduction of BCC rates from line draws of 62% with an overall BCC rate reduction of 48%. The reduction in BCC represents a cost avoidance of \$503,200 for the study period on these three units. Finally, there was no increase in CLABSIs on any of these units for the study period.

**Lessons Learned:** Drawing blood cultures through a needle-free neutral displacement connector, with a straight fluid pathway, is an effective practice to decrease the overall blood culture contamination rate, is a cost savings to the facility and does not increase

## ISSUE

**Blood cultures are a standard of care. Contaminated blood cultures, drawn from a central line, frequently increase cost of care to the patient, unnecessary repeat cultures and add risk to the patient by subjecting them to unnecessary antimicrobial therapy. In 2005 the hospital's Blood Culture Contamination Rate was consistently above nationally accepted rate of 3%. Several process changes were made and we saw consistently reduced rates below 3%. While this reduction was impressive it was noted that there was opportunity for continued improvement. There is no reliable research validating that drawing blood cultures either hub-to-hub or through a connector is an effective practice to reduce contamination rates. Additionally, there is no reliable research to suggest that leaving the connector in place following blood draws may increase the risk of CLABSIs.**



## RESULTS

1. 62% reduction in BCC rates from central line draws on the study units
2. 48% reduction in overall BCC rates on the study units
3. Decrease in BCC rates represents a cost avoidance of \$503,200 for the study period
4. No increase in CLABSIs

## LESSONS LEARNED

1. Drawing blood cultures through a neutral displacement connector with low volume, internal blunt cannula is an effective practice to decrease the overall blood culture contamination rate
2. This represents cost avoidance to the facility
3. It is essential to ensure on-going and consistent education in order to maintain these rates