Top Guns: Creating Blood Culture Aces in the ED

Contaminated blood cultures contribute to increased treatment costs and in-patient length of stay and implicate patient safety. Core measure reporting, and its impact on market competition, drives ED leaders to ensure performance meets established metrics. This project established an ongoing program to ensure a minimum of 90% monthly compliance with Community-Acquired-Pneumonia (CAP) core measures for obtaining blood cultures before antibiotic administration while reducing contamination rates to meet the 3% national benchmark. For the period of April – November 2008, the department’s contamination rate averaged 5.7% and its core measure compliance 76%.

Process:

After reviewing the available literature on best practices, this was an evidence-based, quality-improvement project that implemented new procedures and work flows for obtaining blood cultures in the emergency department.

SOLUTION:

The solution to decrease the contamination rate and ensure core measure compliance required the development of a cadre of clinicians who were extensively trained in proper blood culture collection techniques, the involvement of nursing leadership to demonstrate the departmental priority given to the issue, and a method for as-near-real-time feedback to address problems and monitor trends.

Project implementation required selection and training of a cadre who then were the only staff authorized to obtain routine, peripheral blood cultures. From a nursing staff of approximately 150 nurses and technicians, 27 clinical technicians were selected. Criterion excluded nurses because clinical technicians routinely performed the bulk of phlebotomy duties. A further inclusion criterion was that selected clinical technicians must work at least one shift/week. This group then received 1:1 training, emphasizing meticulous sterile technique, procedural observations and return demonstrations. To ensure standardization, a sole evaluator audited every participant. The department implemented new work flows and communications
Each shift, a single blood culture technician was designated and provided with a phone for notification of required draws. ED nursing leadership demonstrated its commitment to emphasizing blood culture compliance by giving this new position, created without adding resources, an organizational priority. To ensure prompt communication and management oversight, the director of nursing instructed the technician to contact her directly to resolve issues implicating core measure compliance. Nursing leadership created an on-line log to document blood cultures and checked it daily to identify issues or trends. Departmental and hospital QA nurses monitored core measure compliance on a daily basis, using electronic chart auditing with near real-time reporting of potential incidents of non-compliance. The pathology lab reported contamination data retrospectively on a monthly basis. The training evaluator analyzed the data and for each contaminated specimen, the electronic chart was reviewed; the technician involved identified, and remedial training conducted as needed.

The results of implementing this solution was a decrease in the rate of contamination by approximately 60% while increasing core measure compliance to 98%. To ensure sustainability of these results, each technician receives a monthly score card with their personal contamination rates; those with a rate more than 3% for a quarter receive remedial training and every technician will be monitored randomly during the year. A recognition program has been created to reward top performers with public posting of the score card to foster healthy competition. New clinical technicians are added to the team only after receiving the same baseline training as the original members. This training is conducted by the training evaluator and/or two technicians who have been designated as blood culture leaders based on their outstanding performance. Further, blood culture data is shared with the entire staff in multiple forums to demonstrate ongoing leadership commitment to this program.

**OUTCOMES:**

The modifications implemented in this project, begun in April 2009, have been very successful. When comparing blood culture contamination data from April-November 2008 with data from April-November 2009, the rate of blood culture contamination has been reduced by approximately 60%, from an average monthly contamination rate of 5.7% in 2008 to 2.3% in 2009. Compliance with CAP core measures has increased from 76% (May-November 2008) to 98% (May-November 2009). (See attached graphs.)
ED Blood Culture Contamination Rates

Implementation of Blood Culture Technicians

ED CAP Core Measure Compliance
(Blood Cultures Before Antibiotics)

Implementation of Blood Culture Technician