

# Impact of a Modified Blood Culture Bundle on Contamination Rates

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## Background

- Blood culture (BC) collection is the gold standard in septicemia diagnosis.
- The contamination of collected samples by organisms that should not be present result in false-positive cultures.
- BC contamination compromise quality of care and lead to unnecessary antibiotic exposure and prolonged length of hospitalization.

American Society for Microbiology (ASM) and the Clinical Laboratory Standards Institute (CLSI)



Recommend an overall blood contamination rate **not exceeding 3%** as the national benchmark.

- The blood culture contamination rate of an urban, level 1 trauma center Emergency Department **exceeds the national benchmark**.

## Aim of the Project

The purpose of this quality improvement project is to implement a modified blood culture bundle to reduce the rate of false-positive cultures and assess staff adherence to the intervention bundle.

**Process goals:** 100% of participants performing phlebotomy and blood culture specimen collection will adhere to the blood culture bundle.

**Outcome goals:** Reduction in the overall number of false-positive results in blood culture specimen.

## Methods

This project was implemented over a 15-week period in an urban, level 1 trauma center adult Emergency Department

### Intervention bundle:

- Manual specimen diversion technique
- Competency Review
- Peer Feedback System

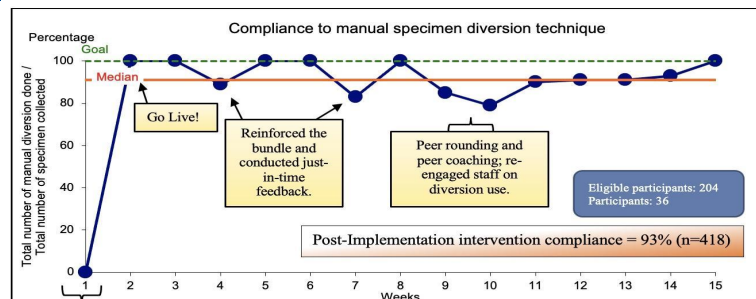
### Measures:

- Documentation of false-positive results per Microbiology Department Protocol

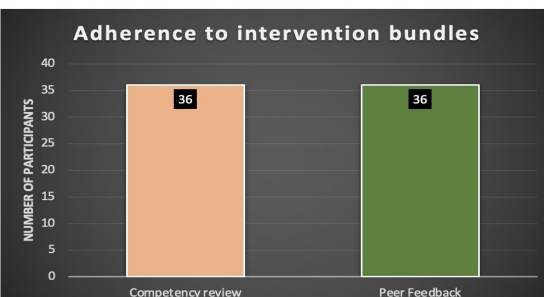
### Strategies:

- Online survey tool
- Actual observations
- Chart audits
- Weekly Nursing Minutes
- Daily shift reminders via Epic SecureChat

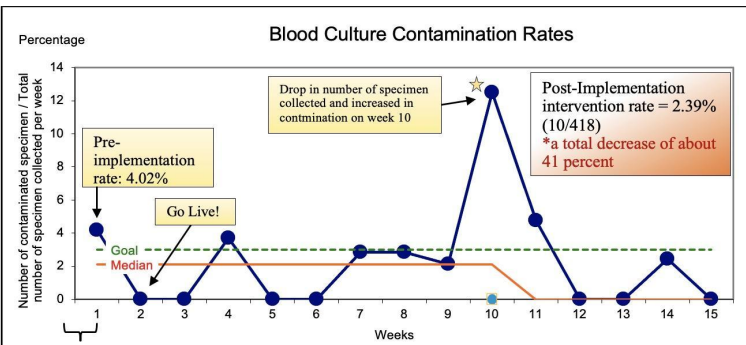
## Results



Education week; Identification of project champions.



- 36 out of 36 participants enrolled and completed a competency review on week 1.
- All participants received peer feedback during weeks 4, 8, 12 and at the end of implementation.



Education week; Identification of project champions.

Implementation Phase: Week 2 to Week 15

## Discussion

### Findings:

- After 15 weeks of implementation, participants used manual specimen diversion in 385 specimen out of 418 total specimen collected.
- Just-in-time feedback, peer rounding, and individualized peer coaching was utilized and has shown to improved engagement among participants.

### Clinical Impact:

- Non-contamination of blood culture specimen helps direct the appropriate selection of antimicrobials to safely manage and treat patients with infection or sepsis.

### Limitations:

- The number of participants for this project is small.
- The use of manual diversion may be difficult to use in combative or confused patients.
- Self-reporting of specimen diversion use may not be reliable.

## Conclusion

- The use of a bundled or multi-pronged approach in this quality improvement project has demonstrated an **overall decrease** in this academic institution's blood contamination rates.
- Staff awareness of the weight of the clinical problem and their dedication to evidence-based practice and process/quality improvement contributed to this project's success.
- The use of a single-use, automatic, specimen diversion device in place of the manual diversion technique may be utilized in the future to compare if it will render similar or better results.

## References



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