Blood Culture Collection Standard of Work

**BACKGROUND**
- Blood culture collection is a common procedure in Emergency Departments (ED) for patients presenting with signs/symptoms of an infectious process.
- Blood culture collection generally requires 2 sets of blood cultures to determine the pathogen. This is especially important for patients meeting SIRS/Sepsis criteria.
- Blood culture specimen contamination occurs when normal skin flora is introduced into the specimen.
- Blood culture contamination and resulting ‘false positive results’ are associated with:
  - unnecessary or inappropriate antibiotic use
  - hospitalization
  - increased diagnostic and consultation costs
  - patient dissatisfaction
  - negative repercussions to the hospital’s reputation
- The Emergency Nurses Association (ENA) recommends use of a standard procedure for blood culture in the Clinical Practice Guideline on Prevention of Blood Culture Contamination.

**LOCAL CONTEXT**
- St. Joseph Hospital, Orange does not have a policy on Blood Culture Collection nor a standard of work.
- Hospital-wide contamination rate is less than 1%. While the goal is under 3% as an industry standard, there are discussions to lower the threshold to <1%

**PURPOSE**
The two-fold purpose of this project is to develop a Standard of Work for blood culture draws and to determine the percent of ‘false positive results’ occurring from Emergency Care Center blood draws.

**METHODS**
- Design: Implementation of an Evidence-based Clinical Practice Guideline from ENA
- Participants: ECC RNs
- Setting: ECC St Joseph Hospital
- Procedure:
  - Create a Standard of Work for Blood Culture Collection developed with best practice evidence
  - Educated ECC RNs using visual aids during pre-shift huddle or in small groups or individually using microteaching during Summer 2021
- Content:
  - Proper technique
  - Dispel common misconceptions regarding site selection, number of sites needed, and timing of specimens
  - Impact of contaminated specimens on patients, finances, and hospital reputation

**RESULTS**
- Baseline Data:
  - 2020 Hospital-wide Contamination Rate = 0.96%; in 4th Quarter 2020 rate increased to 1.84%
  - February – April 2021 Hospital-wide Contamination Rate = 0.86%; 15% of cases attributed to ECC RNs
- Post intervention data not yet available

**DISCUSSION**
- Continue to educate ECC RNs on the importance of proper procedure and technique when drawing blood cultures.
- Identify opportunities to work with other units on proper technique.
- Collaborate with Microbiology regarding opportunities for education and quality improvement projects relating to blood cultures.
- Consider a pilot project using a blood diversion device to remove the initial blood from the sample; research has demonstrated these devices substantially decrease false positives/contamination numbers.

**CONCLUSION**
- False positives & blood culture contamination rates have a real & significant impact on the patient, ‘hard costs’ include unnecessary treatment, prolonged length of stay, or having to be called back to the ED for evaluation.
- Although ‘hard costs’ have a significant financial impact on a hospital, the ‘soft costs’ such as patient dissatisfaction associated with blood culture contamination must be considered.
- Establishing an evidence-based approach including standard of work and education can greatly reduce contamination rates.

**REFERENCES**
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