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Decreasing Blood Culture Contamination in the ED

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Citation

Laier, Bettina, "Decreasing Blood Culture Contamination in the ED" (2015). *All Publications*. 586.
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Decreasing Blood Culture Contamination In the ED

INTRODUCTION



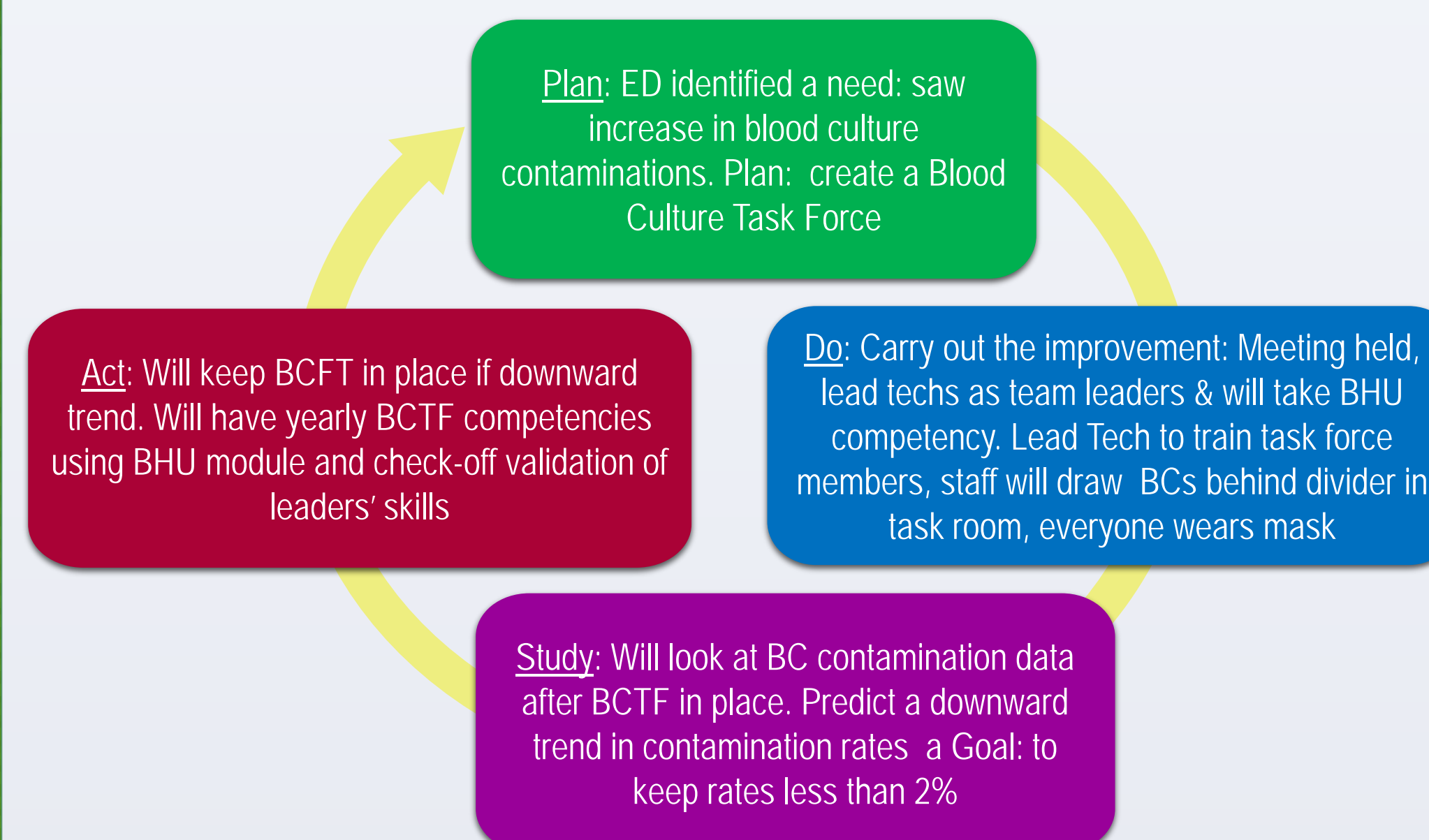
- Blood cultures are needed to diagnose bloodstream infections and determine the susceptibility of bacteria to antibiotics.
- Blood cultures are an important part of the protocols for sepsis.
- When organisms from a site other than the bloodstream enter into the culture bottles and result in a false positive, this is referred to as a contamination of the blood culture.
- Contaminated cultures can be costly in terms of patient safety as well as financially for the organization.
- The Emergency Department (ED) has seen their blood culture contamination rates slowly increase this year and found the need to create an initiative to bring them back down below the national goal of 3%.

PURPOSE & OBJECTIVES

The purpose of this performance improvement initiative is to create a training module & protocol that will decrease the blood culture contamination rate to below the BHSF goal of 2% using the following objectives:

- Describe the purpose of blood culture collection
- State the rationale for adhering to proper technique when drawing blood cultures
- Draw blood cultures following proper technique as outlined in the Blood Culture Competency online course and hospital policy
- Document the BC draw using key phrases for uniformity

METHODS & MATERIALS



- A meeting was held with the Patient Care Supervisor (PCS), the clinical educator and lead techs in the ED representing all shifts.
- In the literature, evidence-based practice shows creating a blood culture task force (BCTF) decreases blood culture contamination rates.
- A plan was designed to change the process of drawing blood cultures (BCs) currently used in the ED.
- A task force has been created that includes the lead techs. They will be trained first, & will then validate other techs that are members of the task force
- A specific location has been designated for the draw of the cultures and strict guidelines are to be followed: only task force members are to draw the BCs.
- Pre and post data will be examined to see if the BCTF in our ED has assisted with the decrease in blood culture contamination rates.
- Initial training of the BCFT will require all staff to complete the online tutorial on BC contamination
- Lead techs will be validated by the ED clinician using a designated validation too
- Lead techs will train and validate staff interested in being part of the BCTF.
- Only BCTF members will draw blood cultures

Proper Technique - First Steps

Before beginning the blood culture specimen collection, wash your hands with soap and water and gather the necessary supplies. Be sure everyone in the room (including the patient and any visitor) puts on a face mask. Otherwise, they need to step out of the room.

Then, one of the most important steps to prevent contaminated samples is to...

...wash the venipuncture site with soap and water before prepping with Chloraprep as stated in blood culture protocol.

Next: Use Chloraprep

Scrub up & down and side-to-side for 30 seconds. Then, let dry for 30 seconds!! This is when the bacteria on the skin are dying.

Once the site is located and prepped, use a 'no touch' technique at all times. Palpating the site after prepping could contaminate the sample.

Proper Technique - First Steps (continued)

Remove the plastic flip-top from the bottle and disinfect the septum with 70% alcohol pads. Let the septum air dry before inoculating the bottles with the blood sample. Blood culture bottle caps do not have an air tight seal. The diaphragm must be disinfected before puncturing the bottle with the sample.

Technique for Venipuncture and IV Starts

For IV insertion, insert the IV catheter and attach the extension tubing. Then attach the vacutainer adaptor or syringe.

For venipuncture using the butterfly, attach the vacutainer adaptor or syringe to the tubing and insert the butterfly.

Maintaining Order - Part 1

When drawing cultures, if there is air in the tubing before inoculating the blood culture bottle, inoculate the aerobic bottle first (air = aerobic).

If there is no air in the tubing, inoculate the anaerobic bottle first, use the transfer done on the end of the syringe.

Maintaining Order - Part 2

When other lab studies are ordered, draw blood for the blood culture first, then draw the other labs. Laboratory tubes for other studies may not be sterile and the blood culture specimen could be contaminated.

Collect the appropriate volume:
Adults: 8-10 mL per bottle
Pediatric: 1-4 mL (<50kg) per bottle
Neonate: 0.8-1.0 mL (<5kg) per bottle

Use Different Sites

Subsequent sets are to be drawn from a different peripheral site and at different times (15 to 30 minutes apart unless otherwise ordered by a physician). Drawing at different sites and times will reduce the chances of false positives and false negatives and help to secure the true organism infecting the patient.

How to Label

Apply labels horizontally along the lower half of the bottom of the blood culture bottles.

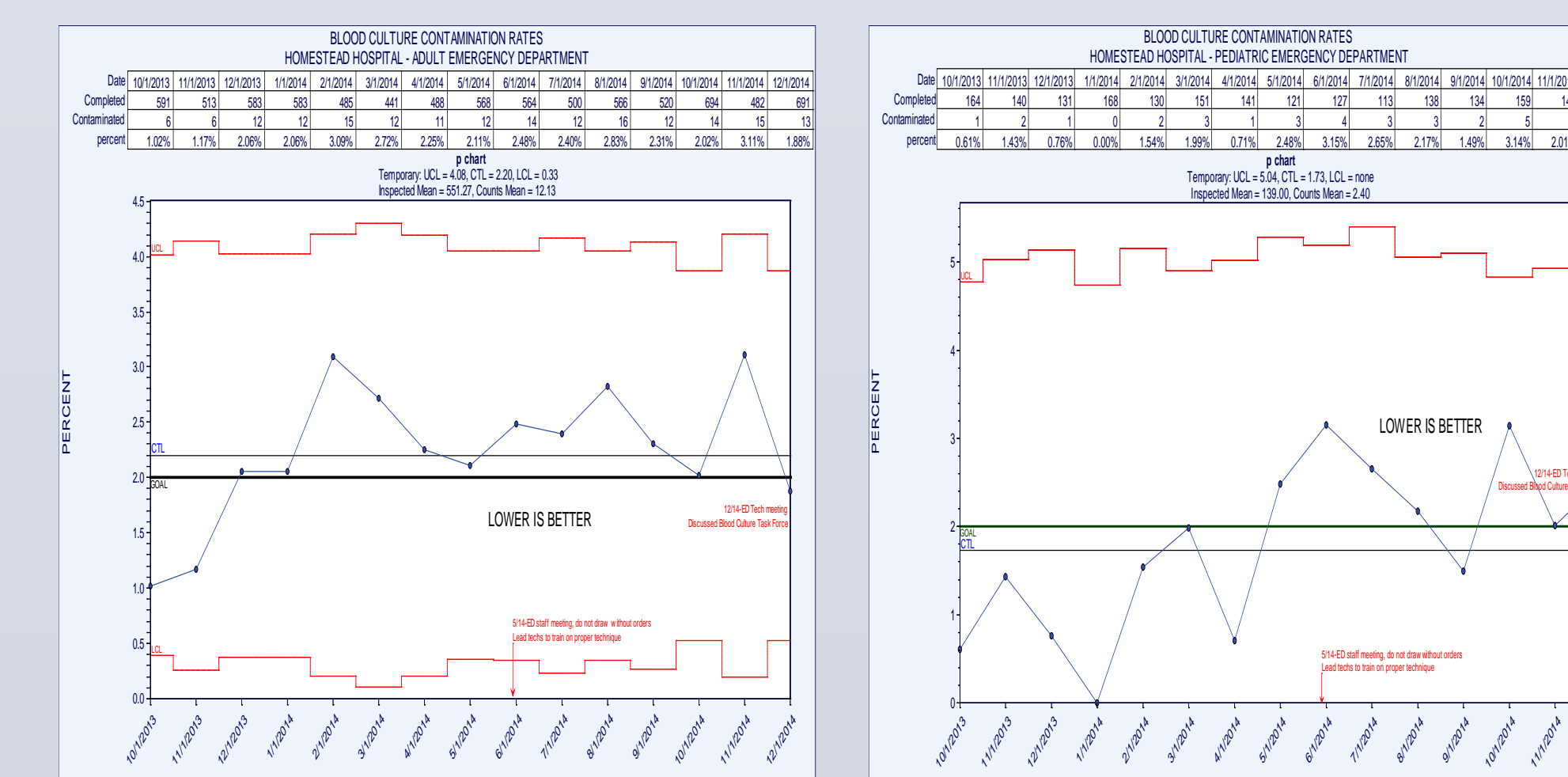
Do not place any identifying labels over the bar code or the BML designations on the bottles.

Be sure to include date/time, initials and location of draw on each label. Deliver the bottle to the laboratory immediately. Do not hold onto the samples or refrigerate.

Note: Make sure that an order is in the computer for each set.

RESULTS

Pre-BCTF data show contamination rates consistently about 2%.



After the BCTF has been active for three months, data will be examined. It is suspected that the contamination rates will have decreased, and be less than the 2% goal.

CONCLUSION

Contaminated blood cultures can increase patient's length of stay, cause unnecessary treatments and be costly to an organization. The formation of a blood culture task force, the designation of a specific location for drawing cultures and following a specific protocol reduces the risk of contamination by streamlining the process.

It is important to draw AND obtain contamination-free Blood Cultures Because it...

- Prevents overuse of antibiotics by treating the contaminant unnecessarily
- Prevents potential patient injury from unnecessary exposure or allergic reaction to antibiotics
- BC drawn prior to antibiotics increases the opportunity to identify organism & improve outcome
- Allows effective treatment of organism with appropriate antibiotics
- Proper technique is cost effective. No wasted draws, extra LOS for patient

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ACKNOWLEDGEMENTS & CONTACT INFO