

Male vs. Female: Reducing Blood Culture Contamination Rates in the ED

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BACKGROUND

- The Emergency Department's (ED) blood culture contamination rates were consistently above the nationally accepted rate of $\leq 3\%$.
- Blood culture contamination rates in the ED varied by location, but ranged from 3.1% to 6.8% in 2017.
- The current blood culture specimen collection process impeded the ED healthcare teams' workflow and impacted the successful collection of uncontaminated blood culture specimens.

AIM

- Decrease blood culture contamination rates to the nationally accepted rate of $\leq 3\%$
- Decrease the associated cost related to contaminated blood culture specimens by 10% by January 2019
- Streamline the blood culture collection process to prevent contamination and ensure safe, evidence based practice
- Increase the ED teams' knowledge of the blood culture collection process
- Increase the ED teams' awareness of factors which contribute to blood culture contamination

METHODS

- Organized a multidisciplinary team to review the current state of blood culture specimen collection in the ED
- Recognized deficiencies in best practice for blood culture collection in the ED
- Examined evidenced based methods to collect blood culture specimens
- Completed a cost analysis to compare the benefits and cost of incorporating the male luer adapter into the blood culture specimen collection process versus the female adapter
- Conducted a PDSA on the proper technique for collecting blood cultures
- Created educational flyers illustrating proper blood culture specimen collection technique
- Provided blood culture specimen education and reinforcement to all health care providers (HCP) in the ED
- Reviewed monthly BMC ED blood culture contamination data
- Provided feedback to all HCPs associated with a contaminated blood culture specimen including the blood culture contaminant and source
- Monthly departmental posting of ED blood culture contamination data

SOLUTIONS

- Implemented a "team approach" including RNs, MDs, CNAs, ED leadership and members of the BMC lab
- Identified a new and cost effective device to facilitate a direct draw into the blood culture specimen bottle
- Ongoing education, flyers and follow up to all HCP in the ED

SOLUTIONS

Proper Technique for Drawing Blood Cultures

Obtain Blood Culture Kit
Disinfect work table with germicidal wipe

Exercise proper Hand Hygiene
wash hands & don gloves

Prepare bottles
Flip the top of one blood culture bottle away from you.
Obtain alcohol swab
Apply pressure to alcohol swab on top of the bottle
Scrub the hub of the bottle
Discard swab
Allow bottle to dry 30 seconds
**Obtain a new alcohol swab
Repeat steps for 2nd bottle

DO NOT LEAVE DIRTY ALCOHOL SWABS ON TOP OF BOTTLES!

Prepare Arm
Apply Tourniquet
Find Vein
Release Tourniquet
If site is dirty, clean with alcohol swab
Apply Chloraprep (pinch the applicator only once)
Scrub area using an up and down motion for 30 seconds
LET DRY FOR 1 MINUTE!
**DO NOT TOUCH THE SITE AFTER APPLYING Chloraprep
Reapply Tourniquet
Attach Luerloc device
Proceed with venipuncture

Filling Blood Culture bottles
REMEMBER DO NOT TOUCH TOP OF BOTTLE
Fill green top bottle first up to the marked 10ml line or if not marked, fill 10mls above liquid line
Repeat steps above with orange top bottle
Invert both bottles until mixed well (8-10 times)
Document on each bottle:
Venipuncture site (ie, L Arm)
Date/Time of specimen collection
Employee ID number
Label bottles with patient sticker - be sure not to cover the bottles' barcode

Note: If absolutely necessary to draw blood cultures from an IV line, full sterile prep as detailed above MUST be followed and blood cultures MUST be drawn first!

Proper Technique for Obtaining Blood Culture Specimens with a Male Luerloc Device

Remove Inner Cannula device from Male Luerloc

Using a Butterfly Needle

- Remove needle from luer adapter on the butterfly needle
- Attach Male Luerloc device to luer adapter on the butterfly needle and secure in place
- Clean venipuncture site with Chloraprep
- Allow to dry (60 seconds)
- Obtain venous access
- Repeat process with aerobic (green top) blood culture specimen bottle first
- Fill bottle with 10 ml (do not over or under fill)
- Repeat process with anaerobic blood culture (orange top) bottle next
- Remove Male Luerloc device
- Flush IV with 10 ml of normal saline

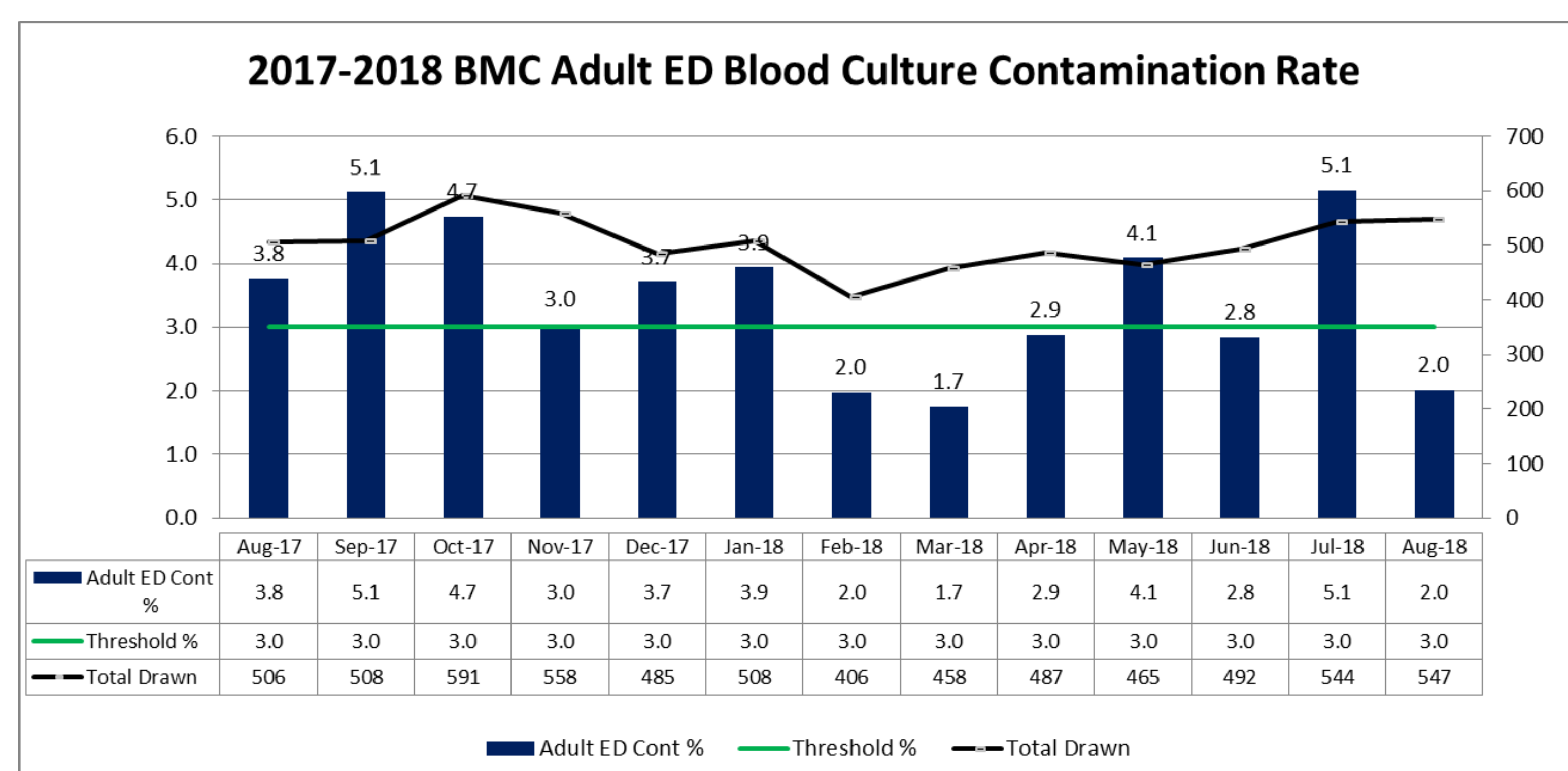
Using IV Line Access

- Attached Male Luerloc device to IV catheter extension set
- Clean venipuncture site with Chloraprep
- Allow to dry (60 seconds)
- Obtain venous access
- Attach IV catheter extension set to IV catheter
- Attach the prepared aerobic (green top) blood culture specimen bottle first
- Fill bottle with 10 ml (do not over or under fill)
- Repeat process with anaerobic blood culture (orange top) bottle next
- Remove Male Luerloc device
- Flush IV with 10 ml of normal saline

Note: If absolutely necessary to draw blood cultures from an IV line, full sterile prep as detailed above MUST be followed and blood cultures MUST be drawn first!

RESULTS

- Project is in the infant stage, however after the first month of staff education and the implementation of the male luer adapter, the blood culture contamination rate in the ED decreased to 2.0% , down from the previous month's high of 5.1%.
- Cost savings to the hospital was \$3.36 per blood culture draw as a result of implementing the male luer adapter into the blood culture collection process
- Stakeholders will continue to monitor the results and provide updates



CONCLUSIONS

- The blood culture contamination rate decreased in the ED
- The male luer adapter contributed to the decreased blood culture contamination rate and improved ED teams' workflow
- Annual blood culture specimen competency is required for all HCPs in order to sustain best practice and maintain blood culture contamination rates less than the national standard

NEXT STEPS

- Monitor the ED's monthly blood culture contamination data
- Provide ongoing feedback to all members of the healthcare team (MD, RN, CNA)
- Develop an annual competency for blood culture specimen collection
- Include the blood culture collection process in all competency based orientation checklists in the ED