This study was designed to test whether diversion of blood obtained at venipuncture into a lithium-heparin tube prior to aspiration of blood culture reduces contamination" Zimmerman et al (2019).

Abstract:

BACKGROUND: Blood culture contamination leads to unnecessary interventions and costs. It may be caused by bacteria in deep skin structures unsusceptible to surface decontamination. This study was designed to test whether diversion of blood obtained at venipuncture into a lithium-heparin tube prior to aspiration of blood culture reduces contamination.

METHODS: The order of blood draws for biochemistry and blood cultures was randomized. Following standard disinfection and venipuncture, blood was either aspirated into a sterile lithium-heparin tube before blood culture bottles (diversion group) or blood cultures first and then lithium-heparin tube (control group). All study personnel were blinded with the exception of the phlebotomist.

RESULTS: After exclusions, 970 blood culture/biochemistry sets were analysed. Contamination occurred in 24/480 (5.0%) control versus 10/490 (2.0%) diversion group cultures (p=0.01). True pathogens were identified in 26/480 (5.4%) control versus 18/490 (3.7%) diversion cultures (p=0.22). Despite randomization, demographic differences were apparent between the two groups. A post-hoc analysis of 637 cultures from 610 medical patients admitted from home neutralized demographic differences. Culture contamination

remained more frequent in the control versus diversion group (17/312, 5% versus 7/325, 2%, p=0.03). Fewer diversion group patients were admitted to hospital (control: 200/299 – 66.9% versus diversion: 182/311 – 58.5%, p=0.03), and length of stay was shorter (control: 30 hours, interquartile range 6-122, versus diversion: 22, range 5-97, p=0.02).

CONCLUSIONS: Use of lithium-heparin tubes for diversion prior to obtaining blood cultures lead to a 60% decrease in contamination. This technique is easy and cheap and might decrease overall hospital length of stay.Clinical Trials Registration: NCT03966534.

You may also be interested in...

Blood culture contamination quality improvement project
Reducing blood culture contamination using an initial specimen diversion device
Use of hair nets and face masks to decrease blood culture contamination rates

Reference:
Zimmerman, F.S., Karameh, H., Ben-Chetrit, E., Zalut, T., Assous, M. and Levin, P.D. (2019) Modification of blood test draw order to reduce blood culture contamination: a randomized clinical trial. Clinical Infectious Diseases. October 1st. doi: 10.1093/cid/ciz971. .