

# <1% BLOOD CULTURE CONTAMINATION RATE

Kristina Kastner, MHA/ED, MT(ASCP), Monica Beach, BS, M(ASCP) MT  
St. Joseph's Hospital and Medical Center



Dignity Health

Dignity Health

## ABSTRACT

Dignity Health - St. Joseph's Hospital and Medical Center (SJHMC), Phoenix, AZ has placed an emphasis on having low blood culture contamination rates. Although SJHMC typically achieves a 2% contamination rate, the initiative was to drive these false positives even lower. SJHMC Laboratory implemented a diversion technique device, Kurin Lock®, for blood culture collections. The device, supported by a strong implementation and change management plan, decreased phlebotomy drawn contamination rates by 43%.

## METHOD

The phlebotomy team used a diversion technique device, Kurin Lock®. The device is designed to collect the initial 0.15 mL of blood during venipuncture into a side chamber. Once the side chamber is filled, the sample bypasses the initial aliquot of blood and flows into the blood culture bottle. Prior to venipuncture, the skin is disinfected with 2% chlorhexidine gluconate/70% isopropyl alcohol (ChloraPrep®) for 30 seconds and allowed to dry. Direct venipuncture is performed using either a 21 or 23 gauge safety slide. After 0.15 mL of blood fills the Kurin Lock®, the prepped aerobic, anaerobic, or pediatric BD blood culture bottle is attached until the appropriate volume is collected. Prior to implementation the team had formal device training. The Lab Director and Phlebotomy Supervisors rounded with the team at ongoing intervals. Compliance and contamination data was captured by the Lab Quality Program Manager and emailed daily to the Laboratory Director and Supervisors. The team held recognition ceremonies to celebrate successful compliance and improved rates. Supervisors and Laboratory Director coached non-compliant users of the device.

## RESULTS

ED pre-implementation: 464 contaminated blood cultures drawn out of 19,017 blood culture collected by phlebotomy and nursing in a 12-month period, for a contamination rate of 2.44%.

ED post-implementation: 44 contaminated cultures out of 4577 blood culture collections drawn by phlebotomy in a 3-month period, for a contamination rate of 0.96%.

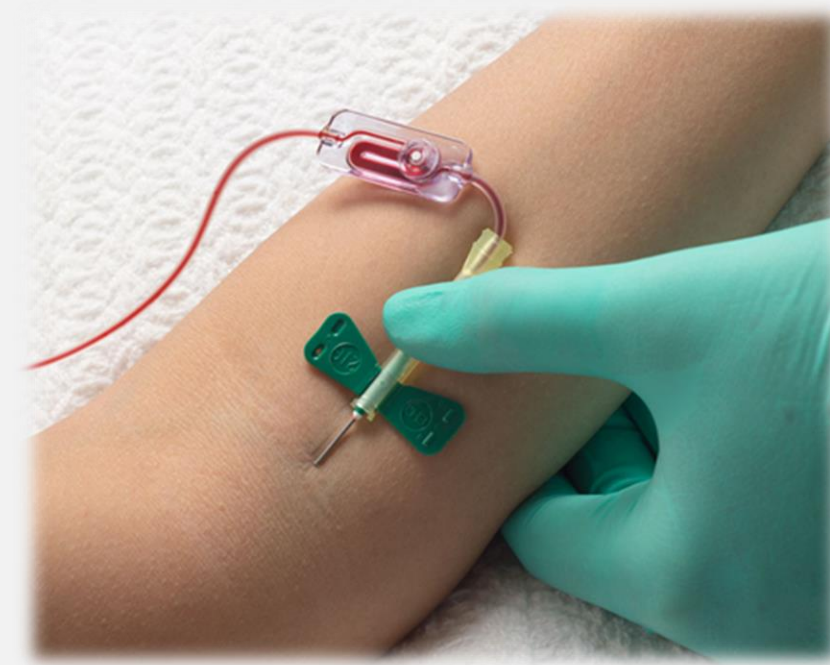
Compliance rates rose from 63% during the first month of use to 98% the 3<sup>rd</sup> month.

Consistent use of the Kurin Lock® was associated with a greater than 43% reduction in the ED blood culture contamination rate drawn by phlebotomists.

SJHMC has estimates a savings of \$280,000 per year based on \$4,500 cost per contaminate model and the cost of the device.

## BACKGROUND

In the United States, approximately one-third of all positive blood cultures are falsely positive due to skin micro contaminations that are not eradicated by antiseptics during collection. A false positive blood culture can lead to unnecessary antibiotic therapy, additional laboratory testing, and excess healthcare costs including increased length of stay. Unnecessary antibiotic therapy increases the risk of allergic reactions, drug interactions, and drug-resistant superbugs. Extended hospital stays increase the risk of hospital-acquired infections and adverse events. The cost of a false-positive blood culture is estimated at **\$4,500-\$10,000.**<sup>1</sup>



Phlebotomist	9/1	9/2	9/3	9/4	9/5	9/6	9/7	9/8	9/9	9/10	9/11	9/12	9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26	9/27	9/28	9/29	9/30	Total	Contam	Contam Rate	
Phlebotomist 1																																		
Phlebotomist 2																																		
Phlebotomist 3																																		
Phlebotomist 4																																		
Phlebotomist 5																																		
Phlebotomist 6																																		
Phlebotomist 7																																		
Phlebotomist 8																																		
Phlebotomist 9																																		
Phlebotomist 10																																		
Phlebotomist 11																																		
Phlebotomist 12																																		
Phlebotomist 13																																		
Phlebotomist 14																																		
Phlebotomist 15																																		
Phlebotomist 16																																		
Phlebotomist 17																																		
Phlebotomist 18																																		
Phlebotomist 19																																		
Phlebotomist 20																																		
Phlebotomist 21																																		
Phlebotomist 22																																		
Phlebotomist 23																																		
Phlebotomist 24																																		
Phlebotomist 25																																		
Phlebotomist 26																																		
Phlebotomist 27																																		
Phlebotomist 28																																		
Phlebotomist 29																																		
Phlebotomist 30																																		
Phlebotomist 31																																		
Phlebotomist 32																																		
Phlebotomist 33																																		
Phlebotomist 34																																		
Phlebotomist 35																																		
Phlebotomist 36																																		
Phlebotomist 37																																		
Phlebotomist 38																																		
Phlebotomist 39																																		
Phlebotomist 40																																		
Phlebotomist 41																																		
Phlebotomist 42																																		
Phlebotomist 43																																		
Phlebotomist 44																																		
Phlebotomist 45																																		
Phlebotomist 46																																		
Phlebotomist 47																																		
Phlebotomist 48																																		
Phlebotomist 49																																		
Phlebotomist 50																																		
Phlebotomist 51																																		
Phlebotomist 52																																		
Phlebotomist 53																																		
Phlebotomist 54																																		
Phlebotomist 55																																		
Phlebotomist 56																																		
Phlebotomist 57																																		
Phlebotomist 58																																		
Phlebotomist 59																																		
Phlebotomist 60																																		
Phlebotomist 61																																		
Phlebotomist 62																																		
Phlebotomist 63																																		
Phlebotomist 64																																		
Phlebotomist 65																																		
Daily Total	520	551	561	551	561	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570	570		
Daily Contaminate	12	12																																