

UAMS MEDICAL CENTER
ACS SERVICES MANUAL

SUBJECT: CLABSI PREVENTION GUIDELINE

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REVIEWED/UPDATED: New

EFFECTIVE: 1/25/2024

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APPROVAL: 1/25/2024

CONCURRENCE(S): Trauma Faculty, SICU Nursing Leadership

PURPOSE:

The objective of this guideline is to eliminate central line associated blood stream infections (CLABSI) in the trauma, emergency general, and surgical critical care population in our hospital and to provide recommendations for safe and effective usage of central lines.

DEFINITION OF CLABSI:

- 1) Central line in place for more than 2 consecutive days in an inpatient location, central line removed 1 day or less before, OR implanted port that was accessed more than 2 days prior while in an inpatient location
 - a. INCLUSION: any centrally placed catheter that terminates in the great vessels and/or heart
 - b. EXCLUSION: arterial catheters, peripheral IVs, midline catheters, arteriovenous fistulas or grafts, ECMO catheters
- 2) Blood cultures positive for a recognized organism
 - a. Single blood culture if organism not commonly a contaminant
 - b. Two or more blood cultures positive for same organism required if the organism is commonly a contaminant on the same or consecutive days
 - c. EXCLUSIONS:
 - i. Organisms belonging to the following genera are excluded as Laboratory Confirmed Bloodstream Infection (LCBI) pathogens: Campylobacter, Salmonella, Shigella, Listeria, Vibrio and Yersinia as well as C. difficile, Enterohemorrhagic E. coli, and Enteropathogenic E. coli.
 - ii. Organisms that are parasites and viruses are excluded as LCBI pathogens.
 - iii. Organisms belonging to the following genera cannot be used to meet any NHSN definition: Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus, and Pneumocystis.
- 3) Not attributable to a secondary source per specific NHSN guidelines
 - a. If positive blood culture is associated with a matching culture or other supportive clinical data per NHSN, this may qualify as a secondary line infection and would NOT classify as a CLABSI

BACKGROUND:

Central line associated blood stream infection (CLABSI) incidence is a quality control metric tracked by hospital administration, accreditation agencies, and insurance companies. CLABSIs greatly impact patient morbidity, mortality, and in-hospital charges. Approximately 30,000 CLABSIs are diagnosed every year, costing the healthcare system millions of dollars. This diagnosis also carries up to a 30% increased risk of mortality for affected patients.

GUIDELINES:

INSERTION OF CENTRAL CATHETER

- 1) Indications
 - a. Vasopressor support for extended periods or at high doses

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- b. Need for rapid administration of blood products or resuscitative fluids without adequate peripheral access
 - c. Invasive monitoring (central venous pressure, pulmonary artery pressure)
 - d. Vesicant or irritant medication (eg., certain chemotherapeutic agents)
 - e. TPN administration
 - f. 3% Hypertonic saline administration > 50 ml/hour or any rate > 24 hours
- 2) Choice of Site
- a. Choice of site based on provider experience, patient factors and provider preference
 - b. Subclavian vein has the lowest CLABSI risk
 - i. Risk of pneumothorax is slightly higher than IJ (1-2% vs < 1%)
 - ii. Consider patient factors (possible need for future dialysis)
 - c. Internal Jugular vein is preferred over femoral vein.
 - i. Distal (lower on the neck) venous puncture site preferred over higher puncture site
 - ii. The catheter should be sutured inferolaterally towards the shoulder (away from the oropharynx)
 - d. Femoral vein is the least preferred site due to highest CLABSI risk
- 3) Choice of Line
- a. Anticipated length of therapy
 - i. <7 days: recommend nontunneled central line placement
 - ii. >7 days: recommend PICC placement
 - b. Number of lumens
 - i. Infection risk increases with number of lumens
 - ii. Recommend least number of lumens feasible
 - c. Antibiotic-impregnated lines
 - i. Our current triple lumen central lines are antimicrobial
- 4) Sterile Technique
- a. Personnel
 - i. Hand hygiene
 - 1. Hand washing: minimum of 20 seconds per CDC recommendations
 - 2. Avagard per manufacturer protocol
 - a. Apply three pumps to clean & dry hands; do not rinse
 - ii. Cap, mask, eye protection, gown, gloves required
 - iii. All personnel in room, including those not performing the line insertion, should have masks and caps on
 - iv. Limit the number of people in the room to the minimum necessary
 - b. Skin prep
 - i. Chlorhexidine (ChloraPrep) scrubs strongly preferred
 - ii. Scrub insertion site for 30 seconds and allow to fully dry before skin puncture
 - c. Barrier
 - i. Use the full body drape provided in the kits. Do NOT use a small drape.
 - d. Dressing
 - i. Use CHG-impregnated dressing.
 - ii. If unavailable, use BioPatch with Tegaderm
 - 1. A BioPatch should not be used with a CHG-impregnated dressing.
 - iii. If significant oozing present, dress with gauze dressing only
- 5) Special Considerations

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- a. Acute or chronic kidney failure
 - i. Avoid subclavian access due to increased risk of central venous stenosis
- b. Ports
 - i. Preexisting ports are not eligible for CLABSI designation unless accessed in an inpatient setting. This eligibility continues from 48 hours post-access until the patient leaves the hospital.
 - ii. Ports should not be accessed if at all possible.
- c. Present on admission
 - i. If patient arrives with CVL already in place from OSH, a reflex blood culture should be taken, similarly to those taken from OSH Foley catheters.
- d. Emergently placed lines
 - i. Should be removed or replaced within 48 hours of placement

MAINTENANCE OF CENTRAL CATHETER

- 1) Access
 - a. All hubs/ports should be covered with antibiotic and/or alcohol-impregnated caps.
 - b. When accessing lines, the access point should be scrubbed for 15 seconds with alcohol
- 2) Dressings
 - a. ICU patients should have a daily CHG wipe bath
 - b. Unless contraindicated, use a CHG-impregnated transparent dressing. This should be changed every 7 days or if visibly soiled.
 - c. If continued bleeding/oozing, can dress with gauze. If gauze dressing, should change every 24 hours. Consider consulting VATS team for a dressing change with hemostatic glue (Cyanoacrylate glue)
- 3) Tubing
 - a. All general tubing should be changed every 96 hours per UAMS nursing policy.
 - b. If used for blood products or lipid-containing products, changes should be more frequent per IV Line Labeling and Maintenance policy NR.CP.1.140.

CONCERN FOR INFECTION

- 1) Judicious use of blood cultures
 - a. Criteria in patients with indwelling lines:
 - i. Fever > 38.3 C (101.1 F) if no other clear source present.
 - ii. Physician discretion
 - iii. Unexplained sepsis
 - iv. Peripheral blood cultures are preferred unless specifically concerned for CLABSI
 - b. How often
 - i. If initial cultures are negative, do **NOT** repeat cultures for continued fever unless clinical status otherwise changes
 - ii. If initial cultures are positive, separate repeat blood cultures by at least two days
 - 1. Do NOT repeat blood cultures daily.
 - a. Contaminate on two consecutive days can be considered a CLABSI, but not if contaminated blood cultures are separated by a day

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- 2) Use of other cultures
 - a. A CLABSI may be omitted if there is another source of infection documented with the culture that contains the same organism.
 - b. OR culture
 - i. If contamination is anticipated or encountered in the operative field, a fluid culture should be taken at the index operation
 - c. Urine culture
 - i. Continue urine cultures per CAUTI guidelines
 - d. BAL/sputum culture
 - i. If suspicion for respiratory infection, a BAL and/or sputum culture should be taken at first suspicion

REMOVAL OF CATHETER

- 1) When to remove
 - a. As soon as reasonably able; **goal removal within 48 hours**
 - b. If positive blood cultures
 - i. line should be removed & replaced with a clean line
 - ii. If able to be removed without harm to patient, should be removed expeditiously
- 2) Alternatives
 - a. PICC lines
 - i. Still classified as central lines and fall under CLABSI guidelines, but may be easier to manage than CVLs and may have lower infection risk
 - ii. Placed by vascular access team
 - b. Midline catheters
 - i. Can remain in place up to 29 days; advantages include less extravasation or dislodgement and fewer venipunctures required
 - c. Peripheral IVs
 - i. Can be placed by RN or vascular access team if needed
 - ii. No more than 2 peripheral IVS should be in place at any time
 - iii. Ideally, only 1 peripheral IV should be left in place concomitantly with central access if needed.

COMMUNICATION GUIDELINES

- 1) ICU checklist
 - a. Every indwelling line should be discussed on every patient in the ICU every day. This should be a routine part of the ICU daily rounding checklist.
 - b. Nursing staff handoff should include discussion of each line and whether those lines are being utilized. If a line is not being utilized, nursing staff should bring this to the attention of the rounding physicians.
- 2) “Dirty line” communication
 - a. Lines placed under sub-sterile conditions during emergencies must be removed and replaced as soon as possible.
 - b. Communication of ‘dirty line’ placement must be made during morning handover and to the SICU resident.

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- 3) Multidisciplinary rounding
 - a. Infection preventionists to join in ICU rounding per their discretion
 - b. Daily discussion should be held with pharmacy staff to determine whether central access is indicated for patient medications
 - c. Nursing staff should join rounds and should mention un- or under-utilized lines.

- 4) Quarterly CLABSI reports
 - a. A quarterly report will be generated and dispersed to SICU staff detailing central line days, number of central lines per patient, and number of CLABSIs.

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