Dialysis Assessment and Response Tool (DART) for Infection Prevention and Control

Catheter and Other Vascular Access Care

This form is intended to aid a DART facilitator in the review of a dialysis facility's catheter and other vascular access care practices. Additionally, observation tools are included to guide audits of catheter and other vascular access care.

Catheter and Other Vascular Access Care Interview Questions

1. Does the facility use an alcohol-based chlorhexidine (>0.5%) solution as the first line skin antiseptic agent during dressing changes of catheters?

- ◯ Yes
- ◯ No
- ◯ Unknown
- ◯ Not assessed
- ◯ Other (*specify*): _____

Rationale:

"Chlorhexidine for skin antisepsis

Use an alcohol-based chlorhexidine (>0.5%) solution as the first line skin antiseptic agent for central line insertion and during dressing changes.*"

"*Povidone-iodine (preferably with alcohol) or 70% alcohol are alternatives for patients with chlorhexidine intolerance."

Source: Core Interventions for Dialysis Bloodstream Infection (BSI) Prevention: https://www.cdc.gov/dialysis/PDFs/Dialysis-Core-Interventions-5_10_13.pdf

2. Are other product(s) applied to the exit site during catheter exit site dressing changes in order to reduce the risk of vascular access infections? (*select all that apply*)

- ☐ Antibiotic ointment or povidone-iodine ointment
- ☐ Chlorhexidine-impregnated dressing (includes sponge dressing)
- ☐ Other antimicrobial dressing. Please specify: _____
- ☐ No product applied
- ☐ Unknown
- ☐ Not assessed

If antibiotic ointment or povidone-iodine ointment:

2a. Does the facility review ointment/catheter compatibility prior to first application?

- ◯ Yes
- ◯ No
- ◯ Unknown
- ◯ Not assessed
- ◯ Other (*specify*): _____

Rationale:

"b. Ingredients in ointments may interact with the chemical composition of some catheters. Thus, ensure the selected ointment will not interact with the catheter material before any such product is applied to the catheter insertion/exit site. For example, ointments containing glycol should not be applied to insertion/exit sites of polyurethane catheters.

c. Mupirocin ointment should not be applied to the catheter insertion site due to the risks of facilitating mupirocin resistance and the potential damage to polyurethane catheters."

Source: Strategies to prevent central line-associated bloodstream infections in acute-care hospitals: 2022 Update, pg 559: https://www.cambridge.org/core/services/aop-cambridge-core/content/view/01DC7C8BBEA1F496BC20C6E0EF634E3D/S0899823X22000873a.pdf/strategies-to-prevent-central-line-associated-bloodstream-infections-in-acute-care-hospitals-2022-update.pdf

"Use povidone iodine antiseptic ointment or bacitracin/gramicidin/polymyxin B ointment at the hemodialysis catheter exit site after catheter insertion and at the end of each dialysis session only if this ointment does not interact with the material of the hemodialysis catheter per manufacturer's recommendations."

Source: Guideline for the Prevention of Intravascular Catheter-Related Infections, pg 39: https://www.cdc.gov/infection-control/hcp/intravascular-catheter-related-infections/summary-recommendations.html#:~:text=Use%20povidone%20iodine%20antiseptic%20ointment,hemodialysis%20catheter%20per%20manufacturer's%20recommendation.

"Triple antibiotic ointment (bacitracin/neomycin/polymyxin B) is available and might have a similar benefit but studies have not thoroughly evaluated its effect for prevention of bloodstream and exit-site infections. Other ointments that have been studied include single antibiotic ointments (e.g., mupirocin). However, concerns exist about development of antimicrobial resistance and also their ability to cover the spectrum of potential pathogens (e.g., gram-negative and gram-positive bacteria) that can cause bloodstream infections in dialysis patients. Ingredients in antibiotic and povidone-iodine ointments may interact with the chemical composition of certain catheters. Therefore, before any product is applied to the catheter, first check with the catheter manufacturer to ensure that the selected ointment will not interact with the catheter material."

Source: Best Practices for Bloodstream Infection Prevention in Dialysis Setting, Antimicrobial Ointment Footnote: https://www.cdc.gov/dialysis-safety/hcp/clinical-safety/index.html

"Use of chlorhexidine-impregnated sponge dressing might be an alternative."

Source: Core Interventions for Dialysis Bloodstream Infection (BSI) Prevention: https://www.cdc.gov/dialysis/PDFs/Dialysis-Core-Interventions-5_10_13.pdf

3. Are antimicrobial lock solutions used to prevent hemodialysis catheter infections in the facility?

- ◯ Yes, for all catheter patients
- ◯ Yes, for some catheter patients
  - Specify how patients are selected: _____
- ◯ No (not for any patients)
- ◯ Unknown
- ◯ Not assessed
- ◯ Other (*specify*): _____

IF NO (not for any patients):

3a. Are there circumstances when the facility might consider the use of antimicrobial lock solutions?

- ◯ Yes (*specify*): _____
- ◯ No
- ◯ Unknown
- ◯ Not assessed

Rationale:

"KDOQI [Kidney Disease Outcomes Quality Initiative] suggests that the selective use of specific prophylactic antibiotic locks can be considered in patients in need of long-term CVC who are at high risk of CRBSI (eg, multiple prior CRSBI), especially in facilities with high rates of CRBSI (eg, >3.5/1,000 days). (Conditional Recommendation, Low-Moderate Level of Evidence)

Note: Under these circumstances and given the current data, KDOQI considers it reasonable for prophylactic use of specific antibiotics: cefotaxime, gentamicin, or cotrimoxazole (TMP-SMX). KDOQI cannot support the routine prophylactic use of antibiotic locks with very low supporting evidence." (pg S33)

Source: KDOQI Clinical Practice Guideline for Vascular Access: 2019 Update: https://www.ajkd.org/action/showPdf?pii=S0272-6386%2819%2931137-0

"Catheter lock is a technique by which an antimicrobial solution is used to fill a catheter lumen and then allowed to dwell for a period of time while the catheter is idle." (pg 40)

"Use prophylactic antimicrobial lock solution in patients with long term catheters who have a history of multiple [catheter-related bloodstream infections] CRBSI despite optimal maximal adherence to aseptic technique." (pg 15)

Source: Guideline for the Prevention of Intravascular Catheter-Related Infections: https://www.cdc.gov/infectioncontrol/pdf/guidelines/bsi-guidelines-H.pdf

4. Are antiseptic-impregnated caps used on hemodialysis catheters?

- ◯ Yes, for all patients
- ◯ Yes, for some patients
  - Specify how patients are selected: _____
- ◯ No (not for any patients)
- ◯ Unknown
- ◯ Not assessed

Rationale:

Use of antiseptic-containing hub/connector cap/port protector to cover connectors is an additional approach for preventing central line-associated bloodstream infections (CLABSIs) and may not be indicated if facility BSI rates are being managed effectively using other infection prevention and control measures.

"Although it is reasonable to evaluate the utility of technology-based interventions when CLABSI rates are above the institutional- or unit-based threshold, this is also an opportunity to review practices and consider behavioral changes that may be instituted to reduce CLABSI risk." (pg 558)

Source: Strategies to prevent central line-associated bloodstream infections in acute-care hospitals: 2022 Update: https://www.cambridge.org/core/services/aop-cambridge-core/content/view/01DC7C8BBEA1F496BC20C6E0EF634E3D/S0899823X22000873a.pdf/strategies-to-prevent-central-line-associated-bloodstream-infections-in-acute-care-hospitals-2022-update.pdf

5. Before accessing the dialysis catheter, what is the catheter hub scrubbed with? (*select the <u>one</u> most commonly used*)

- ◯ Alcohol
- ◯ Chlorhexidine without alcohol
- ◯ Chlorhexidine with alcohol (e.g., Chloraprep, PDI Prevantics)
- ◯ Povidone-iodine (or tincture of iodine)
- ◯ Sodium hypochlorite solution (e.g., ExSept®, Alcavis) alone (not followed by alcohol)
- ◯ Sodium hypochlorite solution (e.g., ExSept®, Alcavis) followed by alcohol
- ◯ Unknown
- ◯ Not assessed
- ◯ Other (*specify*): _____
- ◯ The catheter hub is not scrubbed prior to being accessed

6. Does the facility use needleless connector devices on catheters?

- ◯ Yes
- ◯ No
- ◯ Unknown
- ◯ Not assessed

Rationale:

"Disinfect catheter hubs, needleless connectors, and injection ports before accessing the catheter (Quality of Evidence: MODERATE)

a. Before accessing catheter hubs, needleless connectors, or injection ports, vigorously apply mechanical friction with an alcoholic chlorhexidine preparation, or 70% alcohol. Alcoholic chlorhexidine may have additional residual activity compared to alcohol for this purpose and is therefore preferred." (pg 558)

Source: Strategies to prevent central line-associated bloodstream infections in acute-care hospitals: 2022 Update: https://www.cambridge.org/core/services/aop-cambridge-core/content/view/01DC7C8BBEA1F496BC20C6E0EF634E3D/S0899823X22000873a.pdf/strategies-to-prevent-central-line-associated-bloodstream-infections-in-acute-care-hospitals-2022-update.pdf

"Catheter hub disinfection

Scrub catheter hubs with an appropriate antiseptic after cap is removed and before accessing. Perform every time catheter is accessed or disconnected.**"

"**If closed needleless connector device is used, disinfect device per manufacturer's instructions."

Source: Core Interventions for Dialysis Bloodstream Infection (BSI) Prevention: https://www.cdc.gov/dialysis/PDFs/Dialysis-Core-Interventions-5_10_13.pdf

7. Are patients with hemodialysis catheters educated on how to shower/bathe at home with the catheter?

- ◯ Yes
- ◯ No
- ◯ Unknown
- ◯ Not assessed

If YES:

7a. Describe the patient/caregiver education and how it is provided.

8. Are patients with hemodialysis catheters provided supplies to care for their catheter at home (i.e., the catheter/dressing becomes wet, catheter dressing becomes loose between treatments)?

- ◯ Yes, for all catheter patients
- ◯ Yes, for some catheter patients
  Specify how patients are selected: _____
- ◯ No
- ◯ Unknown
- ◯ Not assessed
- ◯ Other (*specify*): _____

Rationale:

"Do not submerge the catheter or catheter site in water. Showering should be permitted if precautions can be taken to reduce the likelihood of introducing organisms into the catheter (e.g., if the catheter and connecting device are protected with an impermeable cover during the shower)."

Resource: Guideline for the Prevention of Intravascular Catheter-Related Infections, pg 31: https://www.cdc.gov/infection-control/media/pdfs/guideline-bsi-h.pdf?CDC_AAref_Val=https://www.cdc.gov/infectioncontrol/pdf/guidelines/bsi-guidelines-H.pdf

9. Describe how your facility incorporates efforts to reduce the number of patients dialyzing with catheters.

Rationale:

"Catheter reduction Incorporate efforts (e.g., through patient education, vascular access coordinator) to reduce catheters by identifying and addressing barriers to permanent vascular access placement and catheter removal."

Source: Core Interventions for Dialysis Bloodstream Infection (BSI) Prevention: https://www.cdc.gov/dialysis/PDFs/Dialysis-Core-Interventions-5_10_13.pdf

10. Does your facility perform buttonhole cannulation of AV (arteriovenous) fistula patients?

- ◯ Yes
- ◯ No
- ◯ Unknown
- ◯ Not assessed

If YES:

10a. Who most often performs buttonhole cannulation (*select the one most commonly performing the activity*)?

- ◯ Patient (self-cannulation)
- ◯ Patient care technicians (PCTs)
- ◯ Licensed practical/vocational nurses (LPN/LVNs)
- ◯ Registered Nurses
- ◯ Unknown
- ◯ Not assessed
- ◯ Other (*specify*): _____

10b. Describe the process for how the buttonhole site is prepped before cannulation is performed.

10c. Is antimicrobial ointment (e.g., mupirocin) routinely used at buttonhole cannulation sites to prevent infection?

- ◯ Yes
- ◯ No
- ◯ Unknown
- ◯ Not assessed

Rationale:

"Buttonhole cannulation (BHC), or "constant site" cannulation, is a technique in which cannulation occurs with blunt needles using an established track created by repeatedly cannulating at the same site, angle, and depth so that scar tissue forms a tunnel." (pg 2)

"BHC allows patients to self-cannulate, which may increase patient empowerment and facilitate home HD." (pg 7)

Source: Risk of Vascular Access Infection Associated with Buttonhole Cannulation of Fistulas: https://stacks.cdc.gov/view/cdc/119260

CDC does not have specific recommendations for buttonhole cannulation techniques. However, buttonhole cannulation has been associated with higher bloodstream infection rates and increased risk of local access-site infections. If buttonhole cannulation is used, the facility should have a protocol/procedure to ensure scab soaking and removal, skin preparation prior to cannulation, and care of the site after decannulation.

Source: Buttonhole Cannulation of Arteriovenous Fistulas in the United States, pg 308-309:

https://pmc.ncbi.nlm.nih.gov/articles/PMC8809278/pdf/KID.0000052020.pdf

11. Is the facility's BSI rate actively shared with frontline staff?

- ◯ Yes
- ◯ No
- ◯ Unknown
- ◯ Not assessed
- ◯ Other (*specify*): _____

If YES:

11a. How often is the information shared with frontline staff?

Rationale:

"Surveillance and feedback using NHSN

Conduct monthly surveillance for BSIs and other dialysis events using CDC's National Healthcare Safety Network (NHSN). Calculate facility rates and compare to rates in other NHSN facilities. Actively share results with frontline clinical staff."

Source: Core Interventions for Dialysis Bloodstream Infection (BSI) Prevention: https://www.cdc.gov/dialysis/PDFs/Dialysis-Core-Interventions-5_10_13.pdf

Catheter and Other Vascular Access Care – Observations of Access Care Practices

Prior to performing observations, the skin antisepsis product(s) used in the facility should be reviewed including instructions for use (IFU) (e.g., dry time for antiseptics).

Product Name	IFU Scrub Time	IFU Dry Time	Other Notes
Example: Chlorascrub swab	15 sec	30 sec	Apply using repeated back-and-forth strokes

Ideally, complete 5 audits of staff performing catheter and other vascular access care within the facility using the audit tool in this section. Audit tools are not fillable and can be accessed below or at this link: https://www.cdc.gov/dialysis-safety/media/pdfs/Catheter-Connection-Disconnection-Observations-P.pdf

CDC Dialysis Collaborative *Facility Name:*_____ *Date:*_____ *Start time:*_____*AM / PM*

*Day: M W F Tu Th Sa Shift: 1st 2nd 3rd 4th Observer:*_____ *Location within unit:*_____

Audit Tool: Catheter connection and disconnection observations

(Use a "√" if action performed correctly, a "Φ" if not performed. If not observed, leave blank)

Procedure observed, C=connect D=disconnect	Discipline	Mask worn properly (if required)	Hand hygiene performed	New clean gloves worn	Catheter removed from blood line aseptically (disconnection only)	Catheter hub scrubbed	Hub antiseptic allowed to dry	Catheter connected to blood lines aseptically (connection only)	New caps attached aseptically (after disconnecting)	Gloves removed	Hand hygiene performed

Discipline: **P**=physician, **N**=nurse, **T**=technician, **S**=student, **O**=other

Duration of observation period = _____minutes

Number of procedures performed correctly = _____

Total number of procedures observed during audit = _____

ADDITIONAL COMMENTS/OBSERVATIONS:

CDC Dialysis Collaborative *Facility Name:_____ Date:_____ Start time:_____AM / PM*

Day: M W F Tu Th Sa Shift: 1st 2nd 3rd 4th Observer:_____ Location within unit:_____

Audit Tool: Catheter exit site care observations

(Use a "√" if action performed correctly, a "Φ" if not performed. If not observed, leave blank)

Discipline	Mask worn properly (if required)	Hand hygiene performed	New clean gloves worn	Skin antiseptic applied appropriately	Skin antiseptic allowed to dry	No contact with exit site (after antisepsis)	Antimicrobial ointment applied	Dressing applied aseptically	Gloves removed	Hand hygiene performed	Comments

Discipline: **P**=physician, **N**=nurse, **T**=technician, **S**=student, **O**=other

Duration of observation period:_____minutes

Number of procedures performed correctly = _____

Total number of procedures observed during audit = _____

ADDITIONAL COMMENTS/OBSERVATIONS:

CDC Dialysis Collaborative *Facility Name:_____ Date:_____ Start time:_____AM / PM*

Day: M W F Tu Th Sa Shift: 1st 2nd 3rd 4th Observer:_____ Location within unit:_____

Audit Tool: Arteriovenous fistula/graft cannulation observations

(Use a "√" if action performed correctly, a "Φ" if not performed. If not observed, leave blank)

Discipline	Site cleaned with soap and water	Hand hygiene performed (staff)	New, clean gloves worn	Skin antiseptic applied appropriately	Skin antiseptic allowed to dry	No contact with fistula/ graft site (after antisepsis)	Cannulation performed aseptically	Connect to blood lines aseptically	Gloves removed	Hand hygiene performed	Comments

Discipline: **P**=physician, **N**=nurse, **T**=technician, **S**=student, **O**=other

Duration of observation period = _____minutes

Number of procedures performed correctly = _____

Total number of procedures observed during audit = _____

ADDITIONAL COMMENTS/OBSERVATIONS:

CDC Dialysis Collaborative *Facility Name:_____ Date:_____ Start time:_____AM / PM*

Day: M W F Tu Th Sa Shift: 1st 2nd 3rd 4th Observer:_____ Location within unit:_____

Audit Tool: Arteriovenous fistula/graft decannulation observations

(Use a "√" if action performed correctly, a "Φ" if not performed. If not observed, leave blank)

Discipline	Hand hygiene performed (staff)	New, clean gloves worn	Disconnect from blood line aseptically	Needles removed aseptically	Clean gloves worn (by patient/staff) to compress site	Clean gauze /bandage applied to site	If other activities performed between needle removals, hand hygiene is performed and new, clean gloves are worn	Staff gloves removed	Staff hand hygiene performed	Patient gloves removed and hand hygiene performed (if applicable)	Comments

Discipline: **P**=physician, **N**=nurse, **T**=technician, **S**=student, **O**=other

Duration of observation period = _____minutes

Number of procedures performed correctly = _____

Total number of procedures observed during audit = _____

ADDITIONAL COMMENTS/OBSERVATIONS:

MAKING DIALYSIS SAFER COALITION

National Center for Emerging and Zoonotic Infectious Diseases

Division of Healthcare Quality Promotion

DEPARTMENT OF HEALTH & HUMAN SERVICES USA CDC