Infection Prevention Webinar Series for Hospital & Outpatient Settings

NEBRASKA
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DEPT. OF HEALTH AND HUMAN SERVICES

August 12, 2026

NE ICAP

NEBRASKA INFECTION CONTROL ASSESSMENT AND PROMOTION PROGRAM

Presenters & Panelists

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Continuing Education Disclosures

- 1.0 Nursing Contact Hour is awarded for the LIVE viewing of this webinar.
- Nebraska Infection Control Assessment and Promotion Program is approved as a provider of nursing continuing professional development by VTL Center for Professional Development, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.
- To obtain nursing contact hours, you must attend the entire live activity and complete the post-course survey form.
- No relevant financial relationships were identified for any member of the planning committee or any presenter/author of the program content.

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Nebraska Pathogen Watch

Juan Teran, MD
Medical Director, NE ICAP

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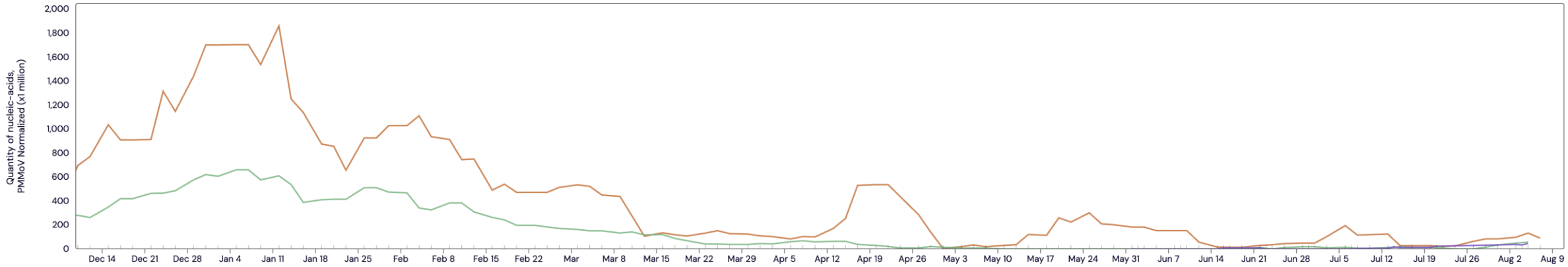
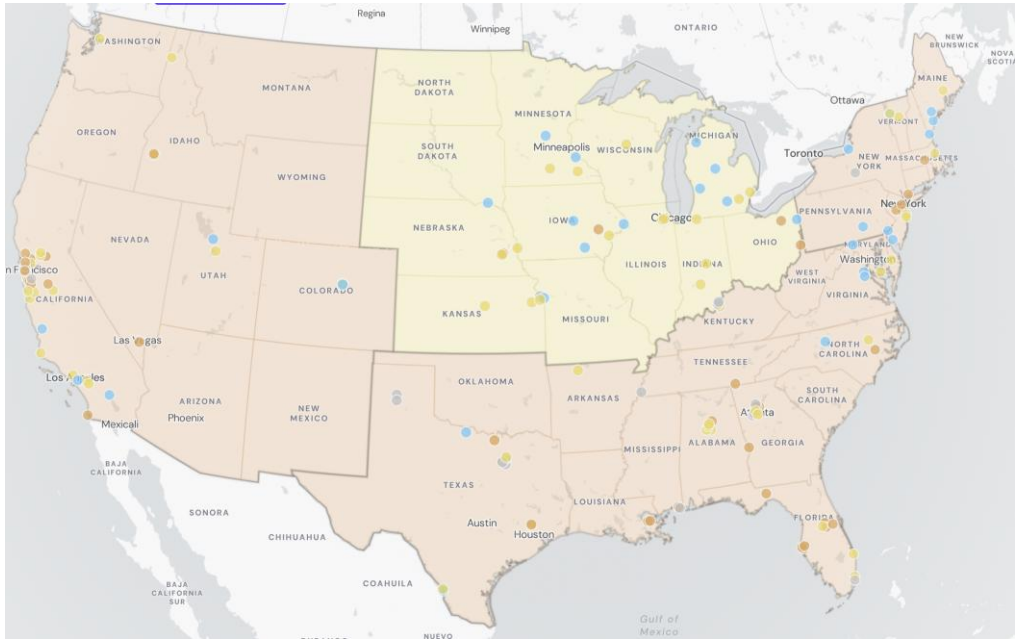
NEBRASKA INFECTION CONTROL ASSESSMENT AND PROMOTION PROGRAM

Key Points

- Pathogen update:
  - Covid-19 activity remains low
  - Multistate outbreak of *Salmonella* infections
  - Number of *Cyclospora* cases

COVID-19

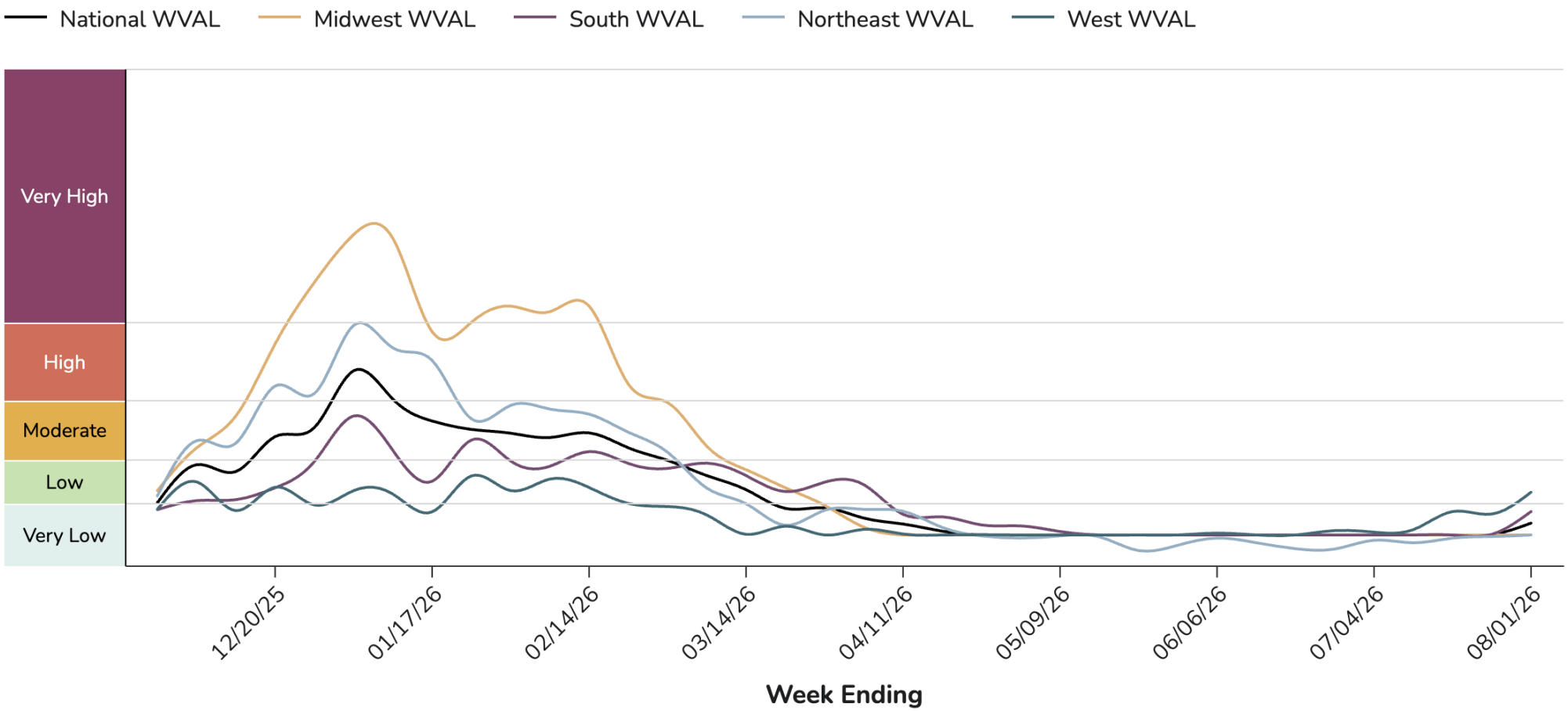




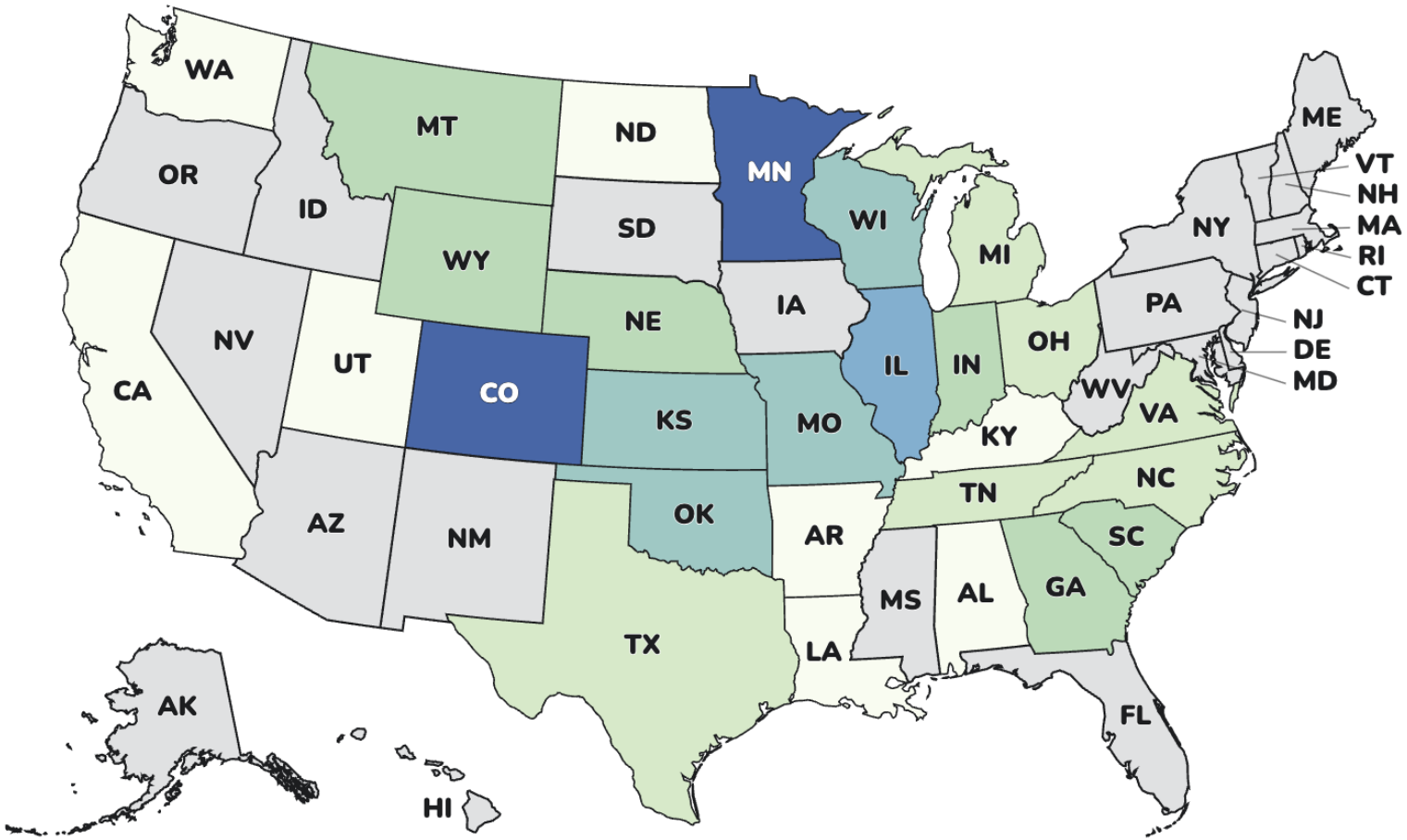
High
Low
Not Calculated
Medium
Not Detected

WASTEWATER SCAN

COVID-19


National WVAL
Midwest WVAL
South WVAL
Northeast WVAL
West WVAL
Very High
High
Moderate
Low
Very Low
12/20/25
01/17/26
02/14/26
03/14/26
04/11/26
05/09/26
06/06/26
07/04/26
08/01/26
Week Ending

Salmonella



Case Counts

Total Illnesses: 345

Hospitalizations: 36

Deaths: 0

Last Illness Onset: July 20, 2026

States with Cases: AL, AR, CA, CO, GA, IL, IN, KS, KY, LA, MI, MN, MO, MT, NC, ND, NE, OH, OK, SC, TN, TX, UT, VA, WA, WI, WY

https://www.fda.gov/food/outbreaks-foodborne-illness/outbreak-investigation-salmonella-jalapeno-august-2026?utm_medium=email&utm_source=govdelivery

Salmonella

Jalapeño peppers

- Distributed by Coast Citrus Distributors
- Grown in Sinaloa, Mexico

Taylor Fresh Foods has recalled jalapeño peppers. The recall includes whole peppers and products peppers were used in, such as burritos, bowls, guacamole, sandwiches, salsas, salads, and wraps.

"Best if used by" date	Up to and including August 16, 2026
Distributed to	Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Maine, Michigan, Minnesota, Missouri, Mississippi, Nebraska, New Hampshire, New York, Ohio, Oklahoma, South Carolina, Tennessee, Texas, Vermont, Wisconsin, West Virginia
Stores receiving recalled foods	Albertsons, H-E-B, Hannaford, Kroger, RaceTrac, Randalls, Stop and Shop, Target, Tom Thumb, Trader Joe's, Walmart, Wawa, Whole Foods

https://www.cdc.gov/Salmonella/outbreaks/javiana-08-26/index.html

Infection/Condition	Type of Precaution	Duration of Precaution	Precautions/Comments
Gastroenteritis *Salmonella* species (including *S. typhi*)	Standard		Use Contact Precautions for diapered or incontinent persons for the duration of illness or to control institutional outbreaks.

Condition	Labs- automated ELR		Labs reporting manually		Healthcare providers	
	immediate	within 7 days	immediate	within 7 days	immediate	within 7 days
Salmonella spp infection, including *S.typhi* (Salmonella serogroups) ^		x		x		x

Cyclospora

Cases acquired in the U.S.

May 1 - August 10, 2026:

Laboratory-confirmed cases	13,895
Hospitalizations	740
Deaths	2
States reporting cases	47*

https://www.cdc.gov/cyclosporiasis/php/surveillance/index.html

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2nd **Wednesday** of every month

12:00 PM Central Time (CST)

Hospital & Outpatient Webinar Invite

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2nd **Thursday** of every month

12:00 PM Central Time (CST)

Post-Acute & Long-Term Care Webinar Invite

Rural Health Transformation Program (RHTP) Updates and Upcoming Education

M. Salman Ashraf, MBBS, FIDSA
Medical Director, Healthcare-Associated Infections and Antimicrobial Resistance Program

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ANTIMICROBIAL STEWARDSHIP ASSESSMENT AND PROMOTION PROGRAM

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NEBRASKA INFECTIOUS DISEASES CONFERENCE

Friday, August 28, 2026

Beardmore Event Center, Bellevue, Nebraska

New this year! Join us for a co-hosted event by the Nebraska Infectious Diseases Society and Nebraska ASAP. This conference combines the NIDS annual meeting with the Nebraska Antimicrobial Stewardship Summit More details to follow!

Nebraska ID

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Dialysis and Infection Prevention: Understanding Risk, Practice, and Performance

Presented by Chris Cashatt RN, BSN, CIC

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Objectives

01

IDENTIFY AT LEAST THREE COMMON SOURCES OF INFECTION RISK IN DIALYSIS SETTINGS.

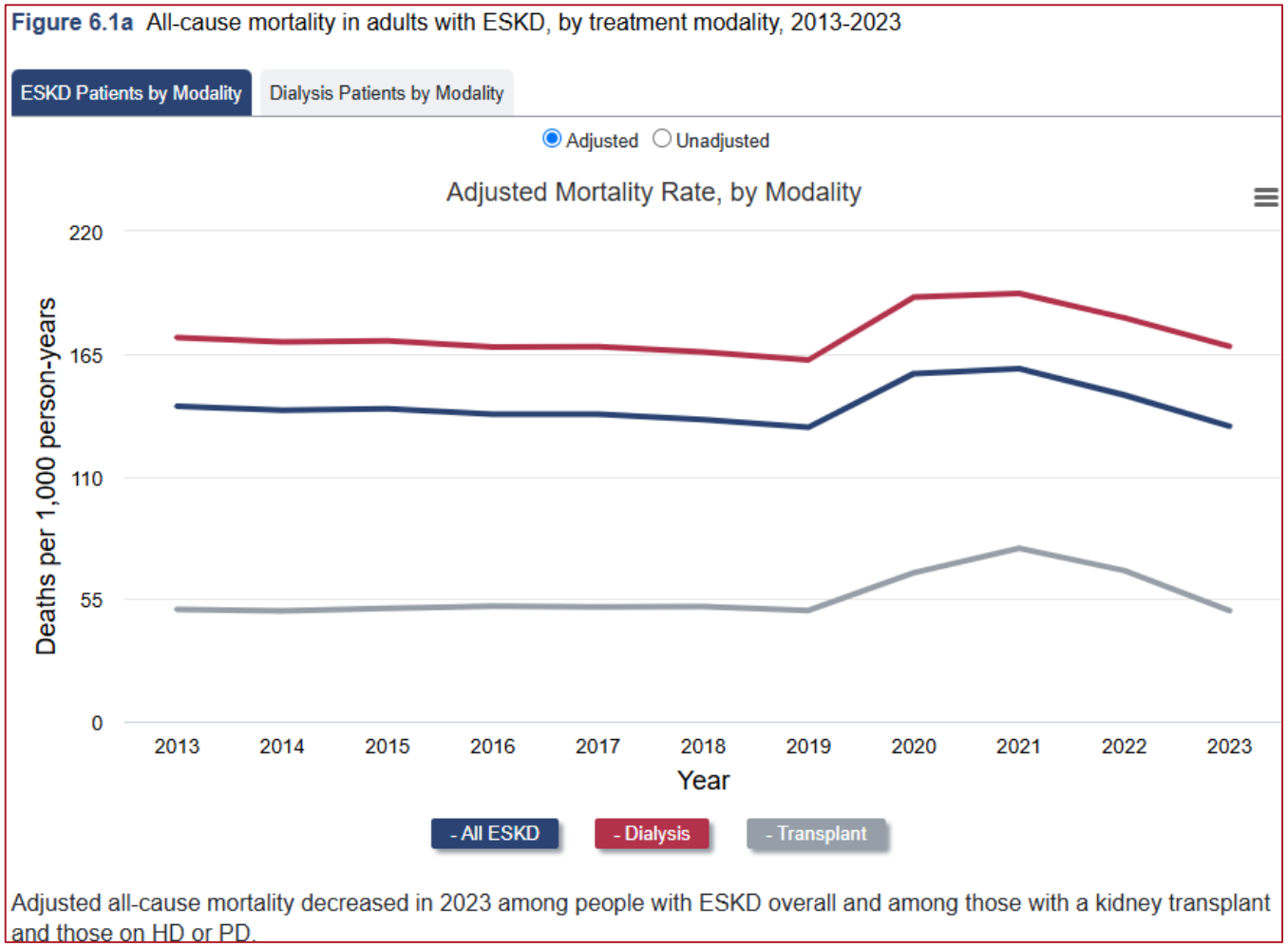
02

DESCRIBE EVIDENCE-BASED INFECTION PREVENTION PRACTICES RELATED TO HAND HYGIENE, ASEPTIC TECHNIQUE, ENVIRONMENTAL CLEANING AND DISINFECTION, AND VASCULAR ACCESS CARE.

03

EXPLAIN HOW INFECTION SURVEILLANCE DATA, REGULATORY REQUIREMENTS, AND QUALITY IMPROVEMENT ACTIVITIES CAN BE USED TO REDUCE INFECTION RATES IN DIALYSIS PATIENTS.

A High-Risk Population



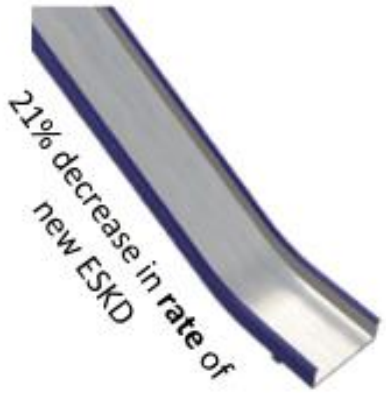
- Kidney disease is the 8th leading cause of death in the U.S.
- COVID-19 was the 3rd known leading cause of death among people with ESKD in 2021.
- Adults on dialysis are 100 times more likely to have a staph bloodstream infection than adults not on dialysis

Annual Data Report | USRDS 2023 Data

End-Stage Kidney Disease ESKD at a Glance

New ESKD in the last two decades

By the end of 2023, the **total** number of Americans living with ESKD was at an all-time high of 831,192



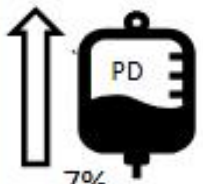
New ESKD is **2X** more common in Hispanic people and **4X** more common in Black people than in White people

Black, 922 per million

Hispanic, 514 per million

White, 243 per million

In the last 21 years, a shift away from in-center dialysis, more **new** ESKD are using at-home PD or receiving preemptive kidney transplant



Death after ESKD start

Annual Data Report | USRDS

2025 Data

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Multiple Settings for Dialysis

- **Acute care hospitals**
- **Outpatient dialysis centers**
- **Home dialysis programs**, which may be performed in:
  - The patient's home
  - Long-term care facilities (LTCFs)

[June 2025 Dialysis Office Hours]

Regulatory Focus on Infection Prevention in Dialysis

- The **Joint Commission, CDC, and CMS** have identified dialysis as a high-risk area, with a focus on infection control to prevent bloodborne pathogen transmission.

CDC
Guidelines, Recommendations and Resources

2001 Recommendations for Preventing Transmission of Infections among Chronic Hemodialysis Patients (Updated 2016)

Guidelines for Prevention of Intravascular Catheter-Related Infections, 2011

Targeted Tuberculin Testing and treatment of Latent Tuberculosis Infection (MMWR 2000)

Updated Guidelines for Using Interferon Gamma Release Assays to Detect Mycobacterium Tuberculosis Infection-United States, 2010

ACIP Vaccine Recommendations (ACIP

Guidelines, Recommendations and Resources | Dialysis Safety | CDC

Surveillance

Hospitals (Inpatient Dialysis)	• NHSN: CLABSI
Outpatient Dialysis Clinics	• NHSN: Dialysis Events • Quality Insights: ESRD network

Home Dialysis	• NHSN:
	  • Annual Survey
	  • HCP COVID-19 Vaccinations (Required)

Common Dialysis-Associated Infections

Peritonitis

Blood-stream infections (BSI)

Sepsis

Peritonitis

- Peritoneum (lining of the belly or abdomen) becomes red and swollen. Symptoms include:
  - Severe pain in the belly area
  - Sore & swollen belly
  - Chills
  - Fever
  - Vomiting
  - Less urine than normal
  - Cloudy Fluid

[The Rainbow of Peritoneal Dialysis Effluent Possibilities - Home Dialysis Central]

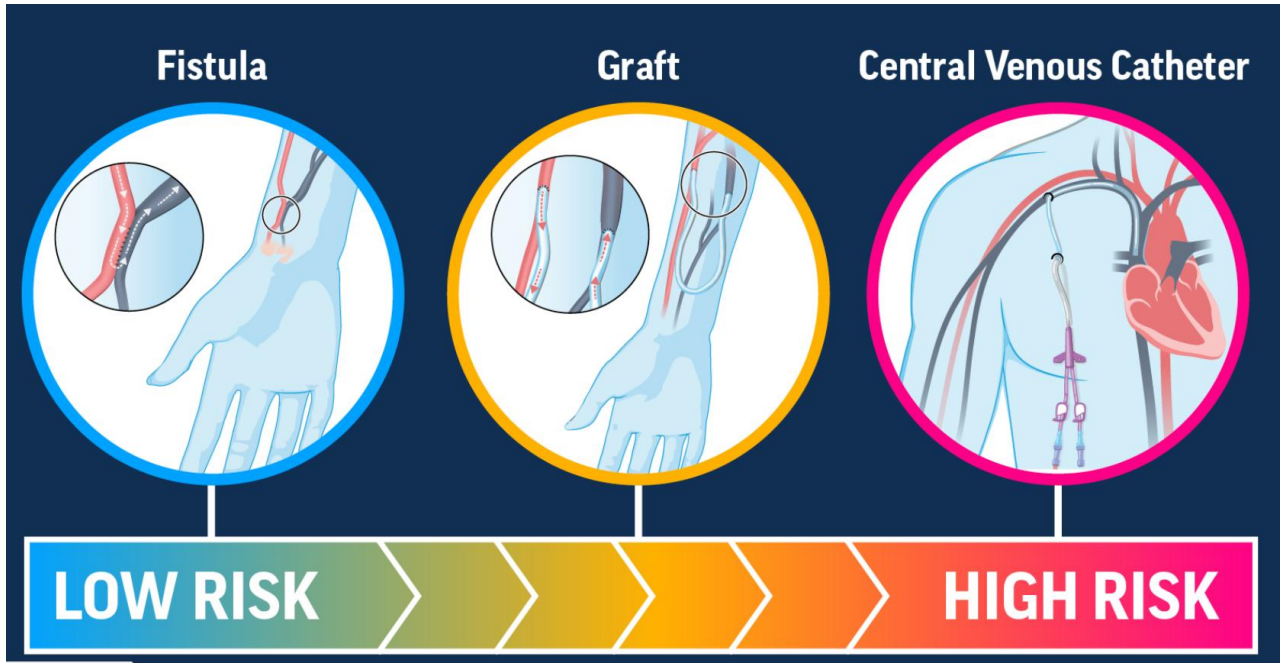
Blood Stream Infections (BSI)

BSIs are serious infections caused by bacteria that get into the blood stream

- Central line catheters have a higher risk of infection than fistulas or grafts
- Symptoms include fever, chills, low blood pressure
- Staphylococcus aureus (found on skin) is the most common group of bacteria that causes BSI's
- *Staphylococcus aureus* is the most common type
- AVF is considered the optimal vascular access due to superior durability, lower risk of infection, least number of interventions to maintain patency

Preventing Bloodstream Infections in People on Dialysis | VitalSigns | CDC

Dialysis Access Types and Infection Risk



AV Fistula	AV Graft	Tunneled CVC	Nontunneled CVC
Surgical anastomosis created between and artery and a vein	A synthetic graft is used to create the anastomosis between the artery and vein	A catheter with a cuff is inserted under the skin to a large vein.	Catheter directly inserted through the skin to a large vein under the skin.
Requires 6 weeks to 4 months before it can be used	Requires 3-6 weeks before it can be used	Available for immediate use	Available for immediate use
Preferred access by KDOQI	Higher risk of infection and complications compared to AV fistulas	Recommended if expected to use > 3 weeks	Short term use only
Lowest risk of infection	Second lowest risk of infection	Second highest risk of infection	Highest risk of infection

Preventing Bloodstream Infections in People on Dialysis | VitalSigns | CDC

Dialysis Assessment of Risk Tool (DART)

- Questions
- Rationale
- Resources
- Observation Tools

1. Catheter and Other Vascular Access Care
2. Environmental Cleaning and Disinfection
3. Hand Hygiene
4. PPE
5. Injection Safety
6. Respiratory Hygiene
7. Water Exposure Biomedical
8. Antibiotic Stewardship
9. Transmission-based Precautions

new

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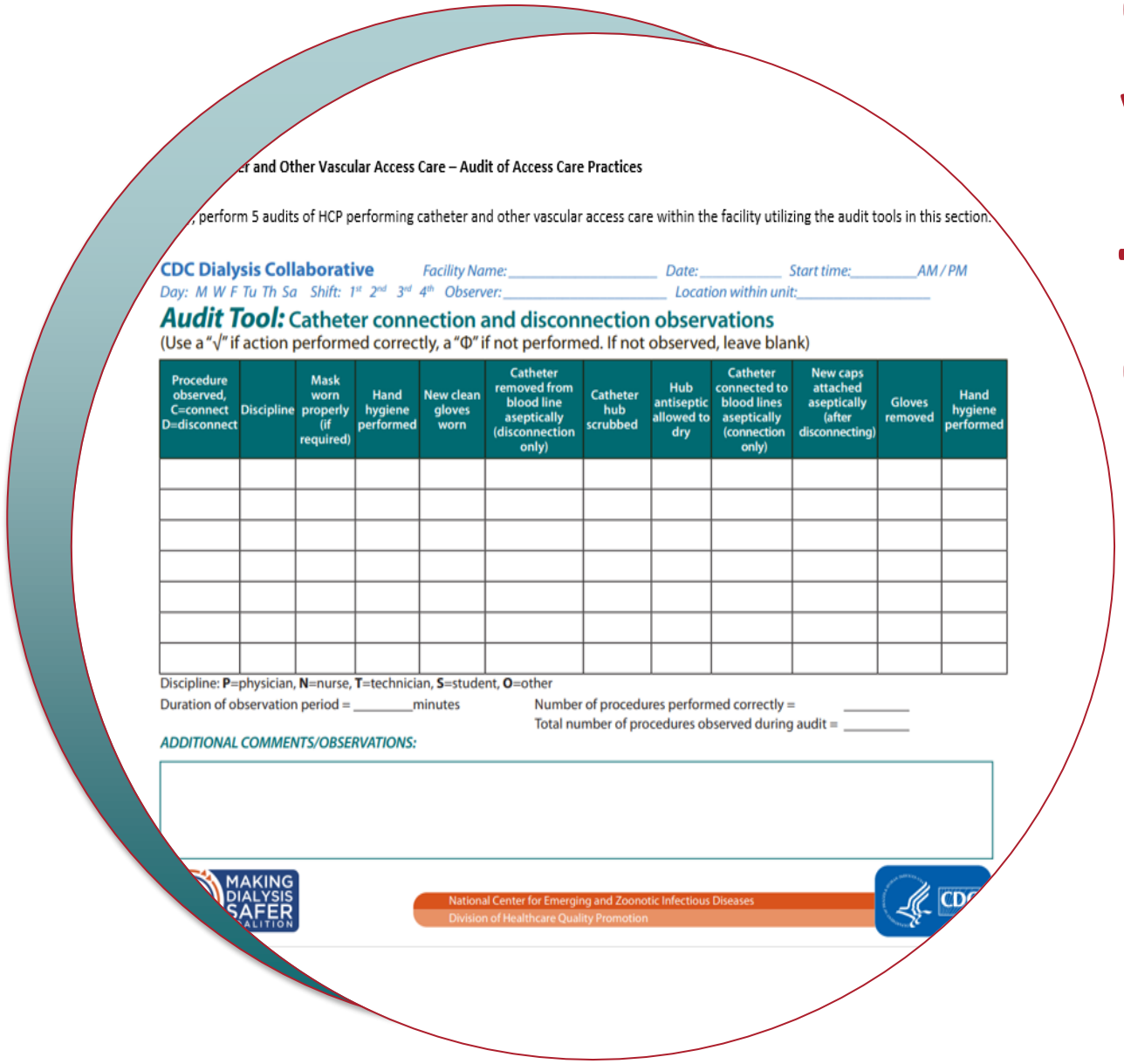
Catheter and Vascular Access Care

- Practices to prevent catheter infections
- Catheter exit site care practices
- Products used for antiseptics, contact times.
- Access techniques of AV fistula (Buttonhole)
- Training-Job specific
- Audit practices of staff adherence to recommended practices
  - Feedback
  - Data reporting
- Staff competency assessments



r and Other Vascular Access Care – Audit of Access Care Practices

, perform 5 audits of HCP performing catheter and other vascular access care within the facility utilizing the audit tools in this section.

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:

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National Center for Emerging and Zoonotic Infectious Diseases

Division of Healthcare Quality Promotion

CDC

Catheter and Other Vascular Access Care – Facility-Level Observations

- Access & Deaccess Vascular Access
- Catheter exit site care
- Catheter hub disinfection
- Staff adherence facility policies

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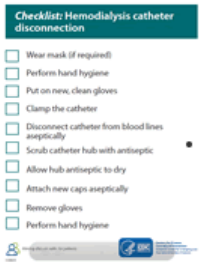
Catheter and Other Vascular Access Care Audit Tools

Catheter Care Tools:

- Catheter Connection and Disconnection Audit Tool[PDF - 188 KB]

Add Your Organization's Logo: Catheter Connection and Disconnection Audit Tool[PDF - 1 page]



Hemodialysis Catheter Disconnection Checklist[PDF - 110 KB]

Add Your Organization's Logo: Hemodialysis Catheter Disconnection Checklist[PDF - 1 page]

Hemodialysis Catheter Connection Checklist[PDF - 103 KB]

Add Your Organization's Logo: Hemodialysis Catheter Connection Checklist[PDF - 1 page]

Hemodialysis Central Venous Catheter Scrub-the-Hub Protocol[PDF - 186 KB]

Add Your Organization's Logo: Hemodialysis Central Venous Catheter Scrub-the-Hub Protocol[PDF - 2 pages]

Catheter Exit Site Care Tools:

- Catheter Exit Site Care Audit Tool[PDF - 254 KB]

Add Your Organization's Logo: Catheter Exit Site Care Audit Tool[PDF - 1 page]

Hemodialysis Catheter Exit Site Care Checklist[PDF - 111 KB]

Add Your Organization's Logo: Hemodialysis Catheter Exit Site Care Checklist[PDF - 1 page]

AV Fistula & Graft Cannulation and Decannulation Tools:

- AV Fistula & Graft Cannulation and Decannulation Audit Tool[PDF - 384 KB]

Add Your Organization's Logo: AV Fistula & Graft Cannulation and Decannulation Audit Tool[PDF - 2 pages]

Arteriovenous Fistula & Graft Cannulation Checklist[PDF - 107 KB]

Add Your Organization's Logo: Arteriovenous Fistula & Graft Cannulation Checklist[PDF - 1 page]

Arteriovenous Fistula & Graft Decannulation Checklist[PDF - 112 KB]

Add Your Organization's Logo: Arteriovenous Fistula & Graft Decannulation Checklist[PDF - 1 page]

Resources & Tools | Dialysis Safety | CDC

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Checklist: Hemodialysis catheter connection

- [ ] Wear mask (if required)
- [ ] Perform hand hygiene
- [ ] Put on new, clean gloves
- [ ] Clamp the catheter and remove caps
- [ ] Scrub catheter hub with antiseptic
- [ ] Allow hub antiseptic to dry
- [ ] Connect catheter to blood lines aseptically
- [ ] Remove gloves
- [ ] Perform hand hygiene

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CDC Centers for Disease Control and Prevention National Center for Emerging and Zoonotic Infectious Diseases

Checklist: Hemodialysis catheter disconnection

- [ ] Wear mask (if required)
- [ ] Perform hand hygiene
- [ ] Put on new, clean gloves
- [ ] Clamp the catheter
- [ ] Disconnect catheter from blood lines aseptically
- [ ] Scrub catheter hub with antiseptic
- [ ] Allow hub antiseptic to dry
- [ ] Attach new caps aseptically
- [ ] Remove gloves
- [ ] Perform hand hygiene

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CDC Centers for Disease Control and Prevention National Center for Emerging and Zoonotic Infectious Diseases

Hemodialysis Central Venous Catheter Scrub-the-Hub Protocol

This protocol outlines a suggested approach to preparing catheter hubs prior to accessing the catheter for hemodialysis. It is based on evidence where available and incorporates theoretical rationale when published evidence is unavailable.

Definitions:

Catheter refers to a central venous catheter (CVC) or a central line

Hub refers to the end of the CVC that connects to the blood lines or cap

Cap refers to a device that screws on to and occludes the hub

Limb refers to the catheter portion that extends from the patient's body to the hub

Blood lines refer to the arterial and venous ends of the extracorporeal circuit that connect the patient's catheter to the dialyzer

Catheter Connection and Disconnection Steps:

Connection Steps

1. Perform hand hygiene and don new clean gloves.
2. Clamp the catheter (*Note*: **Always** clamp the catheter before removing the cap. Never leave an uncapped catheter unattended).
3. Disinfect the hub with caps removed using an appropriate antiseptic (*see notes*).
   a. (*Optional*) Prior to cap removal, disinfect the caps and the part of the hub that is accessible and discard the antiseptic pad (i.e., use a separate antiseptic pad for the next step).
   b. Remove the caps and disinfect the hub with a new antiseptic pad for each hub. Scrub the sides (threads) and end of the hub thoroughly with friction, making sure to remove any residue (e.g., blood).
   c. Using the same antiseptic pad, apply antiseptic with friction to the catheter, moving from the hub at least several centimeters towards the body. Hold the limb while allowing the antiseptic to dry.
   d. Use a separate antiseptic pad for each hub/catheter limb. Leave hubs "open" (i.e., uncapped and disconnected) for the shortest time possible.
4. Always handle the catheter hubs aseptically. Once disinfected, do not allow the catheter hubs to touch nonsterile surfaces.
5. Attach sterile syringe, unclamp the catheter, withdraw blood, and flush per facility protocol.
6. Repeat for other limb (this might occur in parallel).
7. Connect the ends of the blood lines to the catheter aseptically.
8. Remove gloves and perform hand hygiene.

Disconnection Steps:

1. Perform hand hygiene and don new clean gloves.
2. Clamp the catheter (*Note*: **Always** clamp the catheter before disconnecting. Never leave an uncapped catheter unattended).
3. Disinfect the catheter hub using an appropriate anti
   a. (*Optional*) Disinfect disconnection. If th pad for the subsequ
   b. Disconnect the bloc disinfect the hub w the sides (threads) with friction, makin (e.g., blood).
   c. Use a separate antis hubs "open" (i.e., un shortest time possib
4. Always handle the cathet disinfected, do not allow nonsterile surfaces. Hold dried.
5. Attach the new sterile ca Use caution if tape is use (*see notes*).
6. Ensure that catheter is sti
7. Remove gloves and perfo

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Notes/Discussion:

Antiseptic Use and Selection

As described in the 2011 CDC/Healthcare Infection Control Practices Advisory Committee (HICPAC) Guidelines for the Prevention of Intravascular Catheter-Related Infections, prior to accessing the catheter hub it should be disinfected with an appropriate antiseptic (greater than 0.5% chlorhexidine with alcohol, 70% alcohol, or 10% povidone-iodine). There is not enough evidence to recommend one antiseptic over the others. Generally, antiseptics should be allowed to dry for maximal effect.

If using 70% alcohol, sterile antiseptic pads should be used (sterile pads are labeled sterile and packaging for nonsterile pads often does not state whether the pads are sterile or nonsterile). For practical reasons, pads or similar products might be preferred over other forms of antiseptics (e.g., swabsticks) for disinfecting the catheter as they are malleable and allow for vigorous cleaning of small spaces.

If using an antiseptic that leaves a residue (e.g., chlorhexidine), avoid allowing large amounts of antiseptic to enter the lumen of the catheter to avoid potential toxicities to the patient.

If using chlorhexidine, removing all blood residue is particularly important to maximize the effect of the antiseptic.

Soaking Caps

The role of soaking caps in an antiseptic prior to removing them is not clear. It is not a CDC/HICPAC recommendation. This procedure is described in the 2000 National Kidney Foundation's Kidney Disease Outcomes Quality Initiative (KDOQI) Vascular Access Guidelines but was not included in the 2006 update.

Handling Catheter Hubs

Catheter hubs should always be handled aseptically. Once disinfected, the catheter hubs should not be allowed to touch nonsterile surfaces. This might be best performed by holding them until the antiseptic dries. During this time, the staff member performing the procedure should also ensure that the catheter remains clamped.

When disinfecting catheter hubs, clean, nonsterile gloves can be used if aseptic technique is maintained.

Bloodline Disinfection

When accessing the line, disinfecting the ends of the sterile blood lines is not required if care has been taken not to contaminate the ends of the blood lines (i.e., through careful aseptic technique). Blood lines can become contaminated during connections and disconnections, as well as during the priming process. Contact with contaminated prime waste in prime buckets that have not been properly cleaned and disinfected or through backflow from waste handling ports must be avoided. Disinfecting the bloodlines does not address this issue.

Disconnection and Line Reversals

Catheter hubs should be disinfected again after disconnecting from bloodlines and before replacing a new cap at the end of a treatment. This should be done in a manner similar to that used when disinfecting the hub prior to accessing. Disinfecting the catheter hub and the end of the extracorporeal blood line should also be performed if, during a treatment, a patient must be disconnected and their blood is re-circulated. Anytime a patient's circuit is disconnected this should be done aseptically and the number of times a patient's catheter is disconnected from the blood lines should be minimized to the extent possible.

Securing Caps with Tape

Caution should be used if taping caps on to hubs between treatments. Tape can leave residue on the hubs that might make disinfecting them more difficult.

Use of Masks

Although data supporting the use of masks during catheter accessing/deaccessing to prevent vascular access infections is lacking, this practice is recommended for patients and staff in the 2000 KDOQI guidelines and is included in the Centers for Medicare and Medicaid Services (CMS) End Stage Renal Disease Program Conditions for Coverage Interpretive Guidance.

Personal Protective Equipment (PPE)

Proper PPE should always be worn by staff to avoid exposure to potentially infectious blood and body fluids when connecting/disconnecting catheters.

Aseptic Technique

This includes practices that prevent the contamination of clean/sterile items and surfaces. Once tasks requiring aseptic technique have been started, care must be taken to avoid contamination of gloves and other clean/sterile items that can occur when touching dirty surfaces (e.g., positioning patient, using computer keyboard).

Selected References:

1. National Kidney Foundation. KDOQI Clinical Practice Guidelines and Clinical Practice Recommendations for 2006 Updates: Hemodialysis Adequacy, Peritoneal Dialysis Adequacy and Vascular Access. *Am J Kidney Dis* 2006; 48 (suppl 1):S1-S322.
2. National Kidney Foundation. KDOQI Clinical Practice Guidelines for Hemodialysis Adequacy, 2000. *Am J Kidney Dis* 2001; 37 (suppl 1):S7-S64.
3. O'Grady NP, Alexander M, Burns LM, et al. Guideline for the prevention of intravascular catheter-related infections. *Clin Infect Dis* 2011; 52:e162-e193.

[Resources & Tools | Dialysis Safety | CDC]

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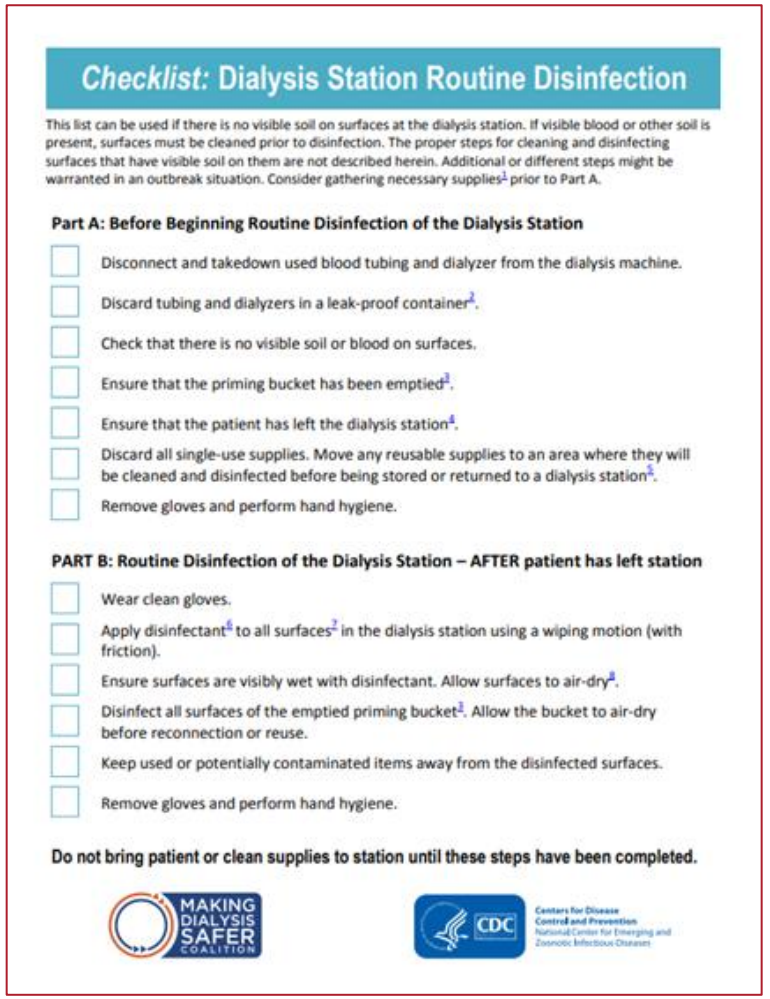
Environmental Cleaning and Disinfection

- Job-specific training
- Observation of HCP, including feedback
- Bled onto the machine
- Establish procedure for cleaning and disinfection of priming buckets
- Assigned responsibility for cleaning and disinfecting:
  - Patient station
  - Portable equipment
- Process for selection of cleaning & disinfection products
- Process for daily cleaning & disinfection of high touch surfaces

Dialysis Station

- Written protocols should be established
- Should never be started until the patient has left the station
- Enough time should be allowed to give staff to clean, disinfect, and dry completely
- Items such as scissors, hemostats, clamps, stethoscopes, and blood pressures cuffs should be removed and disinfected.
- Unused single use items should be disposed of they cannot be disinfected.



Checklist: Dialysis Station Routine Disinfection

This list can be used if there is no visible soil on surfaces at the dialysis station. If visible blood or other soil is present, surfaces must be cleaned prior to disinfection. The proper steps for cleaning and disinfecting surfaces that have visible soil on them are not described herein. Additional or different steps might be warranted in an outbreak situation. Consider gathering necessary supplies[1] prior to Part A.

Part A: Before Beginning Routine Disinfection of the Dialysis Station

- ☐ Disconnect and takedown used blood tubing and dialyzer from the dialysis machine.
- ☐ Discard tubing and dialyzers in a leak-proof container[2].
- ☐ Check that there is no visible soil or blood on surfaces.
- ☐ Ensure that the priming bucket has been emptied[3].
- ☐ Ensure that the patient has left the dialysis station[4].
- ☐ Discard all single-use supplies. Move any reusable supplies to an area where they will be cleaned and disinfected before being stored or returned to a dialysis station[5].
- ☐ Remove gloves and perform hand hygiene.

PART B: Routine Disinfection of the Dialysis Station – AFTER patient has left station

- ☐ Wear clean gloves.
- ☐ Apply disinfectant[6] to all surfaces[7] in the dialysis station using a wiping motion (with friction).
- ☐ Ensure surfaces are visibly wet with disinfectant. Allow surfaces to air-dry[8].
- ☐ Disinfect all surfaces of the emptied priming bucket[3]. Allow the bucket to air-dry before reconnection or reuse.
- ☐ Keep used or potentially contaminated items away from the disinfected surfaces.
- ☐ Remove gloves and perform hand hygiene.

Do not bring patient or clean supplies to station until these steps have been completed.

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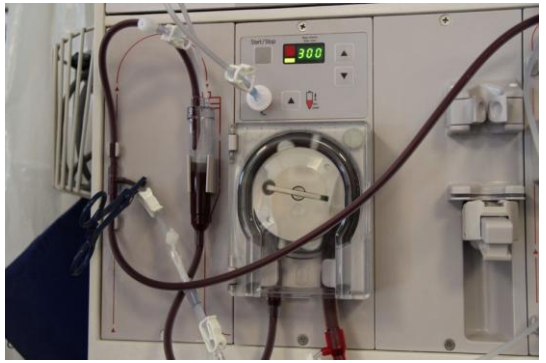
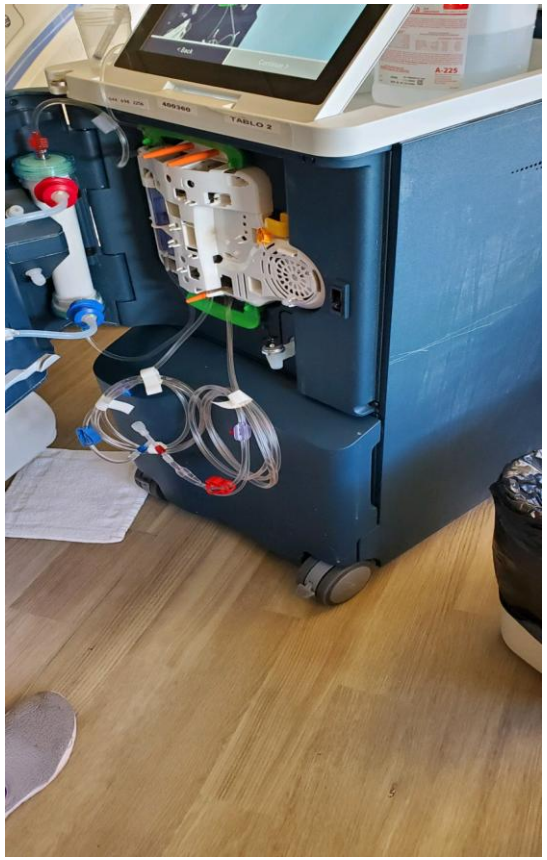
CDC Centers for Disease Control and Prevention National Center for Emerging and Zoonotic Infectious Diseases

Checklist: Dialysis Station Routine Disinfection (cdc.gov)

Hemodialysis Machines





- Disinfection procedures should be documented, including residual disinfection
- Single-pass machines may be rinsed and disinfected at the beginning or end of each day
- Batch recirculating machines must be drained, rinsed and disinfected after each use.

Dialysis Wall Boxes

Facility policies frequency and method for wall box surface disinfection.

Part of facility water management plan for biofilm prevention.

Staff education on risk associated with wall boxes.

Hand hygiene after contact with wall boxes and active surveillance.

ORIGINAL INVESTIGATION | VOLUME 74, ISSUE 5, P610-619, NOVEMBER 2019 Download Full Issue

Multicenter Outbreak of Gram-Negative Bloodstream Infections in Hemodialysis Patients

Shannon A. Novosad • Jason Lake • Duc Nguyen • ... Alison Laufer Halpin • Jennifer Layden • Priti R. Patel • Show all authors

Published: July 30, 2019 • DOI: https://doi.org/10.1053/j.ajkd.2019.05.012 • Check for updates

Multicenter Outbreak of Gram-Negative Bloodstream Infections in Hemodialysis Patients - American Journal of Kidney Diseases (ajkd.org)

This large outbreak was linked to wall boxes, a previously undescribed source of contaminated fluid and biofilm in the immediate patent care environment.

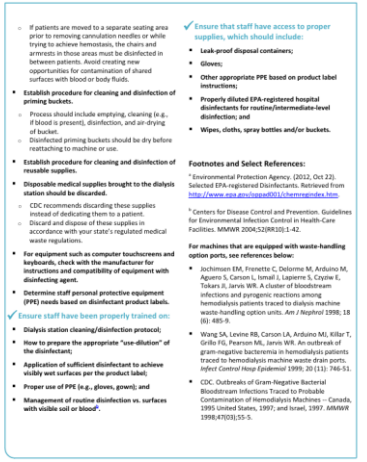
Environmental Surface Disinfection in Dialysis Facilities: Notes for Clinical Managers

✓ Select proper disinfectant(s) and determine correct dilution(s) for routine use.

- **Use only Environmental Protection Agency (EPA)-registered hospital disinfectants[a].**
  - EPA-registered hospital disinfectants have label instructions explaining how they should be used in healthcare settings.
  - EPA-registered sodium hypochlorite or other products for healthcare settings are available and are preferred over household bleach products that are not EPA-registered for disinfection of surfaces.
- **Low-level vs. intermediate-level disinfection:**
  - Routine disinfection of environmental surfaces can be accomplished using a low-level disinfectant (any EPA-registered hospital disinfectant). However, intermediate-level disinfectants must be available in the dialysis facility for disinfection of surfaces that are visibly soiled with blood or body fluids.
  - Intermediate-level disinfectants are sufficiently potent to inactivate mycobacteria and have a tuberculocidal label claim, whereas low-level disinfectants are not strong enough to inactivate these bacteria.
  - For convenience, consider selecting and routinely using hospital disinfectants that are tuberculocidal or have label claims of activity against hepatitis B virus (HBV) and human immunodeficiency virus (HIV). These products may be used to perform routine and intermediate-level disinfection.
- **Identify and instruct staff on the correct dilution of the disinfectant agent.**
  - Read the label carefully and follow the manufacturer's label instructions for proper dilution of the disinfectant. Note, label-specified dilutions for EPA-registered sodium hypochlorite (i.e., bleach) products might not necessarily conform to a 1:100 or 1:10 dilution. The manufacturer's instructions are specific to the product and should be followed. Some products do not require preparation or dilution and are sold as "ready to use."
  - Products with tuberculocidal, HBV, and HIV label claims will also have instructions for cleaning blood spills.

✓ Establish procedure for disinfecting dialysis station between patients.

- **Identify responsible staff.**
- **Ensure procedure allows for sufficient disinfectant to be applied to surfaces (surfaces should be visibly wet).**
- **Employ strategies to optimize cleaning and disinfection of the station.**
  - A sufficient patient-free interval is necessary at each station to facilitate adequate cleaning and disinfection. Routine surface disinfection should not commence until the patient has left the station.
  - A facility-wide patient-free interval between treatment shifts should be considered to ensure thorough disinfection of surfaces at the dialysis station and to minimize lapses in infection prevention that can occur when processes are performed in a hurried manner.
  - Routine disinfection of surfaces at the station should occur with *no patient present* to reduce the opportunities for cross-contamination and to avoid exposing patients to disinfectant fumes.
- **Important considerations regarding moving patients to a post-treatment seating area to facilitate more rapid station turnover:**
  - Patients should not be removed from the station until they have completed treatment and are clinically stable. If a patient cannot be moved safely, disinfection of the dialysis station should be delayed until the station can be vacated in a safe manner.



- If patients are moved to a separate seating area prior to removing cannulation needles or while trying to achieve hemostasis, the chairs and armrests in those areas must be disinfected in between patients. Avoid creating new opportunities for contamination of shared surfaces with blood or body fluids.
- **Establish procedure for cleaning and disinfection of priming buckets.**
  - Process should include emptying, cleaning (e.g., if blood is present), disinfection, and air-drying of bucket.
  - Disinfected priming buckets should be dry before reattaching to machine or use.
- **Establish procedure for cleaning and disinfection of reusable supplies.**
- **Disposable medical supplies brought to the dialysis station should be discarded.**
  - CDC recommends discarding these supplies instead of dedicating them to a patient.
  - Discard and dispose of these supplies in accordance with your state's regulated medical waste regulations.
- **For equipment such as computer touchscreens and keyboards, check with the manufacturer for instructions and compatibility of equipment with disinfecting agent.**
- **Determine staff personal protective equipment (PPE) needs based on disinfectant product labels.**

✓ Ensure staff have been properly trained on:

- **Dialysis station cleaning/disinfection protocol;**
- **How to prepare the appropriate "use-dilution" of the disinfectant;**
- **Application of sufficient disinfectant to achieve visibly wet surfaces per the product label;**
- **Proper use of PPE [e.g., gloves, gown]; and**
- **Management of routine disinfection vs. surfaces with visible soil or blood[b].**

✓ Ensure that staff have access to proper supplies, which should include:

- **Leak-proof disposal containers;**
- **Gloves;**
- **Other appropriate PPE based on product label instructions;**
- **Properly diluted EPA-registered hospital disinfectants for routine/intermediate-level disinfection; and**
- **Wipes, cloths, spray bottles and/or buckets.**

Footnotes and Select References:

[a] Environmental Protection Agency. (2012, Oct 22). Selected EPA-registered Disinfectants. Retrieved from http://www.epa.gov/oppad001/chemregindex.htm.

[b] Centers for Disease Control and Prevention. Guidelines for Environmental Infection Control in Health-Care Facilities. MMWR 2004;52(RR10):1-42.

For machines that are equipped with waste-handling option ports, see references below:

- Jochimsen EM, Frenette C, Delorme M, Arduino M, Aguero S, Carson L, Ismail J, Lapierre S, Czyzw E, Tokars JI, Jarvis WR. A cluster of bloodstream infections and pyrogenic reactions among hemodialysis patients traced to dialysis machine waste-handling option units. *Am J Nephrol* 1998; 18 (6): 485-9.
- Wang SA, Levine RB, Carson LA, Arduino MJ, Killer T, Girilo FG, Pearson ML, Jarvis WR. An outbreak of gram-negative bacteremia in hemodialysis patients traced to hemodialysis machine waste drain ports. *Infect Control Hosp Epidemiol* 1999; 20 (11): 746-51.
- CDC. Outbreaks of Gram-Negative Bacterial Bloodstream Infections Traced to Probable Contamination of Hemodialysis Machines -- Canada, 1995 United States, 1997; and Israel, 1997. *MMWR* 1998;47(03):55-5.

Environmental Surface Disinfection Audits

Ideally, perform 5 audits of staff performing hemodialysis station routine disinfection within the facility utilizing the audit tool in this section.

*Facility Name:*_____ *Observer:*_____

*Date:*_____ *Day: M W F Tu Th Sa* *Shift: 1st 2nd 3rd 4th* *Start time:*_____ *AM / PM*

Audit Tool: Hemodialysis station routine disinfection observations*

(Use a "√" if action performed correctly, a "Φ" if not performed/ performed incorrectly. If not observed, leave blank. All applicable actions within a row must have "√" for the procedure to be counted as successful.")

*This audit tool applies when there is no visible soil on surfaces at the dialysis station. If visible blood or other soil is present, surfaces must be cleaned prior to disinfection.

Discipline	All supplies removed from station and prime bucket emptied	Gloves removed, hand hygiene performed	Station is empty before disinfection initiated**	New clean gloves worn	Disinfectant applied to all surfaces and prime bucket	All surfaces are wet with disinfectant	All surfaces allowed to dry	Gloves removed, hand hygiene performed	No supplies or patient brought to station until disinfection complete

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

Duration of observation period: _____

Number of procedures performed correctly = _____

Total number of procedures observed during audit = _____

ADDITIONAL COMMENTS/OBSERVATIONS:

** Ensure the patient has left the dialysis station before disinfection is initiated.

Hand Hygiene

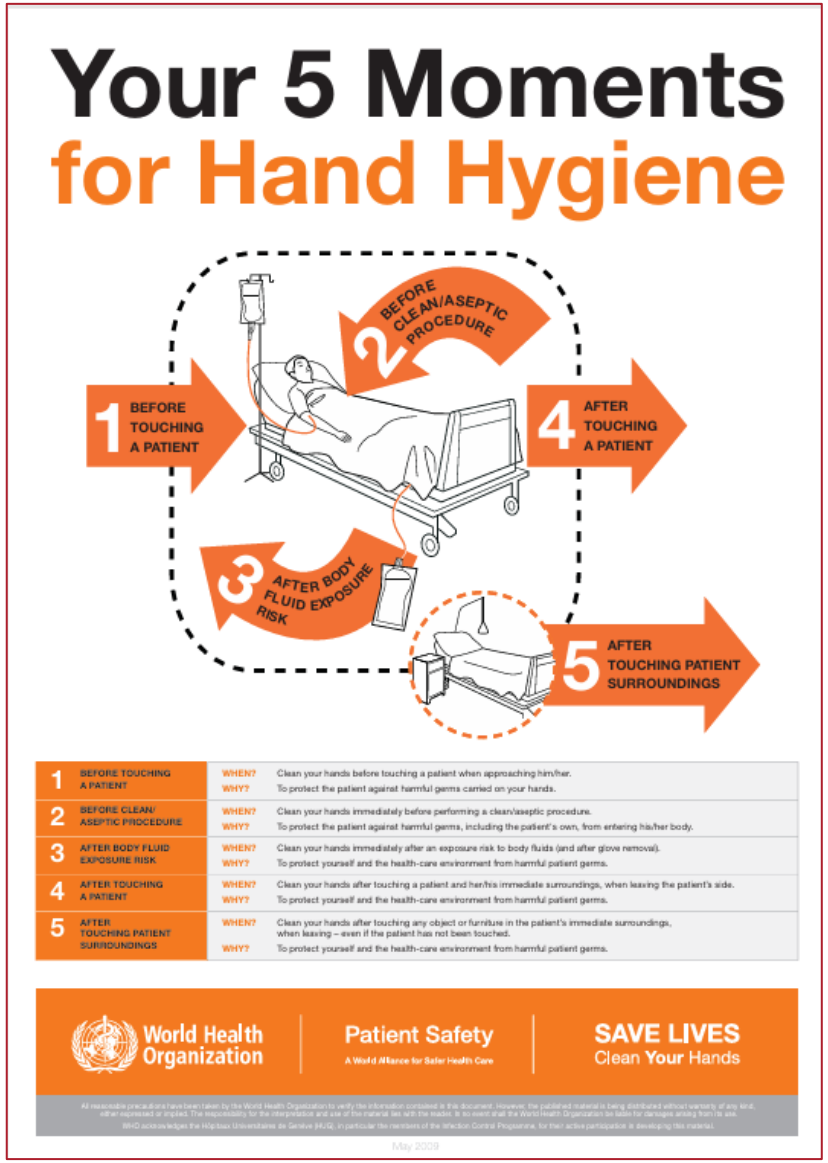
Patients and visitors

Clinical healthcare personnel

Ensure adequate supplies

Job-specific training

Auditing and feedback



Guide to Hand Hygiene Opportunities in Hemodialysis

Hand hygiene opportunity category	Specific examples
1. Prior to touching a patient	• Prior to entering station to provide care to patient • Prior to contact with vascular access site • Prior to adjusting or removing cannulation needles
2. Prior to aseptic procedures	• Prior to cannulation or accessing catheter • Prior to performing catheter site care • Prior to parenteral medication preparation • Prior to administering IV medications or infusions
3. After body fluid exposure risk	• After exposure to any blood or body fluids • After contact with other contaminated fluids (e.g., spent dialysate) • After handling used dialyzers, blood tubing, or prime buckets • After performing wound care or dressing changes
4. After touching a patient	• When leaving station after performing patient care • After removing gloves
5. After touching patient surroundings	• After touching dialysis machine • After touching other items within dialysis station • After using chairside computers for charting • When leaving station • After removing gloves

Please make note of the following during this session.	Yes	No	Comments
There is a sufficient supply of alcohol-based hand sanitizer			
There is a sufficient supply of soap at handwashing stations			
There is a sufficient supply of paper towels at handwashing stations			
There is visible and easy access to hand washing sinks or hand sanitizer			

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Division of Healthcare Quality Promotion

CDC

Part C. Hemodialysis Hand Hygiene – Audit of HCP Hand Hygiene Practices

Ideally, perform 10-12 audits of HCP performing hand hygiene within the facility utilizing the audit tool in this section.

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: Hemodialysis hand hygiene observations

(Use a "√" for each 'hand hygiene opportunity' observed. Under 'opportunity successful', use a "√" if successful, and leave blank if not successful)

Discipline	Hand hygiene		Describe any missed attempts (e.g., during medication prep, between patients, after contamination with blood, etc.):
	Hand hygiene opportunity	Opportunity successful	

Discipline: **P**=physician, **N**=nurse, **T**=technician, **S**=student, **D**=dietitian, **W**=social worker, **O**=other

Duration of observation period = _____ minutes Number of successful hand hygiene opportunities observed = _____

Total number of patients observed during audit = _____ Total number of hand hygiene opportunities observed during audit = _____

** See hand hygiene opportunities on back page

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[Audit Tool: Hemodialysis hand hygiene observations (cdc.gov)]

Hand Hygiene Audit Tools

NE ICAP

Personal Protective Equipment

Gowns

- Patient care when contact with blood and body fluids is anticipated.
- Worn during all dialysis to prevent soiling of clothes. Change if soiled with blood, body fluids, secretions, or excretions
- All staff or visitors who are present in the treatment area during initiation and termination of dialysis when risk of blood exposure is the highest.

Gloves

- Anticipate contact with blood, body fluids or other potentially infections materials
- Anytime when touching the patient equipment.
- Remove gloves after contact with a patient or surrounding.
- Never wear the same pair of gloves for care of more than one patient.

Face Shield or (Mask and Eye protection)

- During accessing or deaccessing HD access process (staff and patients)
- Dressing changes on central lines (staff and patients)

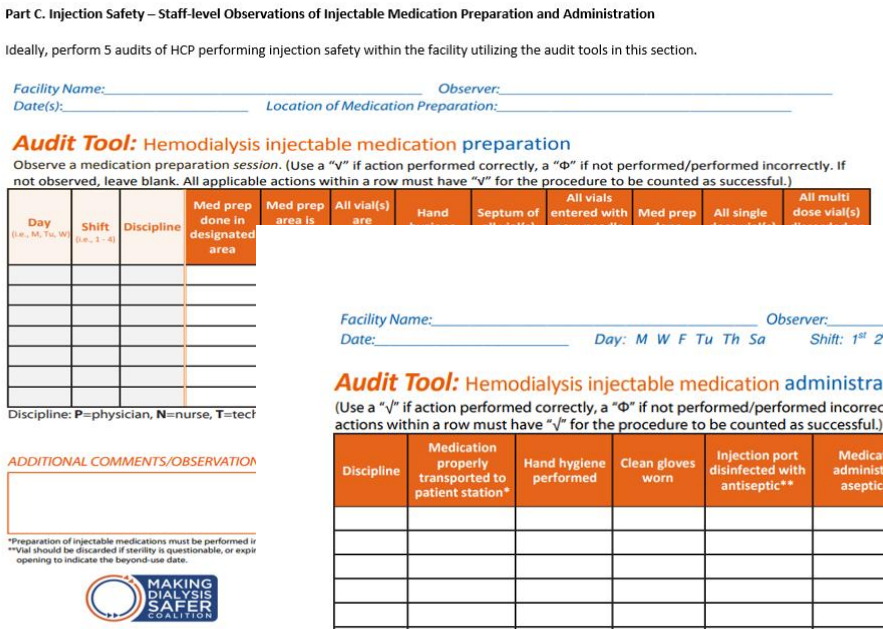
Injection Safety

- Injectable medication preparation location and practices.
- Needle stick policy, tracking, reporting
- Sharps disposal
- Controlled substances
- Auditing & Feedback practices
- Data Reporting
- Single use vials
- Multi-use vials
- Administration tubing and connectors

Injection Safety – Facility-level Observations

- Single use vials
- Multi-use vials
- Administration tubing and connectors
- Location of sharp containers to point of use
- Needles/cannulae with safety features

Preparation



Part C. Injection Safety – Staff-level Observations of Injectable Medication Preparation and Administration

Ideally, perform 5 audits of HCP performing injection safety within the facility utilizing the audit tools in this section.

*Facility Name:*_____ *Observer:*_____
*Date(s):*_____ *Location of Medication Preparation:*_____

Audit Tool: Hemodialysis injectable medication preparation

Observe a medication preparation *session*. (Use a "√" if action performed correctly, a "Φ" if not performed/performed incorrectly. If not observed, leave blank. All applicable actions within a row must have "√" for the procedure to be counted as successful.)

Day	Shift	Discipline	Med prep done in designated area	Med prep area is	All vial(s) are	Hand	Septum of	All vials entered with	Med prep	All single	All multi dose vial(s)

Discipline: **P**=physician, **N**=nurse, **T**=tech

ADDITIONAL COMMENTS/OBSERVATION

*Preparation of injectable medications must be performed i
**Vial should be discarded if sterility is questionable, or expir
opening to indicate the beyond-use date.

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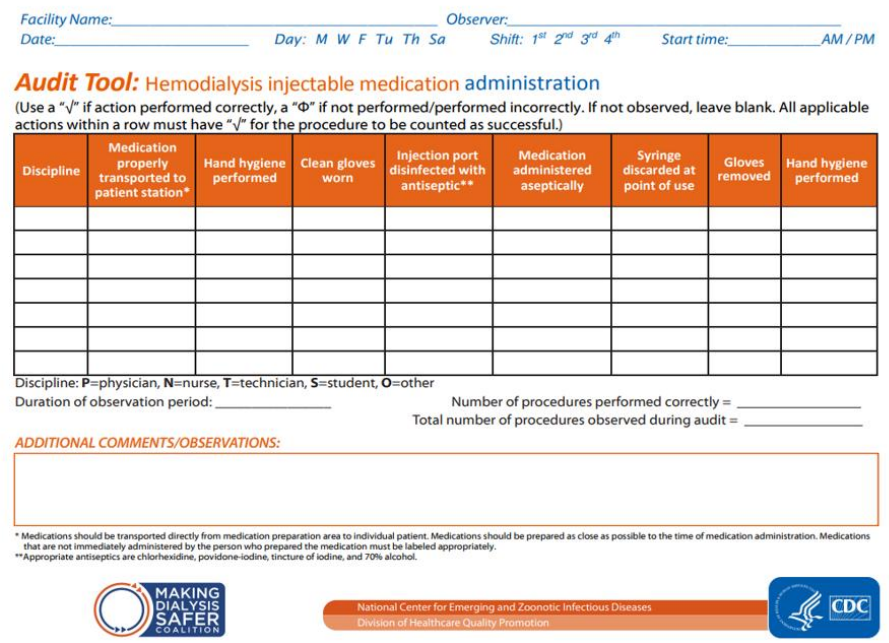
Administration



*Facility Name:*_____ *Observer:*_____
*Date:*_____ *Day:* M W F Tu Th Sa *Shift:* 1st 2nd 3rd 4th *Start time:*_____ AM / PM

Audit Tool: Hemodialysis injectable medication administration

(Use a "√" if action performed correctly, a "Φ" if not performed/performed incorrectly. If not observed, leave blank. All applicable actions within a row must have "√" for the procedure to be counted as successful.)

Discipline	Medication properly transported to patient station*	Hand hygiene performed	Clean gloves worn	Injection port disinfected with antiseptic**	Medication administered aseptically	Syringe discarded at point of use	Gloves removed	Hand hygiene performed

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

Duration of observation period: _____ Number of procedures performed correctly = _____
Total number of procedures observed during audit = _____

ADDITIONAL COMMENTS/OBSERVATIONS:

* Medications should be transported directly from medication preparation area to individual patient. Medications should be prepared as close as possible to the time of medication administration. Medications that are not immediately administered by the person who prepared the medication must be labeled appropriately.
**Appropriate antiseptics are chlorhexidine, povidone-iodine, tincture of iodine, and 70% alcohol.

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Respiratory Hygiene

- Early identification of potentially infectious individuals
- Appropriate management of symptomatic healthcare personnel
- Supportive sick leave and work restriction policies
- Respiratory hygiene and source control measures
- Respiratory protection program (fit testing, training, and PPE use)

People at Increased Risk for Severe Respiratory Illnesses | Respiratory Illnesses | CDC

Respiratory Hygiene/Cough Etiquette – Facility-level Observations

Signage posted at entrances (cover etiquette, notify staff if sick)

Facility provide supplies (hand hygiene, PPE) at entrances to patients, visitors, and staff

How are symptomatic patients separated

Storage of supplies

Dialysis and SARS-CoV-2 (COVID-19)

Key findings in the 2023 Annual Dialysis Report

- The incidence of **long COVID diagnosis was twice as high** among Medicare beneficiaries with CKD as among those without.
- Patients with ESRD and CKD were **less likely to receive treatment like remdesivir** than those without CKD.
- The HD population was hit particularly hard during the pandemic, to the extent that the prevalent **HD population decreased in 2021 for the second year in a row**.

https://usrds-adr.niddk.nih.gov/**2023**/chronic-kidney-disease/3-morbidity-and-mortality-in-patients-with-ckd

CDC COVID-19 Vaccine Guidance

- CDC (Nov. 2025) guidelines recommend that people 65 and older should get vaccine boosters.
- CDC recommends that everyone (age 6+ months) get an updated 2025–2026 COVID-19 vaccine.

Staying Up to Date with COVID-19 Vaccines | Covid | CDC

Water Exposure/Biomedical Practices

- Testing standards and regulations
- Biofilm development prevention
  - Wall boxes
  - Dialysis machines
  - Sinks
- HAI surveillance for water organisms
- Training/education/competency
- Auditing/Feedback
- Water plan for disruption

Water Standards

Action levels are set at 50% of the maximum allowable levels.

Reference Document	Allowable water Total Viable Count (TVC)	Action level water Total Viable Count (TVC)	Allowable Level water Endotoxin Unit (EU)	Action Level water Endotoxin Unit (EU)
AAMI RDS52-2004 (Minimum regulatory requirement)	**< 200**	**≥ 50**	**< 2**	**≥1**
ANSI/AAMI/ISO 135059: 2014 (Preferred recommendation)	**<100**	**≥ 50**	**≤0.25**	**≥0.125**

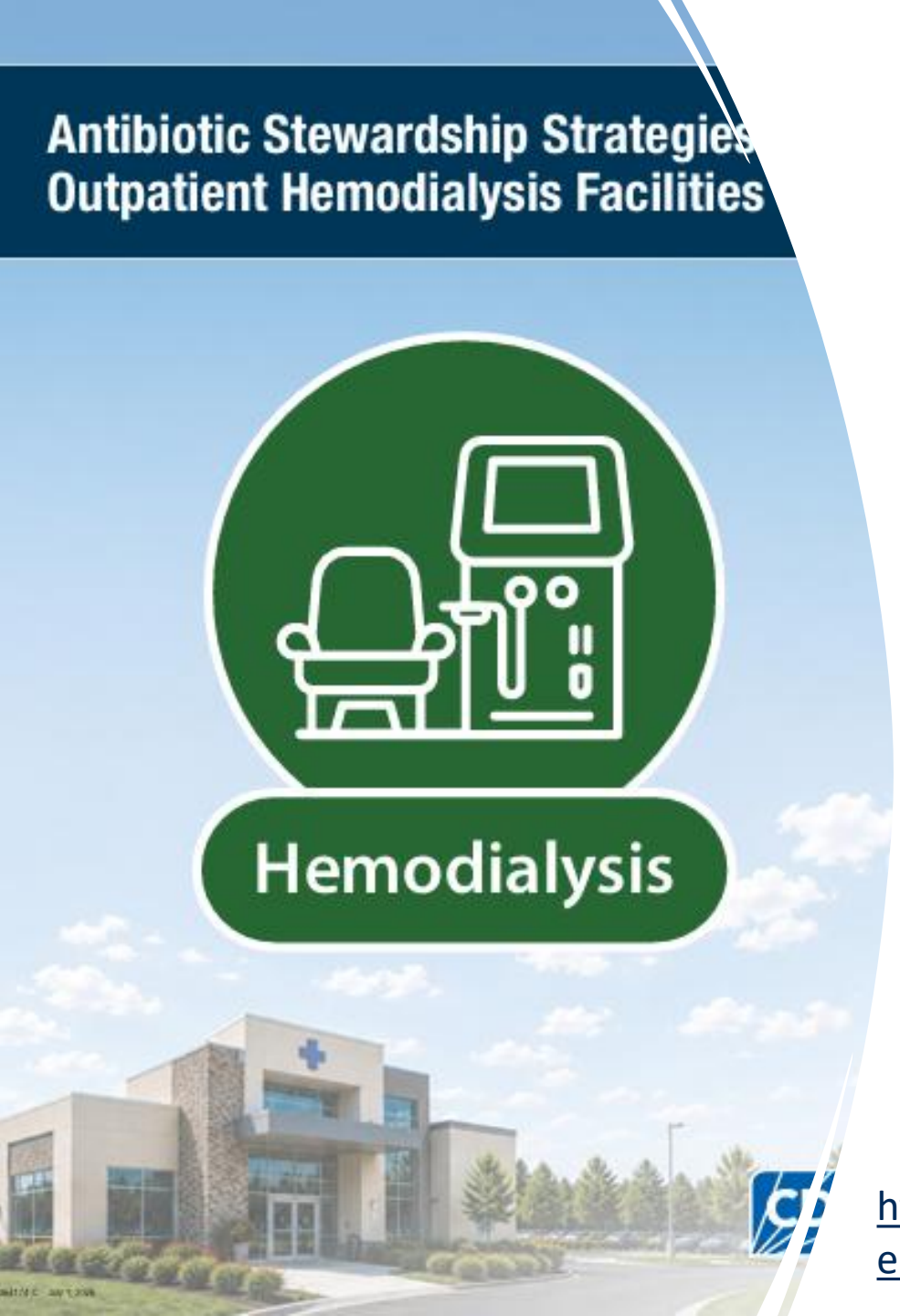
- **Association for Advancement of Medical Instrumentation (AAMI)** in conjunction with **International Standards Organization (ISO)** have established chemical and microbiological standards for water used in dialysis.
- Action levels may be different depending on the year the facility was built. (2004 minimum standard).
- Water rooms located in a secure location, accessible to authorized users only.

ANSI/AAMI/ISO 23500-2:2019; Preparation and quality management of fluids for haemodialysis and related therapies—Part 2: Water treatment equipment for haemodialysis applications and related therapies

Bedside/Portable Dialysis Machine

Bedside or Portable Hemodialysis

- Portable reverse osmosis (RO) water treatment-must meet the same AAMI standards
- Portable water sources include showers, sinks, or water boxes
- Waste may drain into a commode, shower drain, or water box drain-Ensure an air gap between tubing and water in either location. Tubing should be secured to prevent backflow, contact and splatter.



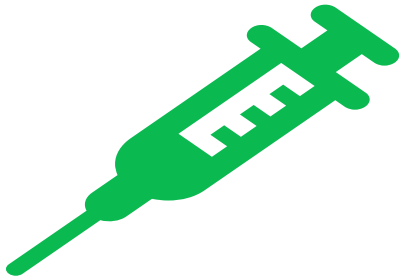
Antibiotic Stewardship

- Leadership **commitment** and **accountability**
- Stewardship **expertise**
- **Action**
  - Blood cultures
  - Antibiotic tracking
  - Culture reports
  - Training

https://www.cdc.gov/antibiotic-use/hcp/core-elements/outpatient-antibiotic-stewardship.html

Transmission Based Precautions (TBP)

Identification, Initiation, and Termination of TBP



Hepatitis B isolation Room

- Only used for Hepatitis B patient
- Dedicated machine and equipment

Interfacility communication

PPE use and supply

Hemodialysis in Acute-Care Settings. For patients with acute renal failure who receive hemodialysis in acute-care settings, Standard Precautions as applied in all health-care settings are sufficient to prevent transmission of bloodborne viruses. However, when chronic hemodialysis patients receive maintenance hemodialysis while hospitalized, infection control precautions specifically designed for chronic hemodialysis units should be applied to these patients. If both acute and chronic renal failure patients receive hemodialysis in the same unit, these infection control precautions should be applied to all patients.

HBV & Anti-HCV Seroconversions

Report	Report HBsAg-positive local health department
Review	Review all patients routine lab results to identify additional cases.
Perform	Perform additional testing.
Investigate	Investigate potential sources.

[MMWR Recommendations for Preventing Transmission of Infections Among Chronic Hemodialysis Patients]

Schedule for Routine Testing for Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) Infections

Patient Status	On Admission	Monthly	Semiannual	Annual
All patients	HBsAg,* Anti-HBc* (total), Anti-HBs,* Anti-HCV, ALT†			
HBV-susceptible, including nonresponders to vaccine		HBsAg		
Anti-HBs positive (≥10 mIU/mL), anti-HBc negative				Anti-HBs
Anti-HBs and anti-HBc positive		No additional HBV testing needed		
Anti-HCV negative		ALT	Anti-HCV	

* Results of HBV testing should be known before the patient begins dialysis.
† HBsAg=hepatitis B surface antigen; Anti-HBc=antibody to hepatitis B core antigen; Anti-HBs=antibody to hepatitis B surface antigen; Anti-HCV=antibody to hepatitis C virus; ALT=alanine aminotransferase.

TBP – Facility-level Observations

Hepatitis B isolation room
Separation of infectious patients (non-HBV)
PPE use and supply
Hand hygiene
Training/education/competency
Auditing/Feedback

Clinical Guidance and Quality Improvement Resources

National Kidney Foundation (NKF)):

- Provide clinical practice guidelines: Kidney Disease Outcomes Quality Indicators(KDOQI
- IPC education for physicians

Quality Insights: ESRD Networks 2, 3, 4, 5, 10, 11, 12

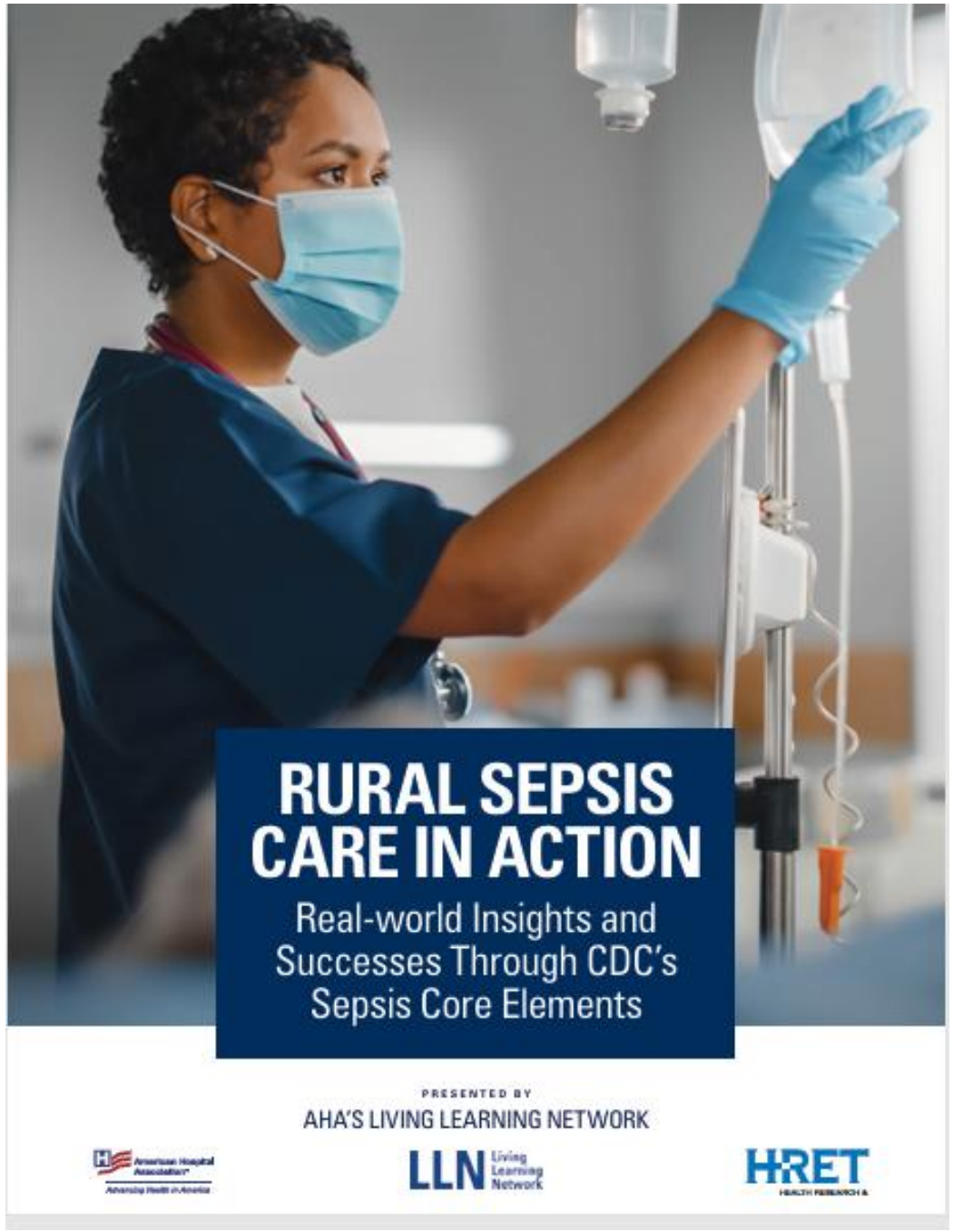
- Improve Access & Quality
- Support Data Systems
- ESRD Patient Registry
- Patient Engagement
- Technical Assistance
- Grievance Resolution

Dialysis Education

NE ICAP

References

- American Society of Nephrology:
  - NTDS: A Curriculum to Achieve Zero Preventable Infections - ASN Excellence in Patient Care (EPC)
  - NTDS Resource Library - ASN Excellence in Patient Care (EPC)
- CDC Dialysis Safety
  - Preventing Bloodstream Infections in People on Dialysis | VitalSigns | CDC
  - Guidelines & Recommendations: https://www.cdc.gov/dialysis-safety/hcp/recommendations-resources/index.html
  - Resources & Tools: Resources & Tools | Dialysis Safety | CDC
  - Outpatient Antibiotic Stewardship: Core Elements of Outpatient Antibiotic Stewardship | Antibiotic Prescribing and Use | CDC
  - Understanding NHSN for Home HD & Peritoneal Dialysis: June 2025 Dialysis Office Hours
  - Preventing Bloodstream Infections in People on Dialysis | VitalSigns | CDC
- NKF: https://www.kidney.org/professionals/guidelines/guidelines_commentaries/vascular-access
- Quality Insights:
  - 5 Diamond | Patient Safety Program
  - Newsletter | Quality Insights ESRD Networks
- United States Renal Data System (USRDS): United States Renal Data System - USRDS - NIDDK



Rural Sepsis Care in Action

Rural Sepsis Care in Action: Real-world Insights and Successes Through CDC's Sepsis Core Elements

- Practical strategies and tools to improve sepsis care delivery.
- Implementation approaches drawn from rural hospital experiences that show how change was achieved in practice.
- Key lessons and actionable insights to support adoption in rural healthcare settings

Medical Devices Graphic

Questions & Answer Session

- Please use the Q&A box in the webinar platform to type your question so it can be read aloud.
- If your question is not answered during the webinar or you need one-on-one help, call 402.552.2881 Monday to Friday, 8 a.m. to 4 p.m. CST, to speak with an Infection Preventionist.
- You can also email your question to nebraskaicap@nebraskamed.com

Slides & Webinar Recordings

- During the webinar: You can access the slides on the NE ICAP Hospital webpage
- After the webinar: The slides and the recording will be available under the Webinars tab on the Past Webinars and Slides page

Upcoming NE ICAP Webinars

- **Wednesday, September 9, 2026**
  - **12:00–1:00 PM (CST)**
  - **Select Infection Prevention and Control Topics:**

    FAQs and Brief Discussion

AdobeStock_355457822

- **Wednesday, October 14, 2026**
  - **12:00–1:00 PM (CST)**
  - **U.S. Antibiotic Awareness Week (USAAW) Promotion**

Infection Control Assessment & Response (ICAR) Visits

Surgical Site Infection Prevention

Sterilization

Safe Injection Practices

Environmental Cleaning & Disinfection

Hand Hygiene

High-Level Disinfection

Point of Care Blood Testing

Laundry

PPE & Standard Precautions

Indwelling Devices (e.g. CAUTI, CABSI)

Wound Care

Water Management

Transmission -Based Precautions

ICAP Contact Information

Call 402-552-2881

Business Hours are Monday – Friday
8:00 AM - 4:00 PM Central Time

Scan the QR Code to open the NE ICAP Contact Form.
Through this form, you can:

- **Request to connect with an Infection Preventionist who specializes in your area**
- **Join our setting-specific communication lists for webinar and training updates**
- **Sign up for newsletters and reminders**
- **Request an ICAR visit for your facility**

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DEPT. OF HEALTH AND HUMAN SERVICES

Webinar CE Process

1 Nursing Contact Hour is awarded by Nebraska ICAP

- Nebraska Infection Control Assessment and Promotion Program is approved as a provider of nursing continuing professional development by the VTL Center for Professional Development, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.

CNE Nursing Contact Hours:

- Completion of survey is required.
- The survey must be completed by the individual earning the credit, only one person per survey.
- Survey functionality is lost on mobile devices.
- One certificate is issued quarterly for all webinars attended.
- Certificate comes directly from ICAP via email.