# INFECTION PREVENTION ICAR'S

# IN THE DIALYSIS SETTING


DEVELOPED BY:

NC STATEWIDE PROGRAM FOR INFECTION CONTROL AND EPIDEMIOLOGY (SPICE)

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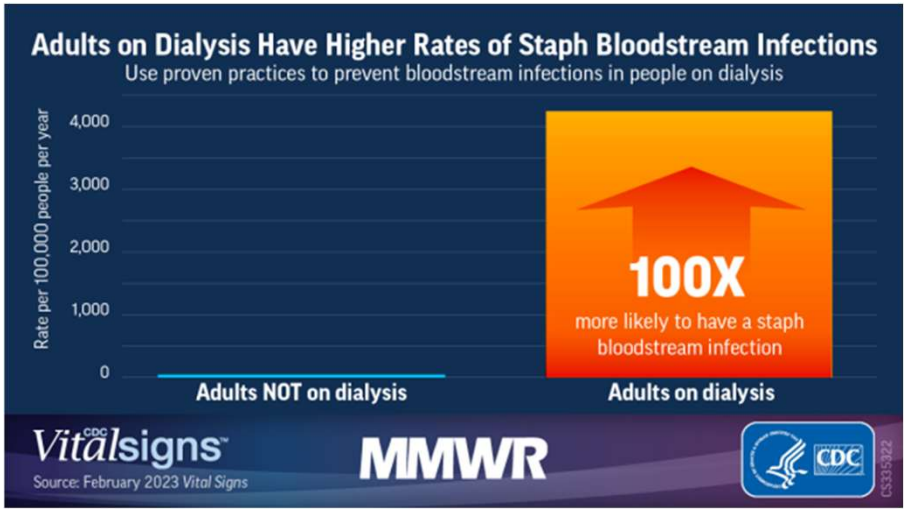
# EPIDEMIOLOGY OF DIALYSIS INFECTIONS

- According to the US Renal Data System 2020 Annual Data Report:
  - Nearly 808,000 people are living with end-stage renal disease (ESRD)
  - 69% are on dialysis
    - 89% hemodialysis
    - 11% peritoneal
  - 31% have had a kidney transplant

# EPIDEMIOLOGY OF DIALYSIS INFECTIONS

Infections are a leading cause of morbidity and mortality

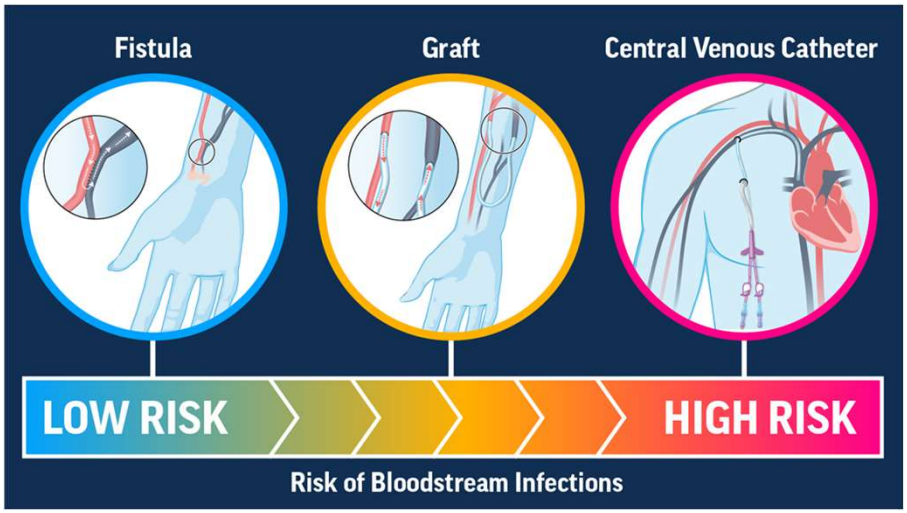
- *S. aureus* most common in patients reported to NHSN



# FACTORS INCREASING RISK OF INFECTION

- Underlying medical problems (e.g., diabetes, high blood pressure)
- Weaken immune system
- Frequent healthcare exposure (inpatient and outpatient care)
- Frequent use of catheters or insertion needles for access to the bloodstream

# INFECTIONS IN DIALYSIS PATIENTS




- Catheter use: Vascular access type is the major risk factor for bloodstream infections regardless of race, ethnicity, or socioeconomic status.

# PATIENT SAFETY

**PART 494 CONDITIONS FOR COVERAGE FOR END-STAGE RENAL DISEASE FACILITIES**
**Interpretive Guidance**



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# ESRD SURVEY PROCESS

## Outline of ESRD Core Survey Process

**▲Presurvey Preparation:**

- ➢ ***Review most current dialysis facility report following ESRD Core Survey Data Worksheet guidance; note how facility is ranked on the State Profile/Outcomes list***
- ➢ ***Review facility complaint & survey history***
- ➢ ***Copy Entrance Conference Materials/Clinical Outcomes Tables from Data Worksheet***
- ➢ ***Contact the ESRD Network about quality concerns***

**Introductions**: ***Contact the person in charge; explain purpose of the survey; present them w/ Entrance Conference Materials/Clinical Outcomes Tables to complete & return w/in 3 hours***

**Environmental "Flash" Tour**: ***Observe 4 patient-related areas listed; ASK staff about the facility "culture of safety" in all 4 areas:***

- ➢ **In-center dialysis patient treatment area:** ***Observe 25% (min 3) occupied dialysis stations including the patients, their vascular accesses & surroundings of the stations; check availability & functionality of emergency equipment*** **Triggers:**
- Dummy drip chambers present in treatment area (V400, 403)
- Vascular accesses covered, not consistently uncovered/corrected by staff (V407)
- No RN on duty (V759)
- Evidence of poor staffing to meet patients' needs (V757)
- Blood spills not cleaned up; equip &/or surfaces spattered with blood (V122)
- HD machine transducer protectors wetted with blood not changed (V120)
- Insufficient space to prevent cross-contamination & use emergency equip (V404)
- No functional AED/defibrillator, oxygen, suction, emergency medications, Ambu bag (V413); insufficient or unavailable emergency evacuation supplies (V415)
- Hemodialysis machines in observed poor repair (V403)
- If dialyzer reuse, noticeable germicide odors (V318)
- Disrespectful communication or actions toward patients (V452, 627)
- Failure to offer patients privacy & confidentiality (V454)

- ➢ **Water treatment/dialysate preparation area:** ***Observe carbon system, chlorine testing equip & reagents, current total chlorine test, RO & DI monitoring & dialysate proportioning ratios***

**Triggers:**

- Carbon system: absence of 2 or more carbon tanks w/sampling port between (V192) ○ Current total chlorine test not done, reagents not sensitive to 0.1mg/L, expired or don't match testing equip (V196)
- RO: absence of functioning H2O quality monitor & audible alarm in tx area (V200)
- If DI present: absence of functioning resistivity monitor & alarm visible & audible in tx area, absence of automatic divert-to-drain or stop valve, DI not monitored 2x/d (V202, 203)
- Water distribution equip in observable disrepair or contaminated state (V403)
- Acid & bicarb concentrates of different proportioning ratios present (V249)
- Acid or bicarb mixing &distribution equip in disrepair or contaminated state (V403)

- ➢ **Reuse room:** ***Observe condition of equip, dialyzer storage & dialyzer refrigerator, if present***

**Triggers:**

- Stored dialyzers aesthetically unacceptable (V343); not protected from unauth access (V321)
- Dialyzers not stored w/n germicide manufacturer's temperature range (V345)
- Reprocessing room or equip in observable disrepair (V318, 403)
- Dirty dialyzers kept at room temp >2 hrs; dialyzer refrigerator temp not monitored (V331)

- ➢ **Home dialysis training area:** ***Observe the physical environment, infection control, availability of emergency equipment & method for summoning immediate assistance***

**Triggers:**

- Insufficient space to prevent cross-contamination between patients (V404)
- Insufficient patient privacy (V406)
- Blood /PD effluent spills not cleaned; equip or surfaces visibly spattered (V122)
- Absence of functional immediately available emergency resuscitation equipment (V413) • No method for summoning immediate assistance (V402) **Triggers for extending the tour to other areas:**
- Evidence of serious lack of environmental maintenance w/ potential to impact pt. safety, e.g., large areas of water damage, mold, uneven floor surfaces in pt.-related areas; (V401, 402)

**▲Entrance Conference:** ***with the facility administrative person***

- ➢ ***Obtain & Review current facility information/outcomes on completed Entrance Conference Materials/Clinical Outcomes Tables***
- ➢ ***Explain purpose & timeline of survey; Ask questions from "Entrance Conference Questions"***
- ➢ ***Compare the current facility outcomes in "% of (HD or PD) Pts with" column of Clinical Outcomes Tables with applicable "US Thresholds" in Clinical Outcomes Threshold Table in current FY ESRD Core Survey Data Worksheet***
- ➢ ***Discuss concerns & areas from DFR that have improved with the administrative person***
- ➢ ***Determine the data-driven focus areas for survey clinical care reviews (areas where national thresholds not met &need for improvement is indicated)***

**▲Observations of Hemodialysis Care & Infection Control Practices:**

- ➢ ***Observe direct care staff delivering care to HD patients using observational checklists for:***
  - Initiation of hemodialysis w/central venous catheter (CVC)
  - CVC exit site care
  - Discontinuation of hemodialysis & post-dialysis care of CVC
  - Initiation of hemodialysis w/AVF or AVG
  - Discontinuation of hemodialysis w/AVF or AVG
  - Cleaning & disinfection of the dialysis station between patients
  - Preparation of the dialysis machine & extracorporeal circuit
  - Dialysis supply management
  - Medication preparation & administration **Triggers:**
- Observed trends of breaches in infection control patient care practices: ○ Poor hand hygiene & glove use practices (V113) ○ Supplies taken to station not disposed, disinfected or dedicated (V116) ○ Clean dialysis supplies not protected from potential

# SURVEY OBSERVATIONS

- Initiation of hemodialysis w/ central venous catheter (CVC)
- CVC exit site care
- Discontinuation of  hemodialysis & Post-dialysis care of CVC
- Initiation of hemodialysis w/AVF or AVG
- Discontinuation of hemodialysis w/AVF or AVG
- Cleaning and disinfection of the dialysis station between patients
- Preparation of the dialysis machine and the extracorporeal circuit
- Dialysis supply management
- Medication preparation and administration

# TOP BREACHES IN INFECTION PREVENTION

## OVERALL FINDINGS

- Poor hand hygiene and glove use practices (V113)
- Supplies take to station not disposed, disinfected or dedicated (V116)
- Clean dialysis supplies not protected from potential contamination (V119)
- Breaches in aseptic practices for CVC (V147) or AVF/AVG care (V550)
- Not adequately disinfection the HD station/equipment between patients (V122)
- Use of dummy drip chamber to set up HD machine for treatment (V400,403)

## TOP FINDINGS

- V113
- V122
- V147

# CORE STRATEGIES TO REDUCE DIALYSIS BLOODSTREAM INFECTIONS

- Conduct monthly surveillance
- Perform observations of hand hygiene opportunities and share results
- Catheter/vascular access care observations
- Staff education and competency
- Patient education/engagement
- Catheter reduction
- Chlorhexidine for skin antisepsis
- Catheter hub disinfection
- Antimicrobial ointment

# 2016 UPDATE-2001 CDC HEMODIALYSIS RECOMMENDATIONS

- Some information and recommendations in the 2001 Guideline have been superseded by information that has led to more recent CDC recommendations. These topics include but are not limited to:
  - Testing for hepatitis C virus (HCV)
  - Testing for human immunodeficiency virus (HIV) infection
  - Standard precautions in healthcare settings
- CDC recommendations and information issued after 2001 address some topics not included in the 2001 Guideline
  - Preventing hemodialysis catheter-related infections
  - Screening patients for latent tuberculosis infection
  - Recommended vaccinations for some vaccine-preventable diseases

# INFECTION PREVENTION CONTROL PRECAUTIONS

## Perform Hand Hygiene:

- Before you touch a patient
- Before you inject or infuse a medication
- Before you cannulate a fistula/graft or access a catheter
- After you touch a patient
- After you touch blood, body fluid, mucous membranes, wound dressings, or dialysis fluids (e.g., spent dialysate)
- After you touch medical equipment or other items at the dialysis station
- After you remove gloves
- **ALWAYS**- between each patient **AND/OR** between each patient stations.

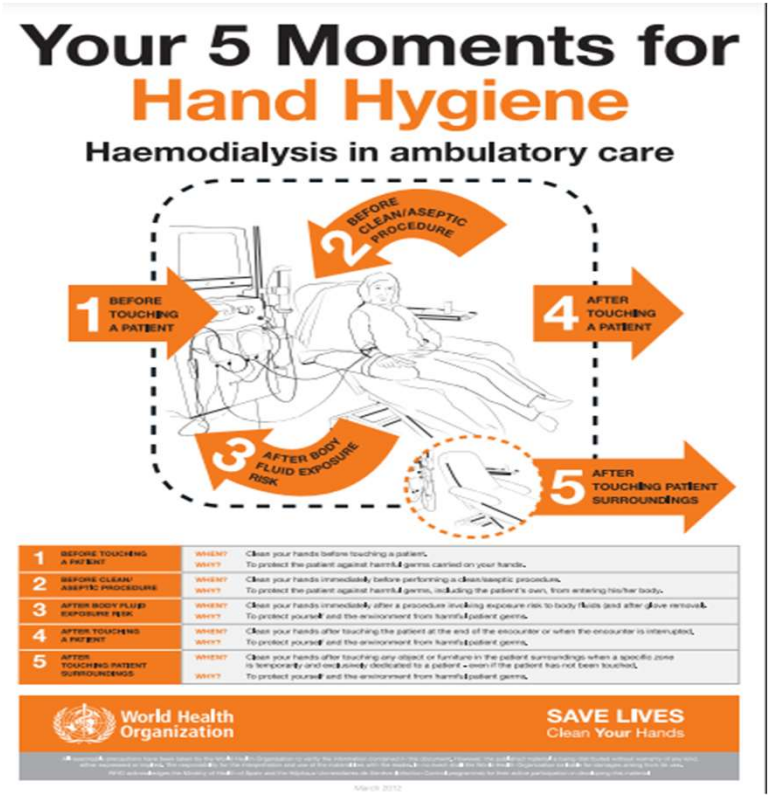
# ESTIMATED MINIMUM NUMBER OF TIMES WHERE HAND HYGIENE IS REQUIRED PER DIALYSIS SESSION PER PATIENT (REGARDLESS OF GLOVE USE)

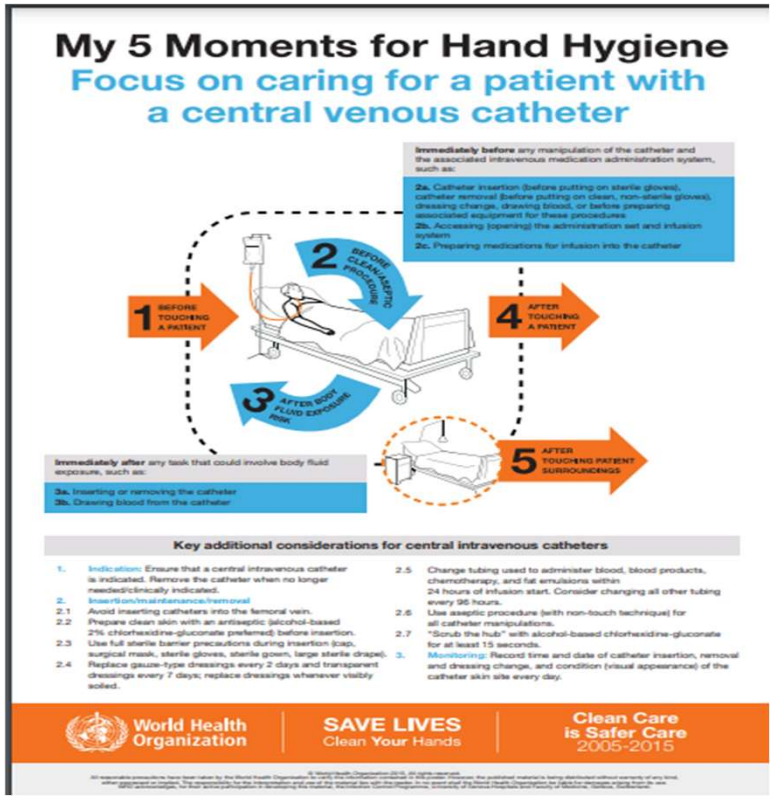
Table 1

Estimated minimum number of times where hand hygiene is required per dialysis session per patient (regardless of glove use)

| SN | Activity | Before | After | Total | | |
|---|---|---|---|---|---|---|
| 1 | Accessing supplies from common clean storage area | | | 1 | – | 1 |
| 2 | Preparing/setting-up the HD machine | | * | 1 | 1 | |
| 3 | Preparing/administering medications (including for anticoagulation) | | | 1 | 1 | 2 |
| 4 | Pre-dialysis: measuring vital signs/weighing | | * | 1 | 1 | |
| 5 | Preparing trolley/tray for cannulation | | * | 1 | 1 | |
| 6 | Palpating clean cannulation sites | | * | 1 | 1 | |
| 7 | Skin preparation & cannulation of arteriovenous access (AVF, AVG) | | | * | 1 | 1 |
| 8 | Preparing trolley for catheter dressing† | | * | 1 | 1 | |
| 9 | Removing old dressing over catheter site† | | – | 1 | 1 | |
| 10 | Catheter exit site dressing† | | * | 1 | 1 | |
| 11 | Connection for HD | 1 | 1 | 2 | | |
| 12 | Handling blood samples and other specimens | | – | 1 | Minimum 1 | |
| 13 | Checking blood pressure (every 1/2–1 hour for 4 hours) | | | 1 | 1 | Minimum 8 |
| 14 | Catheter/blood line manipulation | | 1 | 1 | Minimum 2 | |
| 15 | Adjusting machine parameters and/or attending machine alarms | | | – | 1 | Minimum 1 |
| 16 | Attending to patient incidents/assisting patient | | 1 | 1 | Minimum 2 | |
| 17 | Prepare trolley for dialysis disconnection | | 1 | – | 1 | |
| 18 | Disconnection of HD | 1 | 1 | 2 | | |
| 19 | Post-dialysis: measuring vital signs/weighing | | * | 1 | 1 | |
| 20 | Cleaning/disinfection of dialysis equipment | | * | 1 | 1 | |
| 21 | Leaving the dialysis unit | 1 | – | 1 | | |
| Total estimated minimum number of times hand hygiene is required per dialysis per patient | | | | | | ~30 |

# WHO HAND HYGIENE



# PPE

- Eye protection should be worn any time the circuit is open, during access/deaccess, medication administration
- Gloves should be worn and changed frequently during all care, and anytime the machine is touched
- Masks should be worn during CL access/deaccess, exit site care

# PERSONAL PROTECTIVE EQUIPMENT

- Wear gowns, face shields, eye wear, or masks when performing procedures during which spurting or spattering of blood might occur:
  - During initiation and termination of dialysis,
  - During cleaning of dialyzers, and
  - Centrifugation of blood
- Change PPE if it becomes soiled
- Procedure for cover jackets based on manufacture instructions for use. Cover jackets may be worn to protect staff clothing when no soilage is anticipated these may be worn between patients and can be stored for the duration of the workday and disposed of at the end of shift. (Ensure IFU for cover jacket supports process)

# INFECTION PREVENTION CONTROL PRECAUTIONS

Wear disposable gloves when caring for the patient or touching the patient's environment at the dialysis station; remove and wash hands between each patient or station

Items taken into the dialysis station should either be:

- Disposed of
- Dedicated for use only on a single patient
- Cleaned and disinfected before being taken to a common clean area or used on another patient
  - Non disposable items that cannot be cleaned and disinfected (e.g., adhesive tape, cloth-covered blood pressure cuffs) should be dedicated for single patient use only

# INFECTION PREVENTION CONTROL PRECAUTIONS

- Unused medications including multiple dose vials or supplies (e.g., syringes, alcohol swabs) taken to the patient's station should be used only for that patient and should not be returned to a common clean area or used on another patient.

- Additional measure to prevent contamination of clean/sterile items:
  - Prepare medications in a room/area separated from treatment area and designated only for medications
  - Do not handle/store contaminated/used supplies in areas where medicine/clean supplies are handled
  - Deliver medications separately to each patient
  - Medications labeled as single use (including erythropoietin) should not be punctured more than one time

# CLEANING AND DISINFECTION: DIALYSIS STATION

- Routine cleaning and disinfection of the dialysis station will reduce the risk of spreading an infection
- Cleaning is done using cleaning detergent, water and friction, and is intended to remove blood, body fluids, and other contaminants from objects and surfaces
- Disinfection is a process that kills many or all remaining infection-causing germs on clean objects and surfaces
- Use an EPA-registered hospital disinfectant and follow label instructions for proper dilution
- Wear gloves during the cleaning/disinfection process

# CLEANING AND DISINFECTION: DIALYSIS STATION

- All equipment and surfaces are considered contaminated after a dialysis session and must be disinfected
- **After the patient leaves the station**, disinfect the dialysis station (including chairs, trays, countertops, and machines)
- Wipe all surfaces – Surfaces should be wet with disinfectant and allowed to air dry
- Give special attention to cleaning control panels on the dialysis machines and other commonly touched surfaces
- Empty and disinfect all surfaces of prime waste containers

**TABLE 2. Disinfection procedures recommended for commonly used items or surfaces in hemodialysis units**

| Item or Surface | Low-Level Disinfection* | Intermediate-Level Disinfection* |
|---|---|---|
| Gross blood spills or items contaminated with visible blood | | X |
| Hemodialyzer port caps | | X |
| Interior pathways of dialysis machine | | X |
| Water treatment and distribution system | X | X[†] |
| Scissors, hemostats, clamps, blood pressure cuffs, stethoscopes | X | X[§] |
| Environmental surfaces, including exterior surfaces of hemodialysis machines | X | |

* Careful mechanical cleaning to remove debris should always be done before disinfection.

† Water treatment and distribution systems of dialysis fluid concentrates require more extensive disinfection if significant biofilm is present within the system.

§ If item is visibly contaminated with blood, use a tuberculocidal disinfectant.

- Establish and monitor cleaning logs for each machine
- • External after each patient with station cleaning
- • Follow Manufacturer Instructions for Use for frequency and compatible disinfection products
- • Internal pathways may be disinfected after each patient or at the end of each day
- • A separate disinfection step may take place weekly
- • Bleach should be used at least weekly
- • For HBV+ patients, disinfect after each patient
- • If blood leak occurs, disinfect before use

# CDC DIALYSIS DISINFECTION CHECKLIST

## *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

### Important Notes:

[1] Necessary supplies may include, but are not limited to: leak-proof disposal containers, gloves and other appropriate personal protective equipment (PPE), properly diluted Environmental Protection Agency (EPA)-registered hospital disinfectant, and wipes/clothes.

[2] If used dialyzers and blood tubing are transported out of the station before being discarded, they should be transported in a manner that prevents any leakage.

[3] Perform this step if machine is equipped with a bucket for prime waste. If waste-handling option (WHO) ports are used, separate steps for disinfection are required and are not described here (follow manufacturer's instructions).

[4] Patients should not be removed from the station until they have completed treatment and are clinically stable. If a patient cannot be moved safely, routine 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.

[5] Disposal/removal of used supplies may occur before and/or after the patient has departed the station.

[6] Follow the manufacturer's label instructions for proper dilution, preparation, and use of the disinfectant.

[7] Surfaces to disinfect include but are not necessarily limited to: all surfaces in contact with the patient (e.g., dialysis chair, tray tables, blood pressure cuffs) and frequently contacted by healthcare personnel (e.g., control panel; top, front and sides of dialysis machine; touchscreens; countertops; computer keyboards).

[8] Air-drying is recommended to allow for sufficient contact time with the disinfecting agent.

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# CDC GUIDANCE FOR DISINFECTION

## 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, Czyziw 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, Killar T, Grillo 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.

# CDC DISINFECTION AUDIT TOOL

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 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
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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.

MAKING DIALYSIS SAFER COALITION

National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

CDC

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# WALL BOXES

- Wall box cleaning and disinfection process should be included in daily cleaning logs and support IFU.
- Facility should include wall boxes on regular preventive maintenance checks and include in water management safety plan.
- Hand hygiene – should be preformed after any contact with the wall box

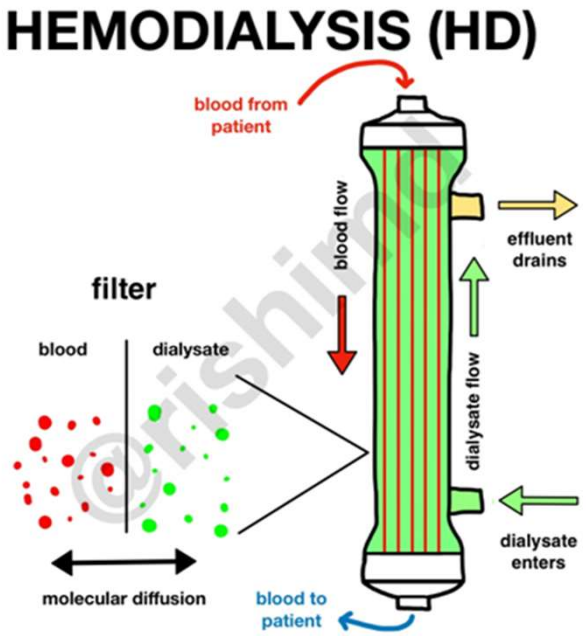
- Educate staff on the risks associated with wall boxes and practices to prevent wall box-related infections
- Ensure high touch surfaces (e.g., connections for acid, bicarbonate, and reverse osmosis water) are disinfected.
- Wipes or other supplies used to disinfect the wall box should be discarded after use and not used to disinfect other surfaces in the dialysis station.
- More than one disinfectant wipe or application may be needed to ensure all wall box surfaces are visibly wet with disinfectant to achieve contact time specified by the manufacturer

- https://www.cdc.gov/dialysis/guidelines/wall-boxes.html

# DIALYZERS

Reuse of dialyzers

- The dialyzer may either be discarded after each treatment or be reused
- Reuse requires an extensive procedure of high-level disinfection
- Reused dialyzers are not shared between patients.
- There was an initial controversy about whether reusing dialyzers worsened patient outcomes. The consensus today is that reuse of dialyzers, done carefully and properly, produces similar outcomes to single use of dialyzers.



# HEPATITIS B VIRUS (HBV)

- Routine testing

| 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.

# HEPATITIS B VIRUS (HBV)

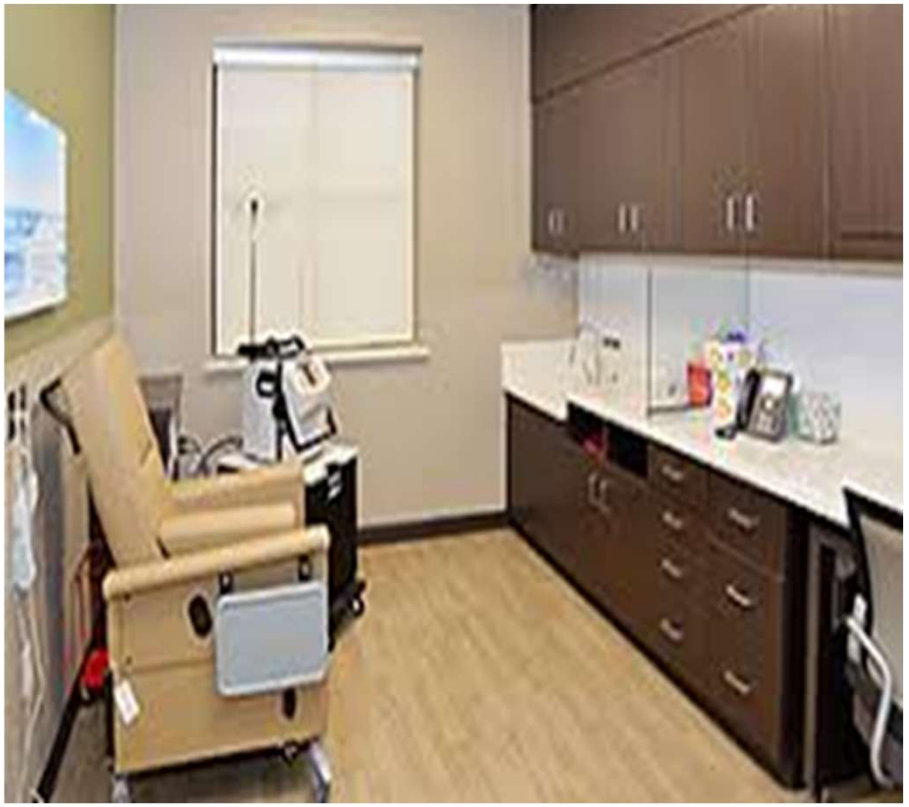
**Hepatitis B Vaccination**

- Vaccinate all susceptible patients against hepatitis B.
- Test for anti-HBs 1-2 months after last dose.
  - If anti-HBs is <10 mIU/mL, consider patient susceptible, revaccinate with an additional three doses, and retest for anti-HBs.
  - If anti-HBs is ≥10 mIU/mL, consider patient immune, and retest annually.
    - Give booster dose of vaccine if anti-HBs declines to <10 mIU/mL and continue to retest annually.

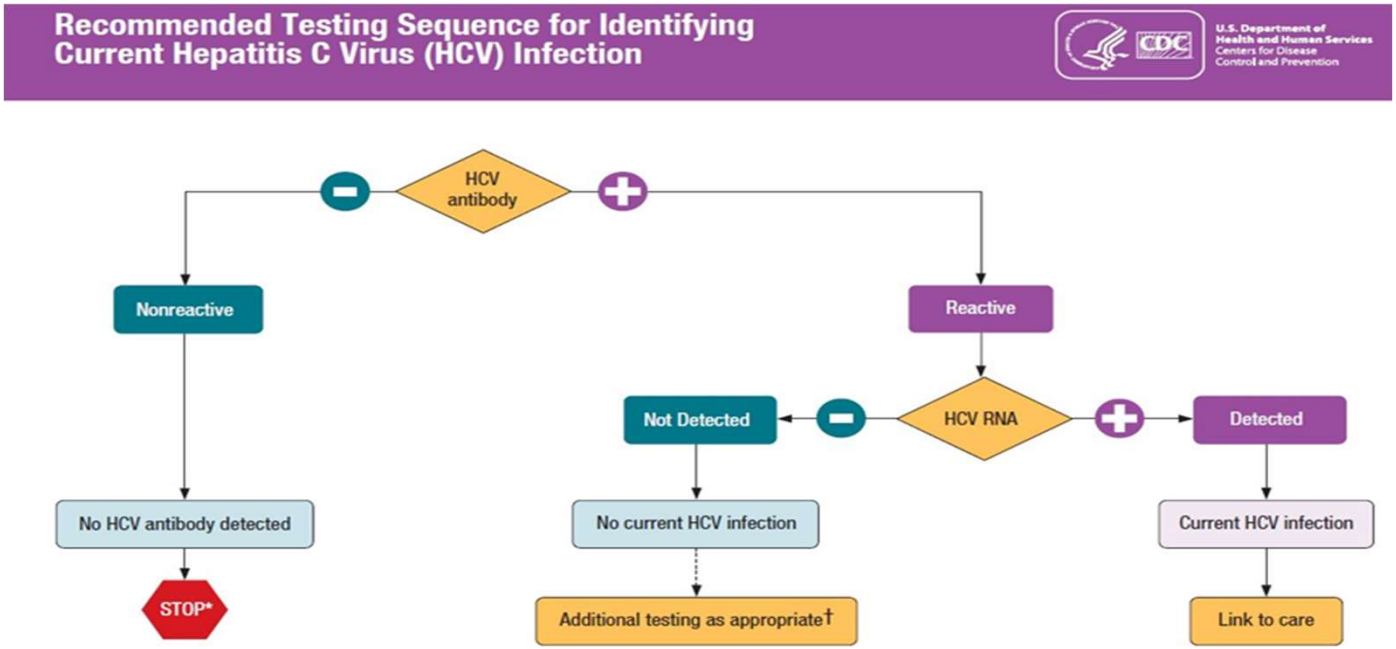
- Hepatitis B Vaccination

# PREVENTION HEPATITIS B TRANSMISSION

- Dialyze hepatitis B (HBsAg+) patients in a separate room using separate machines, equipment, instruments, and supplies – Be sure to use a separate gown when treating these patients
  - HBsAg+ means hepatitis B surface antigen (a lab test for hepatitis B virus) was positive
- Staff members caring for patients with hepatitis B (HBsAg+) should not care for HBV-susceptible patients at the same time (e.g., during the same shift or during patient change over)
  - HBV-susceptible means anyone who has never been infected and lacks immunity to hepatitis B virus



# HEPATITIS C VIRUS (HCV)-TESTING




* For persons who might have been exposed to HCV within the past 6 months, testing for HCV RNA or follow-up testing for HCV antibody is recommended. For persons who are immunocompromised, testing for HCV RNA can be considered.

† To differentiate past, resolved HCV infection from biologic false positivity for HCV antibody, testing with another HCV antibody assay can be considered. Repeat HCV RNA testing if the person tested is suspected to have had HCV exposure within the past 6 months or has clinical evidence of HCV disease, or if there is concern regarding the handling or storage of the test specimen.

*Source: CDC. Testing for HCV infection: An update of guidance for clinicians and laboratorians. MMWR 2013;62(18).*

# PREVENTING BACTERIAL, RESPIRATORY INFECTION TRANSMISSION

- Hemodialysis patients at increased risk for spreading germs to other patients include those with:
  - An infected skin wound with drainage that is not contained by dressings
  - Fecal incontinence or uncontrolled diarrhea
- For these patients use the following precautions:
  - Wear a gown and gloves when caring for the patient and remove the gown and gloves when finished caring for that patient
  - Do not wear the same gown when caring for other patients
  - Dialyze patient at a station with as few adjacent stations as possible (e.g., at the end or corner of the room)
- Patients with respiratory illness and a fever are at risk of spreading viral infections
  - These patients should be dialyzed at least 6 feet away from other patient stations or any shared supplies

# EDUCATING PATIENTS AND CAREGIVERS

- When a new patient starts dialysis and on an annual basis, review the following:
  - Personal hygiene and hand hygiene technique
  - Patient responsibility for proper care of the access site and recognition of signs of infection
  - Recommended vaccinations (including hepatitis B, influenza, and pneumococcal)
  - Reasons for selecting a fistula or graft over a catheter to lower the risk of infection

- Advise patients to inform you if they notice any of the following possible signs of infection:
- Fever
- The access site is:
- swollen (bulging),
- red,
- warm to touch,
- has pus, or
- severe pain at the access site
- Remember: infections of the vascular access site can be life threatening

# FISTULA AND GRAFT CARE CANNULATION AND DECANNULATION

## *Checklist:* Arteriovenous fistula/ graft cannulation

- [ ] Clean site with soap and water
- [ ] Perform hand hygiene (staff)
- [ ] Put on new, clean gloves
- [ ] Apply skin antiseptic and allow it to dry
- [ ] Do not contact site (after antisepsis)
- [ ] Insert needles aseptically
- [ ] Connect to blood lines aseptically
- [ ] Remove gloves
- [ ] Perform hand hygiene

## *Checklist:* Arteriovenous fistula/ graft decannulation

- [ ] Perform hand hygiene (staff)
- [ ] Put on new, clean gloves
- [ ] Disconnect from blood lines aseptically
- [ ] Remove needles aseptically and activate needle retraction device
- [ ] Clean gloves worn (patient and/or staff) to compress site
- [ ] Apply clean gauze/bandage to site
- [ ] Remove gloves (staff and/or patient)
- [ ] Perform hand hygiene (staff and/or patient)

# HEMODIALYSIS CATHETER CONNECTION AND DISCONNECTION

## *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

## *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

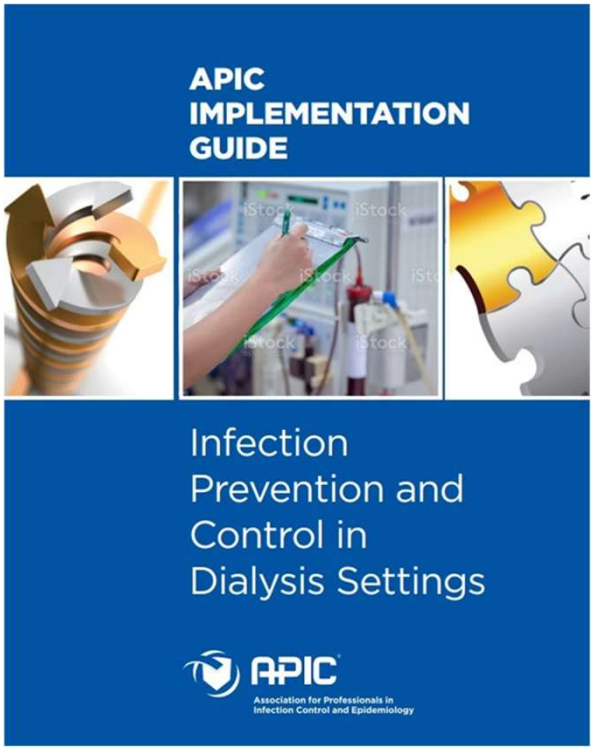
# HEMODIALYSIS CENTRAL VENOUS CATHETER EXIT SITE CARE

## *Checklist:* Hemodialysis catheter exit site care

- [ ] Wear mask (if required) and remove dressing
- [ ] Perform hand hygiene
- [ ] Put on new, clean gloves
- [ ] Apply skin antiseptic
- [ ] Allow skin antiseptic to dry
- [ ] Do not contact exit site (after antisepsis)
- [ ] Apply antimicrobial ointment*
- [ ] Apply dressing aseptically
- [ ] Remove gloves
- [ ] Perform hand hygiene

* Use an ointment that does not interact with catheter material

# APIC RESOURCES



# AHRQ ESRD DIALYSIS RESOURCES

- ESRD Toolkit
- Audits and checklist
- NOTICE

# NC SPICE DIALYSIS RESOURCES

- **NC Infection Control Curriculum for Hemodialysis Settings-10A NCAC 41A .0206 INFECTION PREVENTION – HEALTH CARE SETTINGS**
- **NC SPICE IP CONSULTANTS – ICAR ASSESSMENT FOR FACILITIES**

- ***The NC Communicable Disease Rule 10A NCAC 41A .0206 requires every health care organization to designate an individual to oversee infection prevention activities and that individual shall complete a state approved course (SPICE course) in infection control. The rule requires a designated person for each noncontiguous facility."***

- **Dialysis facilities that report to NHSN complete an *Outpatient Dialysis Center Practices Survey* each year. The survey responses can be accessed in NHSN or the facility can be asked to retrieve and print their completed NHSN survey in advance of the site visit**

# NC SPICE DIALYSIS LETTER AND FLYER

In collaboration with the North Carolina Department of Health and Human Services (NC DHHS), the North Carolina Statewide Program for Infection Control and Epidemiology (SPICE) would like to encourage your participation in a ***free performance improvement project*** focusing on Infection Prevention and Control (IPC).

Funded through the Centers for Disease Control and Prevention (CDC) under the American Rescue Plan Act of 2021, this project is an eighteen (18) month collaborative between NC DHHS and SPICE to support a broad range of healthcare infection prevention and control activities in hospital, health department, post-acute care, and **dialysis** settings.

Infection Control Assessment and Response (ICAR) tools are used to systematically assess a healthcare facility's IPC practices and guide performance improvement efforts. This project provides the resources and the opportunity for SPICE to conduct consultative, educational, onsite ICAR visits to healthcare facilities, including outpatient dialysis settings.

***How can this project benefit your facility?***

- Educational and consultative visit with an Infection Prevention expert, using a standardized assessment tool.
- Verbal summary of findings/recommendations at time of facility exit.
- Written follow up summary with identified gaps and recommendations to enhance your quality initiatives.
- Provision of additional resources and educational sessions if requested.

***Visit expectations.***

- Approximately ½ day meeting with SPICE Infection Preventionist
- Discuss and complete the CDC Dialysis Assessment tool.
- Facility tour with practice observations.
- Exit summary to review findings, recommendations, and answer questions.

**To sign up for a visit or request additional information, click on the following link:**

https://spice.unc.edu/ask-spice/

Sincerely,

*Evelyn Cook, Associate Director NC SPICE*

## INFECTION CONTROL ASSESSMENT and RESPONSE (ICAR) FOR HEMODIALYSIS FACILITIES

***ICAR tools are used to systematically assess a healthcare facility's IPC practices and guide quality improvement***

**Introducing:**

**An 18 month collaborative between N.C. Department of Health and Human Services (NCDHHS) and N.C. Statewide Program for Infection Control and Epidemiology (SPICE).**

**Funded by CDC, under the American Rescue Plan Act of 2021 to support a broad range of healthcare infection prevention and control (IPC) activities.**

- *Provide the following:*
  - *A consultative, onsite infection control assessment.*
  - *An exit summary of findings.*
  - *A site visit summary report with available resources.*
  - *Additional educational opportunities based on findings (at facilities request).*

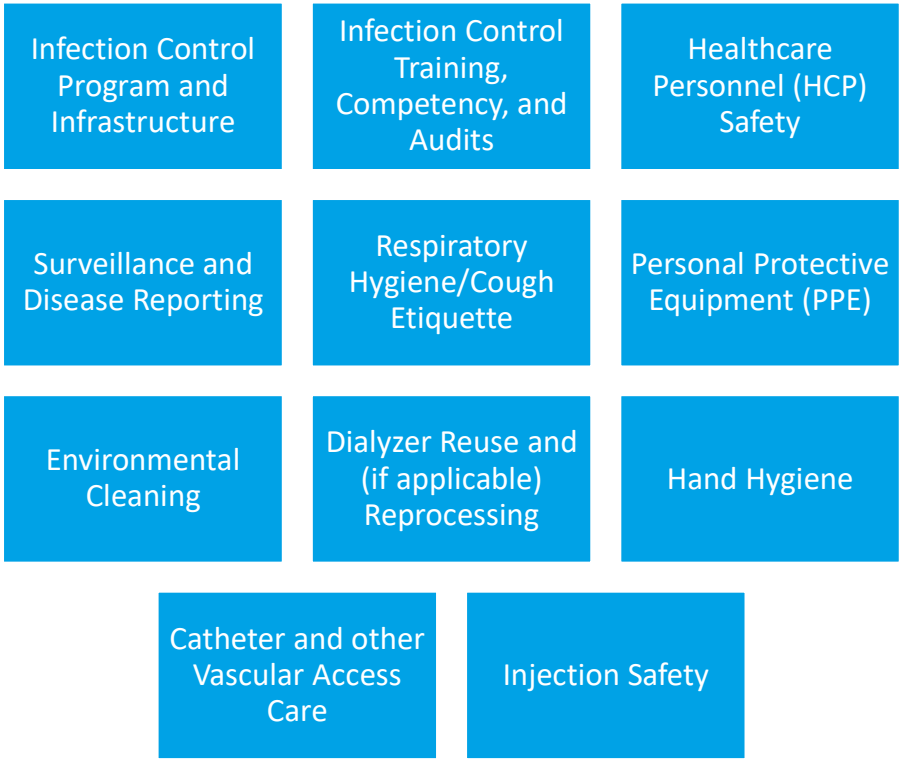
***To request a visit or for more information:***

**http://spice.unc.edu/ask-spice**

# NC SPICE ICAR ASSESSMENT VISIT

- Visits included the following activities:
- Discussion of infection prevention and control policies and procedures
- Review of services offered by the hemodialysis center (HD)
- Interviews with staff
- Hemodialysis center environmental rounds
- Observation of practices

# ICAR INFECTION CONTROL DOMAINS FOR GAP ASSESSMENT




- **Infection Prevention and Control Assessment Tool for Hemodialysis Facilities**

- This tool is intended to assist in the assessment of infection control programs and practices in dialysis facilities. In order to complete the assessment, direct observation of infection control practices will be necessary

- https://www.cdc.gov/infectioncontrol/pdf/icar/dialysis.pdf

# RECENT ICAR FINDINGS

- Preassessment area not being utilized for patient screening and hand hygiene
- Storage occurring within 3 feet of water sources with no splash barriers installed to prevent inadvertent splash/splatter on devices/supplies placed within three feet of the sink.
- Patient supplies noted in staff pockets
- Primary shipping containers (boxes) used for storage in clinical areas.
- Clinical supplies/equipment stored on the floor, under sinks and/or too close to the ceiling (room with sprinkler head).
- Supplies/equipment blocking access to hand hygiene sink.

# OTHER ITEMS OF NOTE

- Tape can be especially problematic; however, three centers described the process of cutting their tape, outside the treatment area, and placing it in the treatment station after terminal cleaning and prior to the next patient's arrival.
- *CDC recommends glucometers should be dedicated to a single patient when feasible. If used on multiple patients they must be disinfected after each use, per the manufacturer's instructions for use (disinfectant must have activity against HIV, HBV, and HCV), and stored in a manner to prevent inadvertent contamination*
- *Per safety sheet Gebauer's Ethyl Chloride spray can is labeled as multi-patient and reusable. However, CDC recommends that all items taken into a dialysis patient's station should either be dedicated to that patient or be discarded*
- *OSHA requires sharp disposal containers to be **"easily accessible to personnel and located as close as is feasible to the immediate area where sharps are used or can be reasonably anticipated to be found"** and **"Maintained upright throughout use."***
- *IFUs are followed for all chemical dilution(s), contact time, storage, and disposal.*
- *All secondary containers for chemicals should be labeled with all the appropriate information as required under OSHA's Hazard Communication standard, 29 CFR 19190.1200.*
- *https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1200*

# SCRUB THE HUB

- *CDC recommendations for scrubbing the hub note: "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) [if using 70% alcohol sterile antiseptic pads should be used] and generally, antiseptics should be allowed to dry for maximal effect."*
- *Recommended times for scrubbing the hub include:*
  - *5-60 seconds*
- *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4446481/pdf/NRP2015-796762.pdf*
  - *10-15 seconds-*
- http://www.jointcommission.org/CLABSIToolkit
  - *5-15 seconds with 70% isopropyl alcohol and alcohol-based chlorhexidine gluconate. Drying time with 70% isopropyl alcohol is 5 seconds; alcohol-based chlorhexidine requires 20 seconds.*
- *Journal of Infusion Nursing: Volume44. Number1S www.journalofinfusionnursing.com*
-

# INFECTION PREVENTION IS EVERYONE'S RESPONSIBILITY

Infections that patients can get while receiving dialysis are serious and preventable!

Healthcare workers like you following infection control precautions and other safe care practices are the key to prevention!

Infection prevention is everyone's responsibility