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Policy Area Infection Prevention  
Applicability UNC Medical Center

## Dialysis Unit

### I. Description

Describes infection prevention guidelines specific to the Dialysis Units

### II. Policy

#### A. Infection Prevention Measures for All Patients

1. Standard Precautions in the Dialysis Setting
  - a. Gloves are required whenever caring for a patient or touching the patient's equipment during the process of hemodialysis.
  - b. A supply of clean gloves and a waste basket will be available near each dialysis station. Staff will remove gloves and perform hand hygiene between each patient or station. Hand hygiene is performed after glove removal, between patient contacts, after touching blood, bodily fluids, and contaminated items. An alcohol-based antiseptic hand rub may be used if hands are not visibly soiled.
  - c. Personal protective equipment (PPE) must be used with all patient care activities when there is a reasonable likelihood of exposure to blood or other potentially infectious body fluids. Staff should wear appropriate PPE (e.g., fluid-resistant gowns, face-shields, protective eyewear, masks) to protect themselves and prevent soiling of clothing when performing procedures

during which spurting or spattering of blood might occur (e.g., during initiation and termination of dialysis, cleaning of used equipment, and centrifugation of blood). PPE should be changed if it becomes soiled with blood, body fluids, and between patients.

## 2. Staff Responsibilities for Vascular Access

- a. Catheters, shunts, fistulas, or other vascular access catheters will be cared for using meticulous aseptic technique.
- b. The UNC Hospitals Dialysis policies found on PolicyStat via the intranet describe in detail the procedures used to care for these devices.
  - i. Hemodialysis nurses and nephrology licensed practitioners only may access the catheter lumens used for hemodialysis.
  - ii. The only exception to this guideline is in the event of an emergency and non-dialysis indications approved by nephrology consult service per Nursing policy: [Accessing Dialysis Catheters for Non-Dialysis Indications](#).

## 3. Medications

- a. Unused medications or supplies (e.g., syringes, alcohol swabs) taken to the patients' station should be discarded.
  - b. Cleanse the rubber diaphragm of medications vials with a sterile alcohol swab and allow to dry prior to accessing. Intravenous medication vials labeled for single use (preservative free) are to be only punctured once. They are discarded immediately after use. Residual medication from two or more vials may not be pooled into a single vial.
  - c. Multi-dose vials are used in accordance with the Patient Care policy: [Medication Management: Use of Multi-Dose Medications and Vaccines in Acute, Operative, and Ambulatory Care Environments](#).
  - d. Medications are delivered separately to each patient. Common carts are not used within the patient treatment area to prepare or distribute medications. Medication vials, syringes, alcohol swabs, or supplies should not be carried in pockets. If trays are used to deliver medications to individual patients, they must be cleaned between patients.
  - e. Use commercially prepared, pre-filled flush solutions.
4. Patient records should not be placed on potentially contaminated surfaces (e.g., beds, dialysis machines).
5. Patient Care Supplies
- a. Clean and contaminated supplies are stored separately. The preparation and handling of clean, unused supplies occur in clean areas clearly separated

from contaminated areas (where used supplies or equipment are handled).

- b. Items taken to a patient's dialysis station, including those placed on top of the dialysis machines, will be disposed of or dedicated for use only on a single patient. Reusable items or equipment will be cleaned and disinfected per manufacturer's instructions for use (MIFU) before being returned to a common clean area or used for other patients.
- c. Items that cannot be cleaned and disinfected (e.g., adhesive tape) will be dedicated for use only on a single patient.
- d. Contaminated (i.e., used) supplies, equipment, blood samples, or biohazard containers are not handled or stored in areas where medications and clean (i.e., unused) equipment and supplies are handled.
- e. When a common supply cart is used to store clean supplies in the patient treatment area, this cart will remain in a designated area at a sufficient distance from patient stations to avoid contamination with blood. Such carts should not be moved between stations to distribute supplies. Supply carts should be accessed with clean hands.
- f. Thermometers with probe sheaths should not be kept on top of the dialysis machine.

#### 6. Additional Guidelines for Peritoneal Dialysis

- a. Peritoneal dialysis machines are disinfected between patients per MIFU with an EPA-registered disinfectant.
- b. Discard dialysis fluid by pouring down a hopper or toilet and follow standard precautions.
- c. Disposal of Peritoneal Fluid
  - i. All dialysis fluid will be disposed of by emptying into a hopper or toilet. In critical care areas, the fluid will be emptied into the drain for hemodialysis. If the patient is in a private room, the drainage system will empty directly into the room's toilet. The discard tube should be several inches from the fluid level of the toilet.
  - ii. If the patient is in a shared suite or curtained bedspace, the peritoneal fluid must empty into a drainage bag or similar container. The drainage container is then emptied into a hopper or toilet by a Dialysis staff member and appropriately discarded.
- d. There are currently no Centers for Disease Control and Prevention (CDC) recommendations for serological screening of peritoneal dialysis patients. Routine serological screening for these patients is not necessary for purposes of infection prevention.

7. Additional Guidelines for Hemodialysis on Acute Care/ICU/Stepdown units
  - a. Ideally, hemodialysis will be performed in the dialysis unit. If hemodialysis must be performed in a patient room, the patient must be in a private room.
  - b. In patient rooms equipped with hemodialysis drains, dialysis fluid must be disposed of into the drain for hemodialysis.
  - c. In patient rooms where no hemodialysis drain exists ideally the toilet will be used for drainage of dialysis fluid. If this is not feasible, due to the amount of fluid, an in-room sink may be utilized. During this time, the sink should not be used for other purposes such as hand hygiene.
    - i. For Enteric Precautions: If the patient room has only one sink, and it is being utilized for dialysis drainage, staff should be advised to remove PPE before leaving the room, exit the room and go directly to the nearest sink to perform soap and water hand hygiene.
    - ii. When hemodialysis is complete, staff will wipe the sink with a 1:10 bleach solution then 1 quart (32 ounces) of a 1:10 bleach solution around the inside of the sink and allow the solution to go down the drain. Staff will wear proper eye and face protection for all tasks that expose them to caustic substances such as bleach, per the Environmental Health and Safety policy: [Personal Protective Equipment Requirements](#).

## B. Responsibilities for Cleaning, Disinfection, and Care of Equipment

1. General cleaning after each patient treatment: Environmental surfaces at the dialysis station, including the dialysis bed or chair, countertops, and external surfaces of the dialysis machine, including containers associated with prime waste, are cleaned, and disinfected according to MIFU. Cleaning is performed while no patient is at the station.
2. Surfaces that become contaminated with blood or other potentially infectious body fluids should be cleaned and disinfected immediately.
3. Equipment shared between patients (e.g., reusable blood pressure cuffs, clamps, medication administration pumps) are disinfected between patients and when visibly soiled.
4. Hemodialysis machines are routinely cleaned and maintained by the hemodialysis unit staff. After each patient use, the exterior surfaces of the machine are disinfected with an EPA-registered disinfectant per MIFU. At the end of each treatment day, prior to disinfection, the machine will be acid cleaned using vinegar, citric, or acetic acid per MIFU.
5. At the end of the day, the internal fluid pathways of each machine are disinfected with

heat or bleach per Fresenius policy (see References). Heat disinfection is accomplished by the water temperature in the heating vessel rising to 83° C and then passing through the internal fluid pathways for 20 minutes with rinse. This system eliminates microbial contamination without the hazards associated with chemicals. Bleach is the approved chemical used on the internal fluid pathways of dialysis machines and will be used to disinfect the internal fluid pathways after treatment of a Hepatitis B Virus (HBV) positive or HBV status unknown patient (refer to section *I. Prevention and Management of HBV Infection*).

6. Primed hemodialysis and CRRT (Continuous Renal Replacement Therapy) set-ups will be discarded after 12 hours if treatment has not been initiated.
7. Concentrate wands must be disinfected daily. See [Attachment 1 - Disinfection of Concentrate Wands](#) for disinfection guidelines.

## C. General Isolation Precautions Guidelines

1. Patients presenting to the Dialysis Unit with clinical manifestations of communicable diseases will be evaluated by a licensed practitioner before dialysis occurs.
2. If a patient on Contact Precautions must receive treatment in the Dialysis Unit, the patient should be placed in an isolation room if available. If there are more patients who require Contact Precautions than isolation rooms, consider dialyzing the patient at a station with as few adjacent stations as possible, or a clear plexi-glass divider on wheels may be used between patient stations. After completion of treatment for all patients who require Contact Precautions, the exterior of the dialysis machine, environmental surfaces, and reusable equipment are cleaned in the same manner as specified in general cleaning responsibilities above.
3. If a patient on Droplet Precautions receives dialysis, the patient should preferably be hemodialyzed in their rooms or placed in an isolation room in the Dialysis Unit. If patients must be treated in the Dialysis Unit, and there are no isolation rooms available, the patient should be dialyzed at the end of the shift, if possible. Patients must be a minimum of 6 feet away from other patients and wear a surgical mask during dialysis. A clear plexi-glass divider on wheels, plus disposable curtains, may be used between patient stations. Curtains should remain closed on either side of the patient, and staff will follow Droplet Precautions and wear a surgical mask when caring for the patient.
4. Inpatients on Airborne Precautions will preferably be hemodialyzed in their room. If patients must be treated in the Dialysis Unit, they must be placed in an Airborne Infection Isolation Room (AIIR) with negative air pressure. Room pressure is checked when in use using the tissue test and results documented in the patient's electronic medical record (EMR).

## D. General Guidelines for the Care of Patients Known or Suspected to be Infected with Bloodborne Pathogens

CDC recommendations for serologic surveillance for certain bloodborne pathogens pertain to staff and patients in chronic hemodialysis centers. The patient screening and vaccination recommendations that follow apply to chronic hemodialysis patients. Most patients receiving hemodialysis in the Inpatient Dialysis Unit are treated briefly, discharged, and then resume treatment in a community hemodialysis center. The screening and vaccination guidelines below should be applied to in-house patients when feasible (e.g., patient with lengthy stay). The staff screening recommendations apply to all hemodialysis staff. UNC staff will receive their screening through Occupational Health Service (OHS).

1. Patients who are HIV or HCV positive do not need to be isolated from other patients either in separate rooms or by using dedicated machines.
2. Patients whose HBV status is unknown pending completion of serology studies will have their machines disinfected in the same manner as HBsAg positive patients.
3. For patients who are HBsAg-positive – (Refer to section *I. Prevention and Management of HBV Infection*)

## E. Routine Serologic Testing for Chronic Hemodialysis Patients

1. All chronic hemodialysis patients should be routinely tested for HBV and HCV infection per licensed practitioner order.
2. Routine testing for HDV or HIV infection for purposes of infection control is not recommended.
3. The HBV serologic status (i.e., HBsAg, total anti-HBcAg, and anti-HBsAg) of all patients should ideally be known before treatment in the Hemodialysis Unit. Follow licensed practitioner's [Hepatitis B Surface Antigen Standing Order](#) for ordering labs. For patients established at an outside dialysis center, serology results should be obtained by calling the outside facility prior to the patient's first in-house dialysis treatment. For new patients, blood for serology is collected during the first dialysis treatment.

## F. Hemodialysis Staff

1. Testing staff for HBV infection is not necessary. The risk of HBV infection among hemodialysis staff is no greater than that of other staff.
2. Routine testing for staff members is not recommended except when required to

document the response to hepatitis B vaccination.

3. Routine testing of staff members for HCV, HDV, or HIV infection is not recommended.
4. OHS will notify the NC Public Health Department and the Dialysis Director if a dialysis staff member becomes HBsAg-positive. In consultation with the Dialysis Director and the OHS, a decision will be made concerning the activities of the staff member.

## G. Hepatitis B Vaccination

1. Vaccine Schedule and Dose
  - a. Hepatitis B vaccination is recommended for all susceptible chronic hemodialysis patients. Chronic hemodialysis patients should be vaccinated according to the most recent CDC/Advisory Committee on Immunizations Practices (ACIP) recommendations.
  - b. Hepatitis B vaccine series is offered to all staff with reasonably expected exposure to blood or other potentially infectious body fluid. Staff will receive the vaccine at UNC Health's expense.

## H. Prevention and Management of HBV Infection

1. HBV-Susceptible Patients
  - a. Vaccination of all susceptible patients per licensed practitioner order and per CDC recommendations.
2. HBsAg Seroconversions
  - a. Notify Infection Prevention and complete a [Communicable Disease Report Form](#) (may be found on the Infection Prevention Intranet site) for HBsAg seroconversions. The form should be faxed to Infection Prevention at 984-97-7719.
  - b. Investigate any additional cases and evaluate unit practices and procedures to identify potential sources of infection.
3. HBV Infected Patients
  - a. Room-10 on the 3 East unit and Hillsborough 2BT2 Room-7 are the Hep B dialysis room/dedicated machine and may be used for patients who are HBsAg positive or HBV PCR positive only. A disposable gown and gloves will be worn for every room entry.
  - b. Glucometers and conductivity meters used in isolation rooms will be disinfected with an EPA-registered disinfectant after each use. Concentrate wands used in the isolation rooms will be cleaned using the process in [Attachment 1: Disinfection of Concentration Wands](#), but must be segregated in a dedicated, designated area away from all other concentrate wands per

CDC guidance on Conditions for Coverage for End-Stage Renal Disease Facilities. If the concentrate wand is to be rotated out of the isolation room, it must be bleached per [Attachment 1: Disinfection of Concentration Wands](#), before subsequent use. Refer to the Nursing Policy: [Disinfection of Concentrate Wands Daily](#). Equipment, instruments, supplies, and medications used on an HBsAg positive, or HBV PCR positive patient will not be used by HBV-susceptible patients.

- c. Staff members who care for HBsAg-positive patients should not care for HBV susceptible patients at the same time, including during the period when dialysis is terminated on one patient and initiated on another. If staff members must care for both HBsAg-positive and seronegative patients during the same shift, they should change gowns between patients, perform hand hygiene, and change gloves to prevent cross-contamination.
- d. A machine that has been used to treat an HBsAg-positive patient will be tagged and kept only for the same patient's treatment until their discharge from the hospital. If there are multiple HBsAg-positive patients in the hospital receiving dialysis treatment, they can use the same machine *with routine cleaning and disinfection of the equipment and treatment chair between patients*. When that patient is discharged, the hemodialysis machine will have its internal pathways chemically disinfected with bleach per Fresenius Medical Care Policy and external surfaces will be cleaned using an EPA-registered disinfectant.
- e. Dialyzers are not re-used in the Hospital Dialysis Unit.

#### 4. Treating patients with transient antigenemia, per Fresenius Medical Care Policy

- a. If a patient converts to hepatitis antigen positive and upon investigation it is determined that the patient received a vaccination injection within the last 28 days, the conversion may be transient antigenemia related to the vaccine.
- b. Treat the patient as if they are HBsAg positive using separate equipment and separate personal protective equipment but DO NOT place the patient in the isolation area with or used for HBsAg positive patients nor use a machine dedicated to HBsAg positive patient for this unknown status patient. Buffer the unknown status patient with patients who are anti-HBs positive. Confer with primary medical team on when to repeat testing after vaccine.

#### 5. HBV Immune Patients

- a. HBV immune patients can undergo dialysis in the same area as HBV-susceptible patients. HBsAg-positive patients are isolated.
- b. Staff members can be assigned to care for both infected and immune patients on the same shift.

## I. Prevention and Management of HCV Infection

Strict adherence to standard infection prevention practices can prevent transmission of HCV within the dialysis environment. Although isolation of HCV-infected patients is not recommended, routine testing by licensed practitioner order is important for monitoring transmission within dialysis centers and ensuring that appropriate precautions are being properly and consistently used.

1. Anti-HCV Seroconversions
  - a. Notify Infection Prevention and complete a [Communicable Disease Report Form](#) for HBsAg seroconversions. The form should be faxed to Infection Prevention at 984-974-7719.
  - b. Investigate any additional cases and evaluate unit practices and procedures to identify potential sources of infection.
2. HCV-Positive Patients
  - a. Patients who are anti-HCV positive (or HCV RNA positive) do not have to be isolated from other patients or dialyzed separately on dedicated machines.

## J. Prevention and Management of HDV Infection

1. No routine testing is recommended but patients known to be infected with HDV should be isolated from all other dialysis patients, especially those who are HBsAg-positive.

## K. Prevention and Management of HIV Infection

1. Routine testing of hemodialysis patients for HIV infection for infection prevention purposes is not recommended.

## L. Surveillance for Infection and Other Adverse Events

1. UNC Hospitals Dialysis Unit
  - a. Records are maintained for each patient that include the location of the dialysis station and machine number used for each dialysis session and the names of staff members who connect and disconnect the patient to and from a machine.
  - b. If a cluster of infections is suspected, notify Infection Prevention at 984-974-7500 or by paging the Infection Preventionist on call through the hospital on call directory.

## M. Training and Education

1. Staff
  - a. Infection prevention education, including OSHA Bloodborne Pathogens and TB training, must be provided at employment and annually thereafter via LMS.

## N. Guidelines for Pediatric Patients

1. Toys/School Supplies – Staff should refer to the Infection Prevention policy: [Diversional Supplies \(e.g., toys and books\)](#) when choosing and cleaning toys for pediatric patients.

## O. Hemodialysis Water

Water for the hemodialysis treatment is treated by a reverse osmosis water system before it is used. The membrane of this system removes bacteria, viruses, pyrogens, and spores. Microbiologic monitoring and endotoxin testing of water used as dialysate is performed monthly and results are kept on file in the dialysis unit.

The most up-to-date microbiological criteria for testing bacteria and endotoxins for dialysis water should be obtained from Fresenius Technical Policy and Procedure Manual. Refer to the Fresenius policy, "Microbiological Monitoring of Central Water and Concentrate Mixing and Delivery Systems" for minimum monitoring requirements of microbiological contaminant levels in treated water. Refer to the Fresenius' Technical policy, "Microbiological Monitoring of Dialysate" for additional baseline sampling requirements for bicarb mixers and solution delivery systems.

## P. Visitors

Family of patients treated in the inpatient dialysis unit will be allowed in the treatment area only at the request of the nursing staff. Family and visitors will not eat or drink in the treatment area and will use bathroom facilities other than those designated for patients and staff. Visitors are encouraged to comply with all indicated isolation precautions. Visitors must be free of communicable diseases when visiting within UNC Hospitals.

Visitation of children to the treatment areas of the Dialysis Unit will be restricted to those greater than 12 years of age. Children will be screened for communicable diseases before being admitted to the unit as outlined in the Nursing policy: [Hospital Visitation](#). Guidelines in this policy must also be followed if visitation by children <12 years is considered.

## Q. Hemodialysis Environmental Services Policy – Daily Cleaning

Refer to the Infection Prevention policy: [Environmental Services](#) for further information on environmental services.

### III. Implementation

The implementation of this policy will be the responsibility of the Medical Director and Nurse Manager of the Inpatient Dialysis Centers.

### IV. Responsibility for Content

Infection Prevention

### V. References

Favero, Martin S., Alter, Miriam J., and Bland, Lee A., Dialysis-Associated Infections and Their Control; In: Bennett, John V. and Brachman, Philip S., Hospital Infections (third edition); Boston; Little, Brown and Company, 1992; pp. 375-402.

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Centers for Disease Control and Prevention. Recommendation for Preventing Transmission of Infections Among Chronic Hemodialysis Patients, MMWR 4/27/01, Vol. 50, No. RR-5.

Centers for Disease Control and Prevention. Guidelines for Vaccinating Kidney Dialysis Patients and Patients with Chronic Kidney Disease. December 2012. <https://www.cdc.gov/vaccines/pubs/downloads/dialysis-guide-2012.pdf>. Retrieved on September 11, 2020.

Centers for Disease Control and Prevention. Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HBV, HCV, and HIV and Recommendations for Postexposure Prophylaxis.

Fresenius Clinical Service Integrated Policy Manual. Bicarbonate Concentrate Container, Cap, and Suction Tube Assembly Disinfection Procedure.

Fresenius Kidney Care Clinical Services Policy: Hemodialysis Machines: Acid Clean, Chemical Rinse, and Heat Disinfection.

Fresenius Kidney Care Clinical Services Procedure: Fresenius 2008K, K2, and T machine – Acid Clean and Heat Disinfection.

Fresenius Medical Care Clinical Services Hepatitis Policy. IS-I-500-075A.

Fresenius Medical Care Clinical Services Policy: Microbiological Monitoring of Central Water and Concentrate Mixing and Delivery Systems.

Fresenius Medical Care Clinical Services Policy: Microbiological Monitoring of Dialysate Policy.

Fresenius Kidney Care Clinical Services Policy: Infection Control and Patient Surveillance for Hepatitis C Virus (HCV).

Rutala, William A., Weber, David J., and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Centers for Disease Control and Prevention. Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008. [https://www.cdc.gov/hicpac/pdf/guidelines/Disinfection\\_Nov\\_2008.pdf](https://www.cdc.gov/hicpac/pdf/guidelines/Disinfection_Nov_2008.pdf)

Centers for Medicare & Medicaid Services. ESRD Conditions for Coverage Frequently Asked Questions (FAQs) Version 1.3. <https://www.cms.gov/Medicare/Provider-Enrollment-and-Certifications/GuidanceforLawsAndRegulations/Downloads/faqsep2009.pdf>

Centers for Medicare & Medicaid Services. Conditions for Coverage for End-Stage Renal Disease Facilities; Final Rule. April 15, 2008. [Medicare and Medicaid Programs; Conditions for Coverage for End-Stage Renal Disease Facilities; Final Rule \(cms.gov\)](https://www.cms.gov/Medicare-and-Medicaid-Programs/Conditions-for-Coverage-for-End-Stage-Renal-Disease-Facilities-Final-Rule)

## VI. Related Policies

[Environmental Health and Safety Policy: Personal Protective Equipment Requirements](#)

[Infection Prevention Policy: Diversional Supplies \(e.g., toys and books\)](#)

[Infection Prevention Policy: Environmental Services](#)

[Infection Prevention Policy: Exposure Control Plan for Bloodborne Pathogens](#)

[Infection Prevention Policy: Hand Hygiene](#)

[Infection Prevention Policy: Infection Prevention Guidelines for Safe Patient Care](#)

[Infection Prevention Policy: Isolation Precautions](#)

[Infection Prevention Policy: Tuberculosis Control Plan](#)

[Medication Management Policy: Medication Management: Use of Multi-Dose Medications and Vaccines in Acute, Operative, and Ambulatory Care Environments](#)

[Nursing Policy: Accessing Dialysis Catheters for Non-Dialysis Indications](#)

[Nursing Policy: Central Venous Access Device \(CVAD\) Care and Maintenance](#)

[Nursing Policy: Hepatitis B Surface Antigen Standing Order](#)

[Nursing Policy: Hospital Visitation](#)

[Occupational Health Services Policy: Infection Prevention and Screening Program: Occupational Health Service](#)

### All Revision Dates

05/2026, 02/2024, 05/2023, 06/2022, 06/2021, 01/2020, 07/2019, 04/2017, 06/2014, 07/2012, 07/2009, 12/2006, 08/2004

### Attachments

1: Disinfection of Concentrate Wands

## Approval Signatures

Step Description	Approver	Date
Policy Stat Administrator	Judith Strubin: Mgr Program-IP	05/2026
	Emily Vavalle: HCS Exec Dir Infection Prevention	05/2026
	Sherie Goldbach: Project Coordinator	05/2026

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## Applicability

UNC Medical Center

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