

Home Hemodialysis Procedures & Training Guide

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Client Services

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For the Home Hemodialysis Care Provider

To assist you in accommodating the needs of home hemodialysis patients, this download provides clinic procedures and patient training material to help ensure the quality of your patients' laboratory specimens and accuracy of test results.

Included in this download:

For the Clinic:

- Laboratory and Patient Procedures including details on Supplies, Centrifuges, Patient Draws, and Instructions on Rescheduling Collection Dates from LabCheck.

For the Home Hemodialysis Patient:

- Instructions for Specimen Collection and Handling; Packing and Shipping; Centrifuge Technique; and Post Testing.
- Items Orderable in LabCheck: Sponge Test Tube Holder and stickers that serve as reminders regarding specimen collection and handling.

LABORATORY PROCEDURES FOR THE CLINIC

The following describes supplies, your role and patient procedures.

Supplies

Using LabCheck, you will need to order the necessary supplies for the collection, handling and shipping of specimens for your home hemodialysis patients. This includes the required tubes, needles, water testing supplies, packing and shipping supplies, etc. On their monthly visit to your clinic, you will provide your patients with supplies for the following month's draw, including:

- Tubes for the appropriate test ordered
- Ascend Clinical barcode labels
- Specimen Transport Biohazard bags with absorbent sheet
- If applicable, packing supplies including: small boxes that include ice packs, Styrofoam, foam layers and cardboard sleeves, FedEx shipping labels and FedEx Clinical Pak

Centrifuges

Ascend Clinical supplies a centrifuge for the home hemodialysis patient through the clinic. It is the clinic's responsibility to issue it to the patient and manage its inspection. Follow your clinic's equipment maintenance protocol. Schedule the patient to bring their centrifuge for routine RPM testing to the clinic prior to centrifuge inspection expiration. For more information on how to purchase your own tachometer, contact Client Services.

- In the event of a centrifuge malfunction, the clinic decontaminates the patient's returned centrifuge and contacts Client Services to obtain a call tag for the return of the centrifuge and order a replacement.
- Instruct patients on proper cleaning procedures in the event of blood splatter. Refer to centrifuge instruction manual.

Patient Draws

Patients may draw anytime during the month or as instructed by the clinic. We recommend draws Monday through Thursday to avoid unforeseen courier delays.

For patients who return specimens to clinic: The clinic must update LabCheck with correct draw date and relabel the specimen. Ascend processes specimens received as long as the barcode label matches the submitted order.

For patients who ship from home: Patients must handwrite the actual draw date on the specimen barcode label and the clinic must update LabCheck with correct draw date. Ascend cannot process specimens if the collection date does not match the submitted order.

Instructions for rescheduling labels in LabCheck are included with this material.

LABORATORY PROCEDURES FOR THE PATIENT

Designed to assist you in the training of your patients, and for your patients to take home, we've included in this download detailed information regarding:

- Lab Collection Checklist
- Packing and Shipping Specimens
- Stickers
- Posters
- Sponge Test Tube Holder

Stickers serve as reminders regarding the general collection, handling and shipping of specimens. It is safe to wipe these with a 10% bleach solution when needed. They do not leave a glue residue when removed and may be reapplied without losing their adhesive properties. These can be applied to the patient's centrifuge or any other surface they wish. They are orderable through LabCheck.

The Sponge Test Tube Holder helps patients hold tubes during collection. They are also orderable through LabCheck.

Of note, additional detailed information is also included in this download. This information should be included in your patient's binder only if appropriate and at your discretion, based on the individual needs of the patient.

Clinic Instructions for Rescheduling and Submitting Labels with Correct Collection Date in LabCheck

These instructions apply to submitted orders and previously printed labels.

1. Log into LabCheck
2. From Patients menu, click Historical Labels
3. Select Patient from drop down menu
4. Click Find Orders
5. Click on Collection Date that is to be rescheduled (you will be redirected to the Label Screen)
6. Click Reschedule All and Click Print/Save
7. Select Collection Date as reported by patient
8. Select Patient
9. Click Find Labels For Selected Patients
10. Click Print/Save

For the Home Hemodialysis Patient

SPECIMEN SUPPLIES AND PROPER LABELING

Supplies

Your clinic will order the necessary supplies for the collection, handling and shipping of your specimens. In addition to a centrifuge, this includes the required tubes, needles, water testing supplies, packing and shipping supplies, etc. During your clinic visits, your care provider will give you supplies for the following month's draw, including:

- Test tubes and barcode labels
 - Cross out the date and handwrite the correct draw date on the barcode label
 - Contact your clinic with the correct collection date if different than what is printed on the barcode labels
- Biohazard bags with absorbent sheet for transportation of the specimens
- If applicable, packing supplies including cardboard sleeve, Styrofoam, ice packs, foam layers. FedEx shipping labels and Clinical Pak for shipping (your clinic will provide other instructions if FedEx is not used)

Proper Labeling

- Place barcode label directly over the manufacturer's label with the patient name oriented closest to the cap.
- Ensure label is flat and smooth.
- Retain a window view to the specimen.











Specimen Collection and Handling

It is recommended that all specimens, other than Post BUNs, be drawn prior to administration of heparin. Heparin causes interference with some tests, possibly causing false dilution of the specimen. This may affect results.

Collection order and specimen handling are summarized below. Most patients do not draw as many tubes as shown below. However, tubes should be drawn in this order to reduce contamination. If you are not drawing a tube listed, simply skip that one and continue to the next until you have drawn your required tubes. Your care provider will provide you with the proper tubes when you visit your clinic and they may also have you come to the clinic for tests with unique requirements.

During the collection, allow the tube to fill until the blood flow ceases.

Immediately after drawing, gently invert the tube in accordance to the instructions below. Proper inversion of specimens is a crucial step to ensuring adequate mixing of the additives contained within the tube and prevent clotting in some cases.

ASCEND		800.800.5655 aclab.com		
Order of Draw	Mix by Inverting	Centrifuge	Refrigerate	
 ROYAL BLUE	8-10 times	No	Yes	
 LIGHT BLUE	4 times	No	No	
 RED	8-10 times	Yes (after clots)	Yes	
 GREEN	8-10 times	Yes	Yes	
 TALL GREEN	8-10 times	Yes	Yes	
 LAVENDER	8-10 times	No	Yes	
POST ORDER OF DRAW				
 GOLD/WHITE	8-10 times	Yes	Yes	
 Example of one inversion	Draw all specimens, except POST BUN (Gold/White), prior to administering heparin			

Commonly Ordered Laboratory Tests

Chemistry

- Albumin
- Alkaline Phosphatase
- ALT (SGPT)
- Aluminum
- AST (SGOT)
- Bilirubin, Total
- BUN
- C-Reactive Protein (CRP)
- Calcium
- Calcium, Ionized
- Calcium Phosphorus Product
- Calcium Phosphorus Product, Adjusted
- Chloride
- Cholesterol
- CO₂
- Creatinine
- Glucose
- Iron
- LDH
- Magnesium
- Phosphorus
- Potassium
- Protein Total
- Sodium
- Triglycerides
- Uric Acid

Coagulation

- Prothrombin Time

Hematology

- CBC & Differential
- Hemoglobin
- Hemoglobin & Hematocrit
- Hemoglobin A1C
- Hemogram
- Platelet Count
- Reticulocytes

Therapeutic Drug Monitoring

- Digoxin
- Vancomycin

Panels

- Comprehensive Metab&di
- Comprehensive Metabolic/Phosphorus
- Iron Statusw/ Iron & Transferrin
- Lipid Panel

Pre/Post Chemistry Panels

- Kt/V Natural Log
- Kt/V Standard

Immunochemistry

- + Ferritin
- + Folate (Folic Acid)
- + PTH, Intact
- + TSH
- + Vitamin B12
- + Vitamin D (non-NY)
- Vitamin D (NY)
- + Hep B Core Ab, Total
- + Hep B Surface Ab Quantitative
- + Hep B Surface Ag/ Confirmation Reflex
- +● Hep C Ab w/PCR Reflex
- +● HIV 1, 2 w/Reflex

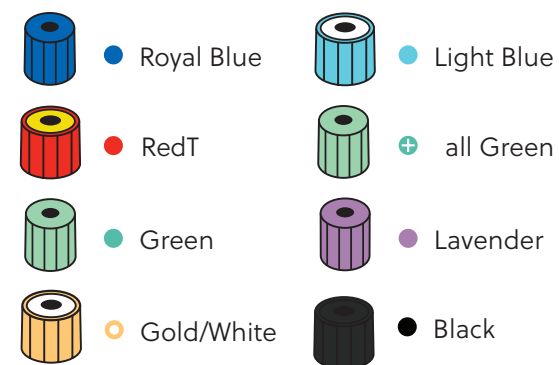
Clearance Tests

- 24 Hour Urine Creatinine Clearance
- Residual Urea Clearance (KrU)

Peritoneal Dialysis

- PD Adequacy
- PET, Standard

Cap Color



Post Dialysis Sampling

Your care provider will provide modified instructions specific to your machine.

SLOW-BLOOD-FLOW METHOD

Drawing the sample from the blood line sampling port

1. At the completion of hemodialysis, turn off the dialysate flow and decrease the UFR to 50 mL/hr, to the lowest TMP/UFR setting, or off. If the dialysis machine does not allow for turning off the dialysate flow, or if doing so violates clinic policy, decrease the dialysate flow to its minimum setting.
2. Decrease the blood flow to 100 mL/min for 15 seconds (longer if the bloodline volume to the sampling port exceeds 15 mL). To prevent pump shut-off as the blood flow rate is reduced, it may be necessary to manually adjust the venous pressure limits downward. At this point, proceed to obtain your sample. You can either shut off the blood pump before sampling, or leave it running at 100 mL/min while the sample is being drawn.
3. After the sample has been obtained, stop the blood pump (if not already stopped) and complete the patient disconnection procedure as per dialysis clinic protocol.

Drawing the sample from the arterial needle tubing using a Vacuette® device

1. Follow Steps 1 and 2 above (Slow-Blood-Flow-Method).
2. After the 15 second slow-blood-flow period (a slow-blood-flow period is still required to clear the small volume in the arterial needle tubing of recirculated blood), stop the blood pump. Clamp the arterial and venous blood lines. Clamp the arterial needle tubing. Disconnect the blood line tubing from the inlet blood line, and attach a Vacuette® with a Luer-Lok type of connection to the arterial needle tubing (or arterial port of the venous catheter). Release the clamp on the arterial needle tubing and obtain the blood sample.
3. After the sample has been obtained, stop the blood pump (if not already stopped) and complete the patient disconnection procedure as per dialysis clinic protocol.

STOP-DIALYSATE-FLOW METHOD

1. At the completion of hemodialysis, turn off the dialysate flow (or set to bypass) and decrease the UFR to 50 mL/hr, to the lowest TMP/UFR setting or off.
2. Wait 3 minutes. Do not reduce the blood flow rate during this 3 minute period.
3. Obtain the blood sample, either from the sampling port on the inlet blood line, from the arterial needle tubing or from the arterial port of the venous catheter if using the needle-free method as described in the preceding section. If sampling from the inlet blood line, it does not matter if you stop or do not stop the blood flow while this sampling is being taken. It is best to stop the blood pump prior to sampling. In the stop-dialysate-flow method, slowing the blood flow prior to sampling should not be done.
4. After the sample has been obtained, return the patient's blood in the bloodlines and dialyzer per protocol.

Centrifuge Technique

Blood includes blood cells and serum. Electrolytes, nutrients and vitamins, hormones, clotting factors and proteins, such as albumin and immunoglobulins (antibodies to fight infection), are dissolved in the serum. (You may also hear the term “plasma”. When clotting factors have essentially been inactivated from the serum by additives contained in some tubes, the remaining specimen is plasma – the clear or yellow part).

The cellular portion of blood contains red blood cells (RBCs), white blood cells (WBCs) and platelets.

Some tests, depending on what is being measured, require these components to be separated. The centrifuge separates these components ensuring test accuracy. For example, measuring potassium requires plasma only and any blood cells in the specimen would impact the accuracy.

Proper centrifugation (spinning) is important to ensure a quality specimen. Your centrifuge has already been calibrated at the correct rotations per minute (RPM) of 3000. You will need to set the timer to 20 minutes for specimens requiring centrifugation.

It is important the centrifuge is balanced. To balance the centrifuge, tubes of the same volume should be placed across from each other, using tubes filled with water if needed. The centrifuge should be placed on a flat surface. Balancing the centrifuge and placing it on a flat surface ensure it will not vibrate or break tubes while operating. When placing the tubes into the centrifuge, particularly the green top tubes, be mindful that the tube top does not rest on the lip of the red tube inserts or the tube lid will come off during the centrifuge cycle.

Balance the centrifuge by placing tubes of the same volume across from each other. Use water filled tubes, if needed.



1. Place the centrifuge on a flat surface.
2. Turn the switch to off.
3. Plug in the centrifuge.
4. Load and balance the centrifuge.
5. Close and latch the lid.
6. Turn the control to 20 minutes, or as instructed by your care provider.
7. If the centrifuge vibrates after you turn it on, turn it off and check the balance of the tubes. Re-balance as needed.
8. Once complete, use the plastic Specimen Transport bags with absorbent sheet to store the specimens. Refrigerate those needing refrigeration.



Properly Spun Tube

Plasma, the clear or yellow part, contains no red blood cells.

Gel is firmly wedged against sides and separates plasma from red blood cells.

Red blood cells are contained below the gel barrier.

Cleaning and Disinfecting Centrifuges

First, place the centrifuge on a flat surface.

CLEANING

- Clean the centrifuge weekly using a mild detergent. Spills should be wiped up immediately.
- Clean both the exterior and the interior.
- Interior cleaning includes the interior bucket, specimen holder, rotor and rubber cushion.

DISINFECTING

- Disinfect using a 10% bleach solution (one part bleach to nine parts water).
- Exterior of the centrifuge should be disinfected weekly.
- Interior should be disinfected monthly.

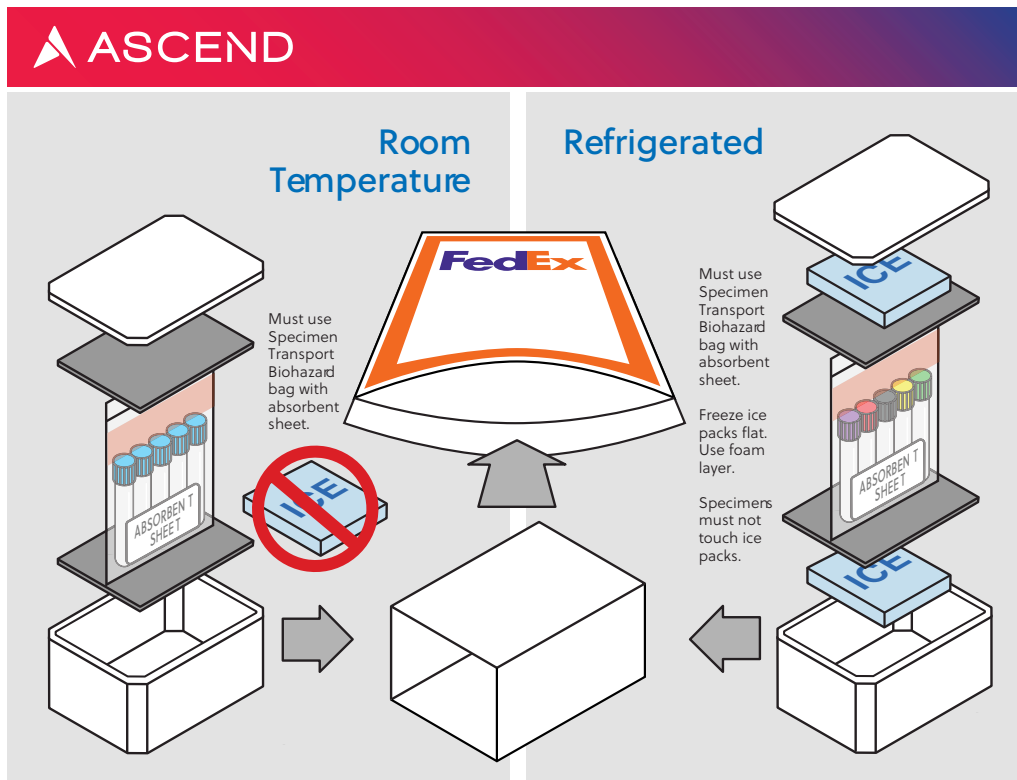
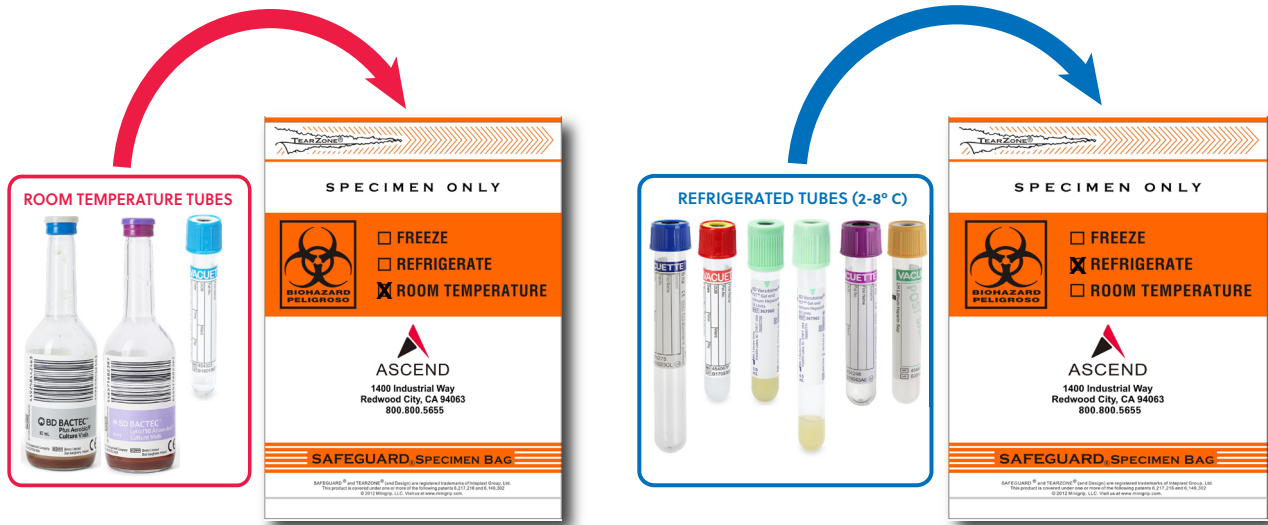
TIPS

- Always unplug power cord from the electrical outlet before cleaning.
- Wear disposable gloves.
- Follow your clinic's safety procedures when cleaning and disinfecting the centrifuge.
- Before transporting the centrifuge to a new location, the exterior and interior surfaces should be cleaned and disinfected.
- Plug centrifuge back into electrical outlet only when completely dry.
- Prepare a fresh 10% bleach solution each time. Once mixed with water, bleach loses effectiveness after 24 hours. The solution cannot be stored for future use.

Specimen Packaging

Transporting Specimens to Clinic

It is imperative you return your specimens to the clinic on the same date of collection for shipping. This includes water or dialysate samples, if applicable. Make sure specimens that need to be shipped refrigerated are refrigerated, and those that need to be at room temperature remain at room temperature until transported to the clinic. Use separate biohazard transport bags when packaging refrigerated and room temperature samples. Do not expose specimens to extreme temperatures, i.e., do not leave them in your car on very cold or very hot days.



For more information, please contact Client Services at 800.800.5655, Option 1.



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