

DHMC Radiology — Ultrasound Protocol Index

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Dept. Procedure Title	Ultrasound Abdomen Limited Right Upper Quadrant (RUQ) Imaging Procedure - Radiology	Procedure ID	10713
Keywords	RUQ, right, upper, limited, quadrant, us, ultrasound, abdomen, hepatology		
Department	Ultrasound		

I. Purpose

To describe the procedures for performing limited abdominal ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Abdomen Limited Right Upper Quadrant (RUQ) Imaging

1. Liver

- i. Perform longitudinal and transverse views to assess the liver parenchyma for focal or diffuse abnormalities.
- ii. Compare the liver echogenicity to that of the right kidney.
- iii. Obtain images to include hepatic lobes (right, left, and caudate), inferior vena cava (IVC) and right hemidiaphragm.
- iv. Perform measurement of the liver length in a sagittal plane at the level of the right kidney (anterior axillary line).

2. Gallbladder and Biliary System

- i. Obtain longitudinal and transverse images of the gallbladder in the supine and decubitus positions.
- ii. Measure the gallbladder wall.
- iii. Assess for a sonographic “Murphy’s sign.
- iv. Evaluate for the presence or absence of intrahepatic and extrahepatic bile duct dilatation.

- v. Obtain measurement of the bile duct preferably over the right hepatic artery in the portal hepatitis.
 - Additional imaging in the upright position may be helpful in finding small stones in the gallbladder neck.

3. Pancreas

- i. Perform transverse and sagittal images of the pancreas to include head, body, and tail.
- ii. Evaluate and measure the pancreatic duct and the distal common bile duct in the region of the pancreatic if dilated.

4. Right Kidney

- i. Obtain representative images in the longitudinal and transverse planes of the right kidney.
 - Longitudinal images should document lateral and medial margins of the kidney.
- ii. Include transverse views of upper, mid, and lower poles.
- iii. Perform maximum measurements (minimum of 2) of renal length.
- iv. Compare renal echogenicity to that of the liver.
- v. Use a color Doppler to exclude mild hydronephrosis vs. hilar vessels.

B. Abdomen Limited - Hepatology Imaging Protocol

- **(Imaging of the spleen may also be requested. Check order for clarification)**

1. Liver

- i. Perform longitudinal and transverse views to assess the liver parenchyma for focal or diffuse abnormalities.
- ii. Compare the liver echogenicity to that of the right kidney.
- iii. Obtain images to include hepatic lobes (right, left, and caudate), inferior vena cava (IVC) and right hemidiaphragm.
- iv. Perform measurement of the liver length in a sagittal plane at the level of the right kidney (anterior axillary line).

2. Gallbladder and Biliary System

- i. Obtain longitudinal and transverse images of the gallbladder in the supine and decubitus positions.
- ii. Measure the gallbladder wall.
- iii. Assess for a sonographic “Murphy’s sign”.
- iv. Evaluate for the presence or absence of intrahepatic and extrahepatic bile duct dilatation.
- v. Obtain measurement of the bile duct preferably over the right hepatic artery in the portal hepatitis.
 - Additional imaging in the upright position may be helpful in finding small stones in the gallbladder neck.

3. Spleen

- **(Imaging may be requested. Check order for clarification)**
 - i. Obtain representative images of the spleen in the longitudinal and transverse planes.
 - ii. Perform longitudinal and transverse measurements of the spleen.
 - iii. Compare the splenic echogenicity to that of the left kidney.

VI. References **N/A**

Responsible Owner:	Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Connell, Chandler; Kvinlaug, Christine	Version #	4
Current Approval Date:	05/02/2022	Old Document ID:	
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Related Polices & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Adult Native Kidney Imaging Procedure - Ultrasound - Radiology	Procedure ID	11182
Keywords	adult, native, kidney, sonographers, sonologists, interpretation, images, imaging, us, ultrasound, studies		
Department	Ultrasound		

I. Purpose of Procedure

To describe procedures for performing native kidney Ultrasound studies.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

The following standard images are required for interpretation.

1. Obtain representative images in the longitudinal and transverse planes of both kidneys.
2. Document lateral and medial margins of the kidneys for longitudinal images.
3. Include labeled images of upper, mid, and lower poles for transverse views of both kidneys.
4. Include the maximum measurements (minimum of 2) of renal length of both kidneys.
5. Compare renal echogenicity to that of the liver or spleen.
6. Obtain longitudinal and transverse images of the urinary bladder.
7. Utilize the Color Doppler to document urinary jets when hydronephrosis is present.
8. When there is a clinical suspicion of pyelonephritis, record color or Power Doppler images.
9. Use Color Doppler to exclude mild hydronephrosis versus hilar vessels when the gray scale images are equivocal.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Connell, Chandler; Kvinlaug, Christine	Version #	3
Current Approval Date:	10/28/2021	Old Document ID:	5643
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Related Policies & Procedures:	Native and Transplant Kidney Biopsy Imaging Procedure - Ultrasound - Radiology		
Related Job Aids:			

Procedure Title	Airborne Precautions Procedure	Procedure ID	7417
Keywords	airborne, precautions, chickenpox, varicella, zoster, herpes, tuberculosis, tb, measles, PAPR, N95, checklist		

I. Purpose of Procedure

The purpose of this procedure is to standardize the process to safely place and maintain patients on Airborne Precautions.

II. Procedure Scope

All providers, staff, students, and volunteers at Dartmouth-Hitchcock.

III. Definitions

Airborne Precautions are used for diseases spread through aerosolizing tiny respiratory particles into the air, that remain suspended for long periods of time. Examples include tuberculosis (TB), disseminated herpes zoster (DHZ), chickenpox, and measles.

IV. Equipment

- Negative pressure room
- N95 respirator
- Powered air purifying respirator (PAPR) unit
- Half face elastomeric respirator
- Eye Protection (face shield, goggles, safety glasses)
- Level II masks
- Yellow precaution gowns
- Respiratory Isolation Cart (RIC)
- Airborne Precautions sign
- Contact Precautions sign
- Portable high efficiency particulate (HEPA) filter

V. Procedure

A. For Inpatient and Outpatient Areas When a Patient Requires Airborne Precautions

1. Obtain a respiratory isolation cart (RIC) from Inventory and Logistics (Stores) by calling 5-6101.
2. Store the cart outside the room, or in the anteroom.
3. Verify cart is plugged in to the nearest outlet at all times.
4. Post the specific isolation precautions sign on the door to the patient room:
 - a. Tuberculosis (TB) or measles: Airborne Precautions
 - b. DHZ or chickenpox: Airborne **and** Contact Precautions
 - c. Novel respiratory illnesses: Airborne **and** Contact Precautions

5. Patient is to be cared for in a negative pressure room.
 - a. If the patient is in an area that lacks a negative pressure room, a portable HEPA filter must be ordered by calling Engineering at 5-7150 or pager 9234.
 - b. Keep the door closed at all times; for negative pressure rooms with an anteroom both doors are to remain closed at all times.
6. Before the patient arrives in the room:
 - a. For areas with a negative pressure room, ensure the room is negative pressure and that the pressure monitor is functioning.
 - i. The pressure monitor must read -0.01 or less at all times (this means that the room is negative).
 - ii. Ensure the monitor alarm is on and test the monitor alarm. When working correctly, the monitor will alarm if the door to the room is left open. If you are unsure of the process for testing the monitor alarm, or if the monitor alarm is not functioning, please contact Engineering at 5-7150 (M-F 0800 -1600) or pager 9234.
 - b. In areas lacking a negative pressure room, the HEPA filter must be placed in the room and turned on prior to the patient's arrival.
7. Review staff respirator fit test records (available from Environmental, Health and Safety) to ensure anyone entering the room has been fit tested and trained within the last year.

The following table is used to guide the set up and proper use of the room:

	TB	DHZ, Chickenpox	Measles	Novel Respiratory Illnesses
Room type	Negative Pressure	Negative Pressure	Negative Pressure	Negative Pressure
Room setup	Remove any unnecessary equipment and supplies	Remove any unnecessary equipment and supplies	Remove any unnecessary equipment and supplies	Remove any unnecessary equipment and supplies
Respiratory protection	N95 respirator or PAPR (motor and hood)	No respiratory protection indicated for IMMUNE staff.	N95 respirator or PAPR (motor and hood)	N95 respirator OR half face elastomeric respirator OR PAPR
Eye/Face Protection	Disposable face shield or goggles (safety glasses not adequate)	Disposable face shield or goggles (safety glasses not adequate)	Disposable face shield or goggles (safety glasses not adequate)	Disposable face shield or goggles (safety glasses not adequate)
Gowns	Follow Standard Precautions	For contact with the patient or environment	Follow Standard Precautions	For contact with the patient or environment
Gloves	Follow Standard Precautions	For contact with the patient or environment	Follow Standard Precautions	For contact with the patient or environment

Trash/linen	Routine practices	Routine practices	Routine practices	Routine practices
Equipment	Discard or decontaminate prior to reuse	Discard or decontaminate prior to reuse	Discard or decontaminate prior to reuse	Discard or decontaminate prior to reuse
Visitors	Wear a level II mask but explain that it does not offer complete protection.	Wear a level II mask, but explain that it does not offer complete protection; gown and gloves not indicated	Wear a level II mask but explain that it does not offer complete protection.	Visitors are prohibited.

B. For Patients on Airborne Precautions Admitted to an Inpatient Unit

1. Follow steps in section A above.
2. Notify the following departments when the patient is placed on Airborne Precautions:
 - a. House Supervisor at pager 9732
 - b. Collaborative Healthcare-associated Infection Prevention Program (CHIP) at pager 8447 or email washyourhands@hitchcock.org
 - c. D-H Safety Office at 5-7233 or email safety@hitchcock.org
 - d. Nurse Manager or RN Unit Supervisor
2. Educate patient and/or family members on the use of Airborne Precautions and document education in patient chart.
3. Place an order in eD-H for the appropriate isolation. Nursing may place the order per protocol.
4. Patients may only leave the room for medically necessary procedures that cannot be performed in the room.
 - a. When scheduling patients for tests or procedures, notify the receiving area of the need for Airborne Precautions.
5. Patients MUST wear a level II mask when leaving the room. Patients DO NOT wear an N95 or PAPR when leaving the room.
6. Review the “Resuscitation of Patients on Airborne Precautions” procedure online.
7. For daily cleaning of the room, PPE is to be worn (as above).
8. After using the PAPR hood and motor, wipe the outside of each unit (motor and hood) with PDI Super Sani-Cloths.
 - a. Clean the inside of the face shield part of the hood with an alcohol wipe.
 - i. There may be special cleaning procedures in conjunction with central sterile reprocessing should the situation warrant such cleaning.
9. Go to the D-H Intranet to view a video refresher for proper donning, doffing, and disposal of PPE.

C. For Patients Requiring Airborne Precautions in the Clinic Area

1. Follow steps in section A above.
2. On the day of the appointment, give the reception staff the name and medical record number of the patient requiring Airborne Precautions.
3. Instruct the reception staff to carry out steps 4 and 5 below.
4. When the patient arrives, they must don a level II or higher mask covering the mouth and nose.
5. Room the patient immediately. These patients must not sit in the waiting area.

D. For Patients Requiring Airborne Precautions in Procedural Areas (non-OR)

1. Follow the steps in section A above.
2. Patients must don Level II mask covering the mouth and nose during transport. Patients DO NOT wear an N95 or PAPR when leaving the room.
3. Room patient immediately. Patients must not wait or recover in open areas (e.g. PACU, Same Day, waiting rooms)

E. Discharging or Transferring Patients From Inpatient and Outpatient Areas

1. After the patient is discharged or transferred, the room is to remain on negative airflow or the HEPA filter must remain on in the room with the door or doors closed for 60 minutes, unless room-specific time has been calculated by measured air changes. Signage remains on the door.
2. After that time, respiratory protection is no longer necessary, but all other PPE required for room cleaning is to be used.
3. Contact Environmental Services for terminal room cleaning.
4. Follow Environmental Services policies for terminal cleaning of Airborne Precaution and/or Contact Precaution rooms (linked below) and remove signage after room cleaning is complete.

F. Management of non-negative pressure rooms that a patient requiring Airborne Precautions has been discharged from (clinic, procedural (non-OR) inpatient areas)

1. After the patient has left the room, ensure the door to the room stays closed for 60 minutes in inpatient and 90 minutes in clinic areas unless room specific time has been calculated by measured air changes. Signage remains on the door.
 - a. Ensure the proper expanded precautions signage remains on the door until a terminal clean has been completed.
2. After that time, respiratory protection is no longer necessary, but all other PPE required for room cleaning is to be used.
3. Contact Environmental Services for terminal room cleaning. Clinic spaces may perform normal room cleaning practices for patients on precautions.

Note: Staff who believe they have had an unprotected exposure to a patient on Airborne Precautions are to report the exposure via the Occurrence with Learning (OWLs) system AND contact CHIP (Infection Prevention) at pager 8447 or washyourhands@hitchcock.org. Infection Prevention staff and Occupational Medicine work together to determine the type of exposure and the employee is informed if any further follow up or testing is needed.

VI. References N/A

Responsible Owner:	CHIP	Contact(s):	Caitlin Adams Barker washyourhands@hitchcock.org
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Date Procedure to go into Effect:	06/25/2021		
Related Polices & Procedures:	Standard and Expanded Precautions Policy Chickenpox and Shingles Management Procedure Resuscitation of Patients on Airborne Precautions Procedure Cleaning Powered Air Purifying Respirator (PAPR) Motor		

Printed copies are for reference ONLY. Please refer to the electronic copy for the latest version.

Reference ID #7417, Version #5

Approval Date: 06/25/2021

Related Job Aids:	Precautions for Specific Diseases and Conditions - Job Aid Airborne Precaution Room Cleaning Procedure - Environmental Services Airborne Precautions Sign Job Aid Contact Precautions Sign Job Aid Contact Precaution Discharge Patient Room Cleaning Procedure - Environmental Services Contact Precaution Occupied Patient Room Cleaning Procedure- Environmental Services
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Dept. Procedure Title	Abdominal Aorta Imaging Procedure - Ultrasound - Radiology	Procedure ID	11183
Keywords	interpret, interpretation, sonographers, sinologist, us, ultrasound, abdominal, aorta		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for performing abdominal aorta ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all Sonographers and Sonologists within the Ultrasound section of Dartmouth-Hitchcock Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Specific Scheduling Orders

- Screening evaluation of the Aorta should be ordered as IMG3585 (AAA screening).
- Follow up for a known aortic aneurysm or signs & symptoms should be ordered as IMG3502 (retroperitoneum limited).

B. Standard Images Required for Interpretation

- Obtain representative longitudinal and transverse images of the entire abdominal aorta to the bifurcation.
- Record a minimum of three levels (proximal, mid, distal) longitudinal AP and transverse measurements.
- Report the longitudinal (AP) and transverse (Trans) measurements only into the structured reporting package.
- Obtain the AP measurement from the longitudinal image.
- Obtain longitudinal and transverse images and measurements of the proximal common iliac arteries.
- Obtain color Doppler images of the abdominal aorta and proximal common iliac arteries documenting thrombus if present.
- Screening evaluation and/or assessment for known aneurysm require the same standard images.

VI. References N/A

Responsible Owner:	Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Connell, Chandler; Kvinlaug, Christine	Version #	3
Current Approval Date:	12/02/2021	Old Document ID:	
Date Procedure to go into Effect:	12/02/2021		
Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Appendix Imaging Procedure - Ultrasound - Radiology	Procedure ID	17876
Keywords	appendix, imaging		
Department	Radiology, Ultrasound		

I. Purpose of Procedure

To describe the procedure for sonographers and sonologists performing appendix specific Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This applies to all sonographers and sonologists with the Ultrasound section of Dartmouth-Hitchcock Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

- Using a linear high frequency transducer **and graded compression**, obtain static images of the right lower quadrant with particular attention to the site of patient's maximum discomfort.
- Attempt to identify the appendix as a blind ending tubular structure documenting any of the following features that may indicate appendicitis:
 - Appendix diameter greater than 6 mm (occasionally normal up to 8 mm).
 - Appendix wall thickness 3 mm or greater.
 - Non compressible
 - Appendicolith often with an acoustic shadow
 - Increased periappendiceal echogenicity suggesting inflammation
 - Increased appendiceal mural color flow suggesting hyperemia
 - Free or localized fluid in the RLQ
- Obtain cine through any area of question

VI. References N/A

Responsible Owner:	Department of Radiology	Contact:	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine	Version #	2
Current Approval Date:	12/03/2020	Old Document ID:	
Date Procedure to go into Effect:	12/03/2020		
Related Policies & Procedures:			
Related Job Aids:			

Departmental Policy Title	Changing Orders Protocol - Radiology - Ultrasound	Policy ID	26672
Keywords	change, changing, order, radiology, ultrasound		
Department	Dartmouth-Hitchcock – Lebanon Radiology		

I. Purpose of Policy

To describe the steps to amend orders so the appropriate examination can be performed based upon the clinical questions or diagnosis. Changes made to Ultrasound exams are to be considered within the clinical scope of practice or both Sonographers and Sonologists.

II. Policy Scope

This procedure applies to all Ultrasound imaging (Obstetrical, Gynecologic, Abdominal & Superficial) studies performed at Dartmouth-Hitchcock - Lebanon.

III. Definitions N/A

IV. Policy Statement

- All Ultrasound orders are reviewed pre-exam through the Radiant orders verification process.
- The indication and/or diagnosis listed determines the exam necessity. Communication to the attending/ ordering physician will be conducted via EPIC secure chat to request a new order be placed. Should the physician be unavailable, the Ultrasound attending Radiologist can give authorization and the order changed “per Radiology protocol”.
- Once communication is completed, a note will be placed in EPIC within “study notes” referencing the order change and include the date, time, and initials.
- The best imaging approach is to be defined in real time and should determine the exam necessity. Endo cavitory or transabdominal approach is considered within this clinical scope of practice.

V. References N/A

Responsible Owner:	Radiology - Ultrasound	Contact:	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Connell, Chandler; Kvinlaug, Christine	Version #	1
Current Approval Date:	01/20/2022	Old Document ID:	
Date Policy to go into Effect:	01/20/2022		
Related Policies & Procedures:			
Related Job Aids:			

Departmental Policy Title	Chaperone Policy for Ultrasound Exams - Radiology	Policy ID	1217
Keywords	chaperone, ultrasound, us		
Department	Radiology – Ultrasound Section		

I. Purpose of Policy

To define the circumstances under which a chaperone is required during an ultrasound examination and to describe the process for obtaining chaperones.

II. Policy Scope

D-H Department of Radiology, Ultrasound Section.

III. Definitions

Eligibility for chaperoning is limited to adult employees (male or female, as specified) of Dartmouth-Hitchcock and student doctors at the Geisel School of Medicine. Volunteers who are neither employees nor Geisel students are *not* eligible.

IV. Policy Statement

- Intracavitary, transperineal, or breast ultrasound examinations of a female patient may be performed by a male sonographer only in the presence of a female chaperone.
- A female sonographer may, at her discretion, request the presence of a chaperone during an examination of a male patient (i.e. testicular exam).
- Responsibility for securing chaperone services
 - During normal business hours (0800-1700, M-F), responsibility for arranging chaperone services rests with the sonographer performing the examination.
 - Outside of normal business hours, the ordering department will be asked to provide a chaperone (when required) for all on-call ultrasound studies.
 - If staffing limitations make it unfeasible to provide a chaperone, the Emergency Department (ED) Charge Nurse (or in the case of a non-ED patient, the requesting provider) will call the D-H House Supervisor (pager 9732) and request a chaperone.
 - The ED Charge Nurse (or in the case of a non ED patient, the requesting provider) will communicate with the on-call Radiology resident to ensure a timely process and scheduling for the ultrasound exam of the patient.

V. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Chief Officer - Operating (MHMH); Office of Policy Support - All Other Documents; Chertoff, Jocelyn	Version #	3
Current Approval Date:	05/07/2020	Old Document ID:	
Date Policy to go into Effect:	05/07/2020		
Related Policies & Procedures			
Related Job Aids:	Ultrasound Imaging of Emergency Department (ED) Patients - Job Aid - Radiology		

Dept. Procedure Title	Complete Abdomen Imaging Procedure - Ultrasound - Radiology	Procedure ID	11184
Keywords	complete, abdomen, abdominal, sonographers, sonologists, interpretation, studies, images, imaging, ultrasound, us, liver, gallbladder, pancreas, kidney		
Department:	Ultrasound		

I. Purpose of Procedure

To describe the procedures for performing abdominal Ultrasound studies which include Abdomen Limited, Abdomen Complete, Abdomen Limited and Abdomen Complete with Vascular studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Aorta

1. Obtain representative images in the longitudinal plane of the entire aorta.
2. Document enlargement if present.

B. Liver

1. Perform longitudinal and transverse views to assess the liver parenchyma for focal or diffuse abnormalities.
2. Compare the liver echogenicity to that of the right kidney.
3. Obtain images to include hepatic lobes (right, left and caudate), Inferior Vena Cava (IVC) and right hemi diaphragm.
4. Perform a measurement of the liver length in a sagittal plane at the level of the right kidney (anterior axillary line).
5. Perform a minimum of (2) longitudinal and (2) transverse plane cine captures of the liver for all clinical indications of liver disease. Cine captures should include sagittal right and left lobes and transverse right and left lobes.
6. Obtain 4-quadrant imaging to assess for ascites for Abdomen Complete studies only.

C. Gallbladder and Biliary System

1. Obtain longitudinal and transverse images of the gallbladder in the supine and decubitus positions.
2. Assess stone mobility.
3. Document the measurement of the gallbladder wall if the gallbladder appears thickened and assess and document if a sonographic “Murphy’s sign” is also present.
4. Determine the presence or absence of intrahepatic and extrahepatic bile duct dilatation.
5. Obtain a measurement of the bile duct preferably over the right hepatic artery in the portal hepatis.
 - Additional imaging of the patient the upright position may be helpful in finding small stones in the gallbladder neck.

D. Pancreas

1. Perform transverse and sagittal images of the pancreas.
2. Evaluate and measure the pancreatic duct and the distal common bile duct in the region of the pancreatic head if dilated.

E. Spleen

1. Obtain representative images of the spleen in the longitudinal and transverse planes.
2. Perform longitudinal and transverse measurements of the spleen.
3. Compare the splenic echogenicity to that of the left kidney.

F. Kidneys

1. Obtain representative images in the longitudinal and transverse planes of both kidneys.
2. Longitudinal images must document lateral and medial margins of the kidneys.
3. Transverse views of both kidneys must include labelled images of upper, mid, and lower poles.
4. Perform maximum measurements (minimum of 2) of renal length of both kidneys.
5. Compare renal echogenicity to that of the liver or spleen.
6. Record Color Power Doppler images when there is a clinical suspicion of pyelonephritis.
7. Use Color Doppler to exclude mild hydronephrosis vs. hilar vessels

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Connell, Chandler; Kvinlaug, Christine	Version #	3
Current Approval Date:	10/28/2021	Old Document ID:	
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Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Cranial Imaging Procedure - Ultrasound - Radiology	Procedure ID	11185
Keywords	cranial, cranium, sonographer, sonologist, interpretation, images, ultrasound, us, studies		
Department	Ultrasound		

I. Purpose of Procedure

To describe how to perform cranial Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This applies to all Sonographers and Sonologists within the Ultrasound section of Dartmouth-Hitchcock-Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

This exam is performed on infants less than or equal to 6 months.

Scans are principally performed through the anterior fontanel to evaluate for intracranial hemorrhage or periventricular leukomalacia (PVL). Additional images may be obtained through the posterior fontanel, foramen magnum or temporal bone.

If extra-axial fluid is present, utilize a linear transducer to further differentiate between subdural or subarachnoid fluid. Document vessels crossing in the fluid space.

Coronal views – Minimum 5 evenly spaced images

- Frontal lobes and orbits
- Frontal horns of the lateral ventricles
- Body of the lateral ventricles
- Occipital horns of the lateral ventricles
- Occipital region
- Perform cine capture in the coronal plane through the entire brain

Right para sagittal views – Minimum 3 images each side

- Brain lateral to lateral ventricle beginning at Sylvian fissure
- Maximum size of the lateral ventricle
- Choroid plexus leading into the caudo-thalamic groove (CTG)
- Perform cine capture in the sagittal plane beginning at the Sylvian fissure and moving medial to the midline
- Using a linear transducer, obtain sagittal cine capture(s) of the parenchyma

Midline sagittal view - Document the following:

- Corpus callosum
- Third ventricle region
- Fourth ventricle
- Vermis of the cerebellum
- Cisterna magna

Left para sagittal views – Minimum 3 images each side.

- Brain lateral to lateral ventricle beginning at Sylvian fissure
- Maximum size of the lateral ventricle
- Choroid plexus leading into the caudo-thalamic groove (CTG)
- Perform cine capture in the sagittal plane beginning at the Sylvian fissure and moving medial to the midline
- Using a linear transducer, obtain sagittal cine capture(s) of the parenchyma

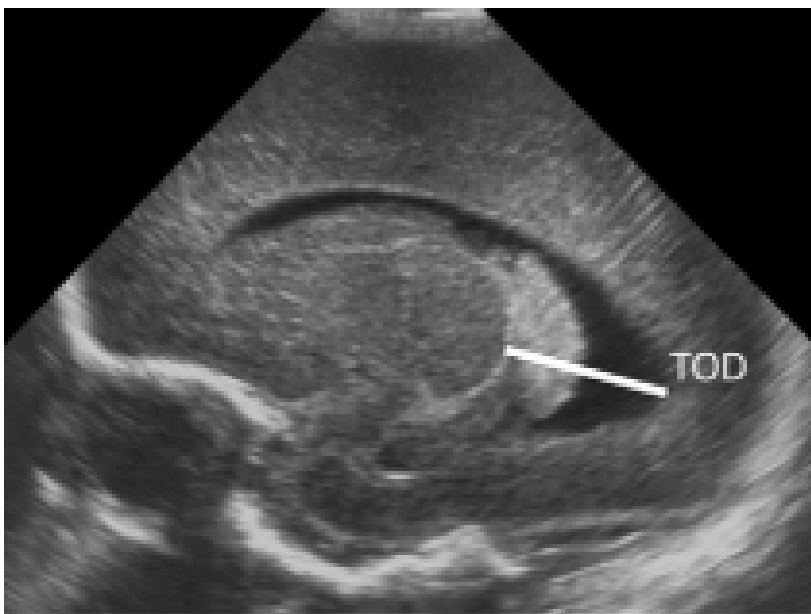
Posterior fossa views:

- Obtain images through the mastoid showing the cerebellum and posterior fossa structures.

Ventricular dilatation measurements (Inpatient studies only):

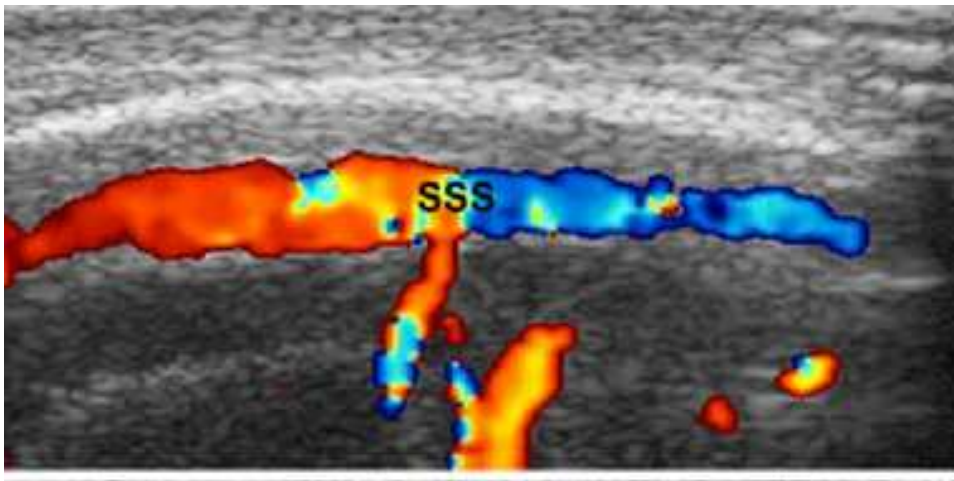
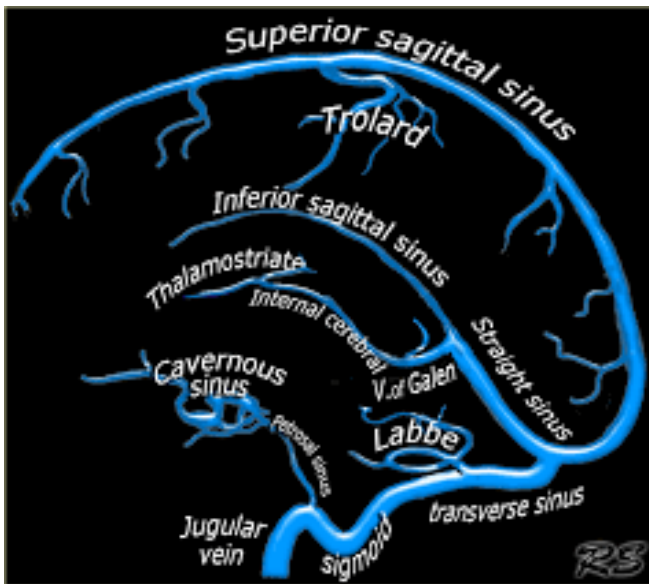
Obtain measurements and static images of the following:

- Ventricular index (VI)
- Anterior horn width (AHW)
- Thermo-occipital distance (TOD)



Additional imaging (Inpatient only):

- Applying very light pressure, obtain power Doppler static imaging of the superior sagittal sinus with a linear transducer in the coronal and sagittal planes.



VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine	Version #	3
Current Approval Date:	09/21/2020	Old Document ID:	
Date Procedure to go into Effect:	09/21/2020		
Related Policies & Procedures:			
Related Job Aids:			

Job Aid	Endometrial Biopsy Setup Job Aid - Ultrasound - Radiology	ID:	11355
Keywords	u/s, us, bx, ultrasound, biopsy, endometrial		
Department	Ultrasound, Radiology		

I. Purpose

To provide a list of necessary supplies for Ultrasound endometrial biopsy procedures.

- Speculum – (have all sizes available)
- Cotton Balls/Betadine Prep
- Surgical gloves (appropriate for physician)
- Long Curved Kelley
- Endometrial Biopsy Curette – 3 choices- have all available
- 10% Neutral Buffered Formalin
- Dilators – Tenaculum
- Surgical pathology request created in eD-H (created by MD)
- Patient Labels
- Specimen transport bag]
- Lidocaine (appropriate for physician)

Billing/ Supplies:

- Guidance only all charges included. No supplies required

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents, Jean Bolger	Version #	2
Current Approval Date:	10/15/2018	Old Document ID:	NEW
Date Policy to go into Effect:	10/15/2018		
Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Gynecologic Imaging Procedure - Ultrasound - Radiology	Procedure ID	11222
Keywords	gynecologic, imaging, ultrasound, study, studies		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for sonographers and sonologist performing gynecologic Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Scheduling

1. Make every attempt to schedule examinations between cycle day 4 and 12.
 - In most cases transvaginal scanning is the preferred method of imaging.
 - Transabdominal approach should only be used if the patient is not a candidate for placement of a transvaginal probe, i.e., is not sexually active, has not yet had a gynecologic exam with a speculum, has been sexually abused, or refuses the endovaginal approach.

B. Ultrasound Imaging

- Annotate the plane of the scan, laterality, and structure(s) being imaged.
- High level decontamination is necessary after each use and the transducer used needs to be identified. Enter the transducer number (located on the connector) into the structured reporting package.
- Once the procedure is completed, the protective cover should be removed and discarded. The transducer should then be washed, placed in plastic bag and biohazard sticker attached. The transducer should then be transported to the decontamination room and processed according to Central Sterile and Reprocessing (CSR) decontamination guidelines.

C. Uterus

- Obtain representative images longitudinally and transversely of the uterus.
- Measurements of the uterine length from the fundus to the cervix and AP diameter perpendicular to the length should be documented.
- The uterine contour and any abnormalities should be documented.

- The double layer endometrial echo should also be analyzed for thickness and or focal abnormality.
- Color Doppler imaging should be performed to evaluate the endometrium.
 - If the entire uterine volume cannot be obtained transvaginally, measurements should be obtained transabdominally.

D. Ovaries & Adnexae

- Both ovaries should be measured in three dimensions and the volume recorded.
- Any abnormalities, size, echogenicity, characteristics (cystic, solid, complex) should be documented and measured.
- Color and spectral Doppler should be used to evaluate ovarian vascularity in the clinical setting when the suspicion of torsion or adnexal masses is suspected.
- Cysts which contain mural nodules/masses should have the size of them measured and images obtained. The presence or absence of vascularity within any mural nodule should be documented.

E. Cul de Sac

- Image and evaluated for the presence of free fluid or masses.

F. 3D & Cine Image Capture

- Obtain representative image of the endometrium to document contour and any questionable abnormalities.
- Also, perform a grey scale cine clip capture in sagittal and transverse planes when where the endometrial stripe appears thick on static images.
- A color cine capture should also be performed preferably in the sagittal plane.

G. Sonohysterogram (SHG)

- A pregnancy test must be performed prior to the study for women of reproductive age who have sexual relations with a male partner, and all of those patients undergoing treatment for infertility.
- This task is performed in the OB/GYN clinic prior to the Ultrasound appointment and documented in the electronic medical record.
- Perform a preliminary transvaginal ultrasound exam following the above guidelines. The ordering provider will request a comprehensive exam in the order.
- Follow Sonohysterogram (SHG) job aid for supplies and setup for this procedure.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s): email	Pamela Mazurek
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine	Version #	4
Current Approval Date:	03/29/2021	Old Document ID:	
Date Procedure to go into Effect:	03/29/2021		
Related Policies & Procedures:	Infertility Imaging Procedure - Ultrasound - Radiology		
Related Job Aids:	Sonohysterogram (SHG) Setup Job Aid - Ultrasound - Radiology		

Dept. Procedure Title	Hypertrophic Pyloric Stenosis (HPS) Imaging Procedure - Ultrasound - Radiology	Procedure ID	11470
Keywords	us, ultrasound, sonographers, sonologists, interpretation, studies, hypertrophic, pyloric stenosis, HPS		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for sonographers and sonologists performing Hypertrophic Pyloric Stenosis Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Standard Images Required for Interpretation

- Using a linear high frequency transducer, image the pylorus in the right upper quadrant (RUQ) location.
 - Sonographic features: The suspicious area appears as a uniformly thickened, hypoechoic mass surrounding a hyperechoic center.
- Obtain measurements of the pyloric channel length (normal length <15mm length).
- Obtain transverse measurement of the single wall thickness (normal thickness <3mm).
- Obtain a cine image capture through suspicious area.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine	Version #	3
Current Approval Date:	11/04/2021	Old Document ID:	
Date Procedure to go into Effect:	11/04/2021		
Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Infertility Imaging Procedure - Ultrasound - Radiology	Procedure ID	11187
Keywords	studies, us, ultrasound, interpretation, images, imaging, infertility		
Department	Ultrasound		

I. Purpose of Procedure

To describe guidelines for performing infertility-specific Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all Sonographers and Sonologists within the Ultrasound section of Dartmouth-Hitchcock Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Ovulation Induction: (OI)

- Obtain the following images for Day 3, baseline or endometrial lining check:
 1. Obtain double layer endometrial echo measurement in the longitudinal axis.
 2. Obtain 3 measurements of both ovaries to determine ovarian volume.
 3. Evaluate for antral follicles of both ovaries (follicles less than 1.0 cm). Count all follicles less than 1.0 cm and record number for each ovary. The automated GE – SONOAVC option will not identify follicles under 10 mm.
 4. Measure all follicles greater than 1.0 cm – may use specific ultrasound unit enabled with follicular monitoring to evaluate (perform appropriate post-image acquisition processing).
 5. Obtain images of the cul-de-sac to assess for free fluid.
 6. Make note and record any adnexal masses seen.
- For subsequent studies, Day 7 and beyond:
 1. Obtain a longitudinal image of the uterus with an endometrial echo measurement.
 2. Use specific Ultrasound unit enabled with follicular monitoring capability.
 3. Review all sectional planes to include or exclude measurement error.
 4. **Best clinical judgement should always be used prior to saving the follicular volume and data.
 5. Obtain three orthogonal measurements of the 3 lead follicles on each ovary.
 6. Obtain images of the cul-de-sac to assess for free fluid.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Connell, Chandler; Kvinlaug, Christine	Version #	3
Current Approval Date:	10/28/2021	Old Document ID:	
Date Procedure to go into Effect:	10/28/2021		
Related Policies & Procedures:	Gynecologic Imaging Procedure - Ultrasound - Radiology		
Related Job Aids:			

Job Aid	Inter procedural Specific Laboratory Orders Verbal with Read Back Job Aid - Radiology - Ultrasound	ID	26696
Keywords	Inter procedural, Inter-procedural, Interprocedural, Laboratory, Orders, Verbal, Read, Back, Radiology, Biopsy, Biopsies, US, Ultrasound, Guided		
Department	Radiology - Ultrasound (US)		

I. Purpose

To safely care for patients scheduled for Ultrasound (US) guided elective procedures and provide direction to personnel who prescribe and implement medical orders for the provision of patient care.

- Inter procedural laboratory studies can be ordered by the Sonographer working in Mary Hitchcock Memorial Hospital when Ultrasound guided biopsies, i.e., Prostate, Native, Transplant and Musculoskeletal biopsies are performed.
- The Sonographer places procedural lab orders as specified in the attached documentation, using verbal with read back order mode in eD-H. Order(s) are placed on the scheduled procedure day after procedure consent and bedside ‘time out’ have been obtained.
- After the procedure has been completed, all orders are to be signed by attending provider (Urology, Nephrology, Transplant, or Musculoskeletal) specified as the Ordering Provider and/or Associate Provider.

Responsible Owner:	Radiology - Ultrasound	Contact:	Dennis Seguin
Approved By:	Office of Policy Support (OPS), Chandler Connell	Version #	1
Current Approval Date:	01/26/2022	Old Document ID:	
Date Policy to go into Effect:	01/26/2022		
Related Policies & Procedures:	Managing Medical Orders Policy		
Related Job Aids:			

Dept. Procedure Title	Intussusception Imaging Procedure - Ultrasound - Radiology	Procedure ID	11225
Keywords	intussusception, us, ultrasound, sonographers, sonologists, interpretation, studies		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for sonographers and sonologists performing Intussusception Specific Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

1. Using a linear high frequency transducer, sweep from the right lower quadrant (RLQ) to the right upper quadrant (RUQ) and then across transverse colon to the left upper quadrant (LUQ) then down to the left lower quadrant (LLQ) in transverse and sagittal planes evaluating for a sonographic “bullseye” or target-like lesion.
2. Document static images in all locations.
3. Sonographic features: The suspicious area appears as a mass of concentric hyperechoic (mucosa) and hypoechoic (muscularis) layers (target appearance).
4. Obtain a cine image capture through suspicious areas.
5. If positive, obtain an image with color Doppler.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine	Version #	3
Current Approval Date:	10/26/2021	Old Document ID:	
Date Procedure to go into Effect:	10/26/2021		
Related Policies & Procedures:			
Related Job Aids:			

Job Aid	Intrauterine Device (IUD) Removal Setup Job Aid - Ultrasound - Radiology	ID:	11378
Keywords	u/s, IUD, ultrasound		
Department	Radiology, Ultrasound		

I. Purpose

To provide necessary supplies for Intrauterine device (IUD) removal procedures.

- Speculum – (have all sizes available)
- Betadine Prep
- Surgical gloves (appropriate for physician)
- Long Curved Kelley
- IUD Retriever (obtain from gynecology nurses as needed)
- Os finder
- Tenaculum
- Lidocaine Kit (local anesthesia)

Billing/ Supplies:

- Guidance only. No supplies

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents, Jean Bolger	Version #	2
Current Approval Date:	10/15/2018	Old Document ID:	NEW
Date Policy to go into Effect:	10/15/2018		
Related Policies & Procedures:			
Related Job Aids:			

Job Aid	Intrauterine Device (IUD) Placement Setup Job Aid - Ultrasound - Radiology	ID:	11377
Keywords	u/s, placement, iud		
Department	Ultrasound		

I. Purpose

To provide a list of necessary supplies for Intrauterine device placement (IUD) procedures.

- Pregnancy test if indicated
- Cotton Balls/Betadine Prep
- Surgical gloves (appropriate size for physician)
- Lidocaine Kit (local anesthesia)
- IUD sterile tray – (ask Gynecology nurse)
 - Gynecology nurse brings all necessary supplies to the exam room
- IUD – (ask Gynecology nurse for item)
- Tenaculum
- Os Finders
- Dilators
- Endometrial Biopsy Curette

Billing/ Supplies:

- Guidance only. No supplies required

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents, Jean Bolger	Version #	2
Current Approval Date:	10/15/2018	Old Document ID:	NEW
Date Policy to go into Effect:	10/15/2018		
Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Doppler Imaging of the Liver Scheduling and Imaging Procedure - Ultrasound - Radiology	Procedure ID	11380
Keywords	Doppler, liver, sonographer, sinologist, interpretation, images, studies, ultrasound, us, hepatology, protocol		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for sonographers and sonologists performing Liver Doppler studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Scheduling

1. Requests for liver Doppler are to be performed for the clinical indications of hepatitis, cirrhosis, “liver disease,” or portal vein thrombosis.
2. Requests to evaluate TIPS patency should be scheduled $\geq$ 10-14 days post procedure.

Abdomen Limited With Vascular - Hepatology Imaging Protocol

- (Imaging of the spleen may also be requested. Check order for clarification)

1. Liver

- Perform examination imaging per AIUM guidelines.
- Perform longitudinal and transverse views to assess the liver parenchyma for focal or diffuse abnormalities. Compare the liver echogenicity to that of the right kidney.
- Obtain images to include hepatic lobes (right, left, and caudate), inferior vena cava (IVC) and right hemidiaphragm.
- Perform measurement of the liver length in a sagittal plane at the level of the right kidney (anterior axillary line).
- Perform a minimum of (2) longitudinal and (2) transverse plane cine captures of the liver for all clinical indications of liver disease.
- Cine captures should include sagittal right and left lobes and transverse right and left lobes.

2. Gallbladder and Biliary System

- Perform examination imaging per AIUM guidelines.
- Obtain longitudinal and transverse images of the gallbladder in the supine and decubitus positions.
- Measure the gallbladder wall.
- Assess for a sonographic “Murphy’s sign.
- Evaluate for the presence or absence of intrahepatic and extrahepatic bile duct dilatation.
- Obtain measurement of the bile duct preferably over the right hepatic artery in the portal hepatitis.
- Additional imaging in the upright position may be helpful in finding small stones in the gallbladder neck.

3. Spleen

(Imaging as requested; check order for clarification).

- Perform examination imaging per AIUM guidelines.
- Obtain representative images of the spleen in the longitudinal and transverse planes.
- Perform longitudinal and transverse measurements of the spleen.
- Compare the splenic echogenicity to that of the left kidney.

4. Liver Doppler

- Perform examination imaging per AIUM guidelines.
- Perform color Doppler imaging of the main, left & right portal veins.
- Obtain color Doppler and a minimum of one (1) spectral waveform (angle corrected less than 60 degrees) in the main portal vein.
- Sample and measure the mean peak systolic velocity in the MPV and enter the value into the structured reporting package.
- Obtain 4-quadrant imaging to assess for ascites.

Abdomen Vascular Limited TIPS - Hepatology Imaging Protocol

○ **(Imaging of the spleen may also be requested; check order for clarification).**

- Perform examination imaging per AIUM guidelines.
- Imaging includes Liver, GB, CBD (spleen if requested) and Doppler interrogation.
- Perform color Doppler of the right, middle, & left hepatic veins.
- Perform color Doppler imaging of the main, left & right portal veins.
- Obtain a minimum of (1) spectral waveform (angle corrected less than 60 degrees) from the main portal vein.
- Measure and add the mean peak systolic velocity value into the structured reporting package.
- Obtain color Doppler images of the stent
- Obtain color and spectral Doppler imaging sampling at a minimum of three (3) different intervals (labeled as portal, mid, IVC end) along the stent using an angle of < 60 degrees.
- Measure and add the mean peak systolic velocity value at each level into the structured reporting package.
- Obtain 4-quadrant imaging to assess for ascites.

Abdomen Limited with Vascular - Non Hepatology Imaging Protocol - Limited RUQ Ultrasound
exam including Doppler evaluation.

- Perform examination imaging per AIUM guidelines.
- Exam includes, Liver, IVC, GB, CBD, Right Kidney, Pancreas and Doppler interrogation of the main, left & right portal veins (aorta, spleen, left kidney are excluded).
- Obtain 4-quadrant imaging to assess for ascites.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine	Version #	5
Current Approval Date:	07/28/2020	Old Document ID:	
Date Procedure to go into Effect:	07/28/2020		
Related Policies & Procedures:			
Related Job Aids:			

Departmental Policy Title	Liver Elastography Scheduling and Imaging Procedure - Radiology	Policy ID	25902
Keywords	schedule, scheduling, liver, elastography, us, ultrasound		
Department	Radiology - Ultrasound		

I. Purpose of Policy

To describe the procedures for scheduling and performing Liver Elastography Ultrasound studies. The following standard images are required for interpretation

II. Policy Scope

This scope applies to all Sonographers and Sonologists within the Ultrasound section of Dartmouth-Hitchcock – Lebanon

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Scheduling

1. Requires pre-approval from Triage before scheduling.
2. Schedule exams on the Philips EPIQ Ultrasound unit, preferably Room 2.
3. Evaluation of the liver echotexture and parenchyma (Abdomen limited exam) cannot be performed on the same day due to billing and coding guidelines.

B. Standard Images Required for Interpretation

- Position the transducer in the right intercostal space and aligned with the ribs.
- Image should avoid lung and narrow the field of view (FOV) if necessary.
- Image the liver keeping the liver capsule parallel to the transducer surface.
- Position the ROI (region of interest) box in the center of the image 1.5 - 2.0 cm below the liver capsule.
- Do not place the ROI near any liver vessels, near rib shadow, or the liver capsule.
- Ask the patient to pause breathing. Do not have them take a deep breath.

- Wait for stable image.
- Acquire a minimum of 10 samples, adding them to the scanner measurement report package.
- Print the calculations pages sending entire study to PACS.

Table 2: Recommendation for Interpretation of Liver Stiffness Values Obtained with ARFI Techniques in Patients with Viral Hepatitis and NAFLD

Liver Stiffness Value	Recommendation
≤5 kPa (1.3 m/sec)	High probability of being normal
<9 kPa (1.7 m/sec)	In the absence of other known clinical signs, rules out cACLD. If there are known clinical signs, may need further test for confirmation
9–13 kPa (1.7–2.1 m/sec)	Suggestive of cACLD but need further test for confirmation
>13 kPa (2.1 m/sec)	Rules in cACLD
>17 kPa (2.4 m/sec)	Suggestive of CSPH

Note.—ARFI = acoustic radiation force impulse, cACLD = compensated advanced chronic liver disease, CSPH = clinically significant portal hypertension, NAFLD = non-alcoholic fatty liver disease.

Liver Fibrosis Staging

Liver Fibrosis Staging	Metavir Score	kPa	m/s
Normal – Mild	F1	5.48 kPa – 8.29 kPa	1.35 m/s – 1.66 m/s
Mild – Moderate	F2	8.29 kPa – 9.40 kPa	1.66 m/s – 1.77 m/s
Moderate – Severe	F3	9.40 kPa – 11.9 kPa	1.77 m/s – 1.99 m/s
Cirrhosis	F4	> 11.9 kPa	> 1.99 m/s

V. References N/A

Responsible Owner:	Radiology - Ultrasound	Contact:	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine; Nystrom, Heidi	Version #	1
Current Approval Date:	11/22/2021	Old Document ID:	
Date Policy to go into Effect:	11/22/2021		
Related Policies & Procedures:			
Related Job Aids:			



Dept. Procedure Title:	Lymph Node Imaging Procedure - Ultrasound - Radiology	Procedure ID:	12483
Keywords	lymph, node, us, ultrasound, image, imaging, study		
Department:	Radiology, Ultrasound		

I. Purpose of Procedure

To describe the procedure for sonographers and sonologist performing lymph node Ultrasound studies.
The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock-Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Imaging: Lymph Node Imaging

1. Place the patient in a position that allows the best access to the area to be investigated for adenopathy.
2. Obtain images documenting the following:
 - i. Perform longitudinal and transverse images of the lymph nodes visualized.
 - ii. Measure each lymph node in the longest dimension with the AP diameter also recorded on that image.
3. Once representative longitudinal and transverse images have been obtained, use the split screen functionality on the scanner to measure and number the three (3) largest abnormal appearing lymph nodes so that measurements can be easily compared.
4. Perform Color Doppler imaging to evaluate for vascularity in each lymph node and record immediately after the split screen recording.
5. Repeat this for each site if more than one.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact:	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine	Version #	1
Current Approval Date:	09/21/2016	Old Document ID:	NEW
Date Procedure to go into Effect:	09/21/2016		
Related Policies & Procedures:			
Related Job Aids:			

Job Aid	Ultrasound Musculoskeletal (msk) Biopsy Setup Job Aid - Radiology	ID	23662
Keywords	radiology, ultrasound, musculoskeletal, msk, biopsy		
Department	Radiology - Ultrasound		

I. Purpose

To provide a list of supplies and discharge instructions (see attachments) necessary for ultrasound guided Musculoskeletal (msk) biopsy procedures.

• Equipment

- Sterile drape (4)
- Sterile OR towels
- Sterile transducer cover
- Sterile surgical gown
- Sterile gloves (physician preference)
- Telfa pad (physician preference)
- Sterile microscope slide (physician preference)
- Achieve or Bard disposable core biopsy needle (physician preference)
- Lidocaine 1% 10mL
- Sodium Chloride 0.9% – 10 mL
- 10 mL syringe (2)
- 25g needle (2)
- 18g needle (2)
- Kerlix gauze sponges (2 pkgs.)
- Chloraprep stick (2)
- Band-Aid
- Tegaderm (2)
- Alcohol prep pads (5)
- Formalin container
- # 11 scalpel
- Specimen transport bag
- Patient belonging bag
- PPE – 2 surgical masks, 2 hats, 2 non sterile gowns

Responsible Owner:	Radiology - Ultrasound	Contact:	Dennis Seguin
Approved By:	Office of Policy Support (OPS), Michael Patrick	Version #	1
Current Approval Date:	08/25/2020	Old Document ID:	
Date Policy to go into Effect:	08/25/2020		
Related Policies & Procedures:			
Related Job Aids:			

Job Aid	Ultrasound Musculoskeletal (msk) Injection / Aspiration Setup Job Aid - Radiology	ID	23659
Keywords	radiology, ultrasound, musculoskeletal, msk		
Department	Radiology - Ultrasound		

I. Purpose

To provide a list of supplies and discharge instructions (see attachments) necessary for ultrasound guided Musculoskeletal (msk) injection or aspiration procedures.

• Equipment

- Sterile drape (4)
- Sterile OR towels (1 pkg.)
- Steri-drape
- Sterile transducer cover
- Sterile gloves (physician preference)
- 10 mL syringe (2)
- 3 mL syringe
- *Lidocaine 1% - 10mL
- Sodium Chloride 0.9% - 10mL
- *Nesacaine MPF 2% (*if the patient has an allergy to lidocaine)
- Triamcinolone 40mg/mL – 1 mL vial (large joints or deep injections)
- Depo-Medrol vial 40mg – 1 mL vial (small joints or superficial injections)
- Ropivacaine 0.5% – 30 mL vial
- 20g needle (1.5” physician preference)
- 20g needle (3.5” physician preference)
- 22g needle (1.5” physician preference)
- 22g needle (3.5” physician preference)
- 25g needle
- 18g needle (2)
- Kerlix gauze sponges (1 pkg.)
- Chloraprep stick (2)
- Band-Aid
- Teraderm (2)
- Alcohol preps (5)
- PPE – 2 surgical masks, 2 hats, 2 non sterile gowns

Responsible Owner:	Radiology - Ultrasound	Contact:	Dennis Seguin
Approved By:	Office of Policy Support (OPS), Michael Patrick	Version #	1
Current Approval Date:	08/25/2020	Old Document ID:	
Date Policy to go into Effect:	08/25/2020		
Related Policies & Procedures:			
Related Job Aids:			

Job Aid	Ultrasound Native Renal Kidney and Transplant Biopsy Setup Job Aid - Radiology	ID	11356
Keywords	ultrasound, guided, renal, biopsy, biopsies		
Department	Ultrasound, Radiology		

I. Purpose

To provide a list of supplies and discharge instructions (see attachments) necessary for ultrasound guided renal biopsy procedures.

• Equipment

- 18 g needle (2)
- 25 g needle
- 10 mL syringe (2)
- Lidocaine 1%
- Sodium Chloride (2)
- Chloraprep stick
- Kerlix sponges
- Sterile drape (6)
- Sterile gloves (physician preference)
- Formalin bottle
- Sterile culture bottle
- Gluteraldehyde - (physician brings this)
- Standard Biopsy guide clip
- Sterile biopsy guide kit
- Sterile transducer cover
- 18 g or 16 g biopsy needle (physician preference - have both available)
- 20 g 6-inch spinal needle
- # 11 Scalpel
- Q-tips
- Tongue depressor
- Band-Aid
- Specimen transport bag
- PPE - (3) surgical hats, (3) surgical masks, (3) non sterile gowns
- Patient belongings bag
- Stretcher to transport the patient to the recovery room once procedure is complete

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents, Michael Patrick	Version #	3
Current Approval Date:	08/24/2020	Old Document ID:	
Date Policy to go into Effect:	08/24/2020		
Related Polices & Procedures:	Native and Transplant Kidney Biopsy Imaging Procedure - Ultrasound - Radiology		
Related Job Aids:			

Dept. Procedure Title:	Native and Transplant Kidney Biopsy Imaging Procedure - Ultrasound - Radiology	Procedure ID:	11471
Keywords	ultrasound guided, bx, sono, native, transplant, kidney, biopsy		
Department:	Ultrasound		

I. Purpose of Procedure

To describe the procedure for sonographer and sonologist performing Native and Transplant Kidney Biopsies under Ultrasound guidance.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock Lebanon.

III. Definitions –

SDP – Same Day Program

IV. Equipment - N/A

V. Procedure

A. Required Kidney Images

The following standard images are required for interpretation.

1. Imaging: Native Kidneys – Scout imaging:
 - i. Obtain a longitudinal and transverse scout image of both native kidneys confirming location.
 - ii. Measure the renal length and record in the structured reporting package.
2. Imaging: Native Kidneys – Full study:
 - i. Obtain representative images in the longitudinal and transverse planes of both kidneys.
 - ii. Document longitudinal images that contain lateral and medial margins of the kidneys.
 - iii. Transverse views of both kidneys must include images of upper, mid, and lower poles.
 - iv. Perform maximum measurements (minimum of 2) of renal length of both kidneys.
 - v. Compare renal echogenicity to that of the liver or spleen.
 - vi. Obtain longitudinal and transverse images of the urinary bladder.
3. Imaging: Transplant Kidney – Scout Imaging:
 - i. Obtain longitudinal and transverse scout images of the transplant kidney.
 - ii. Measure the renal length and record in the structured reporting package.

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Reference ID #11471, Version #3

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4. Imaging: Transplant Kidney – Full Study:
 - i. Obtain representative images documenting the following.
 - ii. Longitudinal measurements (2-3) of the maximum transplant kidney length.
 - iii. Transverse images through upper, mid, and lower poles.
 - iv. Assess for peri-renal fluid collections (urinomas, lymphoceles, etc.).
 - v. Assess for collecting system dilatation.
 - vi. Obtain longitudinal and transverse images of the urinary bladder.
 - vii. Color/Power images of the transplant kidney (adjust color scale and gain to visualize slow/venous flow).
 - viii. Obtain representative spectral Doppler tracings (2 per section) of arcuate vessels at the cortico-medullary junction at the upper, mid and lower renal poles.
 - ix. Obtain color and spectral Doppler tracing (2 per section) of the main renal artery (MRA) and main renal vein (MRV) at the renal hilum and proximal to the anastomosis.
5. Bedside timeout performed in eD-H with all procedural staff verifying pre-procedure questions.
6. Post Biopsy
 - i. Obtain post biopsy images (grey scale and color Doppler) to exclude retroperitoneal bleeding.
7. Lab specimens
 - i. Create a pathology request in eD-H (lab3175) for renal biopsy specimens.
 - ii. Specimens source label and corresponding form should state:
 - A. Formalyn
 - B. Saline
 - C. Glutaraldehyde
8. Paperwork- Discharge Instructions
 - i. Provide nursing recovery with after care instruction sheet (native or transplant).
 - ii. Post biopsy report must be given by the attending physician to the SDP nursing unit.
 - iii. SDP will assign the post procedure room location.
 - iv. Create transportation “hand off” document/checklist in eD-H for transportation. Request “Stat” transport to SDP.

VI. References - N/A

Responsible Owner:	Department of Radiology	Contact(s): email	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Bolger, Jean	Version #	3
Current Approval Date:	10/15/2018	Old Document ID:	RAD.0058
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Related Policies & Procedures:			
Related Job Aids:	Ultrasound Native Renal Kidney and Transplant Biopsy Setup Job Aid - Radiology		

Printed copies are for reference ONLY. Please refer to the electronic copy for the latest version.

Reference ID #11471, Version #3

Approval Date: 10/15/2018

Dept. Procedure Title	Ultrasound Neonatal Spine Scheduling and Imaging Procedure - Radiology	Procedure ID	11463
Keywords	ultrasound, us, neonate, neonatal, spine, study		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for Sonographers and Sonologists performing Neonatal spine Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all Sonographers and Sonologists within the Ultrasound section of Dartmouth-Hitchcock.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Scheduling

- This exam is to be performed on infants (less than) < 3 months of age.
- Any variations need to be approved by the Radiologist.

B. Spine

1. Obtain representative images of the entire spine through the sacrum in longitudinal and transverse planes.
2. Include longitudinal and transverse images of the conus and a longitudinal image from the conus to the sacrum.
3. Identify the conus.
 - a. The conus usually lies at or above the L2-L3 interspace.
4. Perform a cine capture if technically possible of the lumbar spine in a longitudinal projection demonstrating the normal motion of the nerve roots of the cauda equine.
 - a. It is helpful to label the lumbar vertebral bodies by identifying the last rib (T12).
5. Identify and measure the filum terminale (normal < 2mm).
6. If indication for scan is sacral dimple, pit, pigmented lesion, etc., scan the sacrum over the skin abnormality looking for communication into the spinal canal.
7. Obtain representative longitudinal image of each kidney

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine; Nystrom, Heidi	Version #	3
Current Approval Date:	11/08/2021	Old Document ID:	
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Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Ultrasound Obstetrical Imaging Procedure - Radiology	Procedure ID	11223
Keywords	obstetrical, ultrasound, image, imaging, us, ob		
Department	Radiology, Ultrasound		

I. Purpose of Procedure

To describe the procedure for sonographers and sonologists performing Obstetrical Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock Lebanon.

III. Definitions

AIUM – American Institute of Ultrasound in Medicine

MVP – Maximum Vertical Pocket

AFI – Amniotic Fluid Index

LVOT – Left Ventricular Outflow Tract

RVOT – Right Ventricular Outflow Tract

CRL – Crown-Rump Length

IV. Equipment N/A

V. Procedure

A. Special Considerations

- Procedure listed below are per AIUM Standards.
- Measurements are only obtained when the electronic order confirms the request (e.g., growth requested).
- Clarification of limited exam imaging components.
- Exam details may be amended based upon initial findings, which is within the clinical scope of practice or both sonographers and sonologists.

B. Dating

- Dating assessment is established by **best clinical judgment**. Suggested guidelines listed below:

Table 1. Guidelines for Redating Based on Ultrasonography

Gestational Age Range*	Method of Measurement	Discrepancy Between Ultrasound Dating and LMP Dating That Supports Redating
≤ 13 6/7 wk	CRL	
• ≤ 8 6/7 wk		More than 5 d
• 9 0/7 wk to 13 6/7 wk		More than 7 d
14 0/7 wk to 15 6/7 wk	BPD, HC, AC, FL	More than 7 d
16 0/7 wk to 21 6/7 wk	BPD, HC, AC, FL	More than 10 d
22 0/7 wk to 27 6/7 wk	BPD, HC, AC, FL	More than 14 d
[†] 28 0/7 wk and beyond	BPD, HC, AC, FL	More than 21 d

Abbreviations: AC, abdominal circumference; BPD, biparietal diameter; CRL, crown-rump length; FL, femur length; HC, head circumference; LMP, last menstrual period.

*Based on LMP

[†]Because of the risk of redating a small fetus that may be growth restricted, management decisions based on third-trimester ultrasonography alone are especially problematic and need to be guided by careful consideration of the entire clinical picture and close surveillance.

Committee Opinion No. 611

C. Amniotic Fluid

- Amniotic fluid evaluation:
 - Quantitative measurement or assessed subjectively at all obstetrical ultrasound examinations.
 - Maximal vertical pocket is the preferred method.
 - Early gestation: Subjective assessment.
 - Late second and third trimester: Either amniotic fluid index (AFI) or maximal vertical pocket (MVP).
 - Width of any measured fluid pocket must be 1 cm and exclude umbilical cord or fetal parts.
- Definitions (both singleton and multiple gestations):
 - Oligohydramnios:** MVP less than 2 cm
 - Hydramnios:** MVP greater than 8 cm or AFI greater than or equal to 24 cm.

D. Screening Morphology and Detailed Morphology Fetal Assessment

1. Obtain representative images documenting the following:

Table 2. Components of CPT 76811 (Basic and Detailed Examinations)

Component	Basic	Detailed
Head and neck	Lateral cerebral ventricles Choroid plexus Midline falx Cavum septi pellucidi Cerebellum Cisterna magna	3rd ventricle ^{A,36} 4th ventricle ^{A,36} Lateral ventricles ^{A,36} Cerebellar lobes, vermis, and cisterna magna ^{A,37} Corpus callosum ^{A,38} Integrity and shape of cranial vault ¹⁹ Brain parenchyma ²⁰ Neck ^{21,22} Profile ²³⁻²⁵ Coronal face (nose/lips/lens*) ²³ Palate,* maxilla, mandible, and tongue ^{A,26,27} Ear position and size ⁸ Orbits ⁸
Face	Upper lip	
Chest	Cardiac activity	Aortic arch
Heart and thorax	4-chamber view Left ventricular outflow tract Right ventricular outflow tract	Superior and inferior venae cavae ^{28,29} 3-vessel view ²⁹ 3-vessel and trachea view ³⁰ Lungs ^{31,32} Integrity of diaphragm ³³ Ribs ^{A,34,35}
Abdomen	Stomach (presence, size, and situs) Kidneys Urinary bladder Cord insertion site into fetal abdomen Umbilical cord vessel number	Small and large bowel ^{A,36-38} Adrenal glands ^{A,39} Gallbladder ^{A,40,41} Liver ^{38,42} Renal arteries ^{A,43} Spleen ^{A,42} Integrity of abdominal wall ⁴⁴ Integrity of spine and overlying soft tissue ^{A,45,46} Shape and curvature ^{45,46}
Spine	Cervical Thoracic Lumbar Sacral spine	
Extremities	Legs Arms	Number, architecture and position ⁴⁷⁻⁵¹ Hands ⁵²⁻⁵³ Feet ⁵³⁻⁵⁴ Digits; number and position ^{A,51,52} Sex ^{A,55}
Genitalia	In multiple gestations When medically indicated	
Placenta	Location Relationship to internal os Appearance Placental cord insertion (when possible)	Masses ^{54,57} Placental cord insertion ⁵⁸ Accessory/succenturiate lobe with location of connecting vascular supply to primary placenta ^{A,59,60}
Standard evaluation	Fetal number Presentation Qualitative or semiquantitative estimate of amniotic fluid	
Maternal anatomy	Cervix (transvaginal when indicated) Uterus Adnexa	
Biometry	Biparietal diameter Head circumference Femur length Abdominal circumference Fetal weight estimate	Cerebellum ^{A,61} Inner and outer orbital diameters ^{A,62} Nuchal thickness (16–20 wk) ⁶³⁻⁶⁵ Nasal bone measurement (15–22 wk) ⁶³⁻⁶⁶ Humerus ^{A,63-65} Ulna/radius ⁸ Tibia/fibula ⁸

*Performed when medically indicated.

⁸Also included in the basic obstetric examination.

E. Follow-up for Growth-Amniotic Fluid

1. Only obtain measurements when the electronic order verifies the request (i.e., growth requested).
2. Perform fetal assessment to include fetal anatomy appropriate for gestational age.
3. Clinical Ultrasound findings should determine the necessity (if something new is seen, for example; previously appeared normal, now appears abnormal).
4. Obtain representative images documenting the following:
 - Longitudinal image documenting the bladder and cervix
 - Fetal position
 - Placenta location
 - Placental cord origin images in grey scale and color Doppler
 - Amniotic fluid – 4-quadrant measurement if greater than 28 weeks (adhere to amniotic fluid guidelines)
 - Intra-cranial anatomy
 - 4-chamber heart & cine loop capture
 - LVOT – cine loop capture if feasible
 - RVOT– cine loop capture if feasible
 - M-mode tracing with heart rate measurement
 - Diaphragm
 - Stomach
 - Kidneys
 - Bladder
 - Fetal cord insertion
 - Adnexal structures

F. Morphology Limited Follow-up

1. Fetal assessment re-check for a prior incomplete morphology assessment.
2. Clinical Ultrasound findings should determine the necessity (if something new is seen, for example; previously appeared normal, now appears abnormal) and should include the following:
 - Longitudinal image documenting the bladder and cervix
 - Fetal position
 - Placenta location
 - Amniotic fluid – 4-quadrant measurement if greater than 28 weeks (adhere to amniotic fluid guidelines)
 - 4-chamber heart & cine loop capture if feasible
 - M-mode tracing with heart rate measurement

G. OB Limited > 14 Weeks

1. Clinical Ultrasound findings should determine the necessity (if something new is seen, for example; previously appeared normal, now appears abnormal) and should include the following:
 - Longitudinal image documenting the bladder and cervix
 - Fetal position
 - Placenta location
 - Amniotic fluid – 4-quadrant measurement if greater than 28 weeks (adhere to amniotic fluid guidelines)

- 4-chamber heart & cine loop capture if feasible
- M-mode tracing with heart rate measurement

H. Viability

1. Obtain representative images documenting the following:
 - Sagittal wide field of view to include the entire uterus, cervix to fundus
 - CRL measurement
 - Placental location (> than 15 weeks)
 - Amniotic fluid
 - Gestational Sac
 - Identify and document yolk sac
 - Adnexal structures
 - M-mode tracing with heart rate measurements
 - Cine loop capture documenting the presence or absence of fetal cardiac activity
 - In the clinical setting of a prior C-section, obtain sagittal wide field of view to include the entire uterus, cervix to fundus to ascertain location/implantation of the gestational sac.

I. Nuchal Translucency

1. Obtain representative images documenting the following:
 - NT measurement
 - CRL length
 - Placental location
 - Amniotic fluid
 - Gestational Sac
 - Adnexal structures
 - M-mode tracing with heart rate measurement
 - Cine loop capture if feasible

J. Cervical Length

1. Obtain representative images documenting the following:
 - Position
 - Cervical length with & without fundal pressure or valsalva
 - Observe cervix for three minutes after applying fundal pressure
 - Placental location
 - Adnexal structures
 - M-mode tracing with heart rate measurement
 - Cine loop capture if feasible

K. Amniotic Fluid (AFV) – Post Dates

1. Obtain representative images documenting the following:
 - Presentation
 - Placenta location
 - Amniotic fluid – 4-quadrant measurement (adhere to amniotic fluid guidelines).
 - M-mode tracing with heart rate measurement
 - Cine loop capture if feasible

- For Twins/ multiples – Measure and report the deepest vertical pocket in each gestational sac.

L. Position Only

1. Obtain representative images documenting the following:
 - Position
 - Amniotic fluid – 4-quadrant measurement (adhere to amniotic fluid guidelines).
 - M-mode tracing with heart rate measurement
 - Cine loop capture if feasible

M. Biophysical Profile (BPP)

1. Obtain representative images documenting the following:
 - BPP parameters – Use the grading score parameters (2-8) in the structured reporting system
 - Do not use NST section.
 - Presentation
 - Amniotic fluid – 4-quadrant measurement (adhere to amniotic fluid guidelines).
 - Placenta location
 - M-mode tracing with heart rate measurement
 - Cine loop capture if feasible

N. Fetal mechanical PR Interval

1. GE unit is required for these studies.
2. Obtain representative images documenting the following:
 - Presentation
 - Placenta location
 - Amniotic fluid – 4-quadrant measurement (adhere to amniotic fluid guidelines).
 - M-mode tracing with heart rate measurement.
 - PR interval (5 chamber view) – See enclosed document in attachments.
 - Measure time from the onset of mitral valve A wave to Aortic valve opening.

O. Middle Cerebral Artery (MCA) Doppler

Obtain representative images documenting the following

- MCA Doppler assessment with measurements entered into appropriate boxes
- Report Peak Systolic (PSV), S/D Ratio and multiple of the mean (MoM)
- SV gate size should be set to 1.0 mm
- Position
- Placenta location
- Amniotic fluid – 4-quadrant measurement (adhere to amniotic fluid guidelines).
- Assessment for hydrops
- M-mode tracing with heart rate measurement
- Cine loop capture if feasible

P. Umbilical Artery (UA) Doppler

1. Indications:
 - AC less than 10%
 - EFW less than 10%
 - Oligohydramnios
 - Multiple gestation: discordant growth or twin-twin transfusion syndrome
2. Obtain representative images documenting the following:
 - S/D ratio & RI
 - Position
 - Placenta location
 - Amniotic fluid – 4-quadrant measurement (adhere to amniotic fluid guidelines)
 - M-mode tracing with heart rate measurement

Q. Ultrasound Guided Procedures

Amniocentesis

1. Obtain representative images documenting the following:
 - Position
 - Placenta location
 - Amniotic fluid – 4-quadrant measurement if greater than 28 weeks (adhere to amniotic fluid guidelines)
 - M-Mode tracing with heart rate measurement pre and post procedure
 - Cine loop capture if feasible

Therapeutic

1. Obtain representative images documenting the following:
 - Position
 - Amniotic fluid – 4-quadrant measurement (adhere to amniotic fluid guidelines)
 - M-Mode tracing with heart rate measurement pre & post procedure
 - Cine loop capture if feasible

Note: To access attachments, click on the notification (bell) icon located in the upper right hand corner of the document.

VI. References

- 76811 Task Force. Consensus Report on the Detailed Fetal Anatomic Ultrasound Examination. Journal Ultrasound Med 2014; 33:189-195. 0278-4297. www.aium.org
- Society for Maternal-Fetal Medicine Publications Committee., Berkley, E. MD., Chauhan, S. MD., Abuhamad, A. MD. Doppler assessment of the fetus with intrauterine growth restriction. American Journal of Obstetrics & Gynecology. April 2012. 300-308. www.ajog.com
- Wojakowski, A., Izbizky, G., Carcano, M.E., Aiello, H., Marantz, P., Otano, L. Fetal Doppler Mechanical PR Interval Correlation with Fetal Heart Rate, Gestational Age and Fetal Sex. 2009. Wiley InterScience. www.interscience.wiley.com
- Am J Obstet Gynecol. 2014 May; 210(5):387-97. Doi: 10.1016/j.ajog.2014.02.028.
- Fetal Imaging. American College of Obstetrics & Gynecology. Vol. 123, No. 5, May 2014

- Committee Opinion 611. Method for Estimating Due Date. October 2014.
- N Engl J Med 2013;369:1443-51. DOI: 10.1056/NEJMr1302417
- Ultrasound in Pregnancy. Practice Bulletin No. 175. American College of Obstetricians and Gynecologists. Obstet Gynecol 2016;128:e241-56.
- Obstetrics Ultrasound Examinations. www.aium.org

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine; Nystrom, Heidi	Version #	4
Current Approval Date:	11/30/2021	Old Document ID:	
Date Procedure to go into Effect:	11/30/2021		
Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Pediatric Hip Scheduling and Imaging Procedure - Ultrasound - Radiology	Procedure ID	11464
Keywords	pediatric, hip, study, studies, us, ultrasound, images, interpretation, sonographers, sonologists		
Department	Ultrasound		

I. Purpose

To describe guidelines for performing pediatric hip Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock.

III. Definitions N/A

IV. Equipment N/A

V. Procedure imaging:

A. Scheduling:

1. Evaluation of infants suspected of hip dysplasia.
 - Infants should be at least 4 weeks of age (preferably 6 weeks) and NOT older than 6 months of age.
 - Infants younger than 4 weeks old may be scanned if clinically suspected of hip dislocation.
 - Prior approval required from attending Radiologist.
 - Scans should not be performed for rule out development dysplasia of the hip (DDH) after 6 months of age.
 - Examinations may be performed at any age to rule out joint effusion.

B. Scanning Procedure:

The following standard images are required for interpretation.

1. Scan both hips with a linear transducer.
2. Obtain images in a flexed position.
3. Obtain the following images:
 - a. Coronal view of hip (2-3 measurements to obtain “alpha” hip angle).
 - Determine the degree of coverage.
 - Report alpha angle into designated structured reporting system.
 - b. Transverse view of the hip to show the femoral head in relation to the triradiate cartilage.

- c. Obtain a D:D ratio measurement for each hip to determine the degree of femoral head coverage. Enter this value into the structured reporting package.
- d. Stress views of both hips (if not in harness) in transverse view.
- e. Image both hips for comparison.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine; Silas, Anne	Version #	3
Current Approval Date:	02/18/2020	Old Document ID:	
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Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title:	Pediatric Kidney Procedure - Ultrasound - Radiology	Procedure ID:	11475
Keywords	pediatric, kidney, us, ultrasound, images, interpretation, studies		
Department:	Ultrasound		

I. Purpose of Procedure

To describe guidelines for sonographers and sonologists performing Pediatric Kidney Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Scheduling

- Infants must be at least 2 days old.
- Exceptions must be approved by the Attending Radiologist

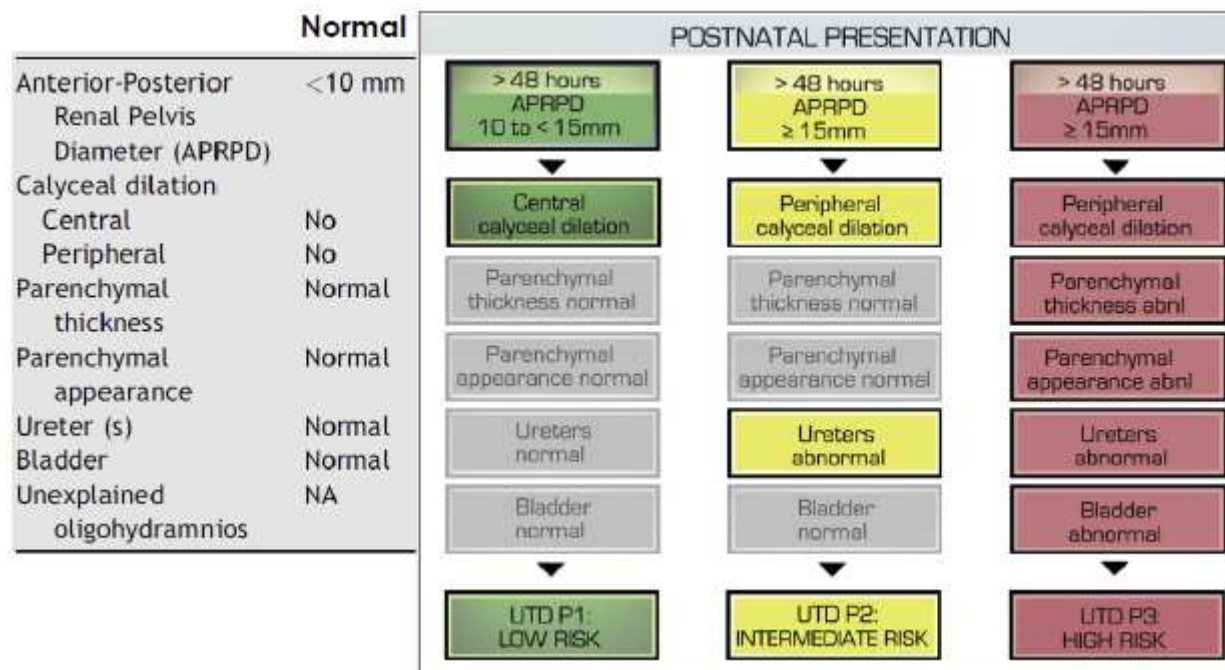
B. Kidney Imaging

- Obtain representative images in the longitudinal and transverse planes of both kidneys.
- Document longitudinal images of the lateral and medial margins of the kidneys.
- Include labeled images of the transverse views of upper, mid, and lower poles of both kidneys.
- Perform maximum measurements (minimum of 2) of renal length of both kidneys.
- Compare renal echogenicity to that of the liver or spleen.
- Obtain measurements in the longitudinal and transverse planes of the urinary bladder adding these to the structured reporting package.
- Use Color Doppler to document urinary jets when hydronephrosis is present.
 - Record Color or Power Doppler images when there is a clinical suspicion of pyelonephritis.
 - Use Color Doppler to exclude mild hydronephrosis vs. hilar vessels when the gray scale images are equivocal.
- Obtain cine captures through both kidneys when hydronephrosis is present.

C. Pediatric Nephrology Doppler Imaging

- Obtain representative images of both kidneys per section B above.
- Perform Color Doppler and Spectral Waveforms (2 per section) of the intra-renal arteries.
- Calculate measurements of the Resistive Index (RI).

Urinary Tract Dilatation (UTD)



Journal of Pediatric Urology (2014) 10, 982-999

VI. References

Nguyen, H., Benson, C., Bromley, B., Campbell, J., Chow, J., Coleman, B., . . . Stein, D. (2014). Multidisciplinary consensus on the classification of prenatal and postnatal urinary tract dilatation (UTD classification system). Journal of Pediatric Urology, 10, 982-998.

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine	Version #	3
Current Approval Date:	02/21/2020	Old Document ID:	3194
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Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Prostate Scheduling and Imaging Procedure - Radiology	Procedure ID	11469
Keywords	prostate, schedule, scheduling, sonographer, sinologist, us, ultrasound, scan, image, studies, interpretation		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for Sonographers and Sonologists performing Prostate Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This applies to all Sonographers and Sonologists within the Ultrasound section of Dartmouth-Hitchcock-Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Scheduling

- Prostate biopsies (fusion directed and regular) are performed in conjunction with the Urology service.
- Prostate imaging (non-biopsy) can be scheduled into specific Radiant exam resources with adherence to prep instructions.
- All other requests must be approved by Triage.

B. Standard Images Required for Interpretation.

- Obtain axial images equally spaced from the seminal vesicles, to the apex of the gland. Targeted images should be obtained from the right, mid and left. Note and measure any focal abnormalities.
- In the mid axial plane, measure the prostate at the widest portion in two (2) dimensions, and add to the calculation package. Note any cystic changes or calcifications.
 - In the setting of infertility evaluation, identify and measure the ejaculatory ducts at the level of the verumontanum.
- Obtain longitudinal images of the right gland to include the seminal vesicle, right base, mid and apex. Note and measure any focal abnormalities.
- Obtain longitudinal image of the mid gland identifying the bladder and prostatic urethra if possible. Measure the prostate size and add to the calculation package. Note any cystic changes or calcifications.

- Obtain longitudinal images of the left gland to include the seminal vesicle, left base, mid and apex. Note and measure any focal abnormalities.
- Import measurements obtained including the transducer # into the structured reporting package.
- Complete the bedside “time out” checklist prior to beginning the procedure.

C. Standard Imaging for Prostate Size Only

- Obtain a cine capture from the seminal vesicles to the apex of the gland.
- In the mid-axial plane, measure the prostate at the widest portion in two (2) dimensions, and add to the calculation package.
- Obtain a cine capture to include the right base, mid and apex
- Obtain longitudinal image of the mid gland identifying the bladder and prostatic urethra if possible.
- Measure the prostate size and add to the calculation package.
- Obtain a cine capture to include the left base, mid, and apex.
- Import measurements obtained including the transducer # into the structured reporting package.

D. Prostate Biopsy - Pathology specimen order (fusion and regular)

- Generate a pathology request in eD-H (lab3175) per Radiology Per Protocol guidelines for the prostate biopsy specimens.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine; Nystrom, Heidi	Version #	3
Current Approval Date:	11/22/2021	Old Document ID:	
Date Procedure to go into Effect:	11/22/2021		
Related Policies & Procedures:			
Related Job Aids:			

Job Aid	Ultrasound Prostate Biopsy Setup Job Aid - Radiology	ID	20248
Keywords	supply list, bx, us, guided, ultrasound, prostate, biopsy		
Department	Radiology - Ultrasound		

I. Purpose

To provide a list of supplies needed and specimen bottle setup/labeling for ultrasound guided prostate biopsy procedures.

Supplies

- 10cc syringe
- 18g hypodermic needle
- Bottle of 1% Lidocaine
- 22g, 15cm spinal needle
- 18g, 20cm biopsy needle
- 2 large specimen transport bags
- Large transducer cover
- Disposable prostate needle guide (institution standard)
- Disposable bracket for fusion biopsies only (institution standard)
- 4 packets sterile Surgilube
- Double ID on each specimen container (MD and sonographer initials)
- Non sterile latex free gloves (have S, M, L available)

Specimen Bottle Setup/Labeling

Right lateral base (A)	Right base (D)
Right lateral mid (B)	Right mid (E)
Right lateral apex (C)	Right apex (F)
Left lateral base (G)	Left base (J)
Left lateral mid (h)	Left mid (K)
Left lateral apex (I)	Left apex (L)
Label additional bottles beginning with (M)	

Responsible Owner:	Radiology - Ultrasound	Contact:	Dennis Seguin
Approved By:	Office of Policy Support (OPS), Christine Kvinlaug	Version #	2
Current Approval Date:	01/17/2022	Old Document ID:	
Date Policy to go into Effect:	01/17/2022		
Related Policies & Procedures:	Prostate Scheduling and Imaging Procedure - Radiology		
Related Job Aids:			

Job Aid	Sonohysterogram (SHG) Setup Job Aid - Ultrasound - Radiology	ID:	11357
Keywords	sonohysterogram, SHG, setup, us, ultrasound		
Department	Ultrasound, Radiology		

I. Purpose

To provide necessary supplies for Sonohysterogram (SHG) procedures.

- Pregnancy test if indicated
- Speculum - (have all sizes available)
- Betadine swab sticks
- SHG catheter
- 20 mL syringe
- Sterile Saline
- Surgical gloves (appropriate for physician)
- Os finder
- Dilators
- Tenaculum

Billing / Supplies:

- Catheter already added. Add additional supplies as needed

Responsible Owner:	Department of Radiology	Contact(s): email	Dennis Seguin
Approved By:	Office of Policy Support (OPS), Jean Bolger	Version #	2
Current Approval Date:	01/04/2018	Old Document ID:	RAD.0053
Date Policy to go into Effect:	01/04/2018		
Related Policies & Procedures:			
Related Job Aids:			

Dept. Procedure Title	Testicular Imaging Procedure - Ultrasound - Radiology	Procedure ID	11472
Keywords	us, ultrasound, testicle, testicular		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for Sonographers and Sonologists performing Testicular Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all Sonographers and Sonologists within the Ultrasound section of Dartmouth-Hitchcock Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

A. Standard Images for Interpretation

- Obtain representative images documenting each testicle separately
 - Longitudinal view of the head of epididymis and upper portion of testicle.
 - A minimum of 3 longitudinal views documenting the lateral, midline, and medial aspects of each testicle.
 - Longitudinal right and left epididymis.
 - Longitudinal tail of epididymis and lower portion of the testicle.
 - Transverse inferior to include epididymal tail.
 - Transverse lower, mid and upper portion of the testicle.
 - Transverse head of epididymis.
- Perform 3 measurements to estimate the testicular volume.
- Obtain appropriate measurements of any suspicious lesions.
- Transverse, grey scale, and color Doppler of both testicles on the same image to compare echogenicity and color Doppler blood flow.
- Color Doppler of the epididymal head and upper portion of each testicle for blood flow comparison relative to the testicle.
- Obtain (3) equally spaced color Doppler images of each testicle.

7. In the clinical setting of suspected torsion, obtain color and spectral Doppler waveforms of each testicle.
8. Perform Color Doppler and grey scale imaging of the spermatic cord structures with and without valsalva to document presence or absence of varicocele. A varicocele is a change in the internal spermatic vein > 3 mm.
9. If an isolated right sided varicocele is identified a limited bilateral renal ultrasound (uretrolim) exam is required. Perform representative longitudinal and transverse imaging and measurements to document the kidneys and the renal hilum to exclude a mass.
10. Evaluate the inguinal canals bilaterally for presence or absence of hernia.

VI. References N/A

Responsible Owner:	Ultrasound	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Kvinlaug, Christine; Nystrom, Heidi	Version #	3
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Related Job Aids:			

Dept. Procedure Title	Thyroid Imaging Procedure - Ultrasound - Radiology	Procedure ID	11473
Keywords	thyroid, imaging		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for sonographers and sonologists performing thyroid Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all sonographers and sonologists within the Ultrasound section of Dartmouth-Hitchcock Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

1. Place patient in supine position with neck slightly hyperextended. If necessary, place a rolled up towel or pillow under the patient's neck.
2. Obtain representative images documenting the following:
 - i. Perform longitudinal and transverse images of both thyroid lobes including transverse images of the isthmus.
 - ii. Measure the size of the thyroid in 3 dimensions.
 - iii. Document and measure any abnormalities within the thyroid as well as adjacent structures (lymph nodes).
 - iv. Once the representative longitudinal and transverse images have been obtained, use the split screen functionality on the scanner to measure and number the two (2) largest nodules in each lobe so that measurements can be easily compared with prior and subsequent studies.
3. Perform color Doppler imaging to evaluate for vascularity in the thyroid and within any thyroid nodule.
4. In the presence of thyroidectomy, or if a thyroid nodule 1 centimeter (cm) or greater in size is seen, evaluate the cervical lymphatic chain, both anterior and posterior to sternocleidomastoid muscle, in longitudinal and transverse, to exclude enlarged lymph nodes.
5. Record, and number the two (2) largest lymph nodes seen on each side using the split screen function.
6. Measure each lymph node in its longest dimension with the AP diameter also recorded on that image.
7. Evaluate each lymph node with Color Doppler.
8. TiRads criteria will assigned to the structured report template by the attending Radiologist.

VI. References N/A

Responsible Owner:	Department of Radiology	Contact(s):	Dennis Seguin
Approved By:	Office of Policy Support - All Other Documents; Patrick, Michael	Version #	5
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Related Job Aids:			

Dept. Procedure Title	Transplant Kidney Imaging Procedure - Ultrasound - Radiology	Procedure ID	11474
Keywords	us, ultrasound, kidney, transplant		
Department	Ultrasound		

I. Purpose of Procedure

To describe the procedure for Sonographers and Sonologists performing transplant kidney Ultrasound studies. The following standard images are required for interpretation.

II. Procedure Scope

This scope applies to all Sonographers and Sonologists within the Ultrasound section of Dartmouth-Hitchcock Lebanon.

III. Definitions N/A

IV. Equipment N/A

V. Procedure

1. Obtain longitudinal measurements (minimum of 2) of the maximum transplant kidney length.
2. Obtain labeled transverse images through upper, mid, and lower poles.
3. Assess for peri-renal fluid collections (urinomas, lymphoceles, etc.).
4. Assess for collecting system dilatation.
5. Obtain longitudinal and transverse images of the urinary bladder.
6. Color/Power images of the transplant kidney (adjust color scale and gain to visualize slow/venous flow).
7. Obtain and label representative spectral Doppler tracings (2 per section) of intra-renal vessels at the cortico-medullary junction at the upper, mid, and lower renal poles.
 - a. Enter resistive index (RI) measurements into structured reporting package
8. Obtain color and spectral Doppler tracing (2 per section, mid and proximal to the anastomosis) of the main renal artery (MRA) and main renal vein (MRV).
 - a. Enter the peak systolic velocity (PSV), end diastolic velocity (EDV) and resistive index (RI) measurements into structured reporting package.

VI. References N/A

Responsible Owner:	Ultrasound	Contact(s):	Dennis Seguin
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Departmental Procedure Title	Trophon2 High Level Disinfection (HLD) Procedure - Ultrasound - Radiology	ID	26678
Keywords	Trophon, High, Level, Disinfection, HLD, Probe, CI		
Department	Radiology - Ultrasound		

I. Purpose

To safely and effectively perform igh level disinfection (HLD) of semi-critical items that touch mucous membranes or non-intact skin in accordance with the manufacturer's recommendations (IFU).

II. Procedure Scope

This applies to all ultrasound transducers utilized at Dartmouth-Hitchcock, Lebanon.

III. Definitions N/A

IV. Equipment

- trophon®2 high level disinfection (HLD) device
- Non-latex gloves
- Disinfecting wipes

V. Procedure

Transducer validation must be performed before any transducer is processed by trophon®2.

A complete list can be found at: <https://www.nanosonics.us/products/trophon-epr>

- Non-latex gloves must be worn during the cleaning process to protect against exposure to infectious agents and cross-contamination.
- Remove the protective cover from the transducer and wipe residual gel off the transducer with a clean dry towel.
- Pre-clean the transducer with a hospital approved low level disinfection (LLD) wipe and dried BEFORE the High Level Disinfection process can commence.
- Scan the medical instrument tag against the Acutrace reader.
- Load the clean, dry probe into the trophon®2 disinfection chamber ensuring that the probe is straight and not touching the walls or the bottom and that the tip of the probe is above the embossed line.
- Place a chemical indicator red side up at the base of the chamber door. A chemical indicator (CI) must be used for each disinfection cycle and can only be used once.
- Close the chamber door.
- The next screen message will confirm: *Is the probe clean and dry?*
- Respond YES if the probe has been pre-cleaned and dried.
- If NO, follow the trophon2 touch screen prompts.
- Scan your operator card.

- Press Start Disinfection on the touch screen to begin disinfection cycle.
- At the end of the 7-minute HLD cycle, the blue status bar at the top of the trophon2's touch screen states: Disinfection Finished.
- Perform proper hand hygiene and put on a new set of gloves before opening the chamber door and removing the probe.
- Open chamber door, verify the chemical indicator (CI) pass status using the color assessment chart on the chemical indicator packaging (**Note:** must be lighter than the MEC-orange on the fail-side of the color assessment chart) and then discard into the nearest trash receptacle.
 - **Important:** Both CI and trophon2 touch screen must indicate a successful cycle for the probe to be ready for use. If either the CI or trophon2 touch screen indicates a fail, the cycle **MUST** be repeated.
- Select chemical indicator result on the touch screen and then scan your operator card to confirm.
- Remove the probe after the cycle is complete. Wipe the probe with a dry, clean, single-use, lint-free cloth.
- Visually inspect the probe and remove any disinfectant residue.
- Store clean probe with the HLD label attached (on connector) and place in the Ultrasound probe storage cabinet.
- The Acutrace information recorded on the trophon2 printer label:
 - Date and time
 - Trophon serial number
 - Cycle number
 - Disinfectant lot number and expiration date
 - Chemical Indicator lot number and expiration date
 - Operator names
 - Trophon cycle status (pass or fail)
 - chemical indicator status (pass or fail)
 - Probe identification (including transducer number)

Chemical Indicators

- Chemical indicators should be stored at room temperature 59-86°F.
- Store in a dry, clean environment out of direct heat.
- Do not store near chemicals such as sterilizing agents, acids, bases, bleaches, and other disinfectants.

SONEX-HL Cartridge Storage

- Cartridge should be stored at temperatures between 59-77°F.
- Store cartridge in all original packaging in correct directional orientation until use.
- Keep away from excessive heat.

Removing and Installing the Disinfectant Cartridge

- The device will automatically prompt you to run a purge cycle if the cartridge has been in the device too long and has expired (30 days). Follow prompts on the LCD screen.
- Screen message will say: ***Replace the cartridge and close cartridge door.***
- Cartridge door opens automatically. Do **NOT** use excessive force to pull down the cartridge door.
- Wearing non-latex gloves and in a designated eye wash station location, lift the cartridge out by touching the areas exposed while the bottle is in the holder and avoid touching pierced areas.

- Recap the empty cartridge and dispose in the nearest waste receptacle.
- Verify the expiration date before inserting a new SONEX-HL cartridge.
- Once the cartridge is in place, close the cartridge door and the device is ready for use.

Contingency Plans

- USB encrypted device will be used to download trophon2 data (cleaning cycles, solution and chemical indicator expiration) every 6 months.
- An Excel document displaying all recorded data will be kept locally and sent to CSR as requested.
- **trophon2 service:**
 - 1-800-437-1171 option 1, option 1, option 5.
- Acceptable alternatives to the trophon2 process are as follows:
 - Temporarily suspend or postpone procedures.
 - Transport all transducers to Central Sterilization (CSR) for High Level Disinfection (HLD) processing
- Annual competencies (training video) will be completed by each staff member who uses the trophon2.
- Training certificate will be printed by the employee to verify successful completion of training course.
- A copy of the training certificate will be kept in the employee file

VI. References

User Manual & Transducer compatibility list

<https://www.nanosonics.us/products/trophon-epr>

Nanosonics / Trophon training website

<https://nanosonicsacademy.com/>

Responsible Owner:	Radiology - Ultrasound	Contact:	Dennis Seguin
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