

ULTRASOUND PROTOCOLS

- Please use and scan in Exam Work Sheets. If exam is negative or there is only one finding, you may write in tech comments, otherwise please use sheet.

Abdomen

Aorta: Long –measure Proximal
Mid
Distal

Trans- measure if abnormal caliber.

IVC: Long- with color- Annotate as IVC

Pancreas: Image head, body, and tail- 3 to 4 images

Liver: Long- Lt lobe lateral

Lt lobe medial

Lt lobe with caudate and IVC

Rt lobe- several images to include dome of liver

Rt lobe- measurement (picture to include Rt kidney)

Trans- Lt lobe superior

Lt lobe mid

Lt lobe inferior

Rt lobe-several images from sup (dome) to inferior

Portal Vein: Show flow

Rt. Kidney: Trans- Upper pole

Mid with measurement

Lower

Long- Medial

Mid with measurements

Lateral

GB: Supine-Long- several images

Trans- several images

LLD-Long –few images

Trans-few images

CBD: Long- image with and without measurements

Spleen: Long- 1 measurement

Trans-2 measurements

Lt. Kidney- Trans- Upper pole

Mid with measurement

Lower

Long- Medial

Mid with measurements

Lateral

- ❖ **Measure and number all pathology transverse and longitudinal on consecutive pictures (first image long, next trans, or vice versa)**
- ❖ **Annotate ALL images**

Pelvic

Uterus: Long

Long (zoom) with long and AP measurement
 Long (zoom) endometrial measurement
 Transverse
 Transverse (zoom) trans measurement
 Long scan to Rt.
 Long scan to Lt
 Transverse- Vagina
 Cervix
 Body
 Fundus

Rt Adnexa: Long with several images to vessels
 Trans images thru adnexa

Rt Ovary: Transverse

Transverse (zoom) with measurements
 Transverse (zoom) with color
 Long
 Long (zoom) with measurements
 Long (zoom) with color

- ❖ color image only needs to be trans or long, not both

Lt Adnexa: Long with several images to vessels
 Trans images thru adnexa

Lt Ovary: Transverse

Transverse (zoom) with measurements
 Transverse (zoom) with color
 Long
 Long (zoom) with measurements
 Long (zoom) with color

- ❖ **Measure and number all pathology transverse and longitudinal on consecutive pictures (first image long, next trans, or vice versa)**
- ❖ **If numerous, measure largest 2-3.**
- ❖ **Annotate ALL images**
- ❖ **All pelvic exams thru the ED may be done as TV.**
- ❖ **ALL Outpatients must fill bladder**

TV

Same images as Pelvic

Re-measure endometrium

Re-measure ovaries and uterus only if you feel you have better images

- ❖ **Measure and number all pathology transverse and longitudinal on consecutive pictures** (first image long, next trans, or vice versa)
- ❖ **Annotate ALL images**

Thyroid

Rt Thyroid: Trans- Several images from lower thru upper pole

Long- Lateral
Mid
Medial

Long-Mid with measurement

Trans-Mid with measurement

LT Thyroid: Trans- Several images from lower thru upper pole

Long- Lateral
Mid
Medial

Long-Mid with measurement

Trans-Mid with measurement

- ❖ **Measure and number nodules**
- ❖ **Show color**

Isthmus: Midline transverse- Low

Mid with measurements

Upper

- ❖ **Annotate ALL images**

Renal

Rt Kidney: Long- Medial
Mid
Mid with measurements
Lateral
Trans- Upper
Mid
Mid with measurements
Lower

Lt Kidney: Long- Media
Mid
Mid with measurements
Lateral
Trans- Upper
Mid
Mid with measurements
Lower

Bladder: Long- Midline
Rt
Lt
Trans- Low
Mid
Upper

- ❖ **Measure prostate long and trans**
- ❖ **Measure and number cysts and stones**
- ❖ **If hydro is present, apply color**
- ❖ **If hydro is present, show bladder jets**
- ❖ **If hydro is present and patient is pregnant, do RI's**
- ❖ **Annotate ALL images**

Renal Artery Doppler

Aorta: Long- Proximal with measurements
Mid with measurements
Distal with measurements
Proximal with color
Proximal with PW and ratio measurements
Trans- RRA proximal
RRA proximal with color

RRA proximal with PW and velocity measurements
RRA: Long-Mid
 Mid with color
 Mid with PW and velocity measurements
Long-Distal
 Distal with color
 Distal with PW and velocity measurements

Rt Kidney: Long-Mid
 Lateral
 Medial
 Mid with measurements
Trans- Upper
 Mid
 Mid with measurements
 Lower
Trans- Lower arcuate RI
 Mid arcuate RI
 Upper arcuate RI

Rt Renal Vein: Long -Color

Aorta: trans- LRA Proximal
 LRA Proximal with color
 LRA Proximal with PW and velocity measurements

LRA: -LRA Mid
 LRA Mid with color
 LRA Mid with PW and velocity measurements

LRA Distal
LRA Distal with color
LRA Distal with PW and velocity measurements

Lt. Kidney: Long-Mid
 Lateral
 Medial
 Mid with measurements
Trans- Upper
 Mid
 Mid with measurements
 Lower
Trans- Lower arcuate RI
 Mid arcuate RI
 Upper arcuate RI

Lt Renal Vein: Long- Color

Take pictures of all 3 report pages
Ratios, Velocities, and RI's

- ❖ **Make sure velocities are taken in longitudinal plane of vessel.**
- ❖ **Annotate ALL images**
- ❖ **If aorta is not visualized due to bowel gas, reschedule after patient has bowel prep**
- ❖ **If aorta is not visualized due to body habitus, cancel and**

Scrotal

Long: Distal inguinal canal
 Epididymal head
 Testicle-Medial, Mid, Lateral
 Epididymal tail
 Measure length pole to pole

Trans: Measure transverse and AP
 Epididymal head
 Testicle-Upper, Mid, Lower
 Epididymal tail

- ❖ **Color Doppler each testicle in longitudinal**
- ❖ **Make sure to use same color gain throughout study**
- ❖ **If any doubt that color pictures are convincing for flow, Spectral images are needed**
- ❖ **Use color on all Epididyma**
- ❖ **Enlarged Epididymis- check for Hyperemia with Color Doppler. Compare with contra lateral epididymis.**
- ❖ **Normal size Epididymis with complaint of pain and tenderness- check with color Doppler for hyperemia**
- ❖ **Measure all masses and cysts and large hydroceles in 3 dimensions**
- ❖ **Suspected Varicoceles- use color and valsalva maneuver to show venous engorgement**
- ❖ **Suspected Inguinal Hernia-Scan up into inguinal canal. Look for loops of bowel(peristalsis) or herniated knuckles of mesenteric fat**
- ❖ **Valsalva may show hernia**
- ❖ **Orchitis-Use color to demonstrate unilateral or bilateral Hyperemia**
- ❖ **Undescended Testicles-Scan both hemiscrotum. If testicles are absent, scan inguinal canals up into pelvis.**
- ❖ **Annotate ALL images**

Aorta

Proximal: Longitudinal- with and without measurements
Transverse- with and without measurements

Mid: Longitudinal- with and without measurements
Transverse- with and without measurements

Distal: Longitudinal- with and without measurements
Transverse- with and without measurements

Bifurcation: Transverse with measurements

Common Iliacs: Transverse with measurements

Color images: Proximal, Mid, Distal and Bifurcation

- ❖ **Annotate ALL images**

Soft Tissue

- ❖ **Image area of interest in Longitudinal and Transverse with measurements if needed**
- ❖ **Use body marker to show area of interest.**
- ❖ **Annotate ALL images**

OB Less than 14 weeks

Pt must have full bladder.

Uterus: Long

Long (zoom) with long and AP measurement

Long (zoom) endometrium

Include- Gestation Sac – if applicable. Gestational sac must be measured in 3 planes. It is a mean sac diameter and requires 3

Yolk Sac- if applicable

Fetal Pole measurement(at least 2)

Heart rate

Transverse

Transverse (zoom) trans measurement
Long scan to Rt.
Long scan to Lt
Transverse- Vagina
 Cervix
 Body
 Fundus

Rt Adnexa: Long with several images to vessels
 Trans images thru adnexa

Rt Ovary: Transverse
 Transverse (zoom) with measurements
 Transverse (zoom) with color
 Long
 Long (zoom) with measurements
 Long (zoom) with color

❖ color image only needs to be trans or long, not both

Lt Adnexa: Long with several images to vessels
 Trans images thru adnexa

Lt Ovary: Transverse
 Transverse (zoom) with measurements
 Transverse (zoom) with color
 Long
 Long (zoom) with measurements
 Long (zoom) with color

- ❖ **Identify and annotate any visible fetal anatomy**
- ❖ **Measure and number all pathology transverse and longitudinal on consecutive pictures (first image long, next trans, or vice versa)**
- ❖ **If numerous, measure largest 2-3.**
- ❖ **All OB exams thru the ED may be done as TV.**
- ❖ **ALL Outpatients must fill bladder**
- ❖ **Annotate ALL images**

OB Complete

Pt must have full bladder

Cervix: Long with measurements

Uterus: Long- Midline

 Right

 Left

 Transverse- Cervix

 Body

 Fundus

(These images are to show the lie of the fetus)

Placenta: a few images
Placenta in relationship to cervix
Measure fluid AFI

2 measurements each: Head circumference
BPD

Spine: Lumbar- Long and Trans
Thoracic- Long and Trans
Cervical-Long and Trans
Sacral-Long and Trans

Lower Extremity: Femur and Tib-Fib, Both Legs

Femur Length: 2 measurements

Bladder

Cord insertion into abdomen and placenta

3 Vessel Cord

Kidneys

Stomach: Annotate fetal position to verify on correct side

Heart: : Annotate fetal position to verify on correct side

Do Clip store to show real time HR

HR trace and measurement

Abdominal Circumference: 2 measurements

Face: Image lips and nose if possible

Profile

Gender: If possible

❖ **Annotate ALL images**

Carotid Doppler

Transverse: CCA- Proximal to Bifurcation
ICA and ECA- Bifurcation to highest visible point

Longitudinal: CCA- Proximal to Bifurcation
ICA and ECA- Bifurcation to highest visible point
Color Doppler with PW Spectral wave form on split screen
Must use 60 degree angle or less

Vertebral: Image in 2D and color with PW

Measurements: CCA- within 2 cm of bifurcation
ICA-Proximal, Mid, and Distal
ECA- Proximal
Vertebrals

- ❖ **Measure Peak Systolic and End Diastolic Velocities of CCA's and ICA's**
- ❖ **Measure Peak Systolic Velocities of ECA's and Vertebral's**
- ❖ **Indicate any plaque or other abnormality seen**
- ❖ **Survey any stenotic areas for highest velocities**

- ❖ **Do not take CCA velocity for ratios at area of plaque**
- ❖ **Annotate all Images**
- ❖ **Include Image of Report page on completion of all measurement.**

Venous Doppler-Leg

CFV/GSV:Trans- Clip store showing compression

GSV: Survey to knee

- Long with flow (PW)
- Long with inhalation (PW)
- Long with augmentation (PW)

CFV: Long with flow (PW)

- Long with inhalation (PW)
- Long with augmentation (PW)

SFV/Profunda: Long with flow (color only)

SFV Upper: Long with flow (PW)

- Long with inhalation (PW)
- Long with augmentation (PW)

Profunda: Long with flow (PW)

- Long with inhalation (PW)
- Long with augmentation (PW)

SFV/Profunda:Transverse- Clip store showing compression
 Transverse- do compression down to Mid SFV

SFV Mid: Transverse- Clip store showing compression

- Long with flow (color only)
- Long with flow (PW)
- Long with inhalation (PW)
- Long with augmentation (PW)
- Transverse- Do compression down to Distal SFV

SFV Lower:Transverse- Clip store showing compression

- Long with flow (color only)
- Long with flow (PW)
- Long with inhalation (PW)
- Long with augmentation (PW)

Turn Patient on side or prone

Popliteal: Transverse- Clip store showing compression

- Long with flow (color only)
- Long with flow (PW)
- Long with inhalation (PW)
- Long with augmentation (PW)

PTV: Compression down to ankle

Transverse- Clip store showing compression

- Long with flow (color only)
- Long with flow (PW)

- Long with augmentation (PW)
- ❖ **Survey calf for GSV, peroneals and LSV**
- ❖ **Annotate all Images**

Venous Doppler Arm

Jugular: Long

- Long with color
- Long with PW
- Trans with compression

Subclavian: Medial-Long

- Long with color
- Long with PW
- Mid- Long
- Long with color
- Long with PW
- Lateral-Long
- Long with color
- Long with PW

Axillary: Long

- Long with color
- Long with PW
- Trans with compression

Brachial: Superior- Long

- Long with color
- Long with PW
- Trans with compression
- Mid- Long
- Long with color
- Long with PW
- Trans with compression
- Inferior: Long
- Long with color
- Long with PW
- Trans with compression

Cephalic: Long

- Long with color
- Trans with compression (proximal, Mid, Distal)

Basilic: Long

- Long with color
- Trans with compression (proximal, Mid, Distal)

- ❖ **Annotate all Images**

Deep Abdominal Doppler Tips

- ❖ **Locate Portal and Hepatic Vein ends of Shunt**
- ❖ **Use color and PW of Proximal, Mid and Distal Shunt**
- ❖ **Measure velocities in Proximal, Mid and Distal Shunt**
- ❖ **Image IVC, Use Color and PW**
- ❖ **Image Splenic and Portal Vein, Use Color and PW**
- ❖ **Image Hepatic Veins entering IVC**
- ❖ **Document with color Doppler flow direction**
- ❖ **Image Hepatic Artery**
- ❖ **Annotate all Images**

Deep Abdominal Doppler

Patient must be NPO

- Aorta:** Long- Proximal- Color, PW, and Velocity
Mid- Color, PW, and Velocity
Distal- Color, PW, and Velocity
- Celiac Artery:** Long- Color, PW, and Velocity
- SMA:** Long-Proximal- Color, PW, and Velocity
Mid- Color, PW, and Velocity
Distal- Color, PW, and Velocity
- IMA:** (if seen) Long-Proximal- Color, PW, and Velocity
Mid- Color, PW, and Velocity
Distal- Color, PW, and Velocity
- ❖ **Annotate all Images**

Segmental Pressures

Pressures

Put Patient in 2 gowns-Remove pants, shoes, and socks.

Patient is supine

Wrap: 1 Above ankles with #10 cuff

2 Below knees with #10 cuff

3 Above knees with #12 cuff

4 High thigh with #12 cuff

Attach inflator module to appropriate cuff

Follow instructions as to which cuff to inflate for segmental pressure setting

Brachial Pressure: Locate artery with probe at wrist or elbow.

Inflate cuff until artery is occluded

Press button to store when first pulse returns

Repeat in other arm

Leg Pressures: Locate artery with probe in post tib or on top of foot

Start with cuff 1
Inflate cuff until artery is occluded
Press button to store when first pulse returns
Repeat for all cuffs ,both legs
Store settings when all pressures are recorded

Pneumo Waveforms

Leg Waveforms: Start with cuff 1

Inflate to between 65-70 mHg.

Record at least 3 waveforms

Repeat through all cuffs, both legs

- ❖ If patient is Diabetic perform toe pressures and waveforms on great toe.
- ❖ If patient can walk, walk patient for 5 minutes or until patient tires
- ❖ Do post exercise ABI's until resting pressure is reached

Thyroid or Neck FNA

Supplies

- Sterile gloves
- Sterile towels
- Chloraprep
- 5 25g needles (pink)
- 1 18g needle (w/safety)
- 1 25g needle (s/safety)
- 6 12cc syringes
- Sterile gauze
- Sterile gel
- Alcohol
- Probe Cover

Before Radiologist enters room:

- **Get consent signed**
- **Survey and image area of interest**
- **Have pathology request ready (for lab)**

- ❖ Give lab advanced notice of procedure
- ❖ Call lab as soon as Radiologist enters room

ALL MATERIALS EXCEPT ALCOHOL AND PROBE COVER SHOULD BE OPENED USING STERILE TECHNIQUE AND PLACED ON STERILE TOWELS PRIOR TO RADIOLOGIST ENTERING THE ROOM. DO NOT LEAVE UNATTENDED

Paracentesis/Thoracentesis

Supplies:

- Sterile gloves
- Biopsy pack
- Chloraprep
- Lidocaine
- Sodium Bicarbonate (optional per Radiologist)
- 4F or 5F 7cm One Step Cath (Occasionally may use 10cm)
- Thoracentesis tubing
- Three-way stopcock
- 60cc Syringe (optional per Radiologist)
- Vacuum Bottles

Before Radiologist enters room:

- Check labs
- Get consent signed
- Survey and image area of interest

Have all supplies ready and unopened

Once Radiologist is sterile, may open these materials and drop onto tray.

WITHOUT BREAKING THE STERILE FIELD

