Case Setup

Ultrasound Preparation:

- Ensure phased array, linear, and curvilinear probes are present, functioning and clean.
- Ensure the ultrasound screen is easily visible to the examinee, either directly or via screen share.

When Examinee Enters:
"Hello Doctor, I am Dr. _ and will be assisting as your examiner for this ultrasound case. As a reminder, please ask me to change probes, change depth, gain, or mode of ultrasound to assist you with the case. Please ask for help to reposition the patient or bed. Do you have any questions?"

Case vignette:
"As you have noted, the patient is presenting with acute abdominal pain."

<u>For diagnostic ultrasound:</u>
"Doctor, what I would like for you to do now is demonstrate how to use the ultrasound to perform an evaluation of the abdominal aorta. Which probe would you like to use?"
Probe settings:

- Linear
  - Gain 10, depth 10cm
- Phased array
  - Gain 10, depth 5cm
- Curvilinear
  - **Gain 10, depth 15cm**

If asked to change probe settings:

- "Tell me when to stop adjusting [gain/depth]
  - Adjust the gain and depth slowly, allowing the examinee to stop you.

"When you find an acceptable image, please let me know."

After examinee has selected their image: **Freeze the image**
"Thank you, I will take the probe from you now. Please point out any relevant artifacts, anatomy or pathology."
After they have pointed out artifacts and anatomy:
"Please show me on the screen where you would like to measure the aorta."
Use calipers, and mark where the examinee indicates, generating a measurement.

After the examinee has completed their measurement, direct them to your screen where you will show pathology:
"Please direct your attention to the screen. Assume this image is the image you obtained from this patient. I would like you to point out any pathology that would be important for this complaint."

After they have indicated any pathology:

Application:

“Please indicate your immediate next steps in caring for this patient.”

End of case:

“Thank you, that concludes your case.”

Pearls and Pitfalls

- The far field border should be the vertebral column, any greater depth is too deep
- Identify all relevant anatomy, including abdominal wall musculature, IVC, aorta, vertebral column, and bowel
- Identify relevant artifacts: namely, shadowing from bowel gas
- If you are unable to visualize the aorta, start at it’s most superficial region, just above the umbilicus and apply firm pressure downwards while slightly rocking the probe to maneuver away bowel gas
- Measure outer to outer for the aorta, greater than 3cm is considered pathologic
- Immediate surgical consultation is a key next step