



international bowel
ULTRASOUND GROUP

How to perform IUS

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Disclosure

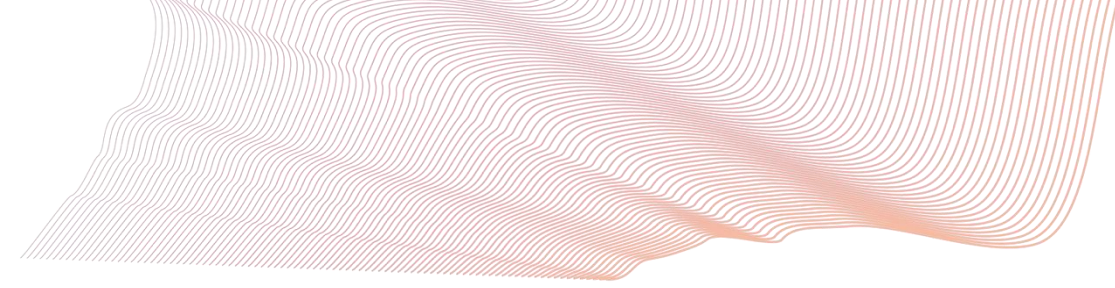
- No relevant financial or commercial conflicts of interest for this presentation.

Intended Learning Outcomes (ILO):

The items marked with a heart represent the mandatory minimum knowledge required for beginners.

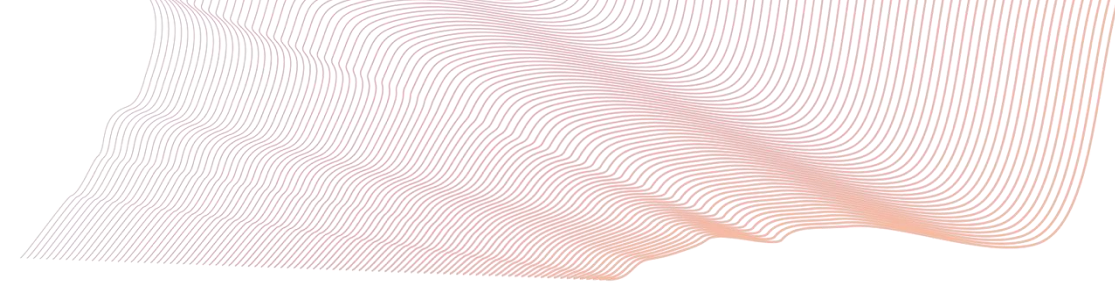
By the end of this session, the learner will be able to:

1. Identify common ultrasound probes used in gastrointestinal imaging. ♥
2. Select the appropriate ultrasound probe for the target anatomy and adjust settings for optimal visualization of intestinal structures. ♥
3. Effectively and correctly position the probe, optimize images, and freeze to ensure accurate measurement and interpretation of IUS findings. ♥
4. Describe the principles of ergonomics and hygiene in IUS practice. ♥
5. Evaluate the impact of scanning conditions (e.g., proper lighting, patient positioning, and gel application) on IUS image quality and diagnostic accuracy. ♥
6. Demonstrate the ability to navigate and scan the gastrointestinal tract systematically. ♥
7. Execute precise probe movements including slide, sweep, rotate, and tilt to effectively visualize different structures. ♥
8. Locate and annotate specific bowel segments on IUS images using labels or anatomical landmarks to facilitate interpretation and documentation. ♥
9. Differentiate between small and large bowel on IUS based on their anatomical location and features. ♥
10. Identify anatomical variations or abnormalities that could alter the typical bowel localization on IUS.
11. Effectively and correctly position the probe, optimize images, and freeze to ensure accurate measurement and interpretation of IUS findings.
12. Describe the steps involved in storing ultrasound images and cine loops, including considerations for data security and retrieval. ♥
13. Understand how to maneuver between different anatomical planes during scanning



How to Perform IUS

- **The Patient**
 - preparation and positioning
- **The Equipment**
 - probes, ergonomics, and setup
- **The Console**
 - the buttons that matter
- **Orientation & Scan Planes**
 - reading the screen correctly
- **What to Look For**
 - normal wall vs. inflammation
- **The Systematic Technique**
 - scanning every segment, every time



The Patient

- No special preparation needed
 - Fasting is not necessary for point-of-care IUS
 - > 4 h fasting reduces food and air in the small bowel, if a cleaner view is needed
 - > 6 h / overnight fasting is only used before assessing splanchnic blood flow or GI motility
- Position
 - Supine, abdomen exposed, comfortable and relaxed
 - Warm gel, generous amount, applied directly to the skin

The Equipment: Two Probes

Convex (low frequency)

- Overview of the whole abdomen
- Deeper bowel segments

• Linear (high frequency)

- > 5 MHz
- Higher resolution
- Detailed wall examination



Ergonomics & Setup

- Clean the probe before and after every exam
- Sit, on the appropriate side of the patient
- The cord does not belong on the floor, or around your neck
- Probe in your dominant hand, other hand free on the controls
- Check the patient ID on the screen before you start



Do It Right From the Beginning

✗ Awkward reach, poor contact



✓ Relaxed hand, full probe contact



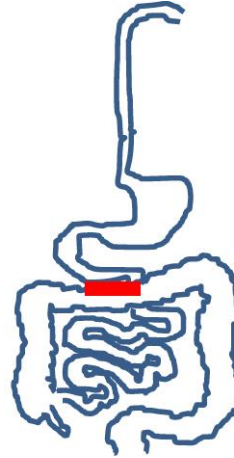
The Console: Buttons That Matter

- **Frequency**
- **Depth**
 - target the bowel to occupy $\sim\frac{3}{4}$ of the screen
- **Gain**
 - adjusts the gray-scale
- **Focus**
- **Freeze / Measure / Capture**
- **Doppler**



Probe Orientation

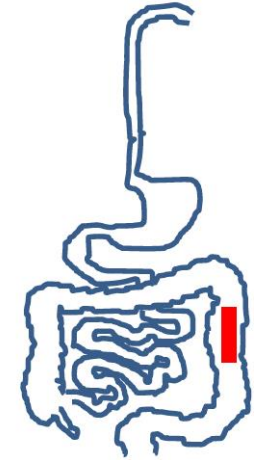
- Every probe has a marker (notch or ridge)
- It always corresponds to a dot on the screen
- **Convention**
 - marker to patient's right → right / left on screen
 - marker cranial → cranial / caudal on screen



right



left



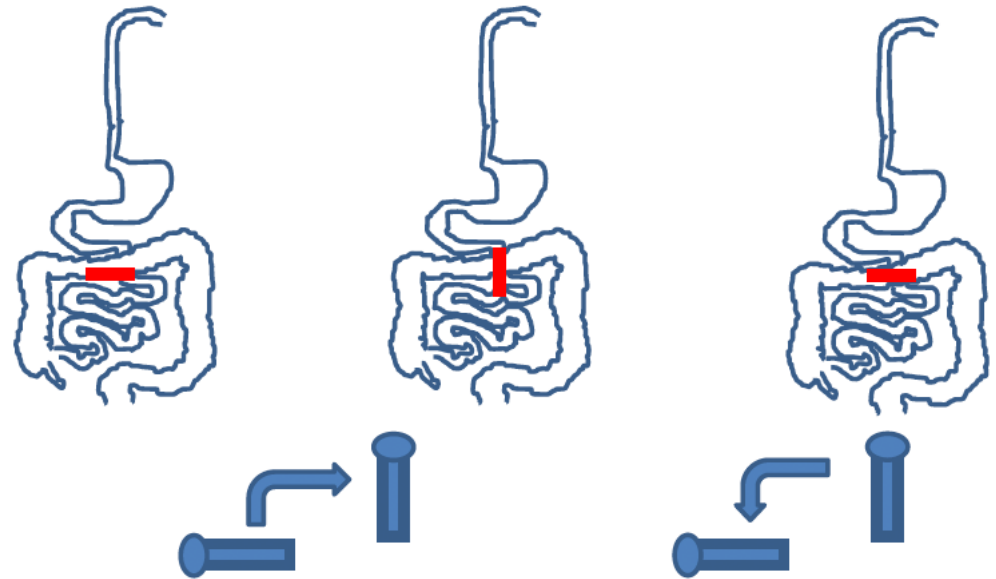
cranial



caudal

Probe Orientation – turning the probe

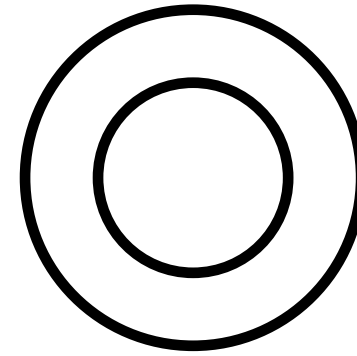
- Sigmoid to Descending
- Descending to Transverse
- Transverse to Ascending
- Ascending to Ileum



Scan Planes: Longitudinal vs. Cross-Section



Longitudinal



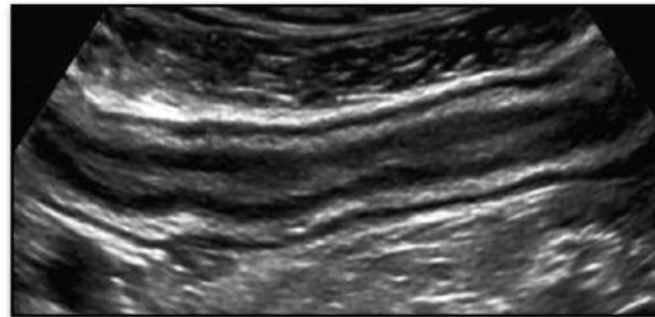
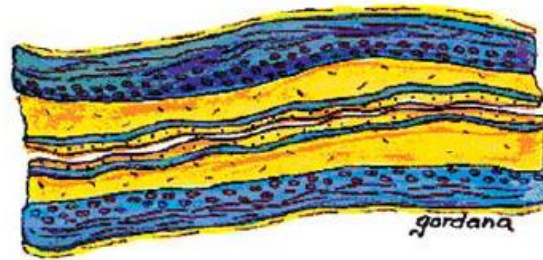
Cross-section

- Every segment should be scanned in both planes
- Longitudinal: two parallel wall lines
- Cross-section: the classic “target sign”

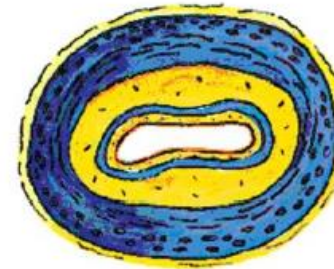
Scan Planes: Longitudinal vs. Cross-Section

Scan planes

Longitudinal

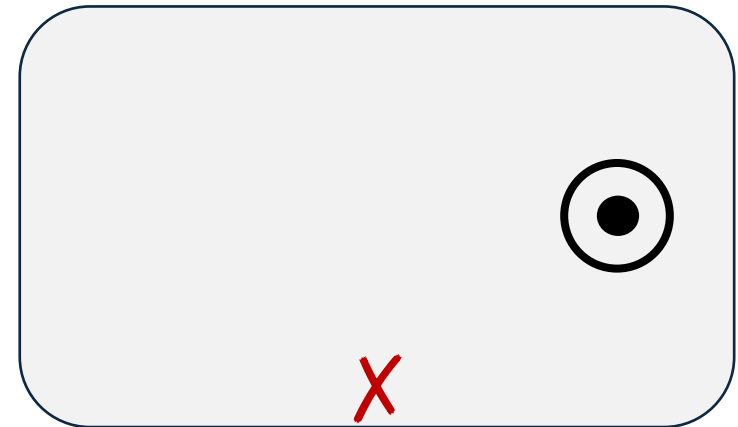
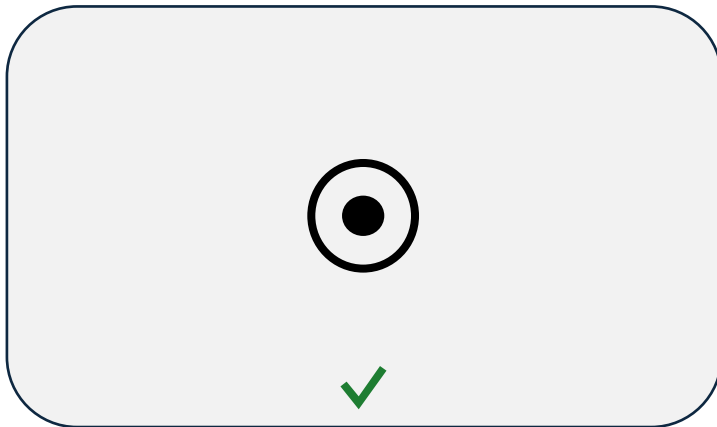


Cross-section



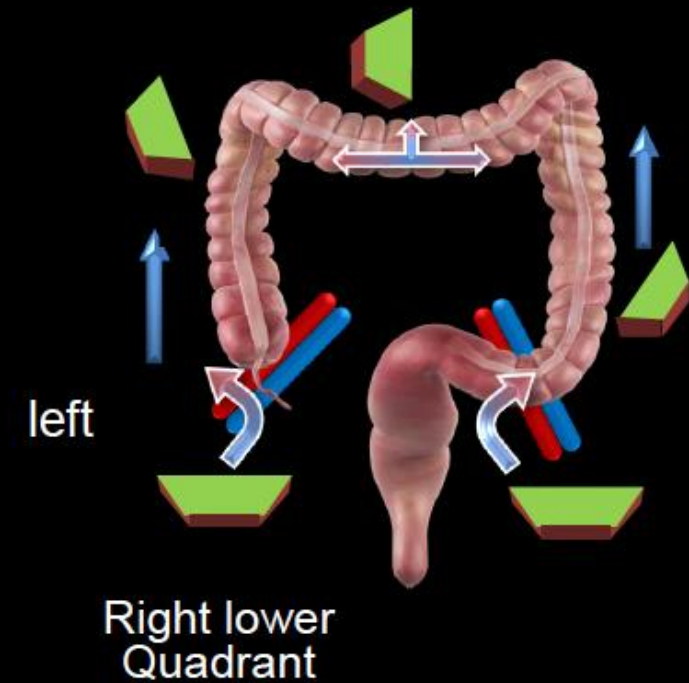
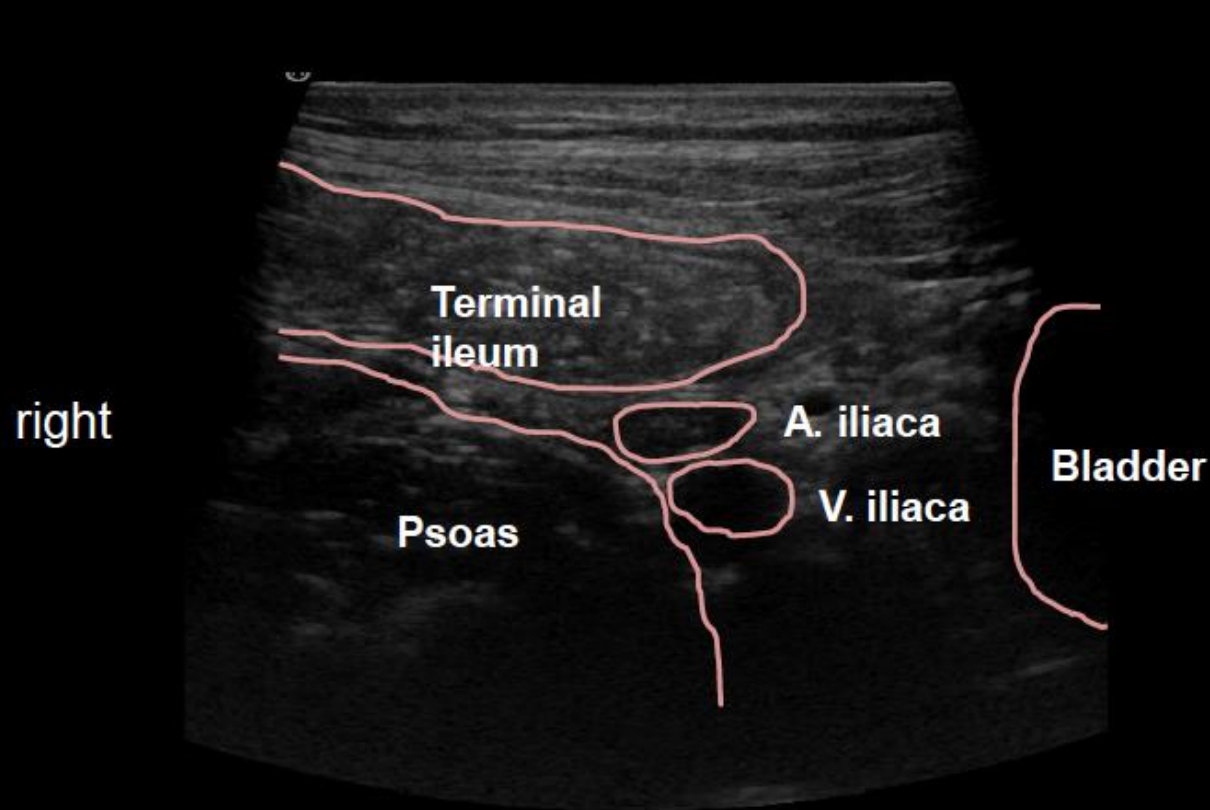
Keep the Region of Interest Centered

- Center the bowel segment in the middle of the screen before freezing or measuring
- Slide, sweep, rotate, and tilt the probe to re-center as the bowel moves
- Turning the probe 90° switches you between longitudinal and cross-section on the same spot

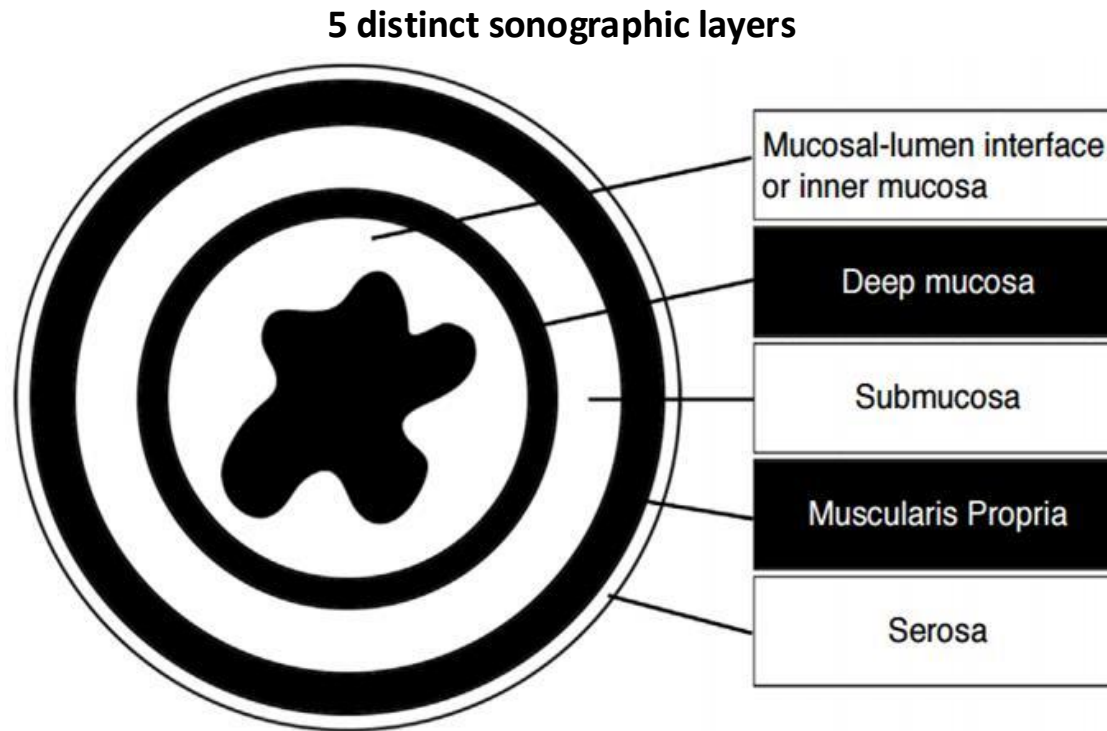




Anatomical Landmarks: Right Lower Quadrant



What to Look For: The Normal Bowel Wall



- Measure wall thickness perpendicular to the lumen, in longitudinal view

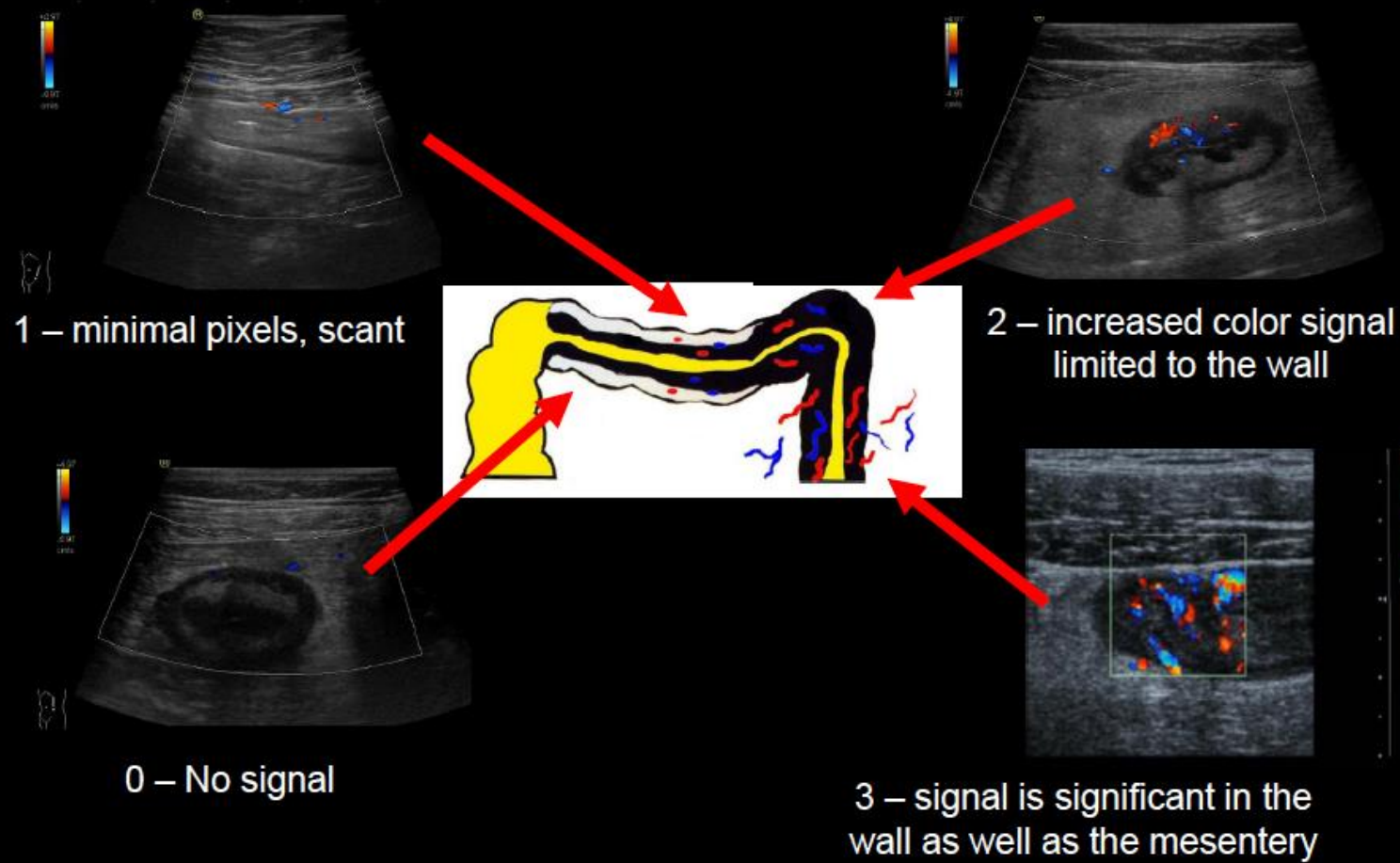
What to Look For: Signs of Inflammation

- **Wall thickening**
 - the single most important criterion
 - > 3 mm correlates with endoscopic activity (sn/sp ~88% / 93%)
- **Hyperemia**
 - increased color Doppler signal in the wall
- **Loss of stratification**
 - especially thickening of the submucosa
- **Inflammation of the mesenteric fat**





Vascularization

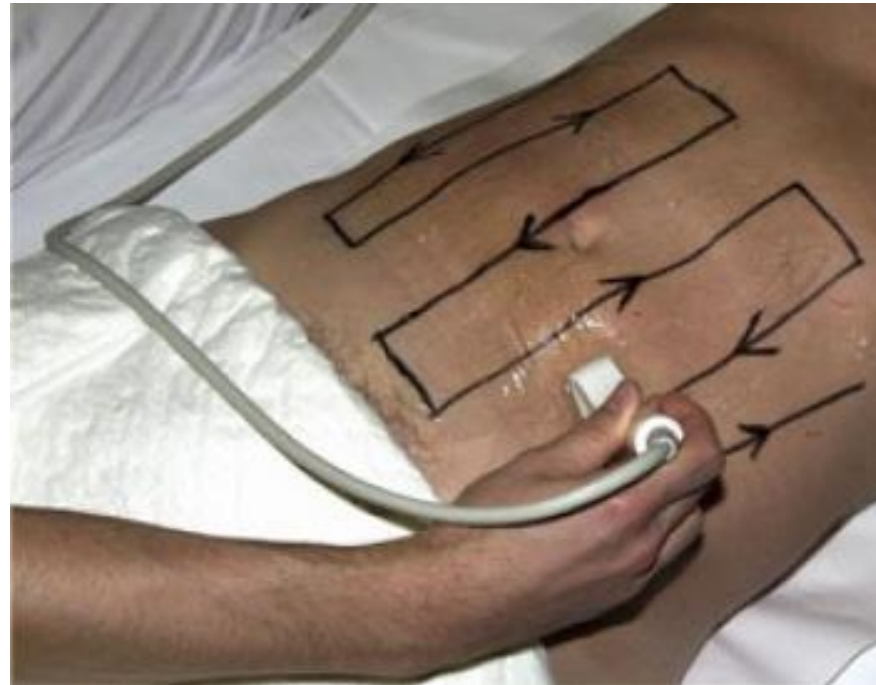


Ultrasound technique: The Systematic Approach

Colon: A → E, every time



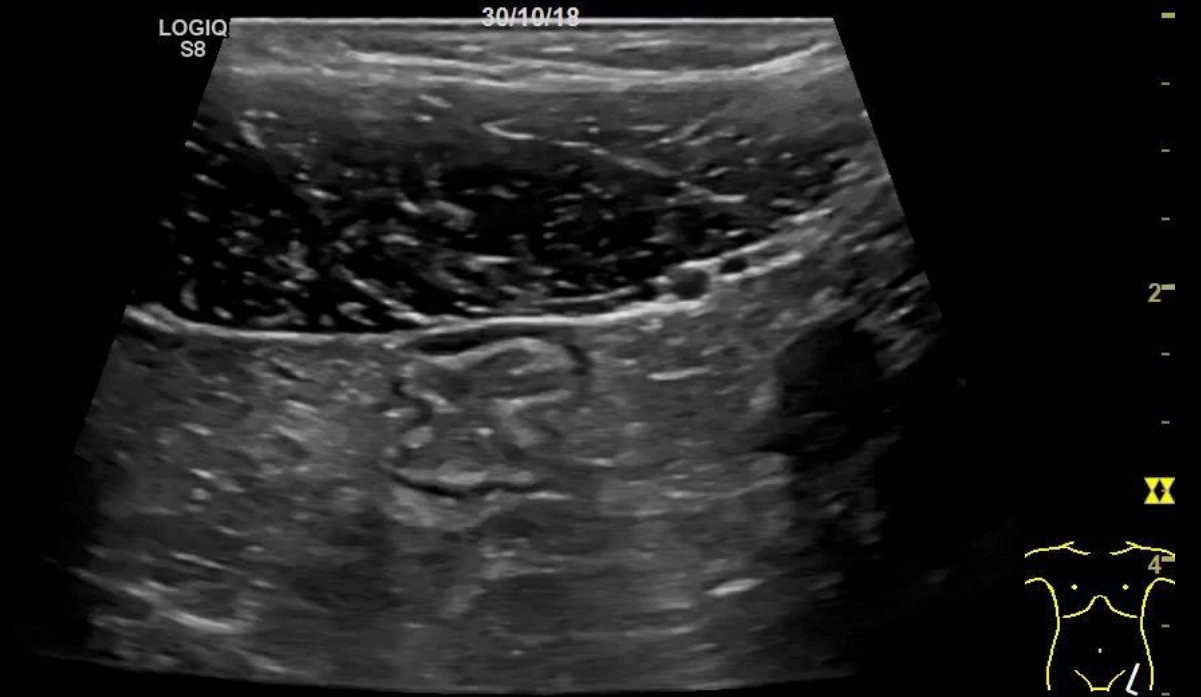
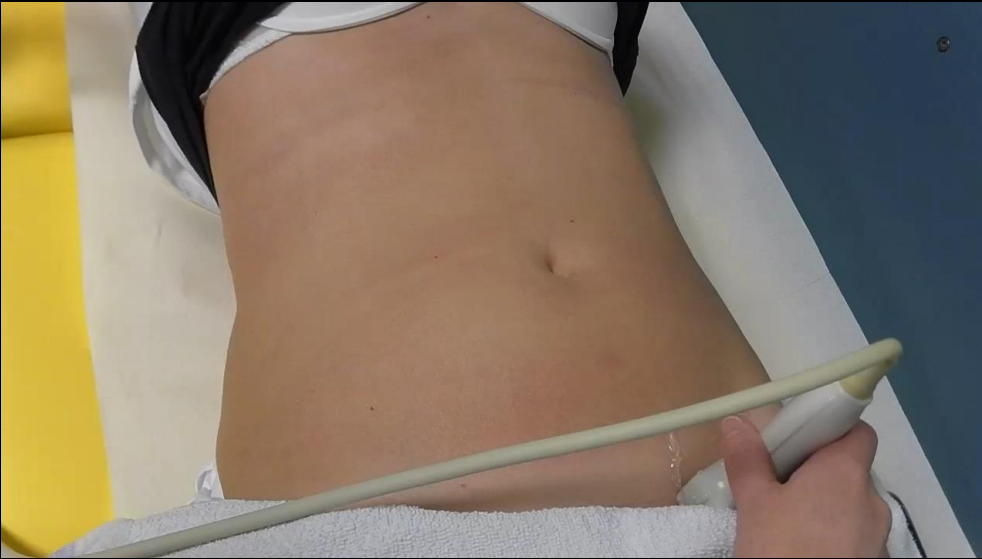
Small bowel: serial parallel sweeps



- Never skip a segment, and never assume it is normal
- Same order, every exam — it becomes automatic

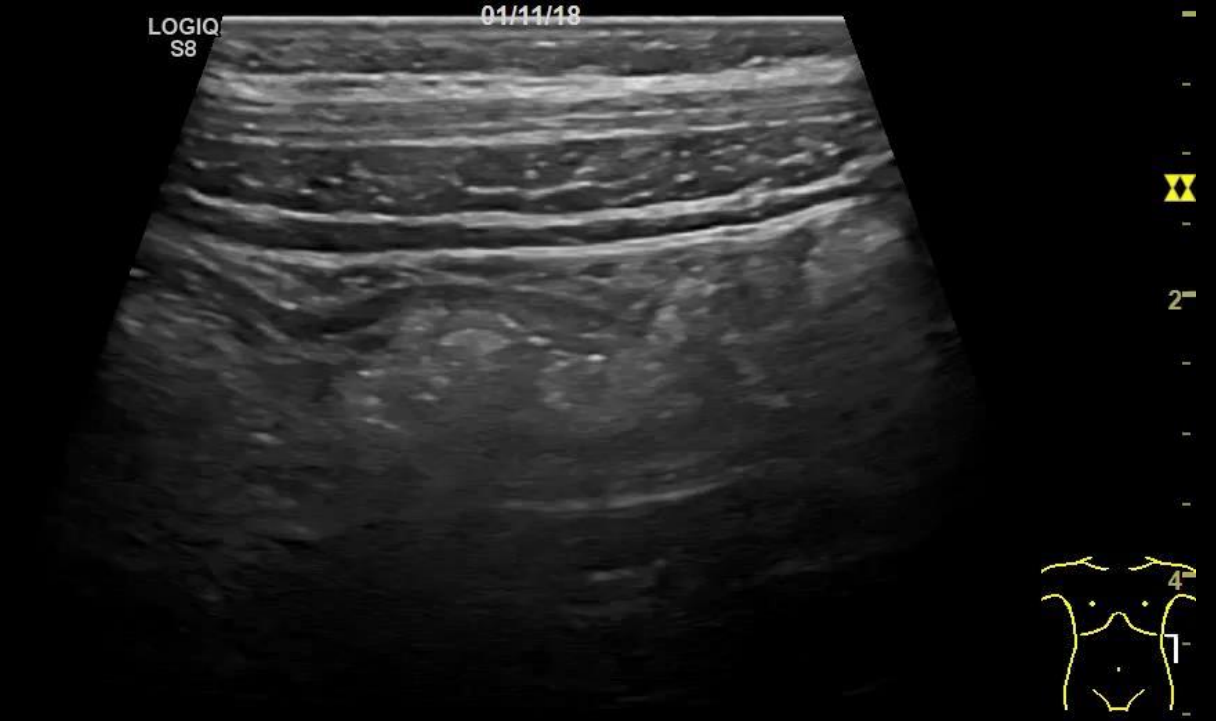


Scanning the Sigmoid Colon





Scanning the Descending Colon



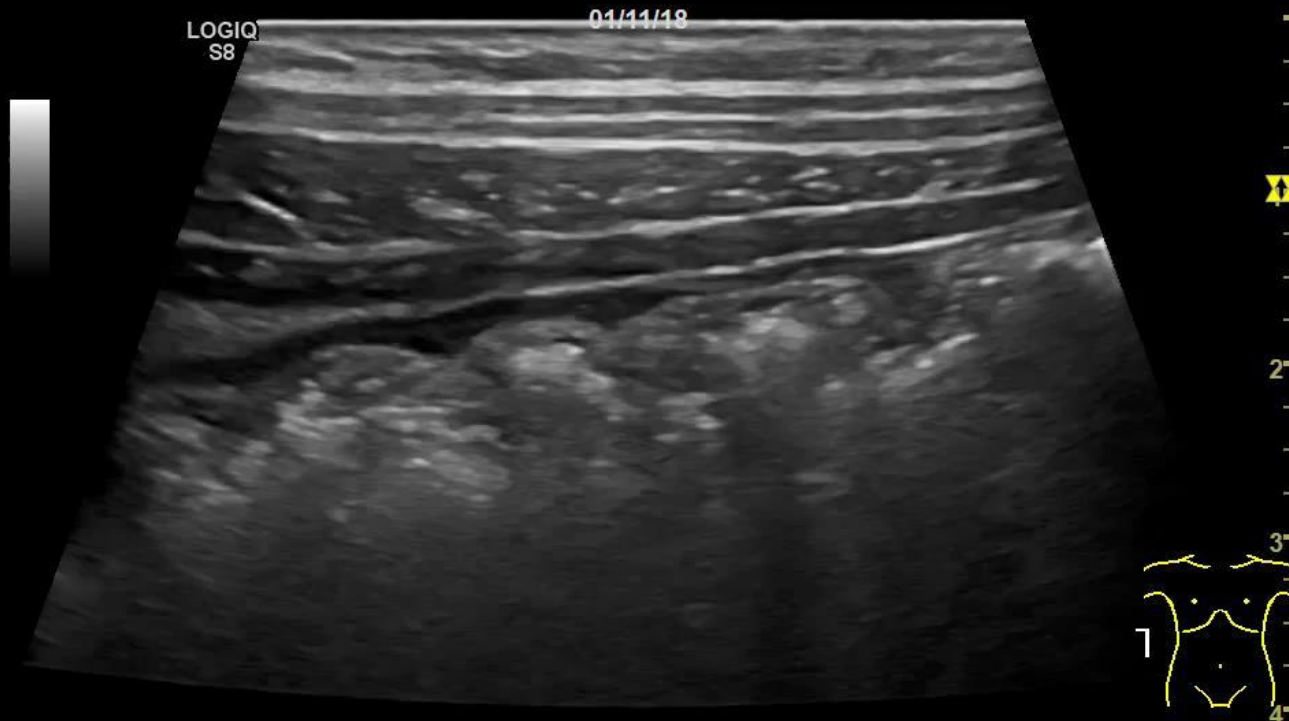


Scanning the Transverse Colon





Scanning the Ascending Colon



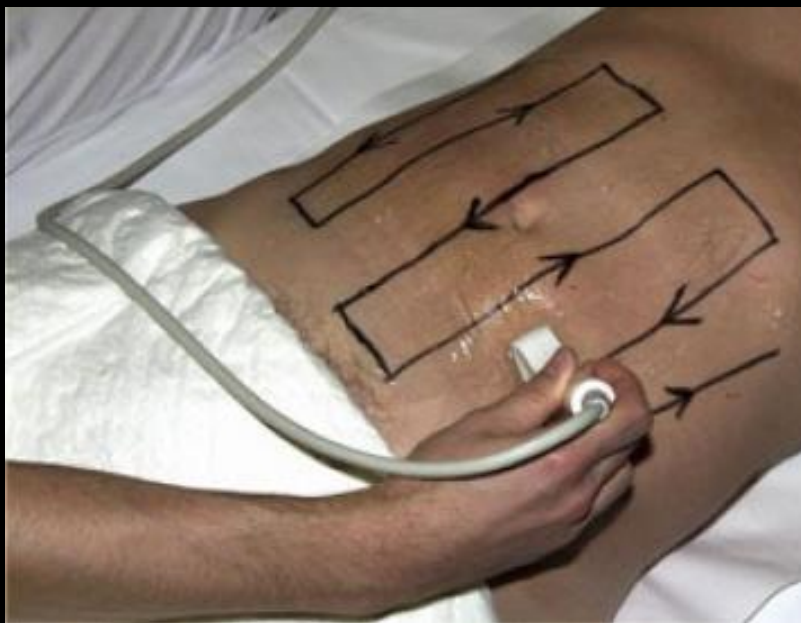


Scanning the Terminal Ileum





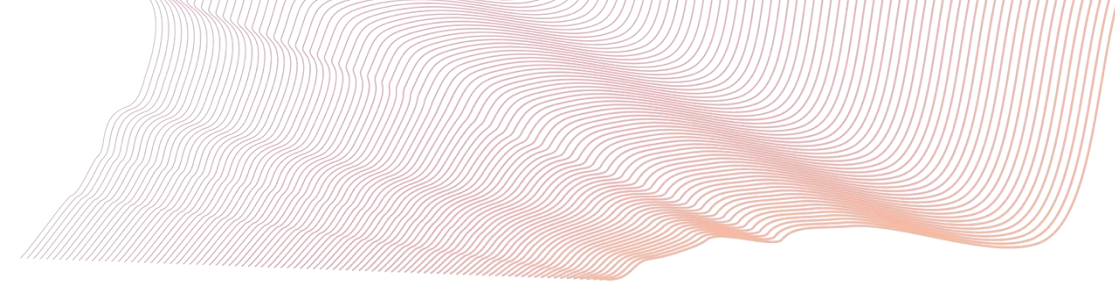
Scanning the Small Bowel



Serial parallel sweeps, top to bottom, covering the full abdomen







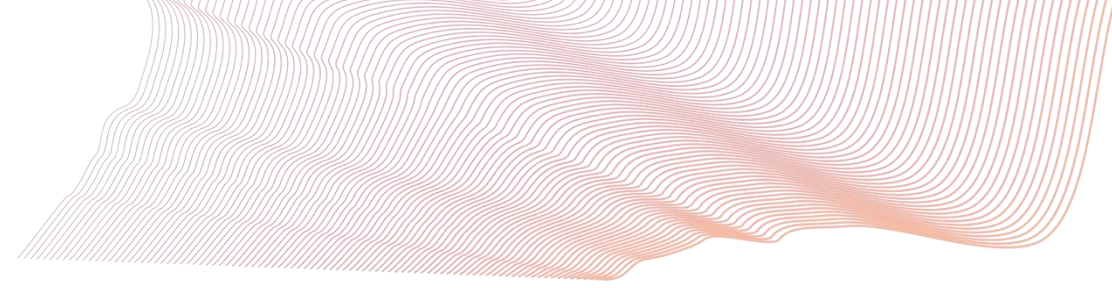
Correct answer

Preferred for motility
assessment

Respuesta correcta

Se prefiere para la evaluación
de la motilidad





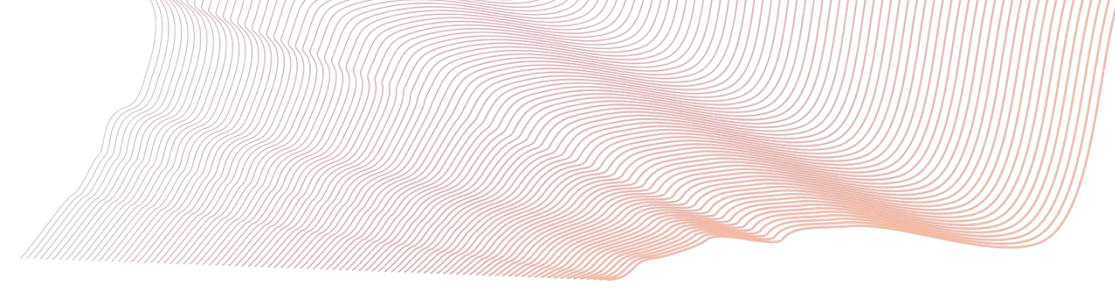
Correct answer

Has high frequency

Respuesta correcta

Tiene frecuencia alta



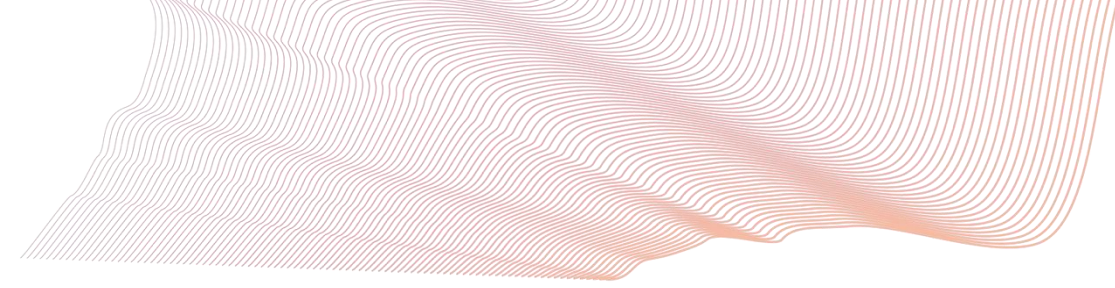


Correct answer

All of the above

Respuesta correcta

Todas las anteriores



Take-Home Messages

- No fasting needed — prepare the patient correctly, clean the probe
- Sit, and don't torture the cord
- Two probes: overview first, then detail
- Orientation: cranial/caudal, right/left, longitudinal/cross-section
- Anatomical landmarks first, then optimize your settings
- Know exactly what you are looking for
- Use a systematic technique, every single time



Q&A

Note for speaker:

*Please note that your allocated lecture time includes Q&A,
so we kindly ask you to keep this in mind when planning
your talk.*