Canine Ultrasound Phantom Training Kit
Lillie

User Manual **Item No. VET4850**

ERLER ZIMMER

Size (approx.):
60 x 45 x 25 cm

Weight (approx.):
7.5 kg

Kit Weight (approx.):
14.5 kg

About Your 'Lillie' Canine Ultrasound Phantom Training Kit

Thank you for purchasing our unique 'Lillie' canine ultrasound phantom training kit. Whether you are new to ultrasound or refining your skills, the 'Lillie' kit provides the perfect training solution. Ideal for both self-practice and formal demonstrations, it eliminates patient-related challenges for stress-free learning.
Training on our phantoms helps develop a precise, reproducible technique and boosts confidence before working with live patients.
Housed in a durable, lockable case, the kit ensures secure storage and safe transportation. To help you maximise the value of your investment, please review & follow the instructions below to ensure your kit remains in optimal condition.

Each training kit is assigned a unique asset number, which allows us to assist you more efficiently in the event of any issues. This number can be found on the front of the case, on the label, and on the 'Lillie' phantom itself.

Before dispatch, each phantom undergoes a thorough individual inspection using ultrasound to identify any significant imperfections or unexpected ultrasound characteristics.

Every feature of our phantoms is carefully catalogued as part of our quality assurance process, and they are only dispatched once they meet our stringent quality standards.

Our phantoms are individually crafted from a unique, tissue-mimicking plastic formula ensuring long-lasting durability (with proper care and maintenance).

The ultrasound-guided fine needle training block is made from a self-healing material, which over time or with excessive use, may show needle track marks which can impact longevity of the blocks.

Kit Contents

Each new kit includes three separate phantoms:

- The ‘Lillie’ Canine Phantom
- The ‘Skills’ Phantom Block
- The ‘Ultrasound-Guided Fine Needle’ Training Block along with ...
- A copy of the Aspire UCS ‘Step-by-Step Ultrasound Image Optimisation Guide’
- A copy of the Aspire UCS ‘Top Tips for Ultrasound-Guided Needle Procedures’
- A training task booklet on how to get the most from your ‘Lillie’ Ultrasound Phantom Training Kit
- A pot of high-quality ‘Aquasonic 100’ ultrasound gel and a pack of environmentally-friendly ‘Anigene Professional Surface Disinfectant Wipes’, recommended for cleaning and protecting the phantoms.

The ‘Lillie’ Aspire UCS Canine Ultrasound Phantom Model is handcrafted, a process which involves 70+ production steps and 35 moulds, so each model is unique. Designed for training, it includes key canine abdominal structures. Whilst not an exact replica, the detailed craftsmanship ensures an authentic ultrasound appearance, which closely mimics real patients.

Includes the following tissuemimicking structures:

- heart, ribs and lung
- liver, gallbladder, spleen, pancreas
- kidneys and adrenal glands, urinary bladder
- stomach, duodenum, ileum, colon
- aorta and caudal vena cava

‘Skills’ Phantom Block – Included Structures:

- a spiral structure
- an anechoic tortuous ‘vessel’ and an anechoic triangular structure
- a hyperechoic structure
- a hyperechoic nodule with a hypoechoic cavity

Mastering fine probe movements, tracking structures, and assessing morphology in multiple planes is more challenging than it looks. With the Lillie kit, you can develop these essential skills ‘stress-free’ because it eliminates patient-related compliancy challenges.

The ‘Ultrasound-Guided Fine Needle Training’ Block enables safe practice of in-plane needle guidance, mastering insertion angles, needle shaft and scan plane alignment for procedures like FNA, cystocentesis, and abdominocentesis.

Note: The ‘Lillie’ Canine Ultrasound Phantom Training Kit is covered by a 12-month guarantee from the purchase date. However, the guarantee depends on proper use and adherence to the provided guidelines, as it is intended exclusively for ultrasound training.

Product Care & Maintenance

Dos for the ‘Lillie’ Canine Ultrasound Phantom Training Kit:

- Lift properly - Use both hands under the phantom ‘belly’ to remove the ‘Lillie’ phantom and always place it in the case feet-first to prevent misshaping.
- Use a stable surface - Place the phantoms on a clean, non-slip, wipeable surface.
- Optimize ultrasound settings - Set acoustic power to 100%, turn harmonics off, and use the lowest frequency for best penetration.
- Adjust image quality - Optimise acoustic power, overall gain, TGC, depth, dynamic range, and focus (if available on the ultrasound system), before each demonstration.
- Only use needles on The ‘Fine Needle Training’ Block. The ‘Skills’ and ‘Lillie’ phantoms are SCAN ONLY and the guarantee is invalidated if needles are used.
- Use appropriate needle size - Only small bore/calibre needles (in numerical terms, 21 or 22 gauge or higher) for the fine needle training block; larger bore needles will cause irreparable damage.
- Clean properly - Use non-alcohol-based medical wipes before and after use.
- Store correctly - Keep phantoms in their dedicated case/containers when not in use.
- Maintain hygiene - Wash hands after use.
- Store in cool, dry conditions.

Product Care & Maintenance

Don‘ts for the ‘Lillie’ Canine Ultrasound Phantom Training Kit:

- Avoid contact with certain materials - Keep phantoms away from plastic, paper, towels, or printed materials to prevent surface damage.
- For safety reasons, never place the phantoms in your mouth.
- Never place/store phantoms near a heat source.
- Do not use the ‘Skills Block’ and ‘Lillie’ phantom for needle practice - they are SCAN ONLY and not for ultrasound-guided needle practice.
- Do not use needle gauges ‹21 (large bore needles) as they will permanently damage the Ultrasound-Guided Fine Needle Training Block.
- Avoid abrasive cleaning - Do not use harsh materials to clean or wipe the phantoms.

#1:Getting the Most from the 'Lillie' Canine Ultrasound Phantom

Equipment:

- Microconvex Probe
- ‘Lillie’ Phantom
- Ultrasound Gel
- Aspire UCS ‘Step by Step Image Optimisation Guide’

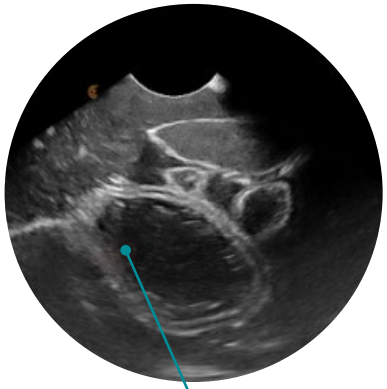
Machine set-up:

1. Select a micro convex/abdominal probe.
2. End previous exams to prevent mixing ‘patient’ data.
3. Enter a fictitious patient name and number.
4. Choose an abdominal preset.
5. Turn off the harmonic setting.
6. Set Acoustic Output (A0) / Acoustic Power (AP) to 100%.
7. Select the lowest possible probe frequency for maximum beam penetration into the phantom.

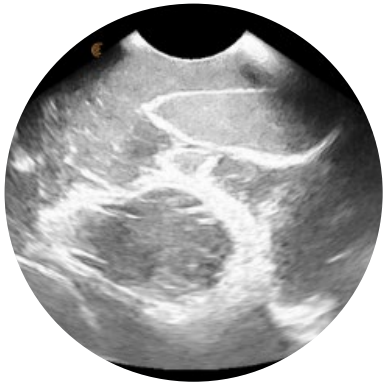
Ultrasound Controls & Image Optimization

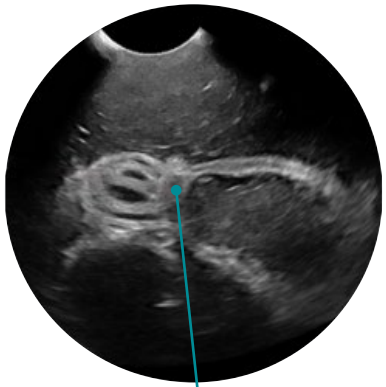
‘Lillie’ Position #1: Dorsal Recumbency

- Place the orientation marker towards the cranial aspect of the ‘Lillie’ phantom and obtain a long axis section of the ‘stomach’ in the midline.
- Using the ‘Aspire UCS Step-by-Step Image Optimisation Guide’, adjust the listed controls, (if/when available on your particular ultrasound system), to see the effects they have on the image; look at the on screen indices and see how they change with each control.



Stomach

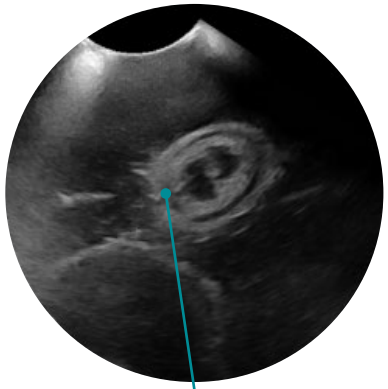




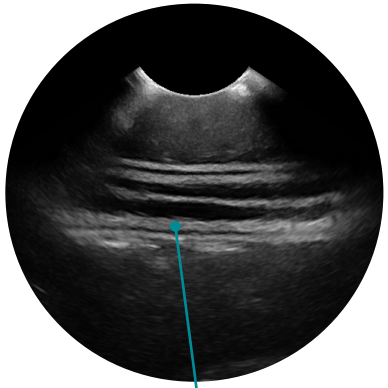
Pylorus

Position #1:
Dorsal Recumbency

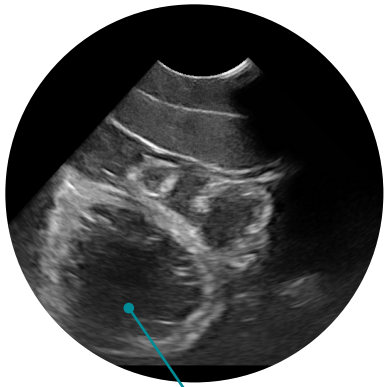
- Identify the 'stomach' as it crosses the midline of the'Lillie' phantom. With the 'stomach' in view, adjust the Depth control to see its effect on the 'stomach's size on the screen. Does increasing or decreasing depth make the 'stomach' appear larger?
- Position the 'stomach' in the middle of the screen; adjust the Overall Gain and TGC controls to observe their effects on the image. What happens to the brightness of the image overall and at different depths?
- Identify the 'pyloric' region where the 'stomach' joins the proximal 'duodenum', just right of the phantom midline.
- Rotate the probe 90 degrees counter clockwise, so the orientation marker is towards you. Slide the probe until the 'duodenum' is centred in a short axis view (coffee bean shape). Optimise the image, Annotate, and Store it.
- Slide the probe caudally, keeping the 'duodenum' in view until it is midway between the phantom's front and hind limbs.
- Rotate the probe 90 degrees clockwise, with the orientation marker back to the cranial aspect, to view the 'duodenum' in a long axis view (longitudinal stripes).
- Adjust the Dynamic Range control and observe the effect on the image. What happens to contrast of the grey scale image?
- Now relocate the 'stomach' crossing the midline and follow steps 2-10 to optimise, annotate, and store a well-centred short axis image of the 'stomach'.



Duodenum Short Axis

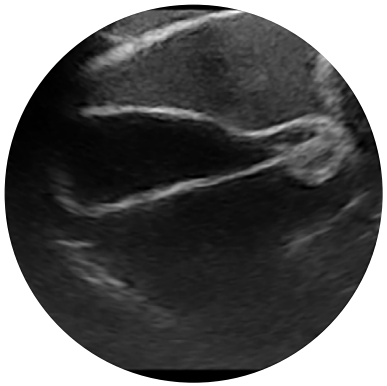


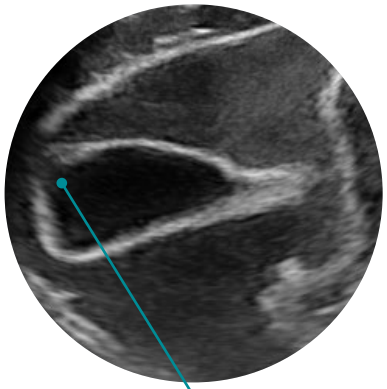
Duodenum Long Axis



Stomach

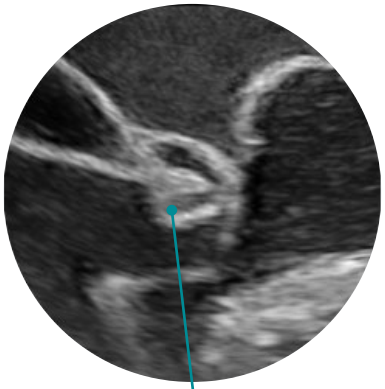
Gallbladder



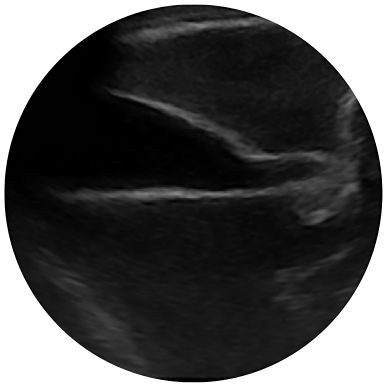


Gallbladder Fundus

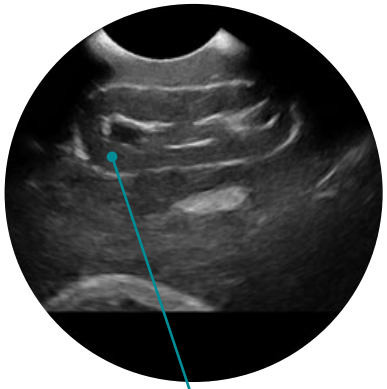
- With the probe in long axis and the orientation marker towards the cranial aspect of the 'Lillie' phantom, locate the 'liver' and identify the 'gallbladder'.
- Using the Aspire UCS Step-by-Step optimisation guide, follow steps 2-10 to produce a well-optimised, long-axis image of the 'gallbladder'. Annotate and store the image.
- Use the Zoom function to magnify the 'gallbladder', and adjust the controls to keep it in the centre of the screen. Compare it with the unmagnified image.
- Gently twist/rotate the probe to identify the 'gallbladder' 'fundus' and 'neck '. Optimise, annotate, and store an image showing both. Consider the probe position—does it align with the long or short axis of the 'Lillie' phantom (patient), or neither?



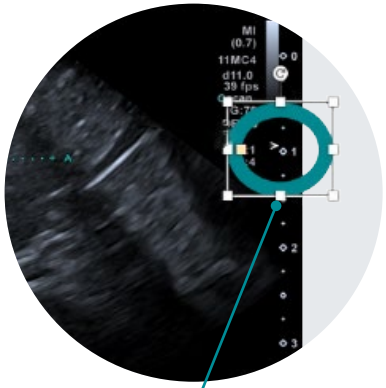
Cystic Duct



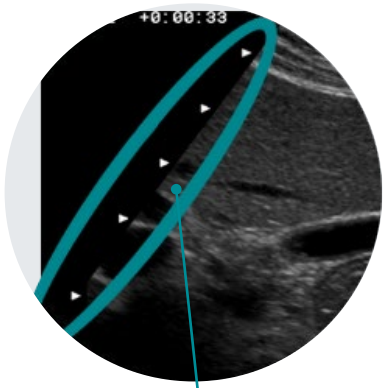
- Locate the cystic duct, distal to the gallbladder neck and using the system calipers, measure the luminal diameter of the cystic duct.
- Practice rotating the probe further counter clockwise from the long axis 'gallbladder' to a short axis view and back again. Optimise, annotate, and store a short axis image of the 'gallbladder'.
- Adjust the Dynamic Range control and observe its effect on the gallbladder wall and contents, paying attention to the grey scale contrast of the image.
- Obtain a long axis 'gallbladder' view and with the Dynamic Range at the maximum and minimum, store images of both values and compare them.



Kidney



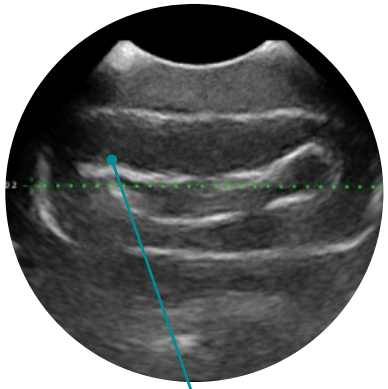
Focus



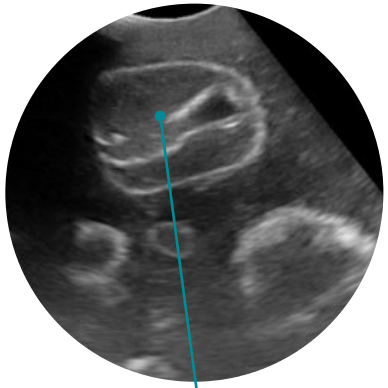
Multiple Focal Zones

Position #2:
Left Lateral Recumbency

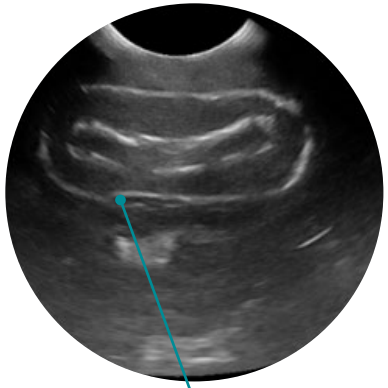
- In the long axis, slide the probe dorsally to locate the right ‘kidney’. Optimise the image of this near-field structure and store an annotated image.
- Adjust the Focus depth and observe its effect. What happens to near-field resolution if the focal depth moves to the far field?
- If available, add multiple focal zones and note their effect on image resolution throughout the depth and the frame rate.
- Slide the transducer ventrally and dorsally to assess the full ‘kidney’, scanning beyond its borders.
- Position the longest section of the ‘kidney’ centrally and horizontally, then measure from cranial to caudal pole. Remember, the long axis of an organ is not arenars in the long axis of the patient. Store an image.
- Remove and reposition the probe, relocate the right ‘kidney’, and repeat the measurement. Compare results.
- Rotate the probe counter clockwise to view the ‘kidney’ in short axis, scanning beyond cranial and caudal margins. Why is it important to scan beyond the boshors of any given structure in more than one plane?
- Adjust the Sector Width/Scan Range to fit the rounded ‘kidney‘ within view. Store an annotated image.
- Practice isolating probe movements: keep the ‘kidney’ in view and rotate the probe on the spot, moving from long to short axis of the ‘kidney’, keeping the structure in the centre of the screen. Now scan beyond the borders in each plane.



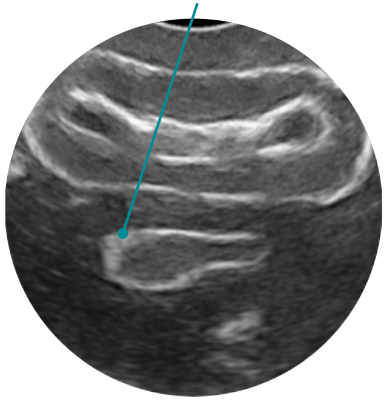
Renal Length



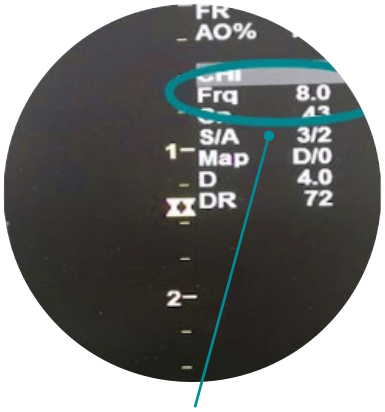
Short Axis



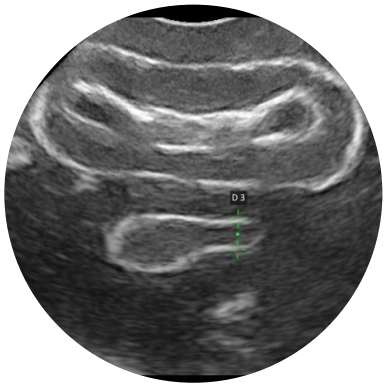
Long Axis

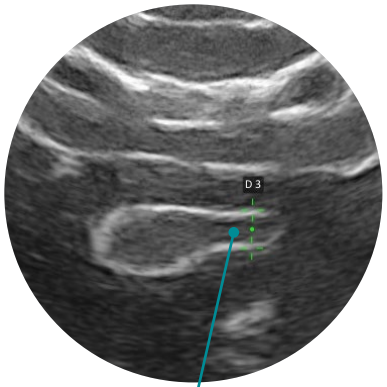


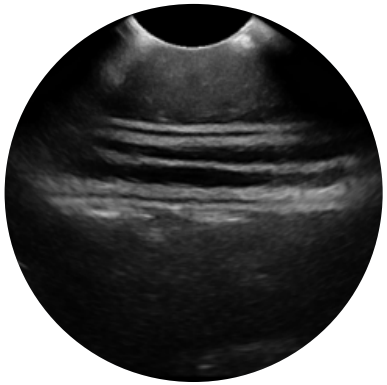
- In the long axis, slide the probe dorsally to locate the right ‘kidney’.
- Within the far field, dorsal to the right ‘kidney’, locate the right ‘adrenal gland’ and note its position and characteristic shape.
- Optimise the image until the right ‘adrenal gland’ is in the centre of the screen and large enough to assess by using the Zoom control. What happens if you Zoom in on the adrenal gland BEFORE adjusting the Depth control sufficiently to bring the gland into the centre of the screen? Does the adrenal gland remain in the centre of the screen?
- Check the Focus position and adjust until the adrenal gland is at its sharpest on the image.

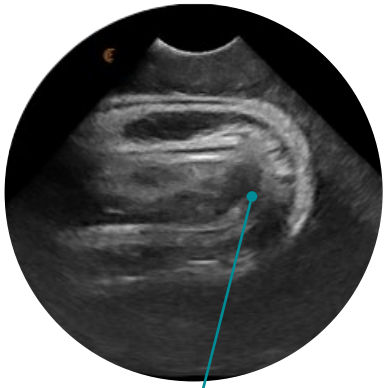


- Try adjusting the Frequency to ensure you have sufficient beam penetration to assess the ‘adrenal gland’ accurately.
- Scan through the ‘adrenal gland’ in both long and short axis views and note any adjacent structures.
- Once optimised, annotate and store an image of the right ‘adrenal gland’ to include the caudal pole diameter height.
- Unfreeze the image, rescan and repeat the measurement of the ‘adrenal gland’. Store another image of the second measurement.
- Are the measurements the same?
- How could you further improve/optimise the image to maximise reproducibility of the measurement?



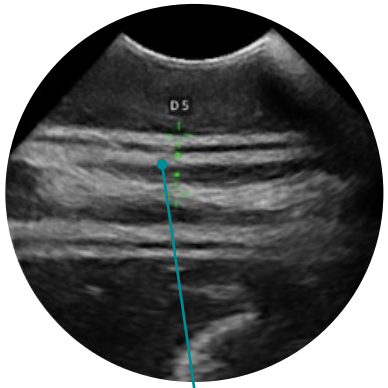




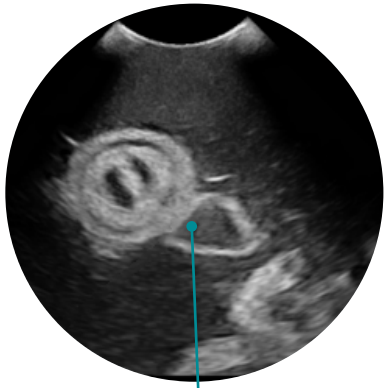


- With the orientation marker of the probe to the cranial aspect of the 'Lillie' phantom, relocate the 'duodenum'.
- Practice isolating 'slide' and 'rotational' movements of the probe to follow the path of the 'duodenum' in short axis (coffee bean shape) from the 'pyloric' region of the 'stomach', down the descending 'duodenum', around the caudal flexure and back cranial along the ascending 'duodenum'
- Keep the 'duodenal' coffee bean shape in the centre of the screen as you slide cranial to caudal and vice versa.
- Now try following the path of the 'duodenum' in long axis. Which do you find easiest?

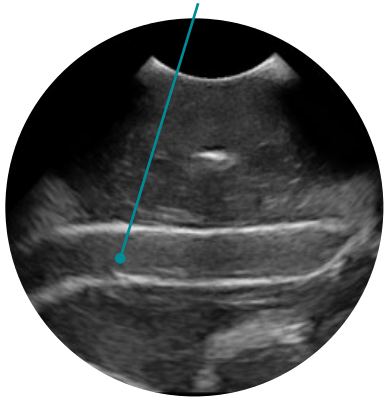
- Obtain a well optimised long axis section of the 'duodenum'. Measure the 'duodenal wall' thickness from the centre of the lumen to the outer edge of the 'serosal wall layer' margin. Annotate and store an image.
- Return to short axis view and locate the triangular shaped right limb of 'pancreas' medial to the 'duodenum'.
- Optimise the image, ensuring the right 'pancreas' is in the centre of the screen, annotate and store an image.
- Rotate counter clockwise on the right 'pancreas' slowly until it can be seen in long axis, running parallel to the descending 'duodenum'.
- Optimise the image again, annotate and store an image of the right limb of 'pancreas' in long axis.

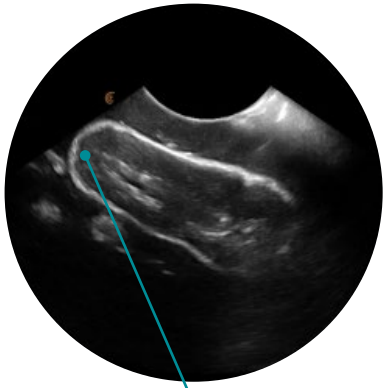


Duodenal Wall Thickness



Pancreas

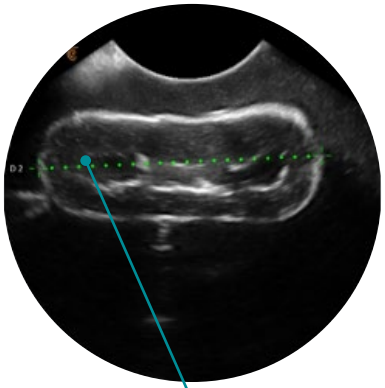




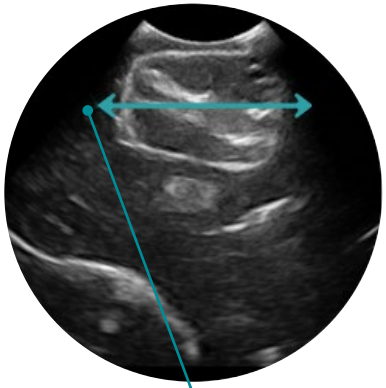
Probe Rocking

Position #3: Right Lateral Recumbency

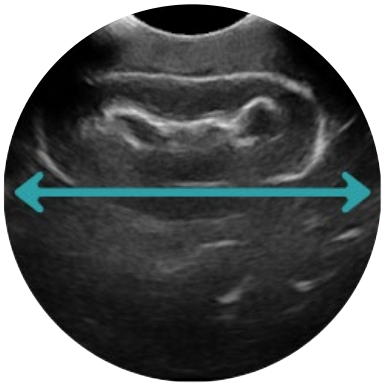
- Position the probe in long axis with the marker cranial and slide dorsally to locate the left 'kidney.' Optimise and store an annotated image.
- Scan fully by sliding ventrally and dorsally beyond the kidney's borders.
- Find the longest section, centring it on the screen.
- Rock the probe without any sliding or fanning motion.Does the kidney stay horizontal on the screen?
- Always try to align the probe perpendicular to the region of interest for optimal sound reflection.
- Perform 2 measurements of the long axis of the kidney, cranial to caudal pole; one with the kidney horizontal and the other non-horizontal on the screen. Is there a difference in your measurements? Are the end points as clear when the kidney is not horizontal? Store image to demonstrate.
- Rotate counter clockwise for a short-axis view of the 'kidney', scanning beyond cranial and caudal margins. Why is scanning beyond borders of a structure in multiple planes so important?
- Adjust the Sector Width/Scan Range/ Area to fit the rounded 'kidney' within view. Store an annotated image.
- Practice isolating probe movements: keep the 'kidney' in view and rotate the probe on the spot, moving from long to short axis of the 'kidney', keeping the structure in the centre of the screen.

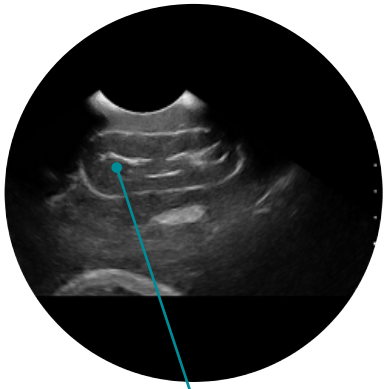


Renal Length

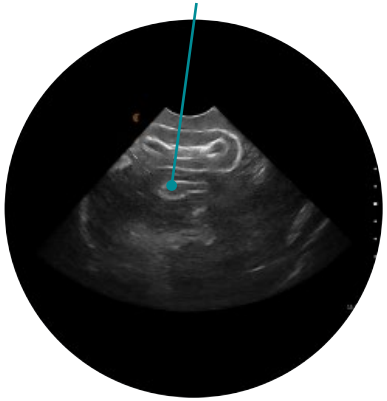


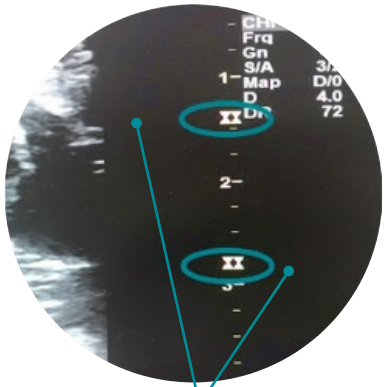
Sector Width





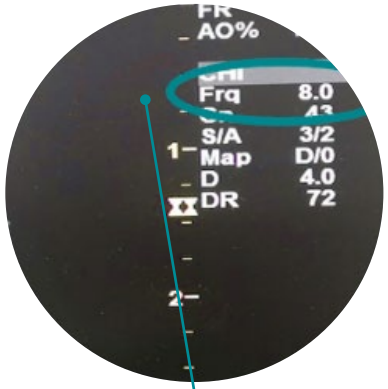
Keft Kidney & Adrenal Gland



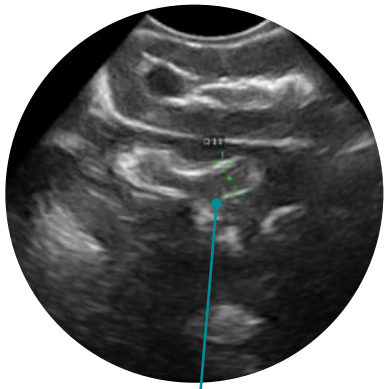


Focus

- Locate the left ‘kidney’ in long axis section.
- Find the left ‘adrenal gland’ dorsal to the kidney in the far field, noting its position and shape.
- Optimise the image:
  - Adjust frequency if necessary for sufficient beam penetration.
  - Adjust depth first, then use zoom to centre and enlarge the ‘adrenal gland’.
  - Refine the focus for maximum image resolution.
- Scan through the ‘adrenal gland’ in both long and short axis views and note any adjacent structures.
- Optimise, annotate and store an image of the left ‘adrenal gland’ to include the caudal pole diameter height.



Frequency



Caudal Pole Height

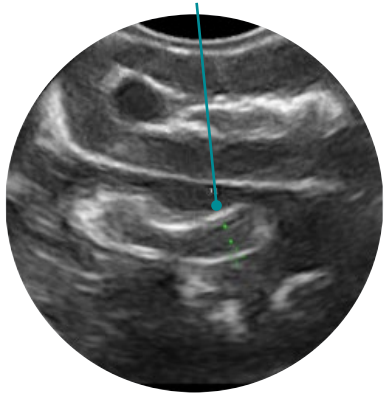
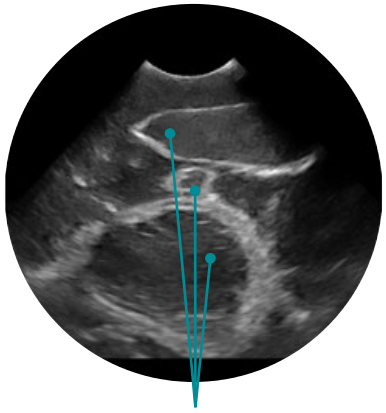
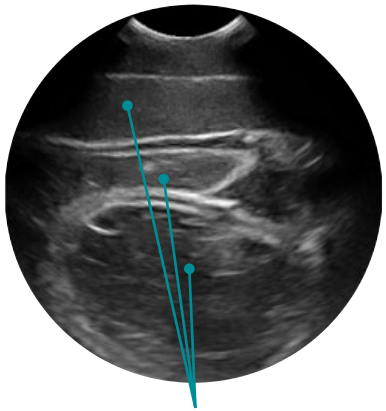


Image Zoomed

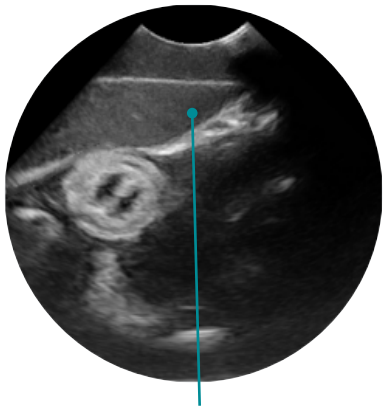
- Unfreeze the image, rescan and repeat the measurement of the ‘adrenal gland’.
- Store another image of the second measurement.
- Are the measurements within a millimetre difference?
- On the previous images stored of the right ‘adrenal gland’, compare the size, shape and echotexture of the two ‘adrenal glands’.
- Does the caudal pole diameter height measurement of the left ‘adrenal gland’ compare with that of the right ‘adrenal gland’? Why would you not routinely measure the cranial poles of the ‘adrenal glands’?
- How could you further improve/optimise the image to maximise reproducibility of the measurements?



Spleen, Left Pancreas & Stomach



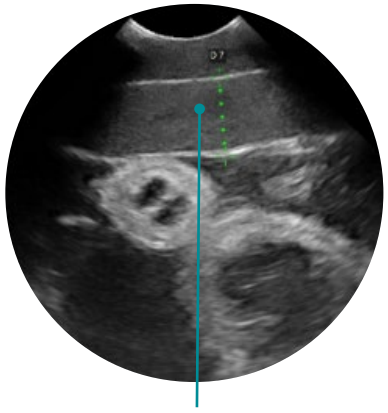
Spleen, Left Pancreas & Stomach



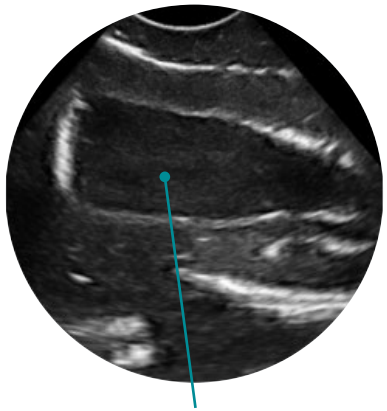
Splenic Tail

- Locate the ‘spleen’ in the near field by placing the probe in long axis over the right cranial aspect of the ‘Lillie’ phantom.
- Observe adjacent structures (‘stomach’ and left ‘pancreas’) and note the ‘spleen’s’ smooth, homogeneous echotexture.
- Map the spleen using slide movements to determine its full extent within the ‘Lillie’ phantom.
- Scan comprehensively with overlapping long and short axis sweeps, optimising the image continuously (this technique is also essential to scan the ‘liver’ parenchyma thoroughly).
- Measure the ventro-dorsal (VD) diameter of the ‘splenic’ body, repeating for accuracy. Annotate and store images of the ‘splenic’ body and tail.

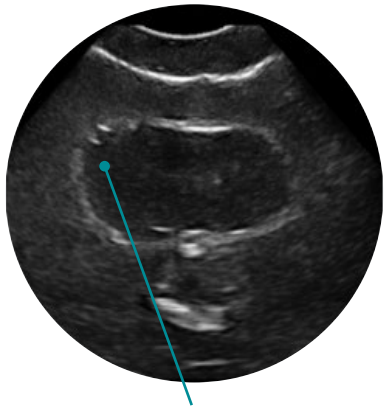
- Slide caudally to locate the ‘urinary bladder’.
- Scan the ‘bladder’ in long and short axes, extending beyond its cranial, caudal, and lateral margins. Annotate and store representative images.
- Using the ‘Aspire UCS Step-by-step Image Optimisation Guide’, practice adjusting the controls listed in steps 3-8 and note their impact on the image.
- Identify controls that enhance anechoic bladder content and improve ‘bladder’ outline clarity.
- Store well-optimised, annotated images of the ‘bladder’ in both long and short axes.



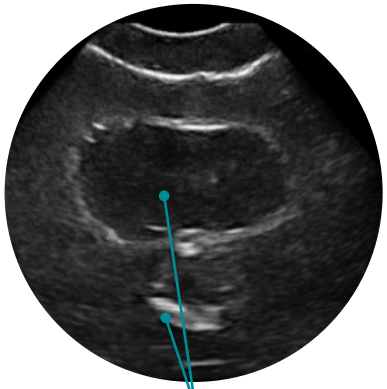
Splenic Body Measurement



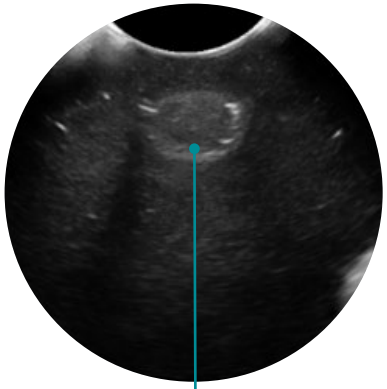
Urinary Bladder Long Axis



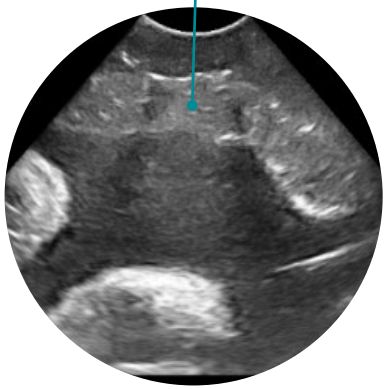
Urinary Bladder Short Axis



Urinary Bladder & Colon

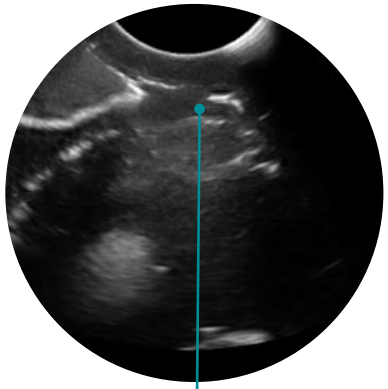


Colon Long & Short Axis

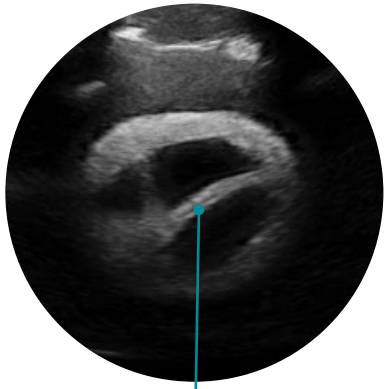


'Lillie' Position: try all three Positions - Left Lateral, Dorsal and Right Lateral Recumbency

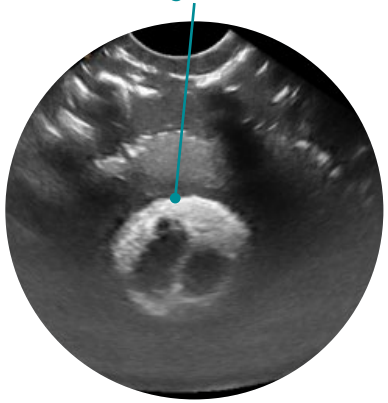
- With the probe in a short axis section, use the urinary 'bladder' as an anatomical landmark to locate and identify the distal descending 'colon' in the far field, dorsal to the 'bladder'.
- Optimise the image for the 'colon', adjusting Depth to centre the 'colon' on the screen.
- Maintaining a short axis view, keep the 'colon' in view and slide the probe cranially to follow the entire descending 'colon', along the transverse 'colon' across the midline, caudal to the 'stomach'.
- Slide back down the 'colon' to the 'bladder' level, still in short axis.
- Rotate the probe clockwise, keeping the colon in view, and retrace the path of the 'colon', this time in long axis section. Which plane makes it easier to follow this linear structure?



Transverse Colon



Heart Long & Short Axis



- Store an annotated image of the descending 'colon' in long axis.
- NowW try to locate and identify the heart. Which 'Lillie' position is best for this?
- Once you have the heart in the centre of the screen, optimise the image and rotate the probe to view the heart in both a long axis and a short axis section.
- Observe 'rib' shadows—how do they affect imaging?
- Annotate and store representative images of the heart in both views.

Consolidating Your Newly Acquired Skills

Ultrasound System Skills for Image Optimisation and Large Probe Movements for Structural Assessments.

‘Lillie’ Position: use all three positions

Since ultrasound is a practical skill, the only way to become confident at using an ultrasound system effectively to optimise images, and refine your motor skills to identify and assess structures comprehensively, is to practice, practice, practice...

Once you have become more confident using the ‘Lillie’ phantom to navigate your way around and have developed your hand-eye-brain coordination to follow structures on ultrasound, try performing a mini-abdominal scan:

Capture and store long/short axis views of key structures:

- ‘Liver’
- ‘Gallbladder’, with a ventro-dorsal gallbladder wall measurement
- ‘Pylorus’
- ‘Duodenum’, measuring wall thickness from luminal center to outer serosal margin (long axis)
- Right & left ‘pancreatic’ lobes
- Right & left ‘kidneys’
- Right ‘adrenal gland’, with caudal pole height measurement
- ‘Spleen’, including the splenic tail and ventro-dorsal diameter of the splenic body
- Left ‘adrenal gland’, with caudal pole height measurement
- ‘Urinary bladder’, with a dorsal wall measurement
- ‘Colon’

ALWAYS Ensure your images are well-optimised and correctly annotated to document and evidence your scan findings. You never know when you might need to rely on them!

Ultrasound System Skills for Image Optimisation and Probe Movements for Structural Assessments. End the exam on the ultrasound system and review stored images.

Critique each image based on:

- Region of Interest (ROI) Position - Is it in the centre of the screen?
- ROI Size - Is it appropriately framed?
- Measurement Accuracy - Are callipers correctly placed?
- Annotations - Are they clear and correct and not obscuring the image?
- Image Quality - What improvements can be made?

Using ‘The Aspire UCS ‘L.E.M.O.N.S. Criteria’, select images and describe the structures using ultrasound terminology, as if reporting to a clinician. Practice refining your observations for clear and professional communication.

How to Assess a Structure on Ultrasound

When you need to describe any structure seen during an ultrasound examination, use the ‘LEMONS’ criteria:

L E M O N S

- **L** — **Location** (e.g., anatomical, focal, diffuse)
- **E** — **Echotexture** (e.g., hypoechoic, isoechoic, hyperechoic, heterogenous, homogenous)
- **M** — **Measurements** (e.g., small, moderate, large, gross or a finite measurement inmm or cm units)
- **O** — **Outline** (e.g., irregular, well- or ill-defined, smooth, poorly marginated)
- **N** — **Number** (e.g., finite number, several, multiple)
- **S** — **Shape** (e.g., ovoid, rounded, fusiform, amorphous)

#2:Getting the Most from the ‘Skills’ Ultrasound Phantom Block

Equipment:

- Microconvex or Linear Probe
- ‘Skills’ Ultrasound Phantom Block
- Ultrasound Gel
- Aspire UCS ‘Step by Step Image Optimisation Guide’

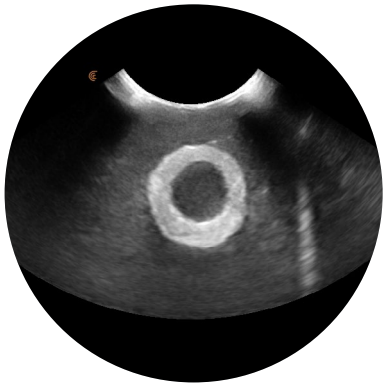
Machine set-up:

1. Select a micro convex or linear probe.
2. End previous exams to avoid mixing patient data.
3. Enter a fictitious patient name & number.
4. Choose a superficial or small animal preset.
5. Turn off the harmonic setting.
6. Set Acoustic Output (A0) / Acoustic Power (AP) to 100%.
7. Select the highest probe frequency for optimal penetration to the back of the phantom block.

Mastering Ultrasound Movements For Small And Complex Structures

Starting Off

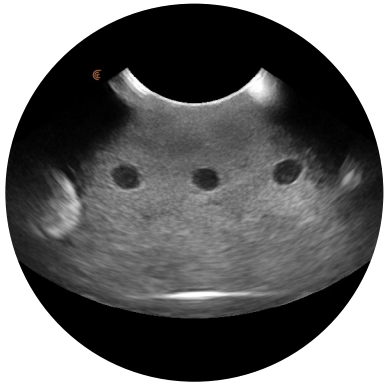
- Identify the probe orientation marker — Decide whether to scan the phantom in a long or short axis.
- Check probe orientation is correct and that the marker corresponds to the left of the screen.
- Use the ‘Aspire UCS Step-by-step Image Optimisation Guide’ to adjust controls for optimal imaging.
- Fine-tune settings to enhance the visibility of structures within the phantom.



Discovering the 'Skills' Ultrasound Phantom Block

- Place the probe with its long axis plane in line with the long axis plane of the rectangular phantom block.
- Explore the block from different scan approaches to identify ALL the objects seen in the images on the right.
- Rotate the probe on each object in turn to spatially map its 3-dimensional shape. Some shapes will be easier than others to assess in their entirety in multiple planes.
- Optimise the image for each shape and use the annotation function to describe your impression of the structure in 3-dimensions. e.g. an elongated tapered structure with a triangular cross sectional shape at one end and a rounded shape at the other.
- Take representative images in both long and short axes sections of each shape to corroborate your ultrasound impression.

- Identify the anechoic tubular structure in the middle of the 'skills' phantom and follow the direction of the structure, from one end to the other, in both long and short axes. Which is easiest for following the anechoic tubular structure?
- What structures in the patient's body would require these fine motor skills when tracking its pathway?
- Measure the lumen of the anechoic tubular structure - take care to place the callipers correctly, measuring the luminal diameter, not the diameter of the structure.
- When might a luminal diameter measurement technique be useful when scanning the abdomen?



#3:Getting the Most from the 'Renal' Needle Phantom Block

Equipment:

- Microconvex or Linear Probe
- Ultrasound Gel
- The 'Ultrasound-Guided Fine Needle' Training Block
- Aspire UCS 'Step by Step Image Optimisation Guide'
- Aspire UCS 'Top Tips for Ultrasound-Guided Needle Procedures'

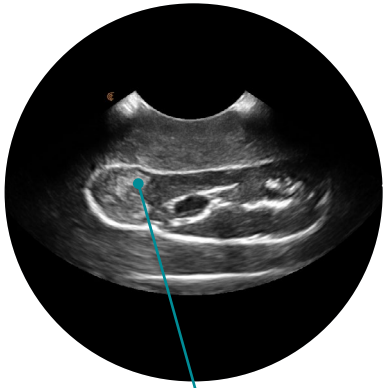
Machine set-up:

1. Select a micro convex or linear probe.
2. End previous exams to avoid mixing patient data.
3. Enter a fictitious patient name & number.
4. Choose a superficial or small animal preset.
5. Turn off the harmonic setting.
6. Set Acoustic Output (A0) / Acoustic Power (AP) to 100%.
7. Select the highest probe frequency which will allow beam penetration to the back of the phantom block.

Performing Safe and Effective Ultrasound-Guided Needle Procedures

Starting Off

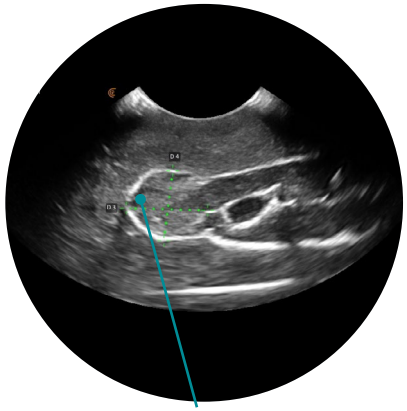
- Make sure you know where the orientation marker of the probe is when you place it on the phantom - ideally the marker should correlate with either the long or short axis of the block, with the marker representing the left of the screen.
- Using the 'Aspire UCS Step-by-step Image Optimisation Guide', adjust the listed controls to optimise the structure seen within the phantom.
- Always take great care when selecting and handling needles. Keep out of reach of children and dispose needles in a dedicated sharps bin

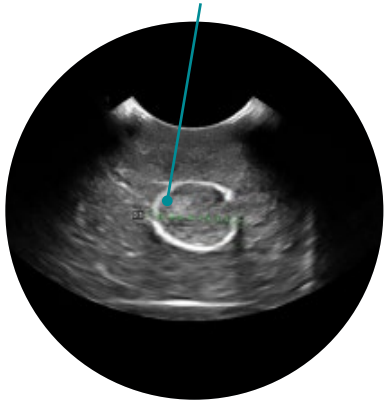


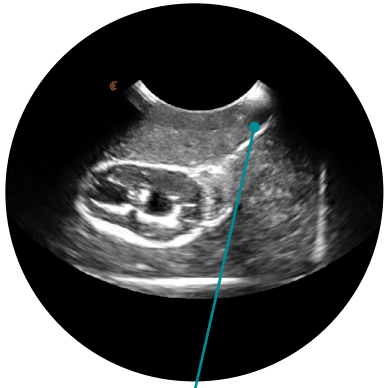
Aligning a Needle with the Scan Plane

- Place the long axis of the probe in line with the long axis plane of the rectangular phantom block.
- Explore the block from different scan approaches and in multiple planes to assess the 'kidney' in its entirety. Compare the ultrasound appearances with that of the kidney in the 'Lillie' Phantom. What is different?
- Measure the region of interest and take well-optimised representative images in both long and short axes.
- Use the 'L.E.M.O.N.S.' Criteria to describe the appearances of the 'kidney', as if reporting the findings to a clinican.
- Read through the Aspire UCS 'Top Tips for Ultrasound-Guided Needle Procedures' and plan how you would perform an FNA to sample the abnormal section of the 'kidney'.

- Adjust the Dynamic Range control to enhance the contrast of the image as this will help to identify the needle tip and shaft as it is inserted.
- Decide which hand to hold the probe and which hand to direct the needle towards the 'renal mass' target.
- Once the target is in site, anchor the probe hand on the phantom block to reduce any involuntary movement.
- Follow Top Tips 1-10 to carefully guide the full shaft of needle, using the in-plane technique, towards the 'renal mass' target.
- Now practice the same technique using your other hand to hold the probe and direct the needle. Which hand do you feel most confident and successful with at guiding the needle?







EXPERTS IN MEDICAL EDUCATION

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