

Abdominal Point-Of-Care Ultrasound Examination (APOCUS)¹

Point-Of-Care Ultrasound Examinations (POCUS) are a form of targeted scans used in emergencies to answer specific diagnostic questions. The APOCUS can be used **to identify peritoneal and retroperitoneal free fluid**. The technique is safe, quick, and can be repeated, allowing it to be used for ongoing patient monitoring. **It does not replace a full and systematic abdominal ultrasound examination**. An APOCUS uses a combination of four acoustic windows. **Patient Preparation:** Patient stability at presentation will determine the position and the extent of any preparation.

The technique can be performed with the patient standing or in sternal or lateral recumbency. Dorsal recumbency is not used due to the risk of further decompensation.

It is not necessary to clip the hair coat, although this can be performed depending on patient stability and in cases where the coat is long or thick.

Isopropyl alcohol is applied to the skin along with ultrasound gel. *

Use a micro-convex transducer.

Choose an abdominal preset.

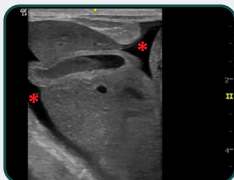
The transducer marker should be orientated cranially.

Set the screen so that the left of the screen displays the marker side of the transducer i.e., the cranial aspect of the patient.

*After use, the transducer should be cleaned to remove any gross contamination and to avoid material drying on the casing. Use clean water and dry with a non-abrasive cloth or towel.

Diaphragmaticohepatic view (DH)

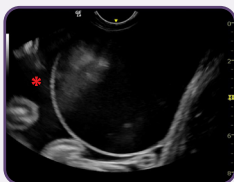
- Place the transducer caudal to the xiphisternum and angle cranially to view the liver
- Set the depth to identify the curved hyperechoic diaphragm – air interface and part of the thoracic cavity. This view can be used to identify pleural or pericardial effusion
- Fan the transducer towards the patient's left and right sides to examine the cranial abdomen and identify the gall bladder



Anechoic fluid surrounding part of the liver (*).

Cystocolic view (CC)

- Place the transducer caudally in the midline and fan the transducer to identify the urinary bladder and part of the colon
- Fan the transducer towards the dependant part of the abdomen to locate any free fluid

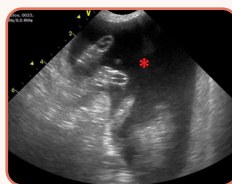


Free fluid is visible cranial to the bladder (*).

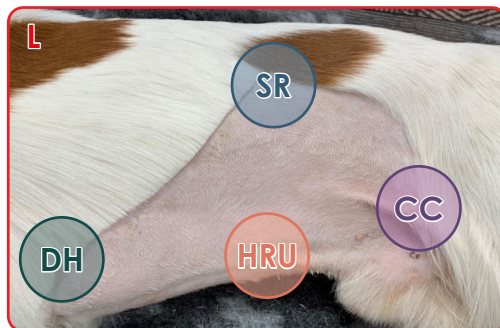
Hepatorenal umbilical (HRU) or Splenorenal umbilical (SRU) views

Which window is used will depend on how the patient is positioned.

- Position the transducer to the dependant aspect of the abdomen just lateral to the midline at the umbilical region
- Rock or fan the transducer to identify any free fluid and evaluate the tail of the spleen and small intestine



Free fluid surrounding sections of small intestine (*).



If free fluid is present, a **scoring system** can be used to semi - quantify the degree of abdominal free fluid².

The score is based on 4 views – DH, CC, the SR or HR view, and the HRU or SRU view.

A positive score is given for each view where fluid is present: 1 = fluid present, 0 = no fluid. **An overall score of ≥3 = large volume bleeder/effusion. <3 small volume bleeder/effusion.** Abdominocentesis can be used to categorise the type of fluid and, if haemorrhage is present, the fluid score can be used alongside PCV to aid clinical decision making.

Use the score to assess changes over time and highlight worsening haemorrhage.

Splenorenal (SR) and/or Hepatorenal views (HR)

Which window is used will depend on how the patient is positioned. If appropriate, both views can be obtained to assess each kidney.

SR view

- Place the transducer on the dorsal left flank caudal to the costal arch
- Fan dorsally and ventrally to identify the left kidney and part of the spleen

HR view

- Place the transducer on the dorsal right flank caudal to the costal arch
- As the right kidney is more cranial, the transducer may need to be angled cranially
- Fan the transducer dorsally and ventrally to assess the kidney and surrounding structures



Anechoic fluid is visible cranial to the kidney, adjacent to the caudal border of the spleen (←).

References and further reading:

- Lisciandro G.R. (2020) Cageside Ultrasonography in the Emergency Room and Intensive Care Unit. Veterinary Clinics of North America: Small Animal Practice. 50(6):1445-1467
- Lisciandro G.R., Lagutichik M.S., Mann K.A., Fosgate G.T., Tiller E.G., Cabano N.R., Bauer L.D., Book B.P., Howard P.K. (2009) Evaluation of an abdominal fluid scoring system determined using abdominal focused assessment using sonography for trauma in 101 dogs with motor vehicle trauma. Journal of Veterinary Emergency and Critical care. 19(5): 426-437

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