

WEBINAR

Practical Small Animal Ultrasound: AFAST Scanning Techniques

August 2021



Your Host



Dr. Oron Frenkel, MD, MS

Emergency Physician & POCUS Educator

Chairman, Clarius Medical Advisory Board

Thank you!

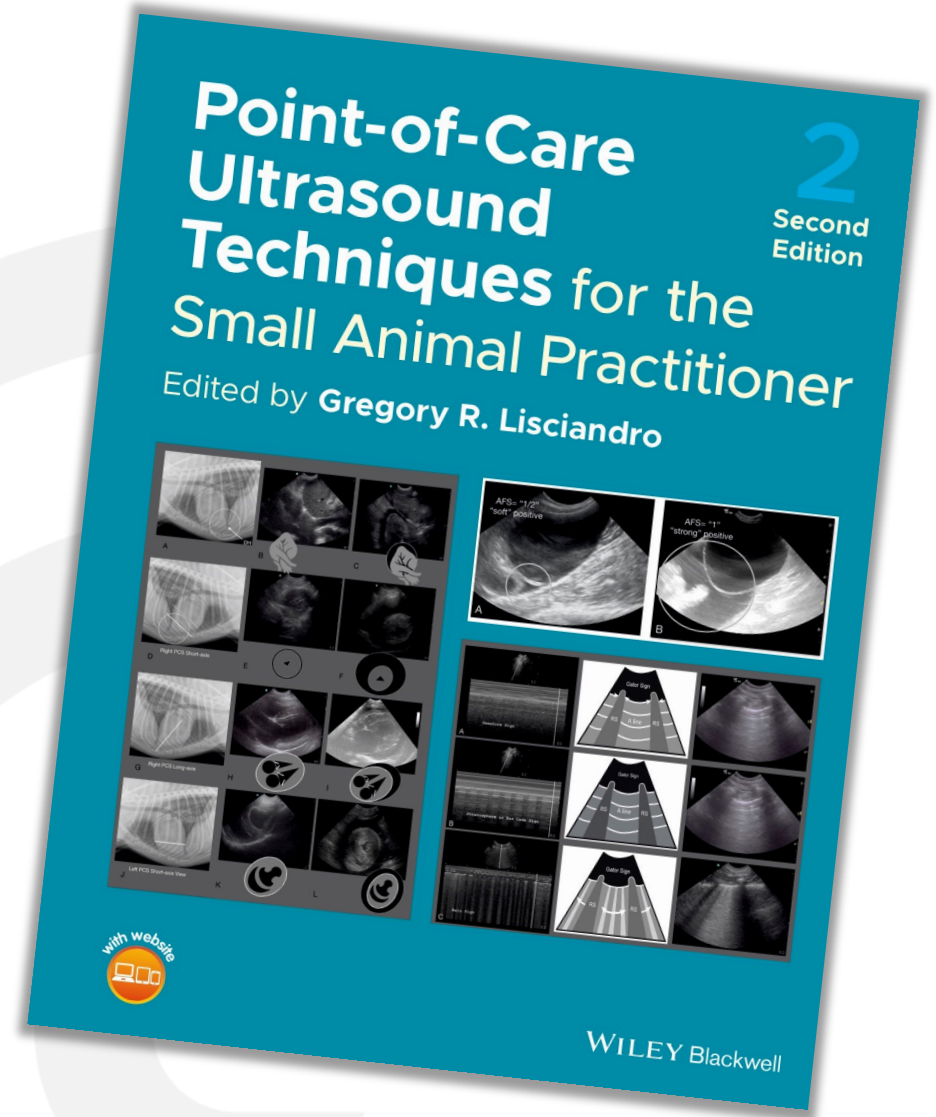
Dr. Gregory R.
Lisciandro DVM, DABVP,
DACVECC

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Buy on Amazon: <https://www.amazon.com/Point-Ultrasound-Techniques-Animal-Practitioner/dp/1119460980>



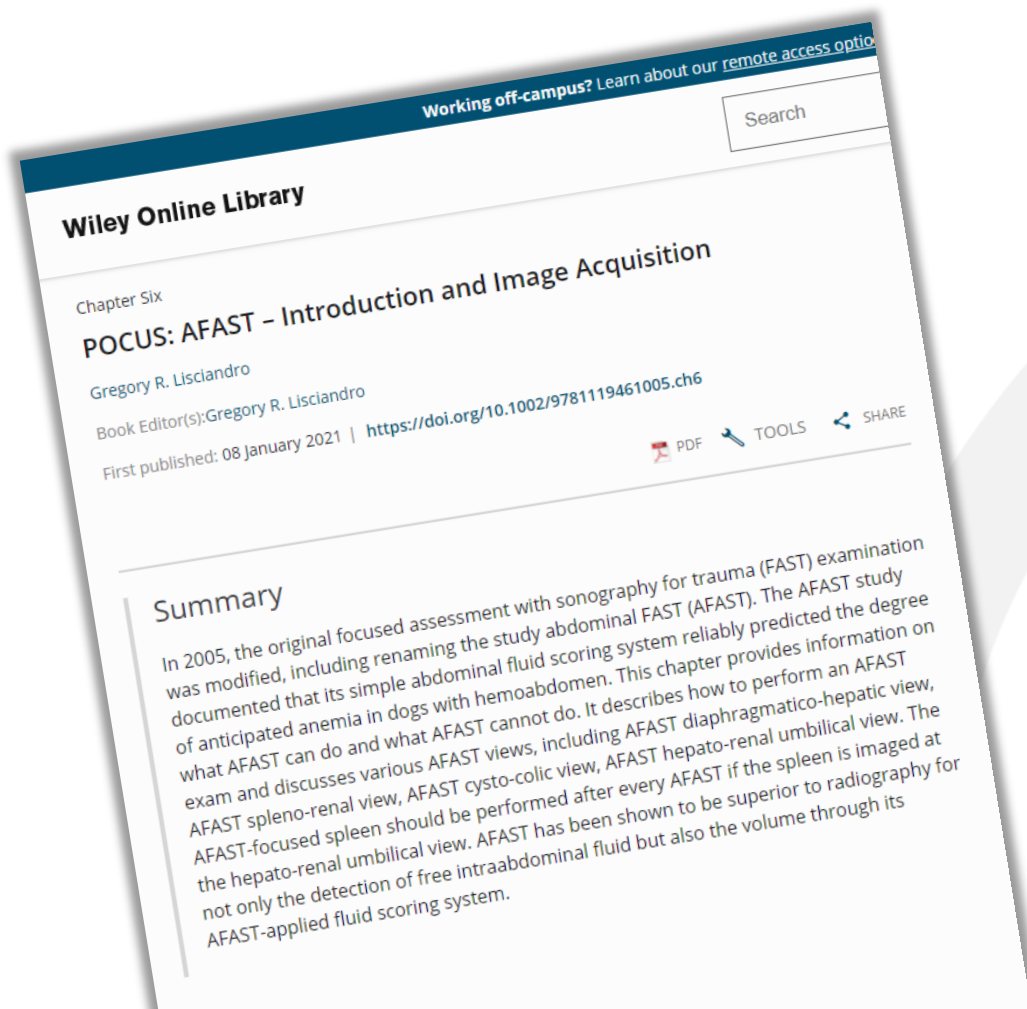
Abdominal Focused Assessment with Sonography for Trauma, Triage, and ...

“These **veterinary FAST techniques** provide an extension of the physical examination for the emergency and critical care veterinarian potentially **expediting diagnosis, prompting life-saving maneuvers, and guiding patient management.**”

Lisciandro GR. Abdominal and thoracic focused assessment with sonography for trauma, triage, and monitoring in small animals. J Vet Emerg Crit Care (San Antonio). 2011 Apr;21(2):104-22. doi: 10.1111/j.1476-4431.2011.00626.x. PMID: 21463438, Source: <https://pubmed.ncbi.nlm.nih.gov/21463438/>



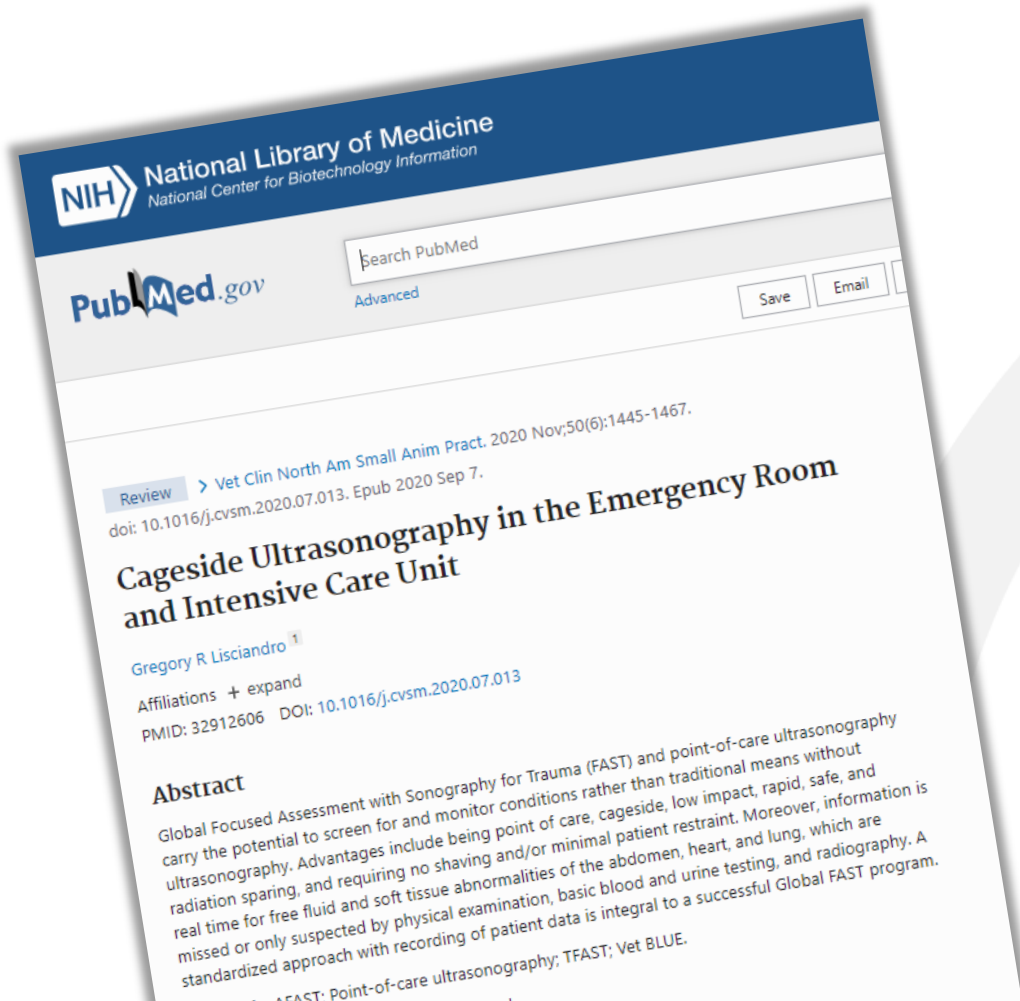
POCUS: AFAST – Introduction and Image Acquisition



“AFAST has been shown to be superior to radiography for not only the detection of free intraabdominal fluid but also the volume through its AFAST-applied fluid scoring system.”

Gregory R. Lisciandro, POCUS: AFAST – Introduction and Image Acquisition, First published: 08 January 2021 Source: <https://doi.org/10.1002/9781119461005.ch6>

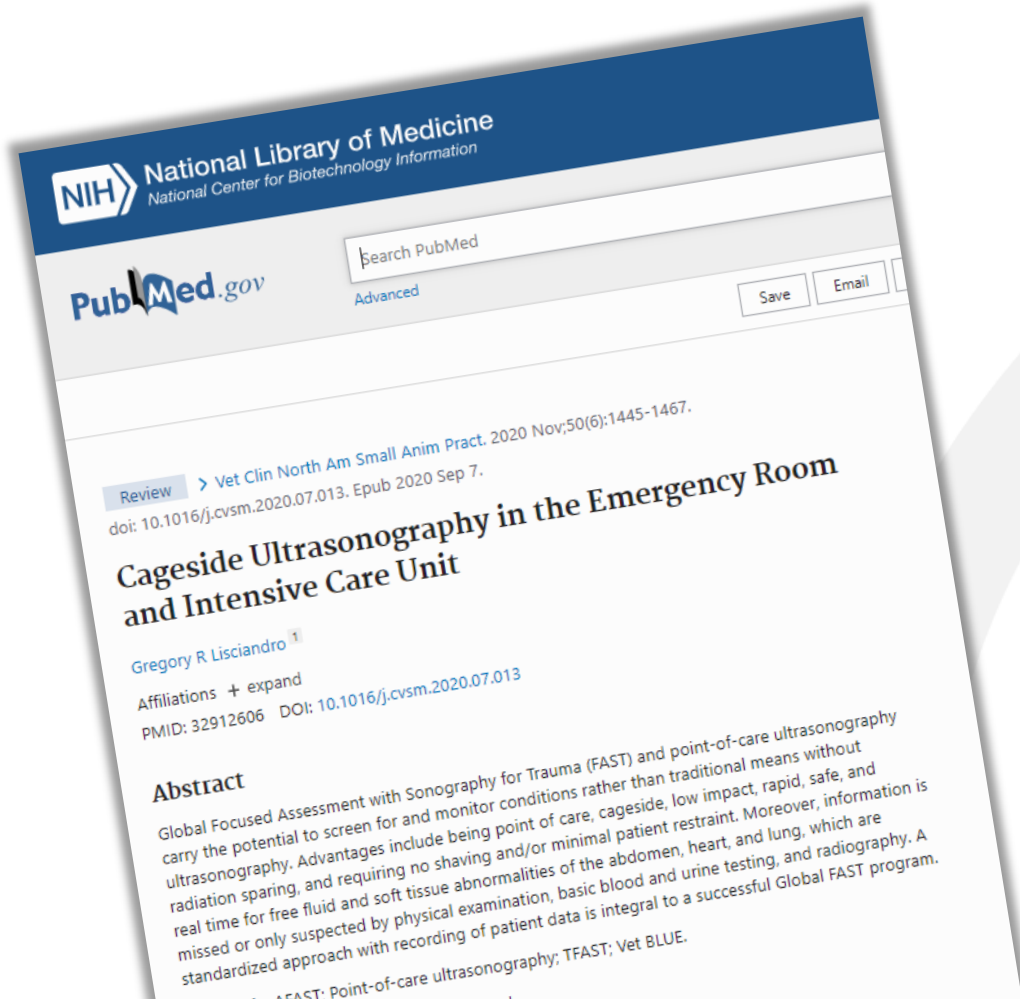
Cageside Ultrasonography in the Emergency Room and Intensive Care Unit



“...information is **real time** for free fluid and soft tissue **abnormalities** of the abdomen, heart, and lung, which **are missed or only suspected by physical examination, basic blood and urine testing, and radiography.**”

Lisciandro GR. Cageside Ultrasonography in the Emergency Room and Intensive Care Unit. Vet Clin North Am Small Anim Pract. 2020 Nov;50(6):1445-1467. doi: 10.1016/j.cvsm.2020.07.013. Epub 2020 Sep 7. PMID: 32912606. Source: <https://pubmed.ncbi.nlm.nih.gov/32912606/>

Cageside Ultrasonography in the Emergency Room and Intensive Care Unit



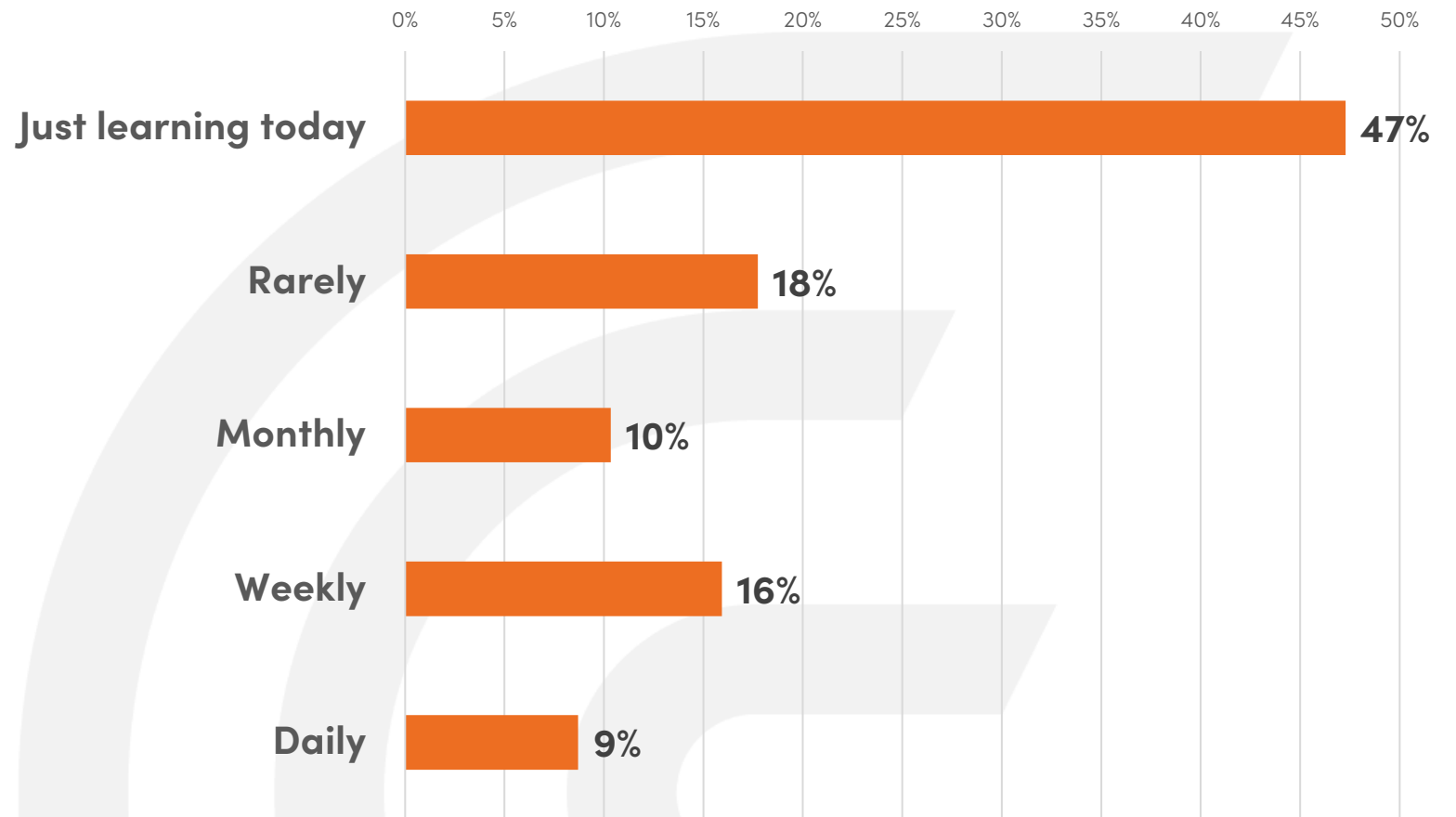
“Advantages include being point of care, cageside, low impact, rapid, safe, and radiation sparing, and requiring no shaving and/or minimal patient restraint.”

Lisciandro GR. Cageside Ultrasonography in the Emergency Room and Intensive Care Unit. Vet Clin North Am Small Anim Pract. 2020 Nov;50(6):1445-1467. doi: 10.1016/j.cvsm.2020.07.013. Epub 2020 Sep 7. PMID: 32912606. Source: <https://pubmed.ncbi.nlm.nih.gov/32912606/>



Poll

How frequently do you use the AFAST exam?



Your Expert Guest Speaker



Dr. Camilla Edwards
DVM, CertAVP, MRCVS

*Peripatetic Veterinary Ultrasonographer |
Educator | First Opinion Veterinary Ultrasound*

Abdominal FAST scanning

A guide to ultrasound in dogs and cats

By Dr Camilla Edwards DVM CertAVP MRCVS

From First Opinion Veterinary Ultrasound

www.fov.u.co.uk

What will we learn in this webinar?

- What is AFAST?
- When to use AFAST.
- How to do AFAST
- Common pitfalls and how to avoid them
- Case examples.



What knowledge are we already assuming?

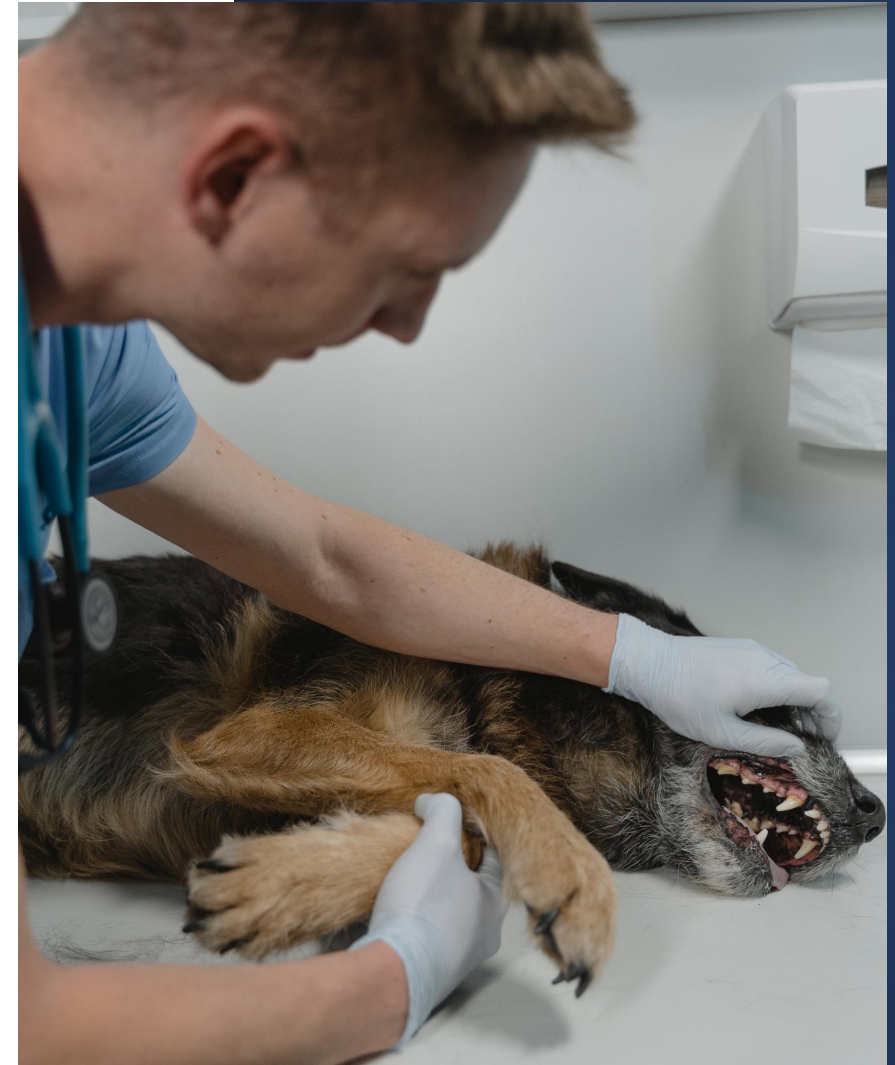
We're assuming you have some basic knowledge about ultrasound machine set up and basic anatomy



Abdominal FAST scanning

What is Abdominal FAST scanning?

- **A**bdominal **F**ocused **A**ssessment using **S**onography in **T**rauma (**T**riage & **T**racking)
- Started with humans in emergency rooms
- 2004 Soren Boysen validated the use of short ultrasound exams to assess trauma in dogs as was being done in human medicine.
- In 2009 Lisciandro showed that an AFAST scoring system reliably showed the degree of bleeding and predicted the degree of anaemia and the likelihood of needing a blood transfusion.
- Progressed to use in animals who have had trauma and those who have not had trauma – anaphylaxis, pericardial effusions, pleural effusions, non-traumatic haemoabdomen and peritonitis



Abdominal FAST scanning – What can it do?

- Detect small amounts of free fluid in the peritoneal, retroperitoneal, pleural and pericardial spaces.
- Can detect as little as 2-3ml/kg free fluid
 - Predict the degree of anaemia in traumatic and non-traumatic haemoabdomen.
 - Serially monitor for occult haemorrhage post-intervention
- In addition to all this
 - Screen for anaphylaxis – halo effect gallbladder
 - Right-sided cardiac function – assessing caudal vena cava size
 - Volume status
 - Urinary bladder integrity



What abdominal FAST scanning cannot do

- Cannot tell you what fluid type the free fluid is without sampling.
- Lacks sensitivity in penetrating trauma cases.
- Can give false results in severely dehydrated and hypotensive patients.
- Cannot replace a full abdominal ultrasound examination.

Abdominal FAST scanning – Pros

Safe

Non-invasive

Quick

Answer clinically important questions

Respiratory distress patients can be assessed in their most comfortable position, while receiving other therapy



Abdominal FAST scanning – Cons

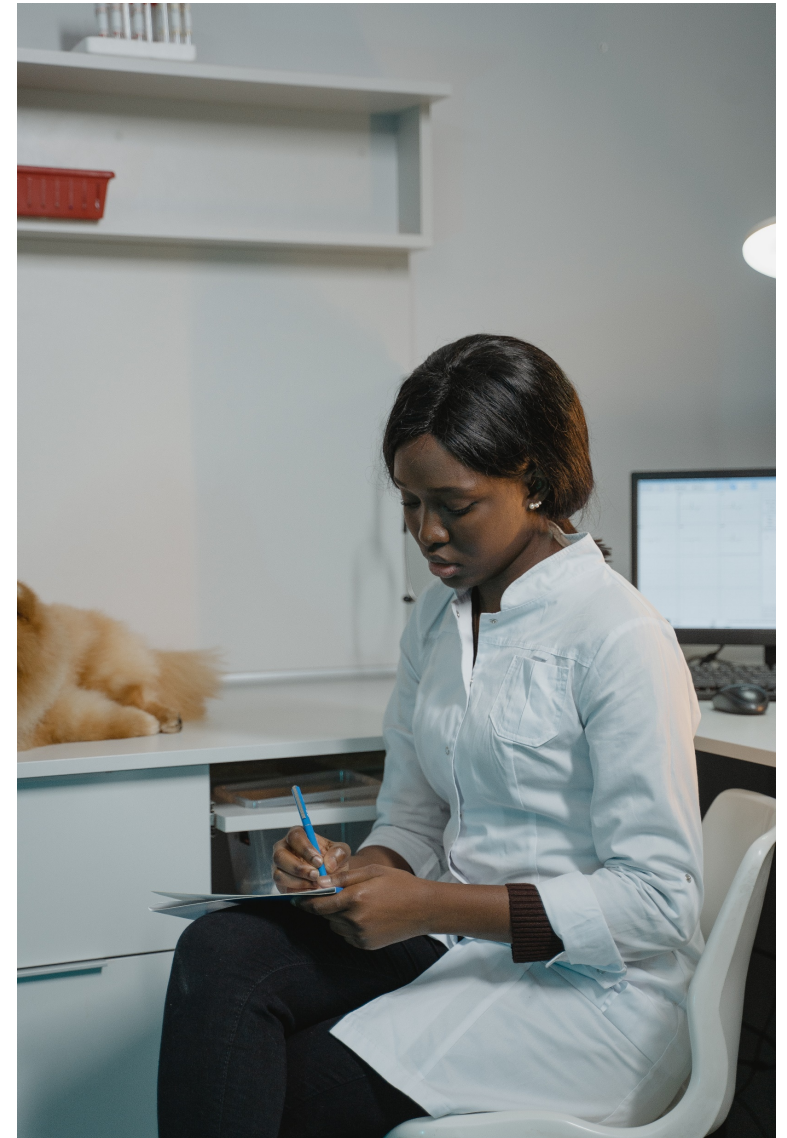
Limited

- AFAST does not assess the whole abdomen
- Cannot assess the type of free fluid

May be less reliable for detecting free fluid in dehydrated, hypotensive dogs

Might not be accurate at predicting degree of anaemia in cats with blunt trauma where uroabdomen more common

Deep lung disease without a peripheral component will not be detected



Abdominal FAST scanning – when to use it

Trauma and emergency cases

- Blunt and penetrating trauma
- Collapsed patients

Medical and post surgical cases

- Unexplained anaemia
- Post-intervention
- Post surgical cases at risk of bleeding or peritonitis
- Suspected peritonitis
- Not doing right

Preparing the Patient

DO NOT NEED TO CLIP

PART THE FUR AND
PLACE ALCOHOL AND
GEL ON AREA.

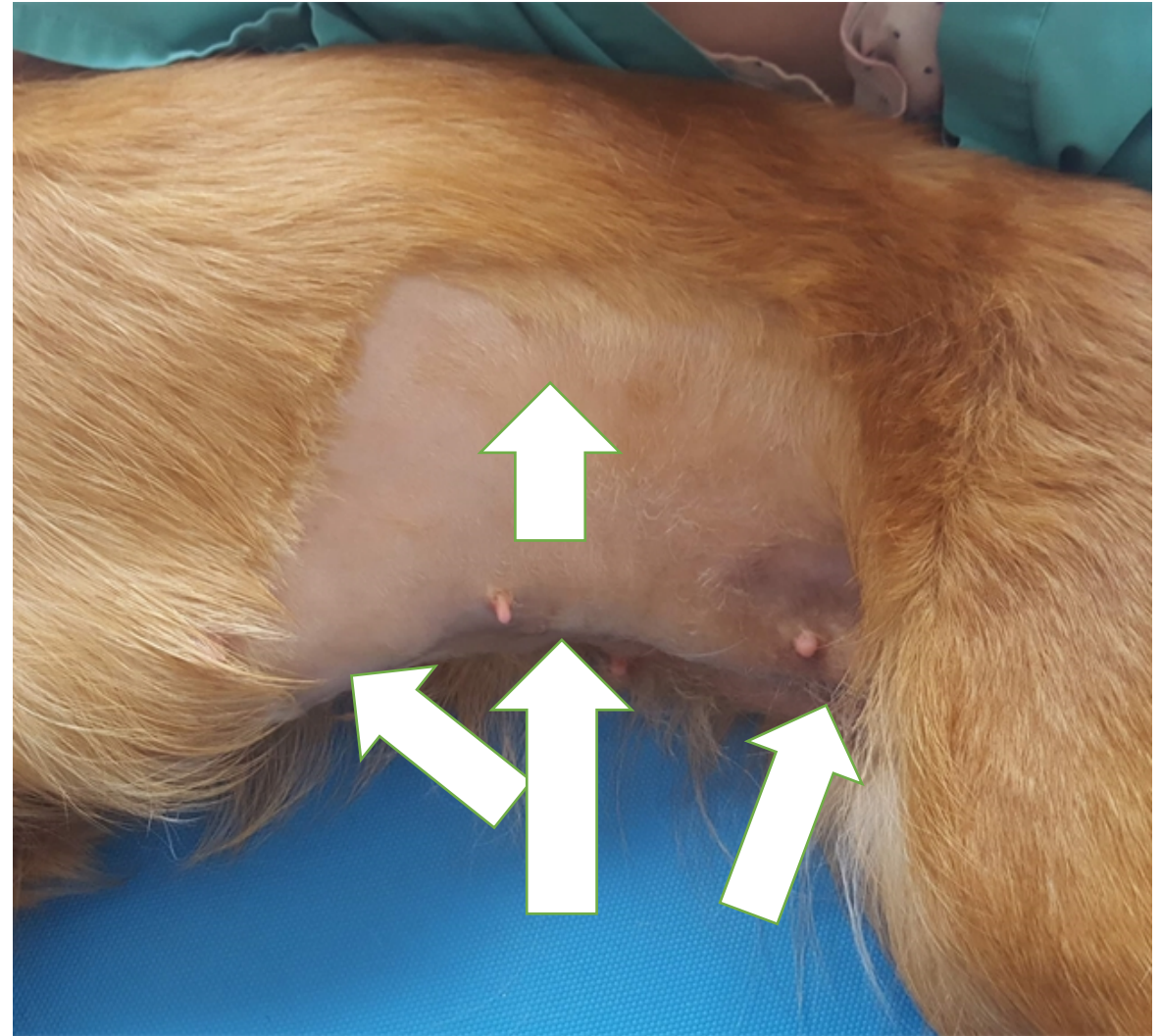
AFAST – RIGHT LATERAL
RECUMBENCY SO THAT
GRAVITY CAN HELP
ASSESS QUANTITY OF
FREE FLUID.

RESPIRATORY DISTRESS -
SHOULD BE PERFORMED
IN STERNAL.



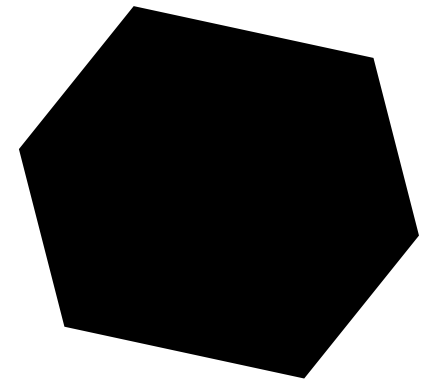
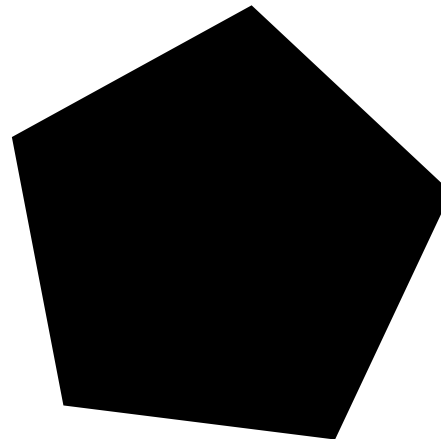
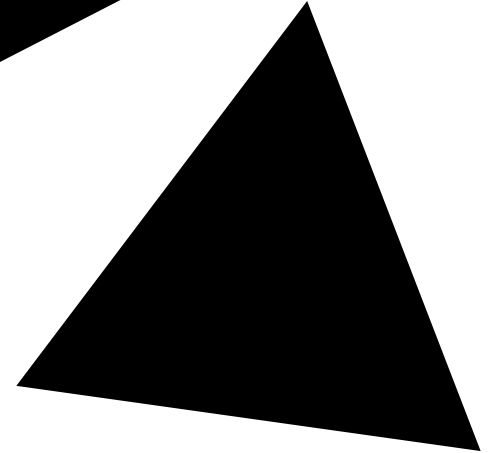
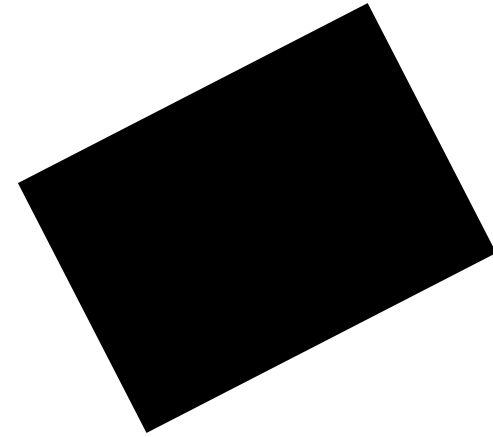
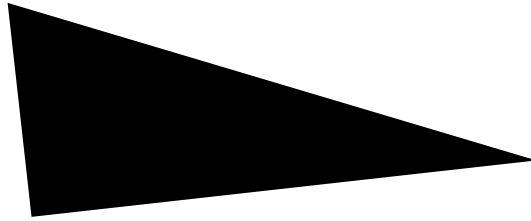
Where to place the probe for Abdominal FAST Scanning

1. DH – Diaphragmatico-hepatic
 2. SR – Spleno-renal
 3. CC – Cysto-colic
 4. HRU – Hepato-renal-umbilicus
- HR – Hepato-renal



What am I looking for?

- Fluid
 - Anechoic (black)
- Free fluid
 - Triangles



What is the Fluid Scoring system?

- Developed by Lisciandro et al. in 2009
- Score each site – DH, SR, CC and HRU 0, ½ or 1
- 0=no fluid
- ½ = <5mm cats, <1cm dogs
- 1= >5mm cats, >1cm dogs
- Add up the results to get a score

0 negative at all four sites for free fluid

<3 positive – small bleeder

≥3 positive – big bleeder

Fluid scoring
system
examples
score - 0



Fluid scoring
system
examples
score – 1/2



Fluid scoring system examples **score – 1**



Common mistakes

- Poor **contact** between probe and skin
 - Part fur
 - Plenty of alcohol and gel
- Poor **image quality**
 - Adjust frequency, focal zone, depth, gain and time gain compensation
- Confusing **normal** with abnormal
 - Fluid filled lumens
 - Blood vessels
- Not understanding **artifacts**
 - Slice thickness, refraction, mirror image artifact, acoustic shadowing and enhancement
- Link between hand-eye-brain
 - Takes practice
 - Relax – **DON'T PANIC!**



**DON'T
PANIC
AND
CARRY
A**

~~TOWEL~~
ultrasound probe



Medical Cases using AFAST

A photograph of a brown dog, likely a Labrador cross, resting its head on a dark, curly-haired dog. The background is a solid dark blue. A large, semi-transparent white circle is overlaid on the left side of the image, containing the text for the case study.

CASE 1

Chad

Signalment: 10yo, Labrador cross, male

History: weight loss over previous 5 months, acutely weak.

Clinical examination: pale mm, tachycardic, tachypnoeic, weak.

Lab work: x-rays – lack of serosal detail, mild anaemia



CASE 1- Chad

Abdominal FAST scan



Case 1 - Outcome

- Abdominocentesis revealed haemoabdomen
- Most likely cause without trauma is rupture of splenic mass with 2/3 cases malignancy.
- Owners opted to euthanase.



A black and white dog is sitting in a grassy field. The dog is looking towards the right side of the frame. In the background, there are trees and a building, possibly a house or a barn, under a bright sky. The overall scene is peaceful and natural.

CASE 2

Chance

Signalment: 12yo, cross breed, Mn,
65lb/30kg

History: diarrhoea and bloating, weak

Clinical examination: palpable fluid wave
on abdomen

Lab work: raised ALT, ALKP, GGT,

Abdominal FAST scan results.....



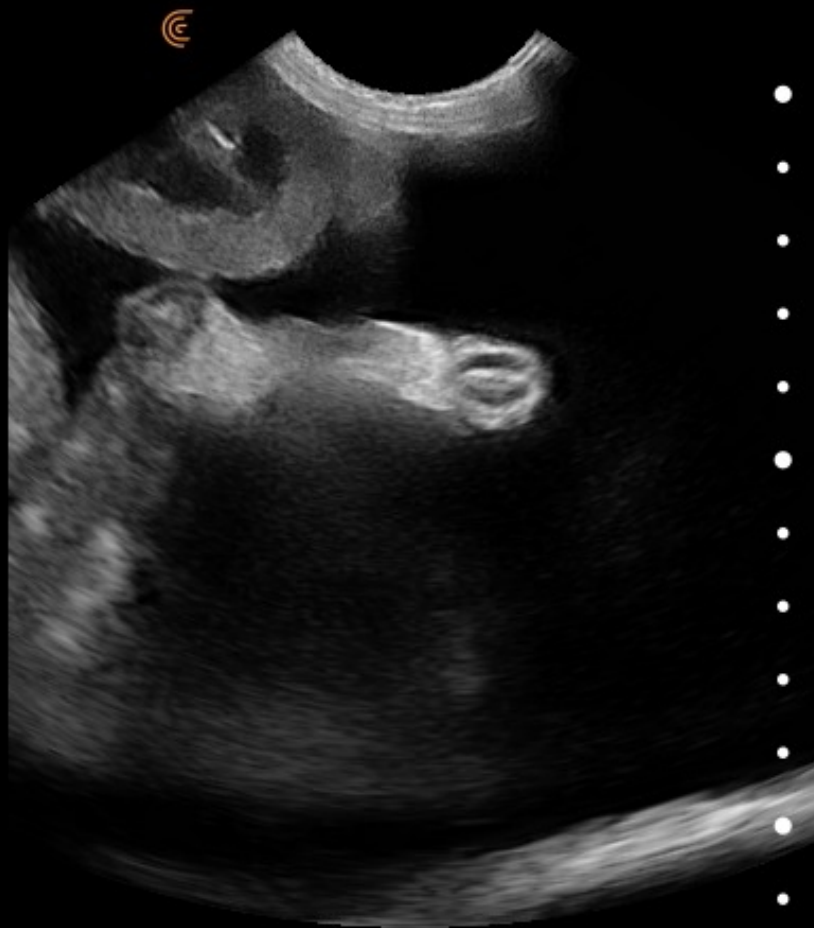
11.4 cm



8.9 cm



11.4 cm



11.4 cm

Case 2 - Outcome

- Abdominocentesis revealed clear yellow fluid
- Referred
- Multi-focal non-surgical tumours in the liver
- Cholelithiasis
- Palliative management – Gabapentin, diuretics and twice-weekly abdominal drain – still going 6 months later



What are the take home messages today?

- **How** to perform an abdominal FAST scan.
 - DH (gallbladder, pericardial, pleural, peritoneal)
 - SR (retro-peritoneal, peritoneal)
 - CC (bladder rupture, peritoneal)
 - HRU/SIU (small bleeds, peritoneal)
 - (HR)
- **What** you are looking for
 - Sharp angles
 - Anechoic (black)
- **Fluid Scoring System**
 - <3 small bleed
 - ≥3 large bleed
- **What the limitations are with abdominal FAST scans.**
 - Blunt trauma versus penetrating trauma
 - Hypotension and dehydration
 - Cats versus dogs
 - Characterising fluid
- **REPEAT!**



Thank you!

- Get in touch with any questions Camilla@fovuc.co.uk
- Check out my website www.fovuc.co.uk
 - Scanning
 - Reviews
 - Courses
 - Community



Lori Keeler, DVM

Willow Park Animal Clinic

“ We purchased the Clarius ultrasound because it was the most economical and the easiest to use. You don't have to fiddle with a whole lot of settings. You just turn it on and you start your ultrasound. ”

5 Ways POCUS Can Help in an Emergency

1. *Superior to radiography for the detection and scoring of free intraabdominal fluid.*
2. *Real-time information for rapid diagnosis, prompting life-saving maneuvers.*
3. *Cageside and low impact with minimal restraint.*
4. *Safe, no shaving required and radiation sparing.*
5. *App-based POCUS is easier to learn and use.*



Clarius C7 Vet HD

- *Wireless Freedom*
- *High-Definition Imaging*
- *Easy App for iOS & Android*
- *Dedicated Small Animal Presets*
- *Affordable Scanner*
- *No Subscription Fees*
- *Unlimited Clarius Cloud Store*
- *Free Clarius Live Telemedicine*
- *Unlimited Users*



Poll

*What additional
information would
you like?*



Poll: Save Your Seat

FREE WEBINAR

Veterinary Ultrasound: Differentiating Primary Cardiac from Pulmonary and Pleural Space Diseases

Wednesday, September 22, 2021 | 2 PM PST | 5 PM EST



Dr. Soren Boysen, DVM, DACVECC
Professor, Veterinary Clinical & Diagnostic Sciences, University of Calgary



Dr. Serge Chalhoub, BSc, DVM, DACVECC
Senior Instructor, Veterinary Clinical & Diagnostic Sciences, University of Calgary

Questions?



Dr. Camilla Edwards



Dr. Oron Frenkel



Thank you!