**AFAST® - IMAGE ACQUISITION AND TARGET-ORGAN APPROACH**

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Text [Point-of-care Ultrasound Techniques for the Small Animal Practitioner, 2nd Edition](https://www.amazon.com/Point-Ultrasound-Techniques-Animal-Practitioner/dp/1119460980/ref%3Dsr_1_1?crid=2W3RO79YXBLKT&keywords=Lisciandro+ultrasound&qid=1674252243&sprefix=lisciandro+ultrasoun%2Caps%2C203&sr=8-1), Wiley ©2021

**Introduction**

The clinical utility of AFAST®, its target-organ approach, and its applied fluid scoring system may be applied to virtually all subsets of patients. The previously published T3 designation encompassed the traditional 3 subsets of Trauma, Triage (non-trauma), and Tracking (monitoring). The "T3" designation was created for veterinarians to avoid the onslaught of confusing acronyms for different patient subsets in human medicine. However, AFAST® has come into its own as "an extension of the physical examination", and the T3 designation is no longer necessary.

Through the standardization of AFAST® there is *exact* clarity to its 5-acoustic windows (views) and they are performed as an unbiased set of data imaging points. The AFAST®-applied abdominal fluid scoring system is used to semi-quantitate the volume of effusion helping with clinical decision-making. The AFAST® target-organ approach serves as a screening test for soft tissue abnormalities at each of its respective views. The mindset for those using AFAST® is one of a *ruling in* and *ruling out* test (specific and sensitive) for the presence or absence of free fluid, and a *ruling in* test for soft tissue abnormalities of its target-organs (specific but variably sensitive being user-dependent). In contrast, point-of-care ultrasound examinations that lack distinct views lead to "selective imaging" and imaging interpretation errors such as "satisfaction of search error" and "confirmation bias error" and "anchor bias" error. Lastly, AFAST® is a screening test and does not replace a complete detailed abdominal ultrasound or abdominal radiography.

Global FAST® is the combination of AFAST®, TFAST® (detection of pleural and pericardial effusion, pneumothorax, and cardiac abnormalities through its fundamental echocardiography), and Vet BLUE®, a proactive regional, pattern-based approach to lung ultrasound (B-line scoring system, visual lung language). Global FAST® has exact clarity to its 15-acoustic windows and may be performed by experienced sonographers in < 7-minutes. Global FAST® uniquely images *both* cavities plus the retroperitoneal space, and lung. The AFAST® sonographer should always strive for performing Global FAST® in all patients to avoid missing important information in the thorax. Watch our Global FAST® 2 1/2 minute video on how to perform most efficiently in a standing patient by clicking [here](https://fastvet.com/global-fast-blend-how-to-do-global-fast-in-standing-and-most-efficiently/).

**Patient Positioning, Preparation, Probe Type, Preset, Probe Maneuver Technique**

**Positioning.** Standing from the *left* side and lateral recumbency (RL) are most often used. RL is advantageous over left lateral recumbency for electrocardiography, imaging the caudal vena cava, gallbladder, and spleen, and fundamental TFAST® echocardiography. However, the fluid scoring system is validated in *either* lateral positioning. Generally, if a patient is standing, AFAST® is performed from the patient's left side (spleen runs along the left body wall); and the entire Global FAST® is performed in standing. In AFAST® fluid negative standing patients, lateral recumbency is considered unnecessary. If AFAST®is free fluid positive, then the sonographer follows the “AFAST® 3-minute fluid scoring rule” by moving the patient to lateral recumbency, waiting 3-minutes to allow free fluid to redistribute, and then fluid scoring. *Dorsal recumbency is never used because it is too risky for hemodynamically fragile or unstable patients.* Repeating the AFAST® one more time after the initial survey is always recommended especially after intravenous fluid therapy/resuscitation. **Preparation.** Hair is not shaved but parted with minimal amounts of isopropyl alcohol followed by alcohol-based hand sanitizer. Alcohol-based hand sanitizer is less noxious and cooling than isopropyl alcohol and is removed more easily than commercially available acoustic coupling gel. *The sonographer should make every attempt to part the hair and place the probe as directly as possible on skin to maximize the image quality and minimize “air-trapping” between the probe footprint and the skin.* **Probe Type.** The microconvex curvilinear probe is used for AFAST® and Global FAST®. **Preset.** AFAST® and Global FAST® are performed with the abdominal preset. **Probe Maneuver Technique.** The probe maneuver is standardized by fanning in longitudinal planes, rocking cranially, and then returning to the starting point of each respective AFAST® views. This approach was derived from the original veterinary FAST study showed when comparing longitudinal to transverse views for free fluid, views matched 397/400 times. A Focused Spleen follows the Spleno-Intestino Umbilical view.

**The AFAST**®

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**Figure.** The first 4-views of AFAST® are used for the abdominal fluid score (AFS). The Hepato-Renal Umbilical view has been renamed the Spleno-Intestino Umbilical (SIU) view. Note not shown is the Hepato-Renal 5th Bonus view. The ultrasound images are examples of the starting point and the depth/relative proportionality used at each respective view regardless of mammalian species. *This material is reproduced with permission of John Wiley & Sons, Inc., Point-of-Care Ultrasound Techniques for the Small Animal Practitioner, 2nd Edition, Wiley ©2021 and Greg Lisciandro, Hill Country Veterinary Specialists, FASTVet.com.*

**AFAST® Order.** The AFAST® regardless of positioning (standing from the LEFT side, right lateral recumbency) is performed in the same order beginning at the Diaphragmatico-Hepatic (DH) view, followed by the least gravity dependent Spleno-Renal (SR) view, then the Cysto-Colic (CC) view, completing the AFAST® at the most gravity dependent Spleno-Intestino Umbilical (SIU) view, where abdominocentesis is likely performed in most fluid-positive patients. The spleen is generally identified at this view (SIU) and then ultrasonographically scanned by a Focused Spleen. Fundamental anatomy may be found in this AFAST® Fluid Scoring System Blog [here](https://fastvet.com/ecc-and-im-blog-afast-and-its-abdominal-fluid-scoring-system-dogs-and-cats-how-far-weve-come-in-2022-since-2005/) in our Free Resources.

**Diaphragmatico-Hepatic (DH) view.** Target-organs are liver, gallbladder, and the heart, lung, and pleural cavity looking beyond (cranial to) the diaphragm, and the caudal vena cava and its associated hepatic veins as it traverses the diaphragm. They are imaged in longitudinal planes with fanning, rocking cranially, and returning to your starting point. Click [here](https://fastvet.com/01-afast-webinar-shorts-on-its-5-views-the-diaphragmatic-hepatic-view/). **Spleno-Renal (SR) view.** Least gravity-dependent view in right lateral recumbency. Target-organs are left kidney and spleen where it is attached to the greater curvature of the stomach by its short gastric vessels. Other structures at this view include the great vessels. They are imaged in longitudinal planes with fanning, rocking cranially, and returning to your starting point. The stomach and colon are deep to the target-organs and often air-filled shadowing through the far field. This view would be used for the detection of pneumoperitoneum (air rises) and the "enhanced peritoneal stripe sign" when patients are in right lateral recumbency.Click [here](https://fastvet.com/02-afast-webinar-shorts-on-its-5-views-the-spleno-renal-sr-view/). **Cysto-Colic (CC) view**. Target-organ is the urinary bladder with the acknowledgement of the colon that when air-filled obscures imaging. Probe (scanning plane) is directed into the most gravity-dependent “CC Pouch” for free fluid, and fanned, rocked, and returned for soft tissue abnormalities. The thigh is often seen through the far field. In sexually intact patients, and predominately sexually intact species, such as non-human primates and exotic companion mammals, the reproductive organs, especially the uterus, should be part of this view.Click [here](https://fastvet.com/03-afast-webinar-shorts-on-its-5-views-the-cysto-colic-cc-view/). **Spleno-Intestino Umbilical (SIU) view.** Most gravity-dependent view in right lateral recumbency. Previously named the "Hepato-Renal Umbilical (HRU) view”, the view has been renamed more accurately the Spleno-Intestino Umbilical (SIU) view because its target-organs are the spleen and small intestine. Neither the right kidney nor the right liver is imaged. The probe is placed at the level of the umbilicus with its scanning plane directed into the most gravity-dependent “Umbilical Pouch” for free fluid, and fanned, rocked, and returned for soft tissue abnormalities. In predominately intact species, such as non-human primates and exotic companion mammals, the sex organs, especially the uterus, should be part of this view. Click [here](https://fastvet.com/04-afast-webinar-short-the-spleno-intestino-umbilical-siu-view/). **Focused Spleen.** Performed by sliding and fanning cranially and caudally along the ventral and left abdominal wall. Click [here](https://fastvet.com/the-afast-focused-spleen/).

**AFAST® Target-Organ Approach.** AFAST® was developed having a target-organ approach by the naming of its acoustic windows at its creation in 2005. The sonographer doesn’t need to identify the exactness of the abnormality, but rather recognize that the view deviates from the expected. The word “suspect” is used for any deviations from the expected.Many of the following listed conditions are missed or suspected based on physical exam, blood and urine testing, and standard radiography without the use of ultrasound. AFAST® serves to "see" the patient's problem list and thus direct diagnostics and treatment. **Diaphragmatico-Hepatic View (DH):** Liver: Masses, Cysts, Heterogeneous Echogenicity; Gallbladder: Sediment, Sludge, Mucoceles, Wall Abnormalities, Common Bile Duct Distension; Caudal Vena Cava and Hepatic Veins: Distension, Dirofilaria, Thrombi, Masses; Lung: B-line, Signs of Consolidation. **Spleno-Renal View (SR):** Left Kidney: Mineralization, Calculi, Pyelectasia, Hydronephrosis, Cortical Cysts, Perinephric Cysts, Ureteral Distension, Cortical Infarction, Masses; Spleen: Masses, Heterogeneous Echogenicity (Lymphoma, Torsion); Retroperitoneal Space: Masses, Thrombi, Free Air. **Cysto-Colic View (CC):** Urinary Bladder: Sediment, Calculi, Thrombi, Masses; Uterus: Fluid-filled (Pyo-, Hydro-, Muco-metra), Pregnancy; Caudal Abdominal Masses. **Spleno-Intestino Umbilical View (SIU):** Spleen: Masses, Heterogeneous Echogenicity (Lymphoma, Torsion); Small Intestine: Ileus and Distension, Wall Abnormalities, Masse, Mid-abdominal Masses, Gastric Distension, Hepatomegaly. **Focused Spleen**: Spleen: Masses, Heterogeneous Echogenicity (Lymphoma, Torsion), Thrombi, Infarction. **Hepato-Renal 5th Bonus View:** Right Kidney: Mineralization, Calculi, Pyelectasia, Hydronephrosis, Cortical Cysts, Perinephric Cysts, Ureteral Distension, Cortical Infarction, Masses; Right Liver: Masses, Cysts, Heterogeneous Echogenicity. Add-on skills include the detection of pneumoperitoneum by the enhanced peritoneal stripe sign, the twinkle artifact for mineralization and small calculi, gastrointestinal motility, and estimation of urinary bladder volume. Renal perfusion has also been assessed using ultrasound.

**AFAST**®**-applied Abdominal Fluid Scoring System - Weak and Strong Positives**

The AFAST®-applied fluid scoring system is simple and includes its first 4-views (excludes the Hepato-Renal 5th Bonus view that is scored but not part of the total). Views are scored as 0, negative, 1/2 "weak positive", and 1 as a "strong positive" and then totaled. Small volume effusions are defined as < 3, and large volume effusions as ≥ 3. The revision of our fluid scoring system is based on more recent fluid scoring published research in juvenile and adult dogs and cats.Click more information in our Free Resources [here](https://fastvet.com/ecc-and-im-blog-afast-and-its-abdominal-fluid-scoring-system-dogs-and-cats-how-far-weve-come-in-2022-since-2005/).

**Goal-directed Templates for AFAST**®

**Patient positioning:** right or left lateral recumbency or standing or sternal

**Gallbladder:** present or absent, contour, wall, content, unremarkable or abnormal

**Urinary bladder:** present or absent, contour, wall, content, unremarkable or abnormal

**Positive of negative at the 4-views (0 negative, 1 positive)**

Diaphragmatico-Hepatic (DH) site: 0 or 1/2 or 1

Spleno-Renal (SR) site: 0 or 1/2 or 1

 Cysto-Colic (CC) site: 0 or 1/2 or 1

 Spleno-Intestino Umbilical (SIU) site: 0 or 1/2 or 1

**Total Abdominal Fluid Score (0-4):** \_\_\_\_\_\_\_\_\_\_

**HR5th Bonus View:** 0 or 1/2 or 1 **or Indeterminate or Not Assessed (NA)**

**Focused Spleen** (*add-on* *after* *completing the* AFAST® SI Umbilical View): **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**DH View:**

 **Pleural effusion:** absent, present (mild, moderate, severe) or indeterminate or NA

 **Pericardial effusion:** absent, present (mild, moderate, severe) or indeterminate or NA

 $**Hepatic venous distension:** unremarkable or present (Tree Trunk Sign) or indeterminate or NA

 &**Caudal vena cava characterization:** bounce (unremarkable) or FAT or flat or indeterminate or NA

 **#Vet BLUE:** B-lines:0, 1, 2, 3, >3, or ∞ and if Shred\_\_cm, Tissue\_\_cm, Nodule\_\_cm, Wedge\_\_cm

**Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Note:** The AFAST® is a rapid ultrasound examination used to detect the presence of free abdominal fluid and obvious soft tissue abnormalities as a screening test to better direct resuscitation efforts and diagnostics, detect complications, and manage patients. AFAST® is not intended to replace a complete detailed abdominal ultrasound exam.

**$The hepatic veins** should *not* be apparent in both dogs and cats placed in lateral recumbency. When imaged the branching has been referred to by the author as the "Tree Trunk Sign."

**&The caudal vena cava** can be alternatively referred to as a bounce = fluid responsive cava (~35-50% diameter change); FAT = fluid intolerant cava (distended with maximum height > 1 cm in dogs < 9kg and > 1.5 cm in dogs > 9kg with little height change [< 10%]); flat = hypovolemic cava (small with maximum height < 3 mm in dogs < 9 kg, < 5 mm in dogs > 9 kg with little height change [< 10%]).

**#Vet BLUE** screens for lung abnormalities along the Pulmonary-Diaphragmatic Interface.

**Goal-Directed Template Examples**

Click [here](https://fastvet.com/most-updated-global-fast-goal-directed-templates/) from our Free Resources. These may be downloaded and used for recording your findings.

**Clinical Indications for AFAST**®

In summary, AFAST®,and better Global FAST®, is used as "an extension of the physical exam" for triaged trauma and non-trauma cases, and post-interventional cases, and then as part of patient rounds and recheck exams. The Global FAST® approach is also used for pre-anesthetic evaluation, semi-annual and annual visits, for sick visits, recheck exams for medical problems, and as part of basic and advanced life support in cardiopulmonary resuscitation**.**

**References & Further Reading**

1. **FASTVetTM** Free Resources [here](https://fastvet.com/category/free-resources/); Goal-directed Templates [here](https://fastvet.com/most-updated-global-fast-goal-directed-templates/); Webinars [here](https://fastvet.com/category/archived-webinars/); Global FAST® Training [here](https://fastvet.com/learn-in-person/); Video How to Perform Global FAST® Efficiently [here](https://fastvet.com/global-fast-blend-how-to-do-global-fast-in-standing-and-most-efficiently/); Anaphylactic Hemoabdomen Webinar in Dogs [here](https://fastvet.com/fastvet-monthly-webinar-july-2022-updated-information-on-medically-treated-canine-anaphylactic-hemoabdomen-presented-at-the-acvim-forum-2022/).
2. Point-of-care Ultrasound Techniques for the Small Animal Practitioner, 2nd edition, Ed. Lisciandro GR, Wiley ©2021. Click [here](https://www.amazon.com/Point-Ultrasound-Techniques-Animal-Practitioner/dp/1119460980/ref%3Dsr_1_1?crid=2W3RO79YXBLKT&keywords=Lisciandro+ultrasound&qid=1674252243&sprefix=lisciandro+ultrasoun%2Caps%2C203&sr=8-1).
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8. **Lisciandro GR**. AFAST-Clinical Integration, Point-of-care Ultrasound Techniques for the Small Animal Practitioner, 2nd Edition, Wiley-Blackwell: St. Louis, ©2021.
9. **Lisciandro GR.** Cageside Ultrasonography in the Emergency Room and Intensive Care Unit. *Vet Clin North Am Small Anim Pract* 2020;50(6):1445-1467.

\*A summary of all our 20+ peer-reviewed clinical studies may be found [here](https://fastvet.com/publications-references-validating-fastvet-techniques/).