

# Abdominal and thoracic focused assessment with sonography for trauma, triage, and monitoring in small animals

Gregory R. Lisciandro, DVM, DABVP, DACVECC

## Abstract

**Objectives** – To review the nonradiologist use of ultrasound (US) in the setting of emergency and critical care, the development, clinical applications, and standardization of veterinary abdominal and thoracic focused assessment with sonography for trauma (FAST) techniques.

**Etiology** – Since the 1990s, the 4-point FAST US technique has been used for injury surveillance in people with blunt and penetrating trauma. FAST screens for free fluid in the abdominal, pleural, and pericardial cavities with high sensitivity and specificity. More recently, an extended FAST scan was developed for the rapid detection of pneumothorax. These techniques and newly created scans have been applied to other critically ill, nontraumatized, subsets of human patients. As a result, the terminology related to this field, eg, extended FAST, HHFAST, FFAST, FAFF, BOAST, SLOH, bedside US, ‘\$ Approach,’ protocols, and objectives have become convoluted despite having similar goals.

**Diagnosis** – The importance of US in the setting of emergency medicine is highlighted by the fact that this diagnostic modality has become an integral part of the core curriculum for nonradiologists including the American College of Surgeons, American College of Emergency Physicians, American Board of Emergency Medicine, Society of Academic Emergency Medicine, and all United States Accreditation Council for Graduate Medical Education Emergency Medicine residency programs.

**Therapy** – Veterinary applications of FAST techniques include an abdominal FAST technique with an abdominal FAST applied fluid scoring system, and a thoracic FAST technique. In an attempt to avoid the creation of numerous acronyms, veterinarians would be well served by making the ‘T’ in ‘FAST’ stand for ‘Trauma,’ ‘Triage,’ and ‘Tracking.’

**Prognosis** – 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. Further clinical research to determine sensitivity, specificity, and accuracy for specific conditions is warranted.

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## Introduction

Since the 1990s, focused assessment with sonography for trauma (FAST) has been a first line, standard of care, screening technique in many algorithms for both blunt and penetrating trauma in people.<sup>1–10</sup> In its original application, a 4-point scan was performed on the

abdomen, evaluating for evidence of free fluid in the abdominal, pericardial, and pleural cavities. The utility of FAST protocols is premised upon the generalization that trauma-related free fluid accumulation reflects internal injury and non-trauma-related free fluid accumulation reflects other pathology. FAST is considered a first line diagnostic test in trauma centers in both Europe and North America, and has virtually eliminated the need for diagnostic peritoneal lavage (DPL) at many trauma centers.<sup>2,3,5,11–16</sup> Improved sensitivity (Se) and specificity (Sp) have been demonstrated in people using FAST protocols over radiography for the diagnosis of free abdominal, pleural, and pericardial fluid and they are comparable to computerized tomography

From the Hill Country Veterinary Specialists, San Antonio, TX 78259.

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Address correspondence and reprint requests to Dr. Gregory R. Lisciandro, Hill Country Veterinary Specialists, 2123 Encino Loop, San Antonio, TX 78259, USA.

Email: woodydvm91@yahoo.com

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