



# Clinical Practice Procedures: Assessment/Focused assessment with sonography for trauma – Vscan Air™

<b>Policy code</b>	CPP_AS_FAVA_0722
<b>Date</b>	July, 2022
<b>Purpose</b>	To ensure a consistent procedural approach to FAST – Vscan Air™.
<b>Scope</b>	Applies to Queensland Ambulance Service (QAS) clinical staff.
<b>Health care setting</b>	Pre-hospital assessment and treatment.
<b>Population</b>	Applies to all ages unless stated otherwise.
<b>Source of funding</b>	Internal – 100%
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The use of bedside ultrasound in the pre-hospital environment improves the assessment and rapid triage of trauma and critically ill patients. Focussed examinations aim to rapidly identify free fluid in the abdominal, thoracic or pericardial cavities and assist in the assessment and management of patients in cardiac arrest.<sup>[1-6]</sup>

The identification of a positive FAST has the potential to improve pre-hospital trauma management and has been shown to significantly reduce time to hospital admission and time to operative treatment in this group of patients.<sup>[7]</sup>

The Focused Assessment using Sonography in Trauma (FAST) examination assesses four standardised ultrasound views that use gravity-dependent regions to rapidly identify intraperitoneal and/or pericardial fluid.

1. Cardiac (most often subxiphoid, but other views may be obtained):

- pericardium and
- heart chambers, especially the right ventricle

2. Right Upper Quadrant (RUQ):

- Morrison's Pouch (hepatorenal recess)
- liver tip (right paracolic gutter) and
- lower right thorax

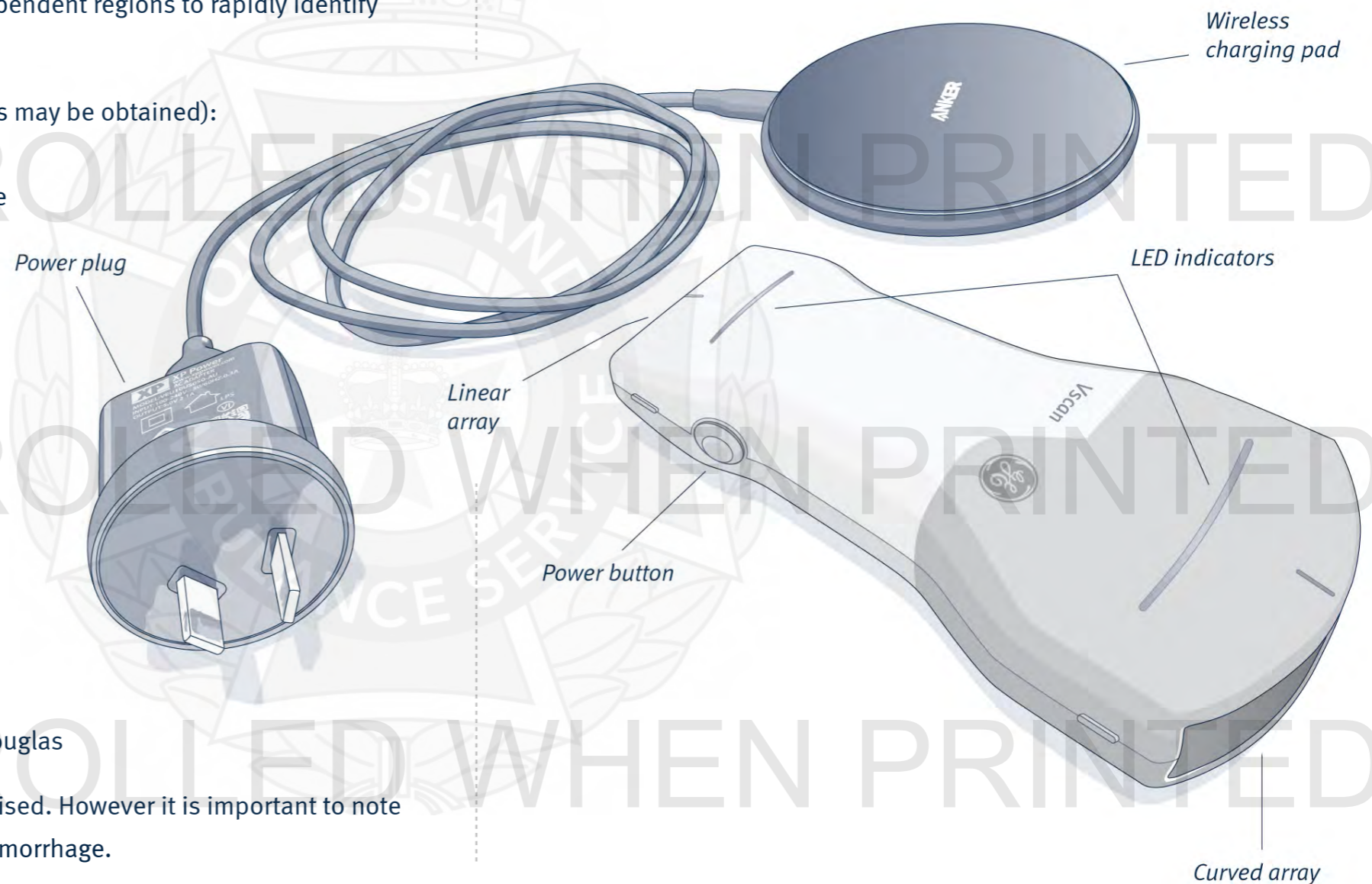
3. Left Upper Quadrant (LUQ):

- subphrenic space
- splenorenal recess
- spleen tip (left paracolic gutter) and
- lower left thorax

4. Pelvic:

- rectovesical pouch (male patients) or
- in female patients, rectouterine/pouch of Douglas

A scan is deemed positive if any free fluid is visualised. However it is important to note that a negative scan does not exclude internal haemorrhage.



## Indications



- Blunt and/or penetrating abdominal and/or thoracic trauma

## Contraindications



- Nil

## Complications

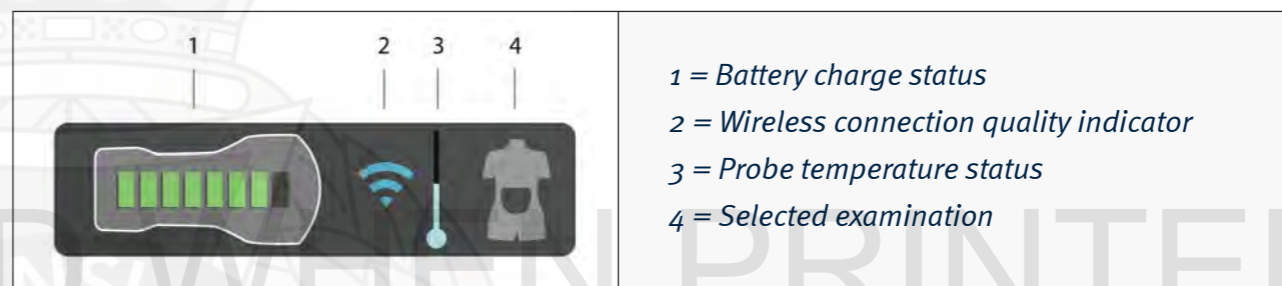


- The use of focused ultrasound is a dynamic process where results can change with time. Clinical judgement must guide patient management irrespective of imaging findings.
- Free fluid in the trauma patient is assumed to be blood; however in certain premonitory conditions, for example, chronic liver disease, ascites may mimic blood in imaging. Therefore, all FAST results need to be interpreted within the clinical context of the patient.
- The FAST examination requires a minimum of 100–200 mL of fluid for visualisation, smaller collections may go undetected.

## PROCEDURE [8]

1. Apply required infection control measures (refer to the *QAS Infection Control Framework*).

2. Pair the Vscan Air™ with the approved display device.
  - a. Press the probe's power button – an alternating blinking white light indicates the probe is booting up.
  - b. Open the registered 'Vscan Air™ Wireless Ultrasound' application on the display device.
  - c. Alternating LED lights will indicate the probe is searching for the app.
  - d. Once the probe has been detected, both LED lights will display a steady white.
3. The setting screen will open on the display device with the default 'Abdominal' setting.
4. Confirm the probe is ready for scanning by reviewing the header on the display device.









5. Position the patient supine and expose the patient.
6. Commence scanning:
  - Blunt trauma – begin with the RUQ view
  - Penetrating trauma – begin with the cardiac view
7. Consider adjusting the display between the landscape or portrait orientation to optimise image quality.
8. Adjust the gain (swiping horizontally) and depth (swiping vertically) as required.
9. If required, press the freeze and/or store icons for visual interpretation.



10. Once scanning has been completed, turn the probe off by holding the power button for 3 seconds – a steady light on both ends will indicate the device is pairing down.

## Additional information

- The Vscan Air™ will operate in a temperature range of -20 to +50 degrees C.
- Users should ensure they are always using the latest 'Vscan Air™ Wireless Ultrasound' application.
- Adequate Vscan Air™ cleaning and high-level disinfection using the Tristel Trio™ Wipe System<sup>[9]</sup> is necessary when the probe comes into contact with non-intact skin or blood. This involves a three part process involving cleaning, disinfection and rinsing (refer to the *QAS Infection Control Framework*).
- The probe will automatically shut down when not connected to the application for 2 mins or placed on the charger.
- The following pre-set examinations settings are available for the curved array transducer.

	Abdominal		Obstetric/Gynaecology
	Cardiac		Vascular
	Musculoskeletal		Lung

- Each Vscan Air™ device needs to be registered to a user account to be activated and ready for use.
  1. Power **ON** the QAS approved display device (e.g. individually issued operational iPad).
  2. Download and install the free 'Vscan Air Wireless Ultrasound' app via the apple App store.



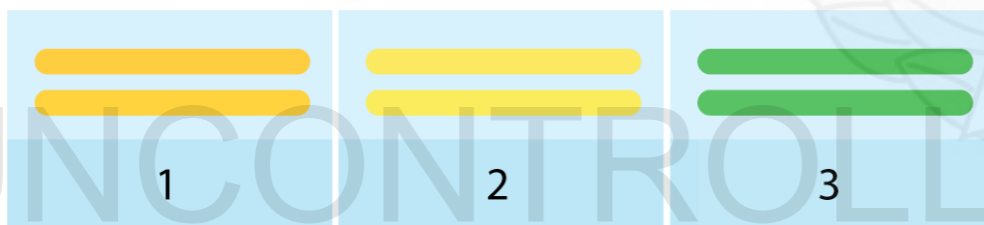
App store icon

3. Select **Allow** to authorise the App to access photos, media and files on the display device.
4. Click on the App icon.
5. Press **Register** to start the registration process.
6. Select **Create**.
7. Turn the Vscan Air probe on and press **Next** to commence initialisation
8. When requested press the power button on the Vscan to connect to the App – once located, select **Continue registration**.
9. Enter the required information (including @ambulance.qld.gov.au email, new password and station address)
10. **Confirm** that the provided information is correct and press **Submit** – an email will be sent to the supplied email address requesting validation of the account.
11. Validate the registration process by clicking on the unique link sent in the email.
12. Confirm registration details.
13. Press 'Add security pin' and Enter a strong 6 digit PIN and press **NEXT**.
14. Re-enter the PIN, consider selecting the biometric authentication (personal preference) and press **SAVE**.

- Image review and sharing
  1. To review previously stored images select **Exams**
  2. Click on exam requiring review
  3. Add patient details as required
  4. Select **Share**
  5. Select Share (with other apps)
  6. Send using @ambulance.qld.gov.au email

### Charging

- Place the VScan Air™ on the charging pad with the GC logo up. Ensure the probe is centred on the charging pad.



Battery level < 8%

Battery level 8–90%

Fully charged

### LED states when Vscan Air™ is charging:

- A **blinking light** on both LEDs indicates a Vscan Air™ charging issue.
- A **steady orange/red toned yellow** on both LEDs indicates the Vscan Air™ is charging. Charge level is less than 8%, and probe will need to charge above this level to be powered on.
- A **steady yellow light** on both LEDs indicates the Vscan Air™ is charging. Charge level is the range 8–90%.
- A **steady green light** on both LEDs indicates the Vscan Air™ is charging. Charge level 90–100%.

- A positive scan is the identification of free fluid in 1 of the four 4 views. A rim of 0.5 cm equates to approximately 500 mL of free fluid and with experience the clinician can identify volumes of < 250 mL.
- The examination should ideally be completed within 2 minutes and the results conveyed to the receiving trauma centre.
- An appropriately placed pelvic binder should not impede the pelvic view.

View	Probe positioning for optimal view
<b><i>Morrison's (hepato-renal)</i></b>	From the xiphisternum the probe is moved to be aligned in the midaxillary line in the patient's right upper quadrant. The probe is then angled posteriorly to gain an image with the kidney in long axis. Scan around the area to exclude free fluid lying superior to the liver.
<b><i>Spleno-renal</i></b>	From the xiphisternum the probe is moved to the patient's left upper quadrant in the midaxillary line. The probe is angled posteriorly to image the potential space between the kidney and the spleen, with the kidney in long axis. Scan around the spleen to exclude free fluid that may collect between the diaphragm and spleen.
<b><i>Pelvis</i></b>	The initial view is gained in the longitudinal position with the image including the pubic symphysis and the bladder. Once the bladder position is confirmed the probe is rotated 90 degrees to image the bladder in transverse. Free fluid is located in the pouch of Douglas (in the female) or lateral/inferior to the bladder (in the male).
<b><i>Subxiphoid</i></b>	The probe is positioned just below the xiphisternum, angled towards the left shoulder and tilted superficially. This can be a challenging view to obtain in patients with epigastric tenderness or large amounts of bowel gas. Often, sliding the probe to the patient's right to include a 'liver window', may improve the image acquisition.