

ULTRASOUND IN TRANSPORT

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- Ultrasound assessment of the critically ill patient has now become a standard of neonatal intensive care, paediatric intensive care and emergency medicine. ^{1,2,3,4,5}
- The NETS consultant must approve the retrieval team taking the ultrasound as NETS only has access to one scanner and its use may need to be rationalised.

CHANGE SUMMARY

- N/A – new document.

READ ACKNOWLEDGEMENT

All NETS clinical staff are to read and acknowledge they understand the contents of this guideline.

Disclaimer

This document is available on-line as a stimulus for interchange of knowledge and ideas in the field of Neonatal and Paediatric Retrieval. It is provided "as-is" and without support or warranty of any kind. Many of our guidelines may not be appropriate for use in retrieval settings other than NETS NSW, especially in non-Australian environments.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st March 2022	Review Period: 3 years
Team Leader:	Staff Specialist	Area/Dept: NETS

Background

- Ultrasound assessment of the critically ill patient has now become a standard of neonatal intensive care, paediatric intensive care and emergency medicine. ^{1,2,3,4,5}
- As NETS only currently has access to one scanner and we often have 2-3 retrievals in progress at any one time we need to rationalise to which cases the ultrasound is to be allocated.
- If two cases are requiring ultrasound simultaneously the NETS consultant should adjudicate and allocate the ultrasound accordingly.
- Personnel must be briefed on the use and approved before using the Terason Tablet ultrasound scanner.⁶
- Personnel should have, or be working toward CCPU or FAST qualification.
- The scanner is kept locked in consultant Hotroom at the NETS base.
- Where a JMO is tasked with the Ultrasound a NETS accredited SMO (see table below) in ultrasound should be made aware so that they can supervise the use and the validity of the findings.

ACCREDITED NETS USS USERS

NETS SMO	CareFlight Contractors
Dr Kathryn Browning Carmo	Dr Ahmed Moustafa
Dr Hannah Dalrymple	Dr Mark Greenhalgh
Dr Raj Angiti	Dr Stephanie Boyd
Dr Angela McGillivray	Dr Abhijat Abnave
Dr Tracey Lutz	Dr Doron Shein

Indications

Neonatal Indications for ultrasound:

- Newborn less than 30 weeks of gestation – assess head ultrasound in sagittal and coronal planes pre and post retrieval.
- Newborn at or near term with hypoxic respiratory failure who is requiring or likely to require mechanical ventilation

Paediatric Indications for ultrasound:

- Pleural effusion likely to need drainage to effect safe transport
- Ventilated child in need of central access

- Critically ill child where assessment of heart contractility will help in inotropic choice e.g. cardiomyopathy
- Severe trauma in a child where FAST assessment has not been achieved locally or ongoing assessment might be useful

Ultrasound Backpack contents

- Terason Tablet
- Charger cable
- Ultrasound probes x 3 (10S, 9C, Hockey stick)
- Single use ultrasound gel packets x 5
- Ultrasound transducer cleaning solution
- Smart USB

General use

- The NETS consultant must approve the tasking of the ultrasound on a case.
- In general, the infant or child should be stabilised in the usual manner prior to ultrasound assessment. The scanner may be set up during the first look observations but scanning is generally deferred until airway and breathing are assessed and managed.
- Brief HUSS may be attended in the extremely preterm baby so that findings are recorded at first look prior to intervention by the NETS team.
- We have three probes available:
 - 10S – for cardiac ultrasound
 - 9C – for cranial, lung and abdominal ultrasound
 - Hockey stick – for line insertion or lung ultrasound
- Probes must be cleaned between each patient and after use with the provided cleaning solution. Clean the length of the probe so that it is prepared and ready for the next user.
- Use only individual gel packs, discard following use on an individual patient.

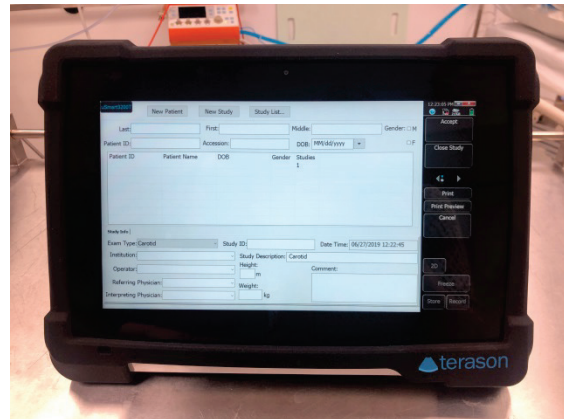
Using the Terason Tablet

Terason User Guide Vol. 1 is available on the desktop of the Tablet if you minimise the scanning window. A quick use guide is as follows:

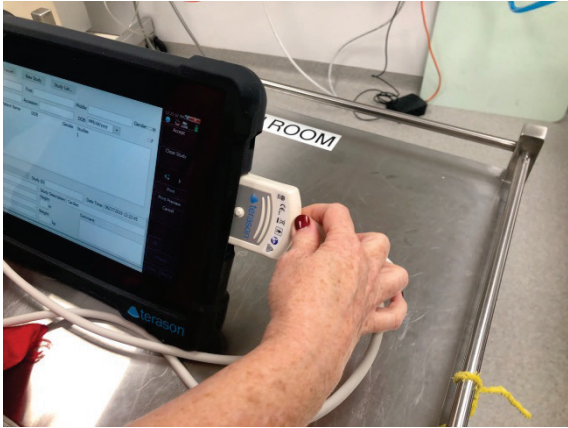
- Set up the Terason on top of a trolley with wheels locked so that there is no movement during the scan.
- Connect the power-brick to the closest power point, making sure it doesn't create a trip hazard.
- Alternatively the Terason can be used without a direct power source. Make sure you plug in the power source after returning to NETS Base so that the battery is charged and ready for use on a next patient.
- Press the stand release to fold out Tablet stand.



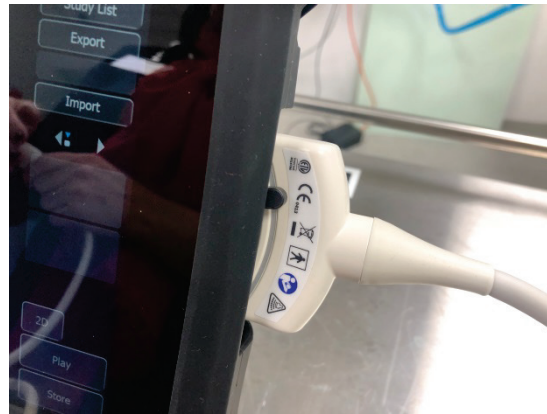
- Turn on tablet using button on top left hand corner. You will see this screen where you can enter patient details and select the "Exam type" you wish to perform e.g. cardiac, carotid.



- Select the appropriate ultrasound probe and insert into the right hand side of the monitor.

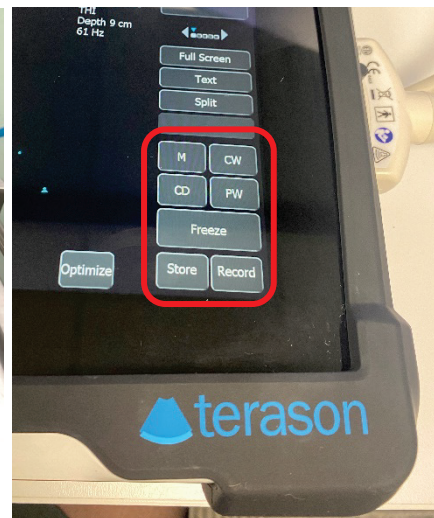


- When the probe is correctly inserted the grey lever will click upwards in to position. To



release the probe depress this lever.

- Use the controls on the right of the screen to store a still image (“store”) or a clip (“record”). M-mode (M), Colour Doppler (CD), Pulse wave Doppler (PW) and Continuous wave Doppler (CW) are also available on the right of the screen.



- During the scanning, make sure there is no tug/pull on the tablet by the short length of the ultrasound probe. Adjust your position so that there are couple of loops of probe cord on the trolley (but not dangling freely) to avoid pull on the tablet.
- When scan is complete, depress grey lever to remove probe, clean the probe using the provided probe safe cleaning solution and return it to bag. Turn the tablet off at power button and fold the stand away before storing in the bag.
- On return to base please restock the bag and return to consultants office

Documentation

- A brief report of main ultrasound findings should be written in the referring hospital notes in addition to the usual NETS entry. JMOs using the scanner should discuss with the accredited NETS SMO in Ultrasound prior to reporting and documenting their findings
- Ultrasound findings should also be documented on the NETS notes to be available for audit and in the receiving hospital.
- Findings should be entered in the ultrasound database on return to base.

References

1. Browning Carmo K, Berry A, Kluckow M, Evans N Neonatal Ultrasound in Transport Current Pediatric Reviews 2012
2. de Waal K, Kluckow M. Functional echocardiography; from physiology to treatment. Early Hum Dev. 2010; 86 (3):149-54.
3. Kluckow M, Seri I, Evans N. Functional echocardiography: an emerging clinical tool for the neonatologist. J Pediatr. 2007; 150(2):125-30.
4. Sehgal A, Mehta S, Evans N, McNamara PJ. Cardiac sonography by the neonatologist: clinical usefulness and educational perspective. J Ultrasound Med. 2014; 33(8):1401-6.
5. Kluckow M. Functional echocardiography in assessment of the cardiovascular system in asphyxiated neonates. J Pediatr. 2011; 158 (2 Suppl):e13-8.
6. <http://www3.gehealthcare.com/en/products/categories/ultrasound/vivid/vivid> www.gehealthcare.com

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