



TARDIS - Working Practice Document - No: 18

3 DAY TCD SUB-STUDY

Two 1 hour TCD recordings are required;

- 1) **Day 0** AFTER written informed consent PRIOR to randomisation or administration of drug
- 2) **Day 3±1**

The machine is on and the NicVue software has loaded.....

1. Enter patient details by clicking on *New*. Please enter the following details:

- *Last Name* = **Centre ID & TARDIS patient ID**
- *Birth date* = **Patient D.O.B.**
- *Patient ID* = **TARDIS patient ID**

AND

Recording number (Day 0 OR Day 3)

2. Ensure a 2 MHz monitoring probe is plugged in
3. Select **TCD (M) (MONITORING MODE)** and then *Acquire*
 - Dismiss the pop-up box
4. Ensure **CONTINUOUS soundtrack recording** is **ON**

Click *configuration* menu



Select *external connections*



Digital outputs tab



Ensure the *continuous soundtrack recording* is ON



Click OK

5. Set up the patient using **trans-temporal** approach. Take time to do this to make sure the optimal signal is identified from the target vessel (IPSILATERAL MCA)
 - see p2 for summary table of approximations to aid vessel identification

To aid identification of MCA

- ↑sample volume to 10mm & ↑ GAIN
- WEAR STEREO HEADPHONES
- Use M-mode

Vessel	Depth	Direction of blood flow	Velocity	Spatial orientation
MCA	30-60mm Optimal signal ~55mm	Toward the probe	60 ±12cm/s	Anterior/superior
ACA	60-80mm	Away from the probe	50 ±12cm/s	Anterior/superior
PCA	60-70mm	Toward the probe	40 ±12cm/s	Posterior/inferior
MCA/ACA bifurcation	55-65mm	Bidirectional - MCA toward, ACA away	See above	Anterior/superior

- a) Identify **optimal MCA signal**
- b) Probe fixed to stabilise the signal using a headset
- c) Adjust settings for recording (SEE SETTING CHECKLIST TABLE BELOW)

Setting checklist	For OPTIMAL Emboli Blood Ratio for ES monitoring
Sample volume	5mm OR <u>As Low As Reasonably Achievable (ALARA) DO NOT EXCEED 10mm</u>
Gain	↓ spectra CLEARLY VISIBLE on BLACK BACKGROUND
Sweep speed	5.1s
Envelopes	Off
Scale	cm/s +/- 100cm/s
Zero baseline	Adjusted - full MCA signal above the x axis
ONLY MCA signal visible	↓ & eliminate BRANCHES by: adjusting <u>angle of the probe</u> or if necessary changing <u>depth</u>
Automatic emboli indicator	OFF
Mode	SINGLE channel

Please keep probe adjustment to a minimum throughout recording time

However it is important make sure that an optimal signal is maintained with minimal artefact throughout the recording. So... don't be afraid to adjust the probe if necessary to maintain the signal!

NB: Make a note of Depth, spatial orientation, sample volume etc - this will help with the follow up appointment!

6. Archive the recordings onto CD. Please label CD & box with:
 - Centre ID
 - TARDIS study number
 - Recording number
 - Date, time and length of recording
 - Vessel, depth and sample volume used

COMMON PROBLEMS

NO SIGNAL

1. Use sufficient gel
2. Wear stereo headphones
3. Don't panic
4. Set-up so YOU are comfortable
5. Check settings e.g.
 - a. Correct depth for the MCA
 - b. Monitoring mode
6. ↑sample size 10mm & ↑ gain
7. ??No window??
 - a. Check contra-lateral side
 - b. Don't give up too soon!

BUT.....Remember in 10-15% of the popⁿ there is **no temporal window** due to CRANIAL THICKNESS

- c. Especially in elderly women
- d. Explain carefully to patient

ONLY INCLUDE IF ADEQUATE SIGNAL

MCA signal cannot be maintained for 60 minutes

1. Spend time to set-up
2. Ensure headset is secure
3. Ensure probe is correctly attached
4. PATIENT IS MADE AS COMFORTABLE AS POSSIBLE

If you do not have an adequate signal i.e. a clearly visible/audible spectra from the start DO NOT INCLUDE PATIENT in TCD sub-study as it is a waste of time/resources if recording cannot be analysed.

Recording is not continuous

1. **DO NOT ADJUST** depth, sample volume and gain **DURING** recording
2. "HITS" automatic detection should be **OFF**
3. **DO NOT USE** screen/snapshot saving **DURING** recording

MCA signal not clear/INTERFERENCE

1. Reduce branches
2. Adjust depth (? MCA/distal ICA stenosis – record distal MCA)
3. Gain adjusted so signal on **black background**
4. Keep probe adjustment to a minimum
 - a. Too much artefact = impossible to analyse
 - b. Ensure signal maintained
 - c. Adjust where necessary to maintain signal
 - d. Only 60 minutes stay close to patient
5. Don't worry if you need to adjust!!
6. Minimise OTHER artefact
7. DO NOT HAVE OTHER ULTRASOUND MACHINES ON IN CLOSE PROXIMITY

Recording does not play back!

1. **Continuous soundtrack** has not been recorded
 - a. Default setting is OFF
 - b. Make sure dot next to speaker icon is BLUE NOT red
 - c. Change default settings
 - d. Create a special TARDIS setting
 - e.g. single unilateral mode and continuous soundtrack recording
2. **Use Monitoring** mode NOT diagnostic mode
3. **Start curve recording**

Machine cuts out

1. Hard drive full
 - a. Archive old exams to CD/DVD
 - b. CLEAR HARD DRIVE
2. Record single channel DO NOT record in M-Mode
 - 60 mins in M-Mode ~ 800MB
 - 60 mins in single channel ~ 96MB