

# **Road speed and physiological stability of neonates undergoing intensive care interhospital transfer by ambulance**

## **INVESTIGATION PROTOCOL**

1. Study includes neonates undergoing urgent intensive care inter-hospital transfer, using a North West Ambulance Service ambulance vehicle and neonate must have invasive blood pressure monitoring.
2. Ask parents if would agree talking to the transport team regarding participation in the study. If agreeable, local team should provide an information pack. Obtain written consent from parents during stabilisation period prior to transfer. Must not delay transfer.
3. Record baseline data during stabilisation. See data collection sheets.
4. Fit datalogger into ambulance, ensuring GPS cable and power source are secured.
5. Connect laptop to monitor (LAN cable + COM port adapter, hardware key), open software, register the monitor, choose variable to record: ABP – mean, ABP – syst, ABP – diast, spO<sub>2</sub>, etcO<sub>2</sub>, awRR, HR (from ECG&pleth), Pulse (from UAC). **(Don't forget power cable)**
6. Record two minutes of baseline physiological data once incubator loaded into ambulance, before setting off.
7. Synchronise equipment and start recording as journey begins.
8. Ensure recording is stopped on arrival at receiving hospital.
9. Record physiological data on arrival at receiving hospital. See data collection sheets.
10. Remove equipment from ambulance before it departs.

### **List of things to take:**

Accelerometer, power cable, data card, GPS cable.

Laptop, LAN cable, COM port adapter, Hardware key (correctly numbered).

Tape to organise cables.

Pack of Velcro tabs.

Data collection sheets.

Participant information pack.

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**DATA COLLECTION SHEET**

**PATIENT DETAILS**

Study reference number \_\_\_\_\_

Date / time of birth \_\_\_\_\_

Gestation at birth \_\_\_\_\_ completed weeks

Postnatal age \_\_\_\_\_ days

Current weight \_\_\_\_\_ g

Clinical Diagnoses

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**TRANSFER SUMMARY**

Date \_\_\_\_\_

Time \_\_\_\_\_

Referring hospital \_\_\_\_\_

Receiving hospital \_\_\_\_\_

Reason for referral \_\_\_\_\_

Model of ambulance \_\_\_\_\_

Incubator / monitor used \_\_\_\_\_

GMNETS staff present

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**CLINICAL DETAILS BEFORE TRANSFER**

Ventilator parameters	Mode	
	Rate	
	PIP	
	PEEP	
	FiO2	
Respiratory status	Respiratory rate	
	O2 sats (%)	
Blood gases	Time	
	pH	
	CO2 (KPa)	
	O2 (KPa)	
	Bicarbonate (mmol/L)	
	Base excess (mmol/L)	
Cardiovascular status	Heart rate	
	Blood pressure (syst/diast)	
	Mean BP	
Temperature	Neonate (oC)	
	Incubator settings (oC)	
Pharmacology	Muscle relaxants / sedation / inotropes	

**INTERVENTIONS DURING TRANSFER**

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## RECORD OF EVENTS DURING TRANSFER

Baseline physiological readings are to be recorded for 2 minutes prior to departure.

Start time \_\_\_\_\_ Stop time \_\_\_\_\_

Time of departure \_\_\_\_\_ Time of arrival \_\_\_\_\_  
(Time taken from neonatal monitor)

Time (mins)	Road conditions	Speed	Movement artefact (tick)	Movement artefact (tick)	Movement artefact (tick)
			BP	spO2	RR
0					
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					
55					
60					
65					
70					
75					
80					
85					
90					
95					
100					
105					
110					
115					
120					

Road conditions – eg: motorway / A class road / dual carriageway / speed bumps.

Speed – slow traffic / blue lights / speed limit

Movement artefact – this can be detected by the lack of a sinusoidal plethysmographic waveform and poor correlation of the associated heart rate measurement compared to those derived from the ECG and invasive blood pressure monitoring. Movement artefact affecting the oxygen saturations and heart rate will be derived from the invasive BP waveform which is least susceptible to movement artefact.

### CLINICAL DETAILS ON ARRIVAL

Ventilator parameters	Mode	
	Rate	
	PIP	
	PEEP	
	FiO <sub>2</sub>	
Respiratory status	Respiratory rate	
	O <sub>2</sub> sats (%)	
Blood gases	Time	
	pH	
	CO <sub>2</sub> (KPa)	
	O <sub>2</sub> (KPa)	
	Bicarbonate (mmol/L)	
	Base excess (mmol/L)	
Cardiovascular status	Heart rate	
	Blood pressure (syst/diast)	
	Mean BP	
Temperature	Neonate (oC)	
	Incubator settings (oC)	
Pharmacology	Muscle relaxants / sedation / inotropes	