

## Introduction

The reorganisation of health services and the delivery of the 'hub and spoke' Model of Care for Critical Care necessitates transfer of critically ill patients between hospitals. In Ireland, in excess of 1000 adult and 450 paediatric critical care inter hospital transfers occur per annum. Transporting critically ill patients is associated with increased mortality and morbidity. Risk may be minimised by adequate planning, appropriate teams, training and task appropriate equipment. and there is evidence that an organised approach to transfer reduces clinical incidents.

## Aims

To introduce a systematic approach to patient management when transporting critically ill patients, which establishes a higher level of performance, reduces cognitive dissonance, provides a framework for clinical teams and reduces the potential for human error.

## Equipment

Rationalise medications and infusions to only those necessary during transport. All equipment secured to critical care transport trolley, ideally below the patient. Adequate battery and oxygen supplies for the journey with a 100% safety factor.

## Packaging

- Pack patient in layers:
  - "Dirty" lower layer – catheter, drains, ECG leads.
  - "Clean" upper layer – infusions, arterial line
- Ventilator tubing external.
- Vacuum mattress as routine, even for non spinal injured patients.
- SpO2 probe and IV access accessible

## Conclusions

A systematic approach to preparation for transporting critically ill patients establishes a common model of care for these patients nationally. This method has been taught on over 50 outreach courses to date for hospital and NAS staff.



## Patient Assessment

Systematic assessment of patient condition, physiology, supports and medications using a standardised checklist.

CHECKLIST	
Airway:	Secure <input type="checkbox"/> CXR confirmed <input type="checkbox"/>
Ventilation:	Ventilation established <input type="checkbox"/> HME filter <input type="checkbox"/> ABGS <input type="checkbox"/>
Oxygen Requirement:	MV x FiO <sub>2</sub> x (journey time in mins), x 2 (safety factor) = O <sub>2</sub> L needed (____) x (____) x (____) mins x 2 = ____ L Sufficient O <sub>2</sub> for journey <input type="checkbox"/>
CVS:	HR, BP optimised <input type="checkbox"/> Tissue / organ perfusion <input type="checkbox"/> Bleeding controlled <input type="checkbox"/> Blood volume restored <input type="checkbox"/> Hb adequate <input type="checkbox"/> IV access; 2 routes <input type="checkbox"/> Arterial line <input type="checkbox"/> CVC <input type="checkbox"/>
Neuro:	Seizures controlled <input type="checkbox"/> Metabolic cause excluded <input type="checkbox"/> Increased ICP managed <input type="checkbox"/> Sedated / paralysed <input type="checkbox"/>
Trauma:	Cervical spine protected <input type="checkbox"/> Pneumothoraces drained <input type="checkbox"/> Thoraco/abdominal bleeding investigated / controlled <input type="checkbox"/> Intra abdominal injuries investigated/ <input type="checkbox"/> Long bone/pelvic fractures stabilised <input type="checkbox"/> Chest drains unclamped <input type="checkbox"/>
Metabolic	Blood Glucose >4mmol/L <input type="checkbox"/> K <sup>+</sup> < 6 mmol/L <input type="checkbox"/>
Monitoring	ECG <input type="checkbox"/> BP <input type="checkbox"/> SaO <sub>2</sub> <input type="checkbox"/> ETCO <sub>2</sub> <input type="checkbox"/> Temp <input type="checkbox"/> Patient ID band attached <input type="checkbox"/> Stable on trolley <input type="checkbox"/> Equipment secured <input type="checkbox"/> Infusions running, labelled <input type="checkbox"/> Adequately sedated / paralysed <input type="checkbox"/> Wrapped to prevent heat loss <input type="checkbox"/> Received appropriate handover <input type="checkbox"/> Adequate clothing <input type="checkbox"/>
Equipment	Fully equipped ambulance <input type="checkbox"/> Drugs/equipment as per checklist <input type="checkbox"/> Transport Bag <input type="checkbox"/> Batteries checked (with spares) <input type="checkbox"/>
Organisation	Case notes <input type="checkbox"/> Radiology <input type="checkbox"/> Blood results <input type="checkbox"/> Bed secured <input type="checkbox"/> Receiving consultant consulted <input type="checkbox"/> NOK informed <input type="checkbox"/> NAS informed <input type="checkbox"/> Contact Receiving Unit before departure <input type="checkbox"/> Discharge summary + Letter <input type="checkbox"/>
Departure	Trolley secured <input type="checkbox"/> Connected to ambulance power <input type="checkbox"/> Ventilator transferred to ambulance O <sub>2</sub> <input type="checkbox"/> All equipment secured <input type="checkbox"/> Staff seated, seat belts <input type="checkbox"/>

## References

1. Murphy, A.M. and Dwyer, R. (2016) 'National Survey of Adult Inter-hospital transfers in Ireland' Intensive Care Society of Ireland, 11<sup>th</sup> June.
2. AAGBI (2009) Inter hospital Transfer
3. Fried, M. et al (2010) Inter-hospital transfers of acutely ill adults in Scotland, Anaesthesia
4. National Institute for Health and Care Excellence (2017) Standardised systems of care for intra and inter hospital transfers
5. Droogh, JM., Smit, M., Hut, J., Absalom, A.R. Ligtenberg, JJ. and Zijlstra JG. (2015) 'Transferring the critically ill patient: are we there yet?', *Critical Care*, 19 (1)