

## Critical Care Tertiary Referral Networks & Transfer of Care (Adults)

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**Summary** This policy directive relates to critically ill adult patients and patients at risk of critical deterioration requiring referral and transfer. The NSW Critical Care Tertiary Referral Networks (Adults) define the links between Area Health Services and tertiary referral hospitals and take into account established functional clinical referral relationships. Implicit to this policy is that access to emergency care and/or urgent surgical intervention for time-urgent critical patients is not to be delayed due to no-available ICU bed: the Aeromedical and Medical Retrieval Services (AMRS) is to be contacted immediately for such patients.

**Replaces Doc. No.** Helicopter Transport of Patients - Procedures to be Followed [PD2005\_473]  
Critical Care Adult Tertiary Referral Networks - Intensive Care Default Policy [PD2006\_046]

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**Applies to** Area Health Services/Chief Executive Governed Statutory Health Corporation, Board Governed Statutory Health Corporations, Affiliated Health Organisations, Affiliated Health Organisations - Declared, Public Health System Support Division, NSW Ambulance Service, Public Hospitals

**Audience** All clinical and administrative staff

**Distributed to** Public Health System, Divisions of General Practice, NSW Ambulance Service, Ministry of Health, Private Hospitals and Day Procedure Centres

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**Director-General**

This Policy Directive may be varied, withdrawn or replaced at any time. Compliance with this directive is **mandatory** for NSW Health and is a condition of subsidy for public health organisations.

## NSW CRITICAL CARE TERTIARY REFERRAL NETWORKS & TRANSFER OF CARE (ADULTS)

### PURPOSE

This Policy Directive relates to critically ill/injured adult patients and those patients **at risk of critical deterioration** requiring referral and transfer of care.

The NSW Critical Care Tertiary Referral Networks (Adults) define the links between Area Health Services and tertiary referral hospitals and take into account established functional clinical referral relationships.

The policy also defines the roles of various statewide clinical speciality referral networks that operate in conjunction with the NSW Critical Care Tertiary Referral Network (section 10)

### MANDATORY REQUIREMENTS

- Access to emergency care and/or surgical intervention for time-urgent critically ill/injured patients is not to be delayed due to “no-available” ICU bed. Aeromedical and Medical Retrieval Service (AMRS) is to be contacted immediately should this situation arise.
- Requirements for transfer of critically ill obese patients as set out in section 6 must be applied.
- Each Area Health Services must have in place by February 2011 an Area-wide protocol for the “escalation of care” to guide the referral of non-critical patients for specialist care (section 9).
- A tertiary referral hospital designated by the NSW Intensive Care Default Hospital Matrix must take responsibility for providing critical care, irrespective of bed status, to a specified group of referral hospitals when the Default Adult Intensive Care Bed Policy is invoked (section 11).
- In time urgent situations the AMRS has the authority to transport the patient directly to the linked tertiary hospital designated by the NSW statewide critical care tertiary networks, regardless of available bed state. If there is a closer hospital that can provide the time-urgent treatment required, AMRS may elect to transport the patient there. In each case the AMRS Consultant will notify the receiving clinician.

### IMPLEMENTATION

Area Health Service Chief Executives are responsible for:

- Meeting the critical care and intensive care needs of that Area and linked rural Area Health Services, where specified, including the provision of clinical advice and ensuring access to appropriate treatment.
- Ensuring that all options for placement of the critically ill patient within the originating Area have been explored and that all appropriate transfers from Intensive Care Units within the Area to other inpatient wards have been made.

- Ensuring formalised intra-Area and inter-Area referral arrangements exist for critically ill patients needing a higher level of definitive care and for non-critically ill patients requiring referral for specialist care.
- Ensuring formalised cross-jurisdictional border arrangements exist for the referral of critically ill patients where required.
- Ensuring that clinical referral and support processes are transparent and effectively communicated to all staff to ensure patients can access definitive care in an appropriate timeframe. This responsibility lies ultimately with the Area Director of Clinical Operations.
- Engaging relevant clinicians and ensuring that consistent local protocols or operating procedures are developed and distributed to relevant clinical areas.

Directors of Clinical Governance are required to inform relevant clinical staff of the revised policy directive.

Area Directors of Clinical Operations are responsible for ensuring appropriate referral arrangements are in place for all non-critical patients requiring referral for specialist care. (Section 2)

The NSW Aeromedical and Medical Retrieval Service (AMRS), a unit of the NSW Ambulance Service, provides statewide coordination of adult medical retrieval services for critically ill patients in collaboration with the Regional Retrieval Services. Similarly, the Regional Retrieval Services liaise with AMRS regarding all retrieval activity. The AMRS is the central point of contact for the medical retrieval of all critically ill adult patients.

**Aeromedical and Medical Retrieval Service (AMRS) Ph: 1800 650 004**

## REVISION HISTORY

Version	Approved by	Amendment notes
March 2010 (PD2010_021)	Director General	Complete revision of PD2006_046 and replaces PD2005_473 <i>Helicopter Transport of Patients - Procedures to be Followed</i>
July 2006 (PD2006_046)	Director General	New Policy

## ATTACHMENTS

1. NSW Critical Care Tertiary Referral Networks and Transfer of Care (ADULTS); Procedures

**NSW CRITICAL CARE TERTIARY REFERRAL NETWORKS &  
TRANSFER OF CARE (ADULTS)**

**NSWHEALTH**  
PROCEDURES

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**Issue date: March 2010**

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## 1 Background

### 1.1 Introduction

The NSW Critical Care Critical Care Adult Tertiary Referral Networks - Intensive Care Default Policy Directive (PD2006\_046) was issued in 2006 and is currently utilised extensively across the system to guide the process of appropriate critical care adult tertiary networking, referral and patient transfer. Since releasing the 2006 version planning has progressed on the reconfiguration of the NSW Trauma System, establishing the NSW Extra Corporeal Membrane Oxygenation (ECMO) Medical Retrieval Service and implementing the web based Critical Care Resource management System (CCRS).

In addition to these developments a number of issues, identified through Incident Information Management System (IIMS) data review, Root Cause Analysis (RCA) recommendations and reported by the Critical Care Health Priority Taskforce, have been addressed, and have been incorporated to this revision of the Policy Directive including:

- Realignment of North Coast Area Health Service (south sectors) critical care tertiary referrals from Royal North Shore Hospital to John Hunter Hospital line with major trauma referrals
- Clarification of the clinical advice and bed finding role of Aeromedical and Medical Retrieval Service (AMRS)
- Formalising the AHS processes for the referral of non-critical patients for higher specialist care
- Managing non-critical patients at risk of critical deterioration
- Managing the transfer of obese critically ill patients
- Managing primary acute spinal injury and severe burn patient referrals by helicopter
- Clarifying the **mandatory requirement** that patients requiring emergency care are provided timely access to the appropriate level of definitive care irrespective of Intensive Care Unit (ICU) bed status
- Formalising the protocol for invoking the Default Adult ICU Bed Policy

CCRS is a statewide web based information system that informs the coordination and decision making for the referral and placement of critically ill patients to the appropriate level of definitive care. CCRS is used by the Aeromedical and Medical Retrieval Service (AMRS) to assist statewide coordination of adult medical retrieval services for critically ill patients in collaboration with the Regional Retrieval Services. Similarly, the Regional Retrieval Services liaise with AMRS regarding all retrieval activity.

AMRS is the central point of contact for the medical retrieval of all critically ill adult patients.

**Aeromedical and Medical Retrieval Service (AMRS)**  
**ph: 1800 650 004**

**Early Notification = Early Assistance**

(In emergencies notification can occur prior to full patient assessment and investigation)

## 1.2 Key definitions

**Aeromedical Operations Centre (AOC):** A unit of the NSW Ambulance Service providing statewide coordination of aeromedical transport and medical retrieval services.

**Aeromedical and Medical Retrieval Service (AMRS):** A unit of the NSW Ambulance Service providing clinical support and advice, transport and escort services for critically ill patients requiring medical retrieval. AMRS is co-located with the AOC.

**Time-urgent critically ill/injured patient:** A patient requiring emergency care at the closest appropriate hospital in the shortest time possible to achieve early intervention and stabilisation.

**Non time-urgent critically ill patient:** A patient stabilised who requires transfer for a higher level of definitive critical care or clinical speciality, but whose transfer is not time-urgent.

**Patient at risk of critical deterioration:** A patient who has suffered a significant injury and/or illness who may appear to be stable but whose condition may quickly deteriorate requiring constant monitoring and early transfer for definitive care.

**Non-critical patient requiring specialist definitive care:** A patient requiring referral and transfer for specialist care facilitated by the Area Patient Flow Unit in consultation with the patient's clinical management team.

**Neonatal and paediatric Emergency Transport Service (NETS):** A medical retrieval service for babies and children who require intensive care.

**Primary Retrieval:** A patient transferred directly from the scene of an incident or medical emergency to hospital.

**Secondary Retrieval:** A patient transferred between health facilities.

## 2 NSW Critical Care Services Adult Tertiary Referral Networks

The NSW critical care services adult tertiary referral networks define the links between Area Health Services and tertiary referral hospitals and take into account established functional clinical referral relationships.

Operating in conjunction with the critical care networks are statewide clinical specialty referral networks which are also defined within this Policy Directive.

These include:

1. NSW Severe Burn Injury Service (Adult)
2. NSW Acute Spinal Cord Injury Referrals (Adult)
3. NSW Major Trauma Referrals (Adult/Paediatric)
4. NSW Rural Cardiac Catheterisation Services (Adult)
5. NSW Extra Corporeal Membrane Oxygenation (ECMO) Medical Retrieval
6. NSW Critical Care Tertiary Referral Networks (Neonatal and High Risk Obstetrics) and NSW Critical Care Tertiary Referral Networks (Paediatric).

In a number of cases, complementary Policy Directives will apply.

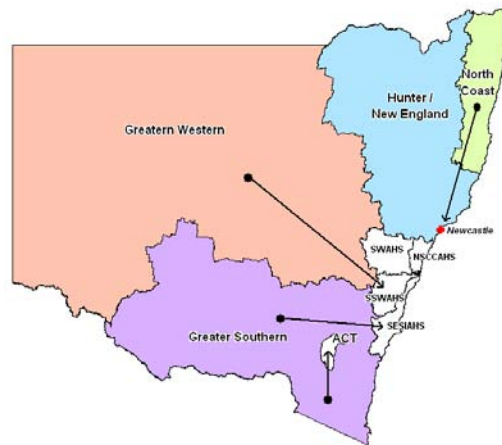
The Area Director of Clinical Operations is responsible for ensuring appropriate referral arrangements are in place for all **non-critical patients requiring referral for specialist care**. Formalised specialist clinical referral networks and referral process must be in place to guide and assist clinicians and Patient Flow Units to ensure appropriate and timely patient referrals. AMRS does not have capacity to manage the referral and transfer of **non-critical patients**. This also applies to patients requiring elective transfer between private hospitals.

Each Area Health Service is responsible for:

- Meeting the critical care and intensive care needs of that Area and linked rural Area Health Services, where specified, including the provision of clinical advice and ensuring access to appropriate treatment.
- Ensuring that all options for placement of the critically ill patient within the originating Area have been explored and that all appropriate transfers from Intensive Care Units within the Area to other inpatient wards have been made.
- Ensuring formalised intra-Area and inter-Area referral arrangements exist for critically ill patients needing a higher level of definitive care and for non-critically ill patients requiring referral for specialist care.
- Ensuring formalised cross-jurisdictional border arrangements exist for the referral of critically ill patients where required.
- Ensuring that clinical referral and support processes are transparent and effectively communicated to all staff to ensure patients can access definitive care in an appropriate timeframe. This responsibility lies ultimately with the Area Director of Clinical Operations.



The following adult critical care tertiary referral networks are designated for all critically ill adult patients requiring transfer to a tertiary facility, and are endorsed by the NSW Critical Care Health Priority Taskforce, Rural Critical Care Taskforce and Ambulance Service of NSW (ASNSW) Medical Retrieval Committee.



The Greater Southern Area Health Service (GSAHS), Greater Western Area Health Service (GWAHS) and North Coast Area Health Service (NCAHS) have critical care referral links with tertiary facilities as illustrated. Owing to proximity with other state and territory health facilities, these Area Health Services also have cross border networks with tertiary critical care services in Queensland, South Australia, Victoria and the ACT.

<b>NSW Critical Care Services Adult Tertiary Referral Network</b>	
<b>Area Health Service to Tertiary Hospital Links</b>	
<b>Referring Area Health Service</b>	<b>Receiving Tertiary Hospital</b>
Northern Sydney/Central Coast Area Health Service	Royal North Shore
Hunter/New England Area Health Service North Coast Area Health Service <sup>1</sup>	John Hunter
Sydney West Area Health Service	Westmead Nepean
Sydney South West Area Health Service Greater Western Area Health Service <sup>2</sup>	Royal Prince Alfred Liverpool Concord
South Eastern Sydney/Illawarra Area Health Service Greater Southern Area Health Service <sup>3, 4</sup>	Canberra <sup>4</sup> Prince of Wales St George St Vincent's
<ol style="list-style-type: none"> <li>1. Owing to proximity, NCAHS maintains a clinical referral network with Queensland</li> <li>2. Owing to proximity, Broken Hill maintains a clinical referral network with South Australia</li> <li>3. Albury is networked with clinical services in Victoria however referral to a NSW facility may be required due to clinical need.</li> <li>4. Owing to proximity, GSAHS maintains a clinical referral network between The Canberra Hospital and the following hospitals: Bateman's Bay, Batlow, Bega, Bombala, Boorowa, Braidwood, Cooma, Delegate, Moruya, Pambula, Queanbeyan, Tumut, Yass and Young.</li> </ol>	

### 3 NSW Aeromedical and Medical Retrieval Services (AMRS)

The Aeromedical and Medical Retrieval Services (AMRS) is a unit of the NSW Ambulance Service, and provides statewide 24-hour coordination and support for primary and secondary adult medical retrievals. Responsibilities include:

- Clinical advice from a critical care medical retrieval consultant
- Mobilisation of an appropriate retrieval team
- A “one phone call” referral, wherever possible, for critically ill patients, which uses conference call facilities to connect the referring clinician, medical retrieval consultant and receiving clinician
- Assistance with ICU bed availability, when usual tertiary referral hospital ICU beds are unavailable
- Assistance with any urgent transfer where routine patterns of referral are unavailable or unacceptably delayed

AMRS is not responsible for finding beds or for the transfer of non-critically ill patients who require referral for a higher level of specialist care. These referrals are to be facilitated through the Area Patient Flow Units, Area based transport services and if needed the Ambulance Service of NSW.

### 4 Which Adults May Need Medical Retrieval?

Those with actual *or potential* significant injuries, illness or at risk of critical deterioration including<sup>1</sup>:

- |                    |   |
|--------------------|---|
| <b>Airway</b>      | <ul style="list-style-type: none"> <li>• All intubated patients</li> <li>• Patients potentially requiring airway intervention enroute (threatened airway obstruction, altered or decreasing LOC, head/neck trauma, head/neck burns)</li> </ul>  |
| <b>Breathing</b>   | <ul style="list-style-type: none"> <li>• Significant respiratory distress or compromise after treatment</li> <li>• RR &lt; 5 or &gt;30, SpO<sub>2</sub> &lt; 90% on 15L oxygen</li> <li>• P<sub>a</sub>O<sub>2</sub> &lt;60 or P<sub>a</sub>CO<sub>2</sub> &gt;60 or pH &lt; 7.2 or BE &lt;-5</li> <li>• Respiratory dependency on CPAP or BIPAP</li> </ul> |
| <b>Circulation</b> | <ul style="list-style-type: none"> <li>• Circulatory shock of any cause</li> <li>• Heart rate &lt; 40 or &gt; 140 beats per minute</li> <li>• SBP ≤ 90mmHg OR &gt; 200mmHg</li> <li>• Complex or recurrent arrhythmias (e.g. recurrent VF, sustained VT, CHB)</li> </ul>  |
| <b>Disability</b>  | <ul style="list-style-type: none"> <li>• Ongoing significant bleeding</li> <li>• Significant altered LOC – GCS ≤ 13</li> <li>• Significant head injury</li> <li>• Acute spinal cord injuries</li> <li>• Recurrent or prolonged seizures</li> <li>• Intracerebral bleeding</li> </ul>  |

To expedite the retrieval process, AMRS requires specific information regarding the patient’s details, clinical status and management, and any special considerations such as obesity. A pro-forma for the information required for adult critical care transfers is included in this Policy Directive to guide referring clinicians (page 30).

## **5 Key Elements of the Medical Retrieval System**

- AMRS provides statewide coordination of adult medical retrieval services, in collaboration with the Regional Retrieval Services. Adult medical retrieval services operate from:
  - Sydney (Bankstown)
  - Illawarra
  - Orange
  - Newcastle (JHH)
  - Tamworth
  - Lismore
  - Canberra
  - Dubbo (Royal Flying Doctor Service)
  - Broken Hill (Royal Flying Doctor Service)
- Vehicle choice (road, helicopter or fixed wing) is made on pre-determined criteria, based on the clinical urgency, transport requirements, optimum transport team and vehicle utilisation.
- Vehicles providing aeromedical medical transport include both fixed wing aircraft and helicopters. Fixed wing aircraft operate out of Sydney, Dubbo and Broken Hill. Sydney and Dubbo aircraft are used exclusively for the inter-hospital transfers while the aircraft at Broken Hill is also used for primary missions and to provide outreach clinic services.
- Helicopters are designated as category 1 or category 2. Category 1 helicopters transport all age groups, can carry two patients, are capable of instrument flight profiles (to fly in some but not all adverse weather conditions), operate on a 24-hour basis and have a statewide utilisation profile. These aircraft are located at Lismore, Newcastle, Sydney, Wollongong and Canberra. Category 2 helicopters are capable of carrying one patient only, are capable of instrument flight profiles, operate from 0800 to 1800 and have primarily a regional utilisation profile. These aircraft are located at Tamworth and Orange. Only helicopters holding contracts with the ASNSW are to be used to transport patients.
- Tertiary referral intensive care units are also the default hospital for private hospitals from within their Area Health Service.
- Critically injured patients are to be transferred to the nearest (in-time) designated appropriate facility (e.g. Major Trauma Service), irrespective of ICU bed status, so that emergency stabilisation and treatment can commence with minimal delay. Aviation factors may at times influence the destination hospital.
- Where there is a difference in clinical opinion regarding the appropriateness of the transfer then the final decision will be made by the medical retrieval consultant at AMRS. This will follow a conference call between the referring clinician, receiving medical consultant and the medical retrieval consultant.
- In specific cases, the referring consultant, medical retrieval consultant and the receiving consultant may decide to refer a patient to a different hospital which is considered more clinically appropriate for that patient's definitive care.

## **6 Obese Patients**

For the purposes of aeromedical transfer, an obese patient is defined as a patient weighing 110kg or more. For road transfers, an obese patient is defined as a patient weighing 160kg or more. In addition to overall weight, the dimensions of the patient and distribution of mass may affect the ability of a patient to fit on a transport stretcher even if they meet the above criteria.

Transfer of critically ill obese patients is challenging for both clinical and logistic reasons. Such patients often have unrecognised clinical problems, and once recognised dealing with these can be technically challenging. The transfer of obese patients by any vehicle is significantly slower than normal transfers. Special equipment and facilities (height adjustable trolleys, manual handling aids, concrete helipads and relatively flat and well surfaced pathways) are required and it is the responsibility of hospitals to have these available. Lack of such equipment and facilities is likely to significantly delay or negate the possibility of transfer.

Patient weight and logistic issues must be accurately conveyed to AMRS at the time of request to inform the most appropriate mode of patient transport. A medical retrieval consultant (AMRS or Regional) should be contacted in all critical care bariatric transfers.

Hospitals must ensure they have a means of weighing obese (including critically ill) patients, as this is crucial for deciding which vehicles can be used for medical retrieval. An estimate of weight is unacceptable as it is invariably an underestimate which may result in delays for transport as alternative vehicles, stretchers and restraint systems are sourced. The Bariatric Sizing Chart on page 8 outlines the methodology for correctly weighing and measuring obese patients. These details must be provided to the AOC for all critical care patients over 110 kg.

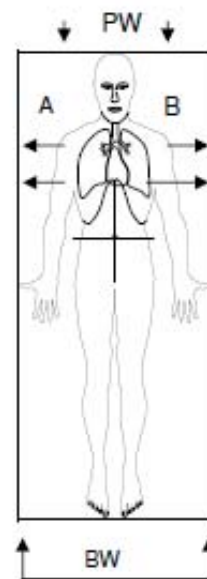
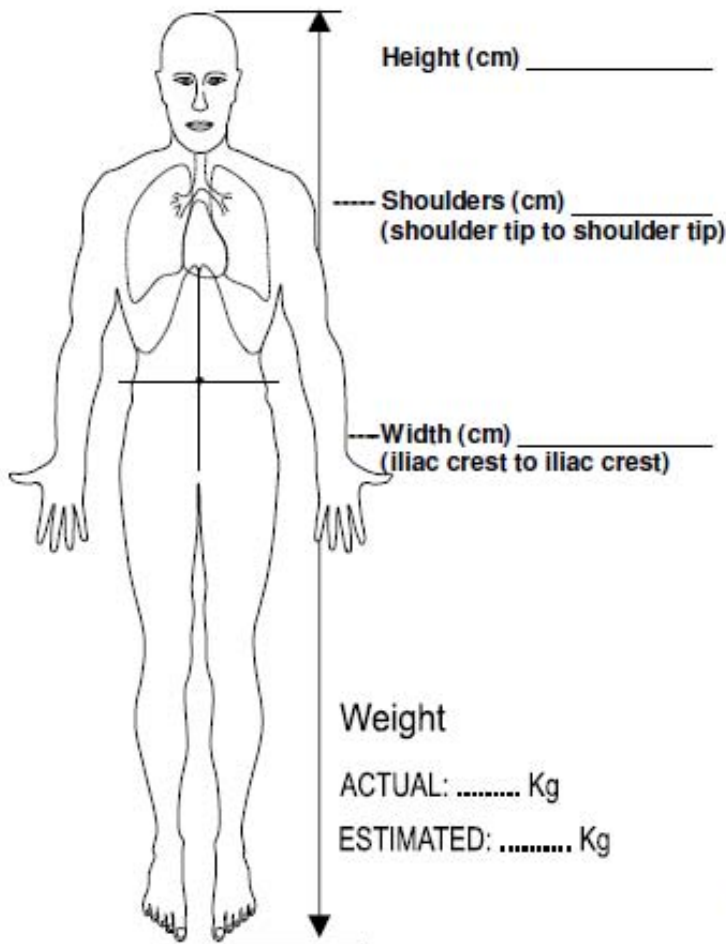
In general it is not possible to transfer an obese patient by helicopter from, or to, a hospital that does not have an on-site concrete helipad with paved access from the hospital. In other circumstances a road transfer will be required, irrespective of distance.

Hospital trolleys used for transport must:

- Be height adjustable at the maximum safe working load via a self contained system and not reliant on external power
- Be height adjustable from 660mm to 1020mm above ground level
- Have a minimum safe working load of 300kg
- Have a patient platform length of least 2 metres with no raised edging at one end.
- Have a patient platform width of 700mm
- Have a patient platform surface that is smooth with raised edges on both sides and one end
- Have a stretcher/patient restraint system
- Large wheels suitable for manoeuvring over the hospital to helipad surface

It is the responsibility of the referring and receiving hospitals to provide sufficient personnel and/or equipment to physically transport the patient from their hospital location to and into the vehicle (or vice versa). Regular communication is vital regarding the status of the mission, the condition of the patient and any specific clinical requirements.

**Bariatric Sizing Chart for Aeromedical Transport**



To assist in correctly determining patient sizing

Please use the following formula

**Patient Width = BW - (A+B)**

PW = Patient Width

BW = width of bed

A = distance from edge of bed to R shoulder tip

B = distance from edge of bed to L shoulder tip

**Please Circle**

- 1. Height adjustable stretcher available      Yes / No
- 2. On Site Helicopter pad available            Yes / No
- 3. Sealed path from Hospital bedside to helicopter pad      Yes / No

$BW - ( A + B )$ $_____ - ( _____ + _____ )$ $_____ - _____$ <p><b>Patient widest point =</b></p>
---

**Please fax to Aeromedical Operations Centre 02 9553 2275**

NSW Health Guideline GL2005\_070 outlines the Occupational Health & Safety Issues Associated with the Management of Bariatric (Severely Obese) Patients. The Guideline can be accessed at: [http://www.health.nsw.gov.au/policies/gl/2005/GL2005\\_070.html](http://www.health.nsw.gov.au/policies/gl/2005/GL2005_070.html)

## 7 Organising an Adult Medical Retrieval and Bed Finding

AMRS will facilitate the provision of clinical advice, referral to the appropriate linked tertiary hospital consultant, bed finding and patient transfer for **time urgent critically ill patients** from both public and private facilities to public facilities.

**NB. Patient Flow Units should not be contacted in the first instance for time urgent critically ill patients due to the lack of readily available clinical information for these patients.**

The referral process for **time urgent critically ill patients** is:

- Referring clinician calls AMRS on 1800 650 004 and, where feasible, a conference call will be established; between the referring clinician, medical retrieval consultant and receiving clinician at the linked tertiary hospital designated by the default hospital matrix. If there is a closer hospital that can provide the time-urgent treatment, AMRS may elect to transport the patient there. In each case the AMRS Consultant will notify the receiving clinician.
- Clinical and logistic advice will be provided to the referring clinician to support the stabilisation and resuscitation of the patient;
- Referral will be triaged and coordinated by the AMRS within the context of competing priorities;
- Referring clinicians are responsible for ensuring timely updates of any significant changes in the patient's condition are provided to AMRS;
- AMRS is responsible for providing timely updates to the referring clinician on despatch and estimated time of arrival of the medical retrieval team.

**Non urgent critical care referrals** are facilitated by reference to the Critical Care Resource management System (CCRS) and utilising the established Area Health Service patient referral processes and clinical networks. Once the destination has been accepted at the receiving hospital then AMRS is to be contacted to undertake the retrieval. Should the established referral processes and clinical network not be able to accommodate the patient then AMRS can be contacted to assist both bed finding and medical retrieval of the patient.



## 8 Critical Care Resource Management System (CCRS)

CCRS is a statewide web based information system that assists the coordination and decision making for the referral and placement of critically ill patients to the appropriate level of definitive care. CCRS informs the availability of neonatal, paediatric, high risk maternity and adult critical care beds across NSW. An integrated module of the statewide Bedboard program, CCRS receives automated data feeds from the Area Health Services Patient Administration Systems to inform the ICU/HDU bed status.

CCRS can be accessed via the NSW Health intranet:

<http://ccrs.health.nsw.gov.au>

CCRS enables each referring site to see available ICU and HDU beds in all facilities and provides communication details to support the negotiation of critically ill patient transfers.

A key aim of the CCRS is improved distribution of critically ill patients across the system to reduce the concentrated demand on tertiary services by facilitating access to regional services for clinically appropriate patients. Rural Area Health Services are increasingly able to provide complex critical care services at regional referral hospitals. Where appropriate, these regional critical care services should be considered as potential sites to refer critically ill patients thereby improving overall access to ICU/HDU beds. This statewide networking increases the number of patients able to be managed in regional centres, and in many cases allowing patients to be cared for closer to their home and family.

Each individual unit is responsible for ensuring the information in CCRS is correct and current. In addition to real-time updates on bed status at the unit level the Patient Administration System (PAS) will automatically update the bed status hourly. Each unit is required to check and verify the unit bed status at each nursing shift handover.

**CCRS enables early recognition of the system approaching capacity; in this situation all potential patient transfers should be expedited to maximise available bed capacity.**

## 9 Non-Critical Patients Requiring Referral for Specialist Care

The role of AMRS does not extend to finding beds and facilitating clinical referral for non-critical patients. The volume of referrals and multitude of clinical referral networks for non-critical patients does not support a centralised model. However, it is recognised that in some cases, unless the referral and transfer is timely, the situation may become critical.

Each Area Health Service has intra-Area and inter-Area clinical networks for non-critical patients requiring referral for a higher level of specialist care. Formalisation of these networks and an “escalation of care” process must be in place to ensure patients who require specialist referral are afforded timely access to definitive care.

**An Area-wide protocol for the “escalation of care” for specialist referral, approved by the Chief Executive, which outlines the process and clinical networks, must be in place by February 2011 to guide the referral of non-critical patient for specialist care.**

Patient Flow Units (PFU) support these established networks, facilitate patient referrals for specialist care and improve access. The NSW Health ‘BedBoard’ program facilitates the identification of general and specialist ward beds to facilitate patient referral and access.

This structure provides the framework for the appropriate intra-Area clinical referral of non-critical patients requiring a higher and/or more specialised level of definitive care.

## 10 Statewide Clinical Specialty Referral Networks

A number of statewide clinical speciality networks operate in tandem with the NSW Critical Care Tertiary Referral Networks (Adults).

These networks are determined by Statewide and Selected Specialty Services Plans to achieve appropriate concentration of highly specialised services which can respond to the needs of NSW residents. The location of these services is determined by a range of factors including the volume of clinical demand, critical mass issues, workforce and clinical support services and in some cases, the imperative is to achieve early clinical intervention such as for those patients suffering serious trauma.



## 10.1 NSW Severe Burn Injury Service Referral Network (Adult)

The NSW Statewide Severe Burn Injury Service (Adults) is located at Concord Repatriation General Hospital and Royal North Shore Hospital. Children requiring attention for severe burn injury are cared for at The Children’s Hospital at Westmead.

Patients with severe burn injury are to be referred according to the “NSW Severe Burn Injury Service - Burn Transfer Guidelines/Burns Transfer Flow Chart” available at: [http://www.health.nsw.gov.au/policies/gl/2008/GL2008\\_012.html](http://www.health.nsw.gov.au/policies/gl/2008/GL2008_012.html).

In primary retrieval cases of a combined severe trauma and burn injury in the greater Sydney metropolitan area, where a helicopter with accompanying doctor has responded, then these patients may be transported directly to Royal North Shore Hospital if considered clinically appropriate.

Initial care should be provided according to the “NSW Severe Burn Injury Service Model of Care” available at: <http://www.health.nsw.gov.au/pubs/2004/burninjurymoc.html>

<b>NSW Severe Burn Injury Service Referral Network (Adult)</b>	
<b>Referring Area Health Service</b>	<b>Receiving Severe Burn Hospital</b>
South Eastern Sydney/Illawarra AHS Sydney West AHS South Western Sydney AHS Greater Southern AHS Greater Western AHS Australian Capital Territory (ACT)	<b>Concord Repatriation General Hospital</b> <ul style="list-style-type: none"> <li>• Burns Registrar/Consultant on-call Ph: (02) 9767 5000 then page.</li> <li>• Intensive Care Unit Ph: (02) 9767 6404</li> <li>• Burn Unit/Ambulatory Care Ph: (02) 9767 7775 (b/h) Ph: (02) 9767 7776 (a/h) Fax: (02) 9767 5835</li> <li>• Burns CNC Ph: (02) 9767 5000 then page 60271 Office 9767 7798</li> </ul>
Northern Sydney/Central Coast AHS Hunter /New England AHS North Coast AHS	<b>Royal North Shore Hospital</b> <ul style="list-style-type: none"> <li>• Burns Registrar/Consultant on-call Ph: (02) 9926 7111 then page.</li> <li>• Intensive Care Unit Ph: (02) 9926 8640 or 8642</li> <li>• Burns Unit/Ambulatory Care Ph: (02) 9926 7988 (b/h) Ph: (02) 9926 8941 (a/h) Fax: (02) 99267589</li> <li>• Burns/Plastics CNC Ph: (02) 9926 8940 or Ph: (02) 9926 7111 then ask to page</li> </ul>

**The Children’s Hospital at Westmead receives referrals for children with severe burn injury according to GL2008\_012. Paediatric patients requiring medical retrieval are facilitated by NETS call: 1300 36 2500**

## 10.2 NSW Acute Spinal Cord Injury Referral Network (Adult)

The Statewide Spinal Cord Injury Service (SSCIS) for adults is located at Prince of Wales Hospital and Royal North Shore Hospital. Children requiring care for acute spinal cord injury are cared for at The Children’s Hospital at Westmead and Sydney Children’s Hospital. SSCIS is responsible for the management of patients who have sustained a spinal cord injury where there is persistent neurological deficit arising from damage to neural tissue as a result of trauma, or from a non-progressive disease process (e.g. transverse myelitis, vascular occlusion, compression by infective process or haemorrhage).

Trauma patients who have sustained a spinal injury with neurological deficit are to be transferred to a specialist acute spinal injury service at the earliest opportunity, once medically stable. The relevant SSCIS is to be notified in all cases where a spinal cord injury has been sustained to facilitate referral and transfer as soon as possible, and to obtain guidance on clinical management.

The key element of this referral network is the coordination and facilitation of the bed finding process for acute spinal cord injuries with neural loss, by AMRS, who will facilitate communication between referring services and spinal unit clinicians in relation to acute clinical care. This referral process only pertains to acute spinal cord injuries with neural loss and those spinal cord injuries as defined by the SSCIS. Patients with vertebral fractures only, are to be referred to a Spinal/Orthopaedic or Neurosurgeon via the existing referral process for each Area Health Service. AMRS does not find beds for patients with vertebral fractures only.

The Spinal Cord Injury Referral Network describes specialist spinal services for acute spinal cord injuries and networked Area Health Services. AMRS is to be contacted to facilitate the medical retrieval of adults with an acute spinal cord injury on 1800 650 004.

<b>NSW Statewide Spinal Cord Injury Referral Network (Adult)</b>	
<b>Referring Area Health Service</b>	<b>Receiving Spinal Cord Injury Hospital</b>
South Eastern/Illawarra AHS Greater Southern AHS South Western Sydney AHS Australian Capital Territory (ACT)	<b>Prince of Wales Hospital</b> <ul style="list-style-type: none"> <li>Director Ph: (02) 93822222</li> </ul>
Northern Sydney/Central Coast AHS Sydney West AHS Greater Western AHS Hunter/New England AHS North Coast AHS	<b>Royal North Shore Hospital</b> <ul style="list-style-type: none"> <li>Head of Department Ph: (02) 99267111</li> </ul>

Patients with an established and stable spinal injury who require readmission to hospital should be referred to the local health facility which has the appropriate level of anaesthetic/intensive care service to oversee and manage any respiratory support requirements.

### 10.3 NSW Major Trauma Referral Networks (Adult and Paediatric)

It is the goal of the NSW Trauma Services Plan to integrate all hospital facilities into an inclusive trauma network in order to provide definitive trauma care to all injured patients throughout NSW. Patients with minor to moderate injuries will continue to be managed at the nearest appropriate facility, while patients with more serious injuries require management at a higher level of care necessitating transfer to a Major Trauma Service (MTS) for definitive care or a Regional Trauma Service (RTS) as required in the first instance in accordance with ASNSW Protocol T1. The Trauma Plan is available at: [http://www.health.nsw.gov.au/pubs/2009/trauma\\_services.html](http://www.health.nsw.gov.au/pubs/2009/trauma_services.html).

Paramedics are encouraged to transport all major trauma patients to the highest level trauma facility within one (1) hour travel time. If the patient has an un-relievable airway obstruction, the patient may be taken to the nearest available hospital, for urgent resuscitation.

Trauma networks which, are closely aligned with the NSW Critical Care Tertiary Referral Networks for adults, are largely determined by the location of the MTS and the imperative to achieve early clinical intervention for seriously injured patients in accordance with ASNSW Protocol T1.

**Availability of an ICU bed at the receiving Major Trauma Service/Regional Trauma Service is not to delay the acceptance of time critical patients for emergency care.**

#### 10.3.1 Adults

Details of the adult MTS, the networked RTS and AHS networks are outlined in the following matrix:

<b>NSW Adult Trauma Services Referral Networks</b>		
<b>Major Trauma Service</b>	<b>Regional Trauma Service</b>	<b>Referring Area Health Services</b>
John Hunter	Coffs Harbour Lismore <sup>1</sup> Port Macquarie Tamworth Tweed Heads <sup>1</sup>	Hunter New England AHS North Coast AHS
Royal North Shore	Gosford	Northern Sydney Central Coast AHS
Liverpool	N/A	Sydney South West AHS
Royal Prince Alfred	N/A	Sydney South West AHS
St George	Wagga Wagga Wollongong	South Eastern Sydney/Illawarra AHS Greater Southern AHS <sup>2,3</sup>
Westmead	Nepean Orange	Sydney West AHS Greater Western AHS <sup>4</sup>
1. Owing to proximity, NCAHS maintains a clinical referral network with Queensland. 2. Owing to proximity, Albury also maintains a clinical referral network with Victoria. 3. The Canberra Hospital maintains a referral network for the following hospitals: Batemans Bay, Batlow, Bega, Bombala, Boorowa, Braidwood, Cooma, Delegate, Moruya, Pambula, Queanbeyan, Tumut, Yass and Young. 4. Owing to proximity, Broken Hill also maintains a referral network with South Australia.		

All patients assessed to be suffering severe trauma are to be taken directly to the closest Major Trauma Service. If travel time is greater than sixty minutes then initially they should be taken to the closest regional trauma service. There are however, four potential exceptions;

1. In primary cases of an **isolated acute spinal cord injury in the greater Sydney metropolitan area, where a helicopter with accompanying doctor has responded**, then these patients may be transported directly to the relevant specialist spinal cord injury service.
2. In primary cases of a **severe burn injury in the greater Sydney metropolitan area, where a helicopter with accompanying doctor has responded**, then these patients may be transported directly to the relevant specialist severe burn injury service.
3. In primary cases of a **combined severe trauma and burn injury in the greater Sydney metropolitan area, where a helicopter with accompanying doctor has responded**, then these patients may be transported directly to Royal North Shore Hospital if considered clinically appropriate.
4. In primary cases of a **combined severe trauma and acute spinal cord injury in the greater Sydney metropolitan area, where a helicopter with accompanying doctor has responded**, then these patients may be transported directly to Royal North Shore Hospital if considered clinically appropriate.

### 10.3.2 Paediatric

Prehospital response, triage, clinical management and transport of paediatric patients suffering serious trauma occurs according to the processes and criteria contained within the ASNSW Protocol T1 (page 17). Paediatric trauma is included in this Policy Directive due to the application of Protocol T1 to both adult and paediatric patient groups.

Children aged up to 16 years fitting the criteria in the pre-hospital Protocol T1 (with due consideration given to paediatric physiological changes) should be transferred, if within the recommended pre-hospital transport time, to a paediatric MTS capable of providing specialised acute, diagnostic and definitive paediatric trauma care. These cases are time-critical and need access to definitive trauma care in as timely manner as possible.

When direct transport to a paediatric MTS is not feasible, the child should be transported to the most appropriate adult MTS or RTS facility for initial assessment, stabilisation and appropriate transfer. Pre hospital notification to the ASNSW Operations Centre (Trauma Code 3 MIST), and through activation of the RLTC model and NETS, will facilitate an early retrieval response to support efficient transfer to a designated paediatric MTS.

The role of the paediatric MTS in supporting the hospitals within its clinical networks is emphasised here as it is important that there are adequate skill levels among staff in the emergency department, trauma services and other key areas as injured children will continue to present to these services. A policy of compulsory acceptance by the paediatric MTS of all requests for transfer of moderate to severely injured paediatric trauma patients is in place to ensure optimal care.

Area Health Services currently form part of the three Child Health Networks which are linked to each of three paediatric major trauma services as outlined in the following NSW Trauma Services Referral Network (Paediatric):

<b>NSW Trauma Services Referral Network (Paediatric)</b>		
<b>Major Trauma Service</b>	<b>Child Health Network</b>	<b>Referring Area Health Services</b>
John Hunter Children's	Northern	Hunter New England AHS North Coast AHS1
Children's Hospital, Westmead	Western	Sydney South West AHS (Liverpool, Fairfield, Concord) Sydney West AHS Northern Sydney Central Coast AHS (Gosford, Hornsby, Ryde, Wyong) Greater Western AHS2
Sydney Children's Hospital	Greater Eastern and Southern	South Eastern Sydney Illawarra AHS Northern Sydney Central Coast AHS (Manly, Mona Vale, RNSH) Sydney South West AHS (Balmain, Bankstown, Bowral, Camden, Campbelltown, Canterbury, RPA) Greater Southern AHS3 ACT
<ol style="list-style-type: none"> <li>1. Grafton and north of Grafton will usually refer to Brisbane</li> <li>2. Referrals from Greater Western may go to Adelaide due to proximity.</li> <li>3. Referrals from Greater Southern may go to Royal Children's Melbourne due to proximity.</li> </ol>		

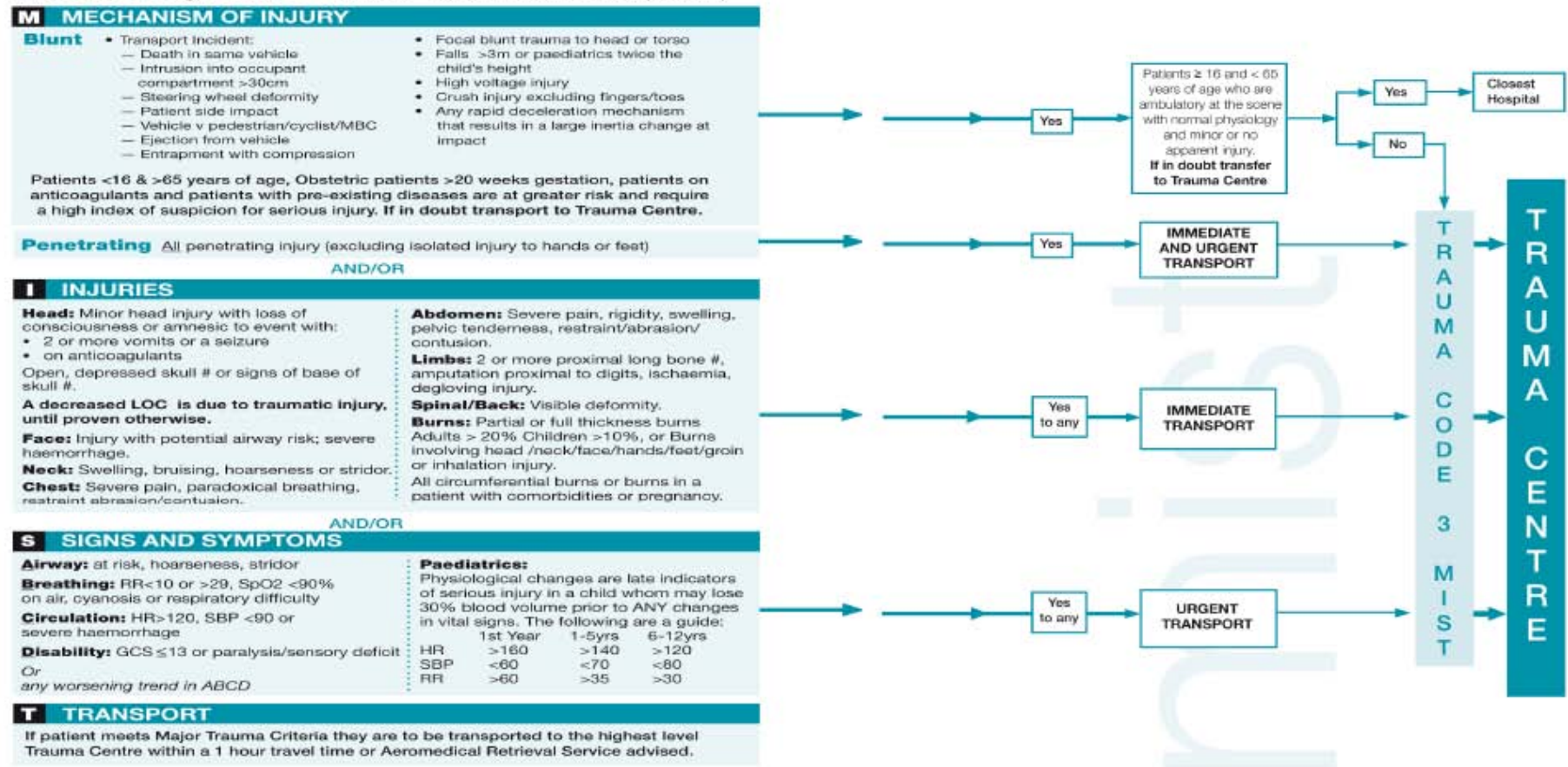
Where there is a need to train and up-skill staff the Area should liaise with the Trauma Network Co-ordinator and/or Trauma Clinical Nurse Consultant.



10.3.3 ASNSW Major Trauma Triage Tool

The accurate identification of patients with serious injury and their timely arrival at an appropriate hospital are crucial to the effectiveness of the trauma system. All trauma patients attended by the ASNSW are assessed according to the ASNSW Protocol T1 Pre-hospital Management of Major Trauma which is based on the MIST criteria to trigger a systemwide response to a patient suffering major trauma and a maximum sixty minute travel time to definitive care if required and clinically appropriate.

Trauma Triage Tool — Major Trauma Criteria (MIST)



## **10.4 NSW Rural Cardiac Catheterisation Laboratory Referrals**

The NSW Rural Health Plan (2002) provided for the establishment of cardiac catheter services for adults at Tamworth, Orange, Wagga Wagga, Coffs Harbour and Lismore. In the event of a critically ill patient requiring urgent inter-hospital transfer from a rural cardiac catheter service to a tertiary hospital then the patient will be transferred according to the NSW Critical Care Tertiary Referral Networks (Adults). Critically ill cardiac patients who require transfer for an urgent procedure (usually interventional cardiology or surgery) will be immediately transferred for this procedure, regardless of an available ICU or CCU bed.

AMRS will facilitate the transfer and, where an Intra-Aortic Balloon Pump (IABP) device is required AMRS, will provide its own device configured for aeromedical transport.

## **10.5 NSW Extra Corporeal Membrane Oxygenation (ECMO) Medical Retrieval Service**

For adults, an increasing demand for ECMO support has been observed for patients with severe respiratory failure, who are at the limits of conventional therapy. Improving survival rates of patients treated with ECMO have led to an increased demand for this support. Often these patients present to hospitals which do not have ECMO facilities and expertise resulting in a tertiary referral service performing an “ECMO heart - lung rescue”.

Patients who may be considered for ECMO are often too sick to safely transport with conventional equipment therefore the need arises to establish the patient on ECMO and stabilise their condition prior to transport. The safe management of an ECMO retrieval patient requires a coordinated response by the referring and receiving hospitals, ECMO team, Ambulance and the medical retrieval services.

For children in New South Wales, ECMO is provided at the Sydney Children’s Hospital and the Children’s Hospital at Westmead. Both these centres also refer patients to the Royal Children’s Hospital in Melbourne most commonly for non-cardiac patients where extended therapy is anticipated.

For adults, ECMO is provided at tertiary facilities in NSW with Level 6 Cardiothoracic and ICU services including:

- John Hunter Hospital
- Liverpool Hospital
- Prince of Wales Hospital
- Royal North Shore Hospital
- Royal Prince Alfred Hospital
- St Vincent’s Hospital
- St George Hospital
- Westmead Hospital

The primary reason for ECMO in these facilities is for cardiac surgery in adults however there has been an increasing incidence of ECMO being required to support or “rescue” adult patients in refractory respiratory failure.

Increasingly in adult cases, ASNSW is being called upon to transport an ECMO clinical team (3 persons) plus necessary equipment to metropolitan and rural based hospitals to stabilise patients on ECMO. After the patient is established on ECMO, the patient is then transported with a team of three (2 x retrieval, 1 x ECMO) to RPA or St Vincent's Hospital.

The three potential transport modalities available are road, helicopter and fixed wing. While road transport is a viable option using the ASNSW large capacity road vehicles a number of problems are encountered using this mode of transport due to the extended travel time. An adequate supply of oxygen, air, suction, and electrical power cannot be maintained for prolonged periods requiring multiple stops at health facilities to replenish these essential elements of ECMO therapy which in turn increases the risk of adverse incidents. The ASNSW AW-139 helicopters have been configured to enable ECMO retrievals.

St Vincent's Hospital and Royal Prince Alfred Hospital, in collaboration with AMRS, provide the ECMO referral and transfer service and ECMO retrieval team on alternate weeks. AMRS is notified of the active ECMO referral service. To organise the referral and transfer of a patient requiring rescue ECMO the following steps and conditions must be adhered to:

1. Early notification of a patient potentially requiring referral for ECMO is essential and should be undertaken in accordance with the "Indications for ECMO Referral" Guideline (page 20).
2. Initial contact is with AMRS who will then contact the active ECMO service (either the on-call General Intensive Care consultant at RPAH or the Cardiac Intensive Care consultant at SVH). The receiving hospital's ICU consultant would then discuss the case with the referring clinician, on-call cardiac surgeon and medical perfusionist.
3. The destination hospital (either SVH or RPAH) will be determined according to the patients underlying condition, required clinical/surgical intervention and access to an available ICU bed.

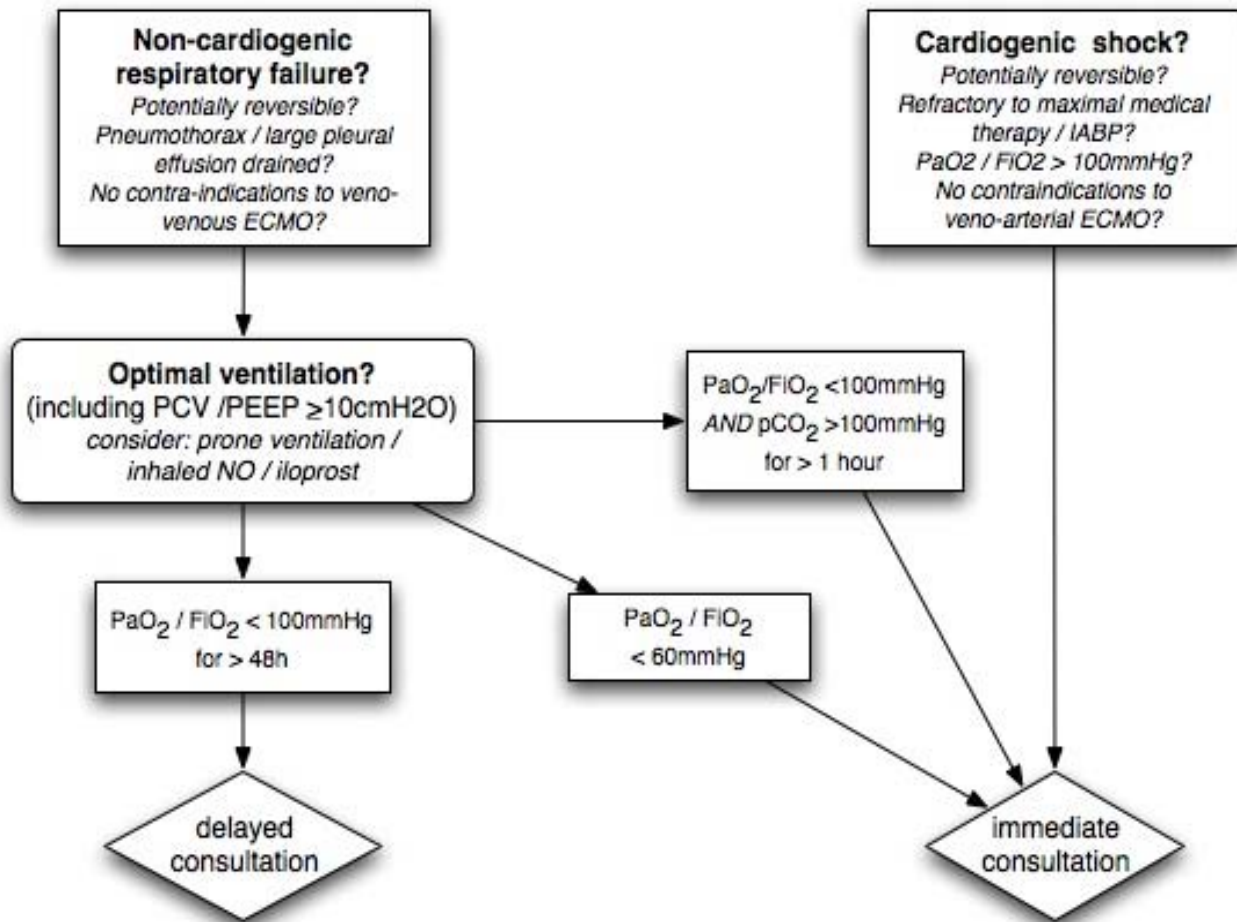
**AMRS is to be contacted to facilitate all adult ECMO referrals and transportation call: 1800 650 004**

Case selection and treatment protocols used during ECMO are now well defined by the international Extracorporeal Life Support Organisation (ELSO). The flow diagram outlines the indications for ECMO therapy and referral based on guidelines developed by ELSO and used internationally.

In response to the increasing demand for patient stabilisation on ECMO, medical retrieval and transfer, and prolonged ECMO support an expert clinical group formed in NSW to provide advice on service and resource requirements, and to develop the following Indications for ECMO Referral Guideline which is to be used by all referring clinicians.



INDICATIONS FOR ECMO REFERRAL



- Absolute contraindications to all forms of ECMO**
- \* Significant pre-existing co-morbidity, such as irreversible neurological condition, cirrhosis with ascites, encephalopathy, history of variceal bleeding, active malignancy with predicted limited survival, HIV.
  - \* Weight > 120kg
- Relative contraindications to all forms of ECMO**
- \* Age > 65
  - \* Multiple trauma with uncontrolled haemorrhage
  - \* Multiple organ failure
- Absolute contraindications to veno-venous ECMO (for respiratory failure)**
- \* Pulmonary hypertension (mPAP > 50mmHg)
  - \* Severe right or left heart failure (EF < 25%)
  - \* Cardiac arrest
- Relative contraindications to veno-venous ECMO**
- \* High pressure, high FiO<sub>2</sub> IPPV for > 1 week
- Absolute contraindications to veno-arterial ECMO (for cardiac failure)**
- \* Severe aortic valve regurgitation
  - \* Aortic dissection
- Relative contraindications to veno-arterial ECMO**
- \* Severe peripheral vascular disease

## **10.6 NSW High Risk Obstetric Referrals**

The NSW Critical Care Tertiary Referral Networks (Neonatal and High Risk Obstetric) are supported by the NSW Pregnancy and Newborn Services Network (PSN), the NSW Neonatal and Paediatric Emergency Transport Service (NETS), the Perinatal and Paediatric Resources System, Pregnancy Advice Line, evidence based practice and policy and guideline development along with statewide education resources.

It is expected that AHS will ensure the provision of clinical support, cooperation and appropriate education between units through current clinical and education staff.

When women have been identified as requiring referral to a high-risk maternity unit, clinicians should contact the Tertiary Referral Centre in their Network to discuss the care and transfer arrangements. Consultants at the Tertiary Referral centres should be readily available to discuss clinical issues. Notification of the ICU team, and communication with the medical retrieval team, should occur early to ensure all clinical support services are aware and available as required.

Critically injured pregnant women should be managed the same as non-pregnant injured adults and transferred directly to the most appropriate designated trauma facility in accordance with the Ambulance of NSW Protocol T1 for trauma triage, management and transportation. A secondary transfer of the pregnant patient to a facility that has obstetric and neonatal services can occur once considered clinically appropriate. Early notification to NETS is warranted in this situation.

The Pregnancy Advice Line can be contacted through NETS and the NETS clinicians will be available to provide clinical support and advice. NETS provides statewide coordination of neonatal and paediatric retrieval, and compliments the Perinatal Advice Line (PAL) in coordinating difficult or complex high-risk maternal referral and transfer. PAL is a roster of senior specialists from tertiary units who are available for clinical advice.

**To contact the Pregnancy Advice Line call NETS: 1300 36 2500**

High risk obstetric and neonatal care is provided by level 5 or 6 services. Clinicians will make the decision as to the most appropriate facility based on patient needs in conjunction with available beds and resources. Whilst predominantly providing neonatal surgical services, the neonatal intensive care cots at Sydney Children's Hospital and The Children's Hospital at Westmead will be considered when maternity beds are identified at The Royal Hospital for Women and Westmead Hospital, due to campus collocation.

The Greater Southern Area Health Service, Greater Western Area Health Service and North Coast Area Health Service have tertiary obstetric and neonatal links with facilities in the Sydney metropolitan area. It is acknowledged that these Area Health Services and northern sections of Hunter New England also have appropriate cross border networked referral arrangements with tertiary services in Queensland, South Australia, Victoria and the ACT. The NSW Critical Care Tertiary Referrals Networks (Neonatal and High-Risk Obstetrics) Policy Directive and the NSW Critical Care Tertiary Referrals Networks (Paediatrics) Policy Directive will become available in 2010 and will provide detailed clinical guidelines on the tertiary referral of high-risk obstetric and paediatric patients.

## 11 NSW Statewide Default Adult ICU Bed Policy

Access to emergency care and/or urgent surgical intervention for time-critical patients is not to be delayed due to no-available ICU bed. AMRS should be contacted immediately for such patients.

**In time urgent situations, the AMRS has the authority to transport the patient directly to the linked tertiary hospital designated by the default hospital matrix regardless of bed state. If there is a closer facility that can provide the time-urgent treatment, AMRS may elect to transport the patient there.**

Each Area Health Service is ultimately responsible for meeting the intensive care needs (except for super-specialty services) of that Area and is responsible for a linked rural Area Health Service, where specified. In addition, each Area Health Service has a responsibility to ensure that all options for placement of the patient within the Area have been explored and that all appropriate transfers from Intensive Care Units to inpatient wards have been made.

The Area Director of Clinical Operations (DCO) is responsible for ensuring formalised intra-Area and inter-Area referral arrangements exist for critically ill patients needing a higher level of definitive care and for non-critically ill patients requiring referral for specialist care. Clinical referral and support processes are transparent and effectively communicated to all staff to ensure patients can access definitive care in an appropriate timeframe. The AMRS may contact the DCO where necessary to resolve inter-Area and non urgent transfers.

In situations of high demand, where there are **no appropriate adult intensive care beds available across the system for a non-urgent critical patient** then the Default Adult Intensive Care Bed Policy may be invoked. This step is taken only after thorough assessment has been undertaken of the intensive care services capacity and intra/inter-Area Health Service critical care referral networks to ensure all potential referral options have been exhausted.

In the event of the default system being activated, the tertiary referral hospital designated by the **NSW Intensive Care Default Hospital Matrix** will be responsible for providing critical care, irrespective of bed status, to a specified group of referral hospitals.

The default matrix has been developed following consultation with Area Health Services, the NSW Medical Retrieval Committee, Critical Care Health Priority Taskforce, Intensive Care Taskforce and other key stakeholders. The default matrix is based on a hospital-to-hospital network and does not necessarily follow the normal Area Critical Care Referral Networks. In specific cases the referring consultant, medical retrieval consultant and the receiving consultant may decide to refer a patient to a different hospital which is considered more clinically appropriate for the patient's definitive care.

### 11.1 Invoking the Default Adult ICU Bed Policy:

- The referring hospital contacts their intra-Area ICU/s to verify there is no capacity to accept the patient within Area.
- All units are to review exit blocked beds, liaise with the hospital executive to have them cleared and update CCRS
- The referring hospital verifies that there are no appropriate available ICU beds as shown on CCRS.
- The referring hospital contacts AMRS who will explore any alternative destination for an ICU/HDU bed.
- Where no appropriate available ICU bed can be identified across the system the on-duty Medical Retrieval Consultant at AMRS will invoke the Default Adult ICU Bed Policy and contact the receiving ICU Consultant.
- The designated tertiary ICU will accept the patient, irrespective of bed status, as per the Default ICU Matrix.
- AMRS will advise the Director, Statewide Services Development Branch
- If AMRS becomes aware of any exit block issues affecting access to ICU/HDU beds, they will notify the Director, Statewide Services Development Branch who will liaise with the relevant AHS Executive to address these issues.

Fundamental to this procedure being activated is the principle that:

**Where a patient requires time-critical care, not available at the referring hospital, then the patient must be transferred immediately to the facility designated by the Default Hospital Matrix that is able to provide appropriate emergency treatment irrespective of bed status.**

**APPENDIX 1 Clinical Referral Networks**

<b>JOHN HUNTER HOSPITAL</b>	
<i>Hunter New England Area Health Service</i>	
<ul style="list-style-type: none"> <li>• Armidale</li> <li>• Barraba</li> <li>• Belmont</li> <li>• Bingara</li> <li>• Boggabri</li> <li>• Bulahdelah</li> <li>• Cessnock</li> <li>• Denman</li> <li>• Dungog</li> <li>• Glen Innes</li> <li>• Gloucester</li> <li>• Gunnedah</li> <li>• Guyra</li> <li>• Inverell</li> <li>• James Fletcher</li> <li>• Kurri Kurri</li> <li>• Lake Macquarie (private)</li> <li>• Maitland</li> <li>• Manilla</li> <li>• Manning</li> <li>• Merriwa</li> <li>• Moree</li> <li>• Morisset</li> <li>• Murrurundi</li> <li>• Muswellbrook</li> </ul>	<ul style="list-style-type: none"> <li>• Narrabri</li> <li>• Calvary Mater Newcastle</li> <li>• Quirindi</li> <li>• Scone</li> <li>• Singleton</li> <li>• Tamworth</li> <li>• Taree</li> <li>• Tenterfield</li> <li>• Tingha</li> <li>• Tomaree Community (formerly Nelson Bay Polyclinic)</li> <li>• Vegetable Creek (Emmaville)</li> <li>• Walcha</li> <li>• Warialda</li> <li>• Wee Waa</li> <li>• Werris Creek</li> </ul>
<i>North Coast Area Health Service</i>	
Owing to proximity, some northern NCAHS Hospitals also maintain a clinical referral network with Queensland.	
<ul style="list-style-type: none"> <li>• Ballina</li> <li>• Bellingen</li> <li>• Bonalbo</li> <li>• Byron</li> <li>• Campbell</li> <li>• Casino</li> <li>• Coffs Harbour</li> <li>• Dorrigo</li> <li>• Grafton</li> <li>• Kyogle</li> <li>• Lismore</li> </ul>	<ul style="list-style-type: none"> <li>• Maclean</li> <li>• Macleay/Kempsey</li> <li>• Macksville</li> <li>• Mullumbimby</li> <li>• Murwillumbah</li> <li>• Nimbin</li> <li>• Port Macquarie</li> <li>• Riverlands</li> <li>• Tweed Heads</li> <li>• Urbenville</li> <li>• Wauchope</li> </ul>

**Clinical Referral Networks**

**ROYAL NORTH SHORE HOSPITAL**

*Northern Sydney Central Coast  
Area Health Service*

- Castlecrag (Private)
- Dalcross (Private)
- Gosford
- Hornsby
- Manly
- Mater Misericordiae (Private)
- Mona Vale
- North Shore (Private)
- Royal Rehabilitation
- Ryde
- Sydney Adventist (Private)
- Woy Woy
- Wyong

**WESTMEAD HOSPITAL**

*Sydney West Area Health Service*

- Auburn
- Blacktown
- Baulkham Hills (Private)
- Mt Druitt
- St Joseph's Auburn
- Westmead (Private)

**NEPEAN HOSPITAL**

*Sydney West Area Health Service*

- Blue Mountains
- Hawkesbury
- Lithgow
- Portland
- Springwood

**Clinical Referral Networks**

<b>CONCORD HOSPITAL</b>	
<i>Sydney South West Area Health Service</i>	
<ul style="list-style-type: none"> <li>• Canterbury</li> </ul>	
<b>LIVERPOOL HOSPITAL</b>	
<i>Sydney South West Area Health Service</i>	
<ul style="list-style-type: none"> <li>• Bowral</li> <li>• Campbelltown</li> <li>• Camden</li> <li>• Bankstown/Lidcombe</li> <li>• Fairfield</li> </ul>	
<b>Referral Hospital:</b>	<b>ROYAL PRINCE ALFRED HOSPITAL</b>
<i>Sydney South West Area Health Service</i>	<i>Greater Western<sup>1</sup> Area Health Service</i>
<ul style="list-style-type: none"> <li>• Balmain</li> </ul>	<ul style="list-style-type: none"> <li>• Balranald</li> <li>• Baradine</li> <li>• Bathurst</li> <li>• Blayney</li> <li>• Bourke</li> <li>• Brewarrina</li> <li>• Broken Hill</li> <li>• Canowindra</li> <li>• Cobar</li> <li>• Collarenebri</li> <li>• Coolah</li> <li>• Condobolin</li> <li>• Coonabarabran</li> <li>• Coonamble</li> <li>• Cowra</li> <li>• Cudal</li> <li>• Dubbo</li> <li>• Dunedoo</li> <li>• Eugowra</li> <li>• Forbes</li> <li>• Gilgandra</li> <li>• Goodooga</li> <li>• Grenfell</li> <li>• Gulgong</li> <li>• Gulargambone</li> <li>• Ivanhoe</li> <li>• Lake Cargelligo</li> <li>• Lightning Ridge</li> <li>• Molong</li> <li>• Mudgee</li> <li>• Narromine</li> <li>• Nyngan</li> <li>• Oberon</li> <li>• Orange</li> <li>• Parkes</li> <li>• Peak Hill</li> <li>• Rylstone</li> <li>• Tibooburra</li> <li>• Tottenham</li> <li>• Trangie</li> <li>• Trundle</li> <li>• Tullamore</li> <li>• Walgett</li> <li>• Warren</li> <li>• Wellington</li> <li>• Wentworth</li> <li>• White Cliffs</li> <li>• Wilcannia</li> </ul>

1. Owing to proximity, GWAHS maintains a clinical referral network with South Australia.



**Clinical Referral Networks**

<b>PRINCE OF WALES HOSPITAL</b>	
<i>Sydney South East Illawarra Area Health Service</i>	<i>Greater Southern Area Health Service</i>
<ul style="list-style-type: none"> <li>• Prince of Wales (Private)</li> </ul>	<ul style="list-style-type: none"> <li>• Boorowa</li> <li>• Crookwell</li> <li>• Goulburn</li> <li>• Murrumburrah-Harden</li> <li>• Young</li> </ul>
<b>ST VINCENT'S HOSPITAL</b>	
<i>Sydney South East Illawarra Area Health Service</i>	<i>Greater Southern Area Health Service</i>
<ul style="list-style-type: none"> <li>• St Vincent's (Private)</li> <li>• Sydney/Sydney Eye</li> </ul>	<ul style="list-style-type: none"> <li>• Coolamon</li> <li>• Cootumundra</li> <li>• Griffith</li> <li>• Gundagai</li> <li>• Hay</li> <li>• Hilston</li> <li>• Junee</li> <li>• Leeton</li> <li>• Lockhart</li> <li>• Narrandera</li> <li>• Temora</li> <li>• Tumbarumba</li> <li>• Wagga Wagga</li> <li>• West Wyalong</li> </ul>
<b>ST GEORGE HOSPITAL</b>	
<i>Sydney South East Illawarra Area Health Service</i>	<i>Greater Southern Area Health Service</i>
<ul style="list-style-type: none"> <li>• Bulli</li> <li>• Kareena (Private)</li> <li>• Milton Ulladulla</li> <li>• Port Kembla</li> <li>• Shell Harbour</li> <li>• Shoalhaven</li> <li>• St George (Private)</li> <li>• Sutherland</li> <li>• Wollongong</li> </ul>	<ul style="list-style-type: none"> <li>• Barham</li> <li>• Berrigen</li> <li>• Corowa</li> <li>• Culcairn</li> <li>• Deniliquin</li> <li>• Finley</li> <li>• Henty</li> <li>• Holbrook</li> <li>• Jerilderie</li> <li>• Tocumwal</li> <li>• NB. Albury is networked with clinical services in Victoria however referral to a NSW facility may be required due to clinical need.</li> </ul>



**Clinical Referral Networks**

<b>THE CANBERRA HOSPITAL</b>	
<i>Greater Southern Area Health Service</i>	
<ul style="list-style-type: none"><li>• Batemans Bay</li><li>• Batlow</li><li>• Bega</li><li>• Bombala</li><li>• Braidwood</li><li>• Cooma</li></ul>	<ul style="list-style-type: none"><li>• Delegate</li><li>• Moruya</li><li>• Pambula</li><li>• Queanbeyan</li><li>• Tumut</li><li>• Yass</li></ul>

## APPENDIX 2 Clinical Resource Documents & References

Joint Faculty of Intensive Care Medicine, Australian & New Zealand College of Anaesthetists and the Australasian College of Emergency Medicine: Minimum Standards for Transport of Critically Ill Patients.

[http://www.jficm.anzca.edu.au/publications/policy/ic10\\_2003.htm](http://www.jficm.anzca.edu.au/publications/policy/ic10_2003.htm)

Joint Faculty of Intensive Care Medicine, Australian & New Zealand College of Anaesthetists and the Australasian College of Emergency Medicine: Minimum Standards for Intra-hospital Transport of Critically Ill Patients.

[http://www.anzca.edu.au/publications/profdocs/profstandards/ps39\\_2003.htm](http://www.anzca.edu.au/publications/profdocs/profstandards/ps39_2003.htm)

ICCMU Intensive Care Services Statewide Clinical Guidelines

<http://intensivecare.hsnet.nsw.gov.au/five/staffonly/guidelines.php>

NSW Rural Emergency Clinical Guidelines (Adult) 2007

[http://www.health.nsw.gov.au/policies/gl/2007/GL2007\\_005.html](http://www.health.nsw.gov.au/policies/gl/2007/GL2007_005.html)

NSW Severe Burn Injury Service - Burn Transfer Guidelines 2008

[http://www.health.nsw.gov.au/policies/gl/2008/GL2008\\_012.html](http://www.health.nsw.gov.au/policies/gl/2008/GL2008_012.html)

NSW Health (2008) *Between the Flags Project- The Way Forward (Keeping Patients Safe)*, Clinical Excellence Commission, Sydney, Australia.

<http://www.cec.health.nsw.gov.au/files/between-the-flags/publications/the-way-forward.pdf>

NSW Health (2009) *Selected Specialty and Statewide Service Plans- NSW Trauma Services* NSW Health, Sydney, Australia

[http://www.health.nsw.gov.au/pubs/2009/trauma\\_services.html](http://www.health.nsw.gov.au/pubs/2009/trauma_services.html)



**NSW Aeromedical and Medical Retrieval Services (AMRS)**

**ADULT CRITICAL CARE TRANSFERS**

Patient Label

Patient Name \_\_\_\_\_ Age \_\_\_\_\_ Weight (kgs) \_\_\_\_\_  
 Referring Hosp \_\_\_\_\_ Referring Doctor \_\_\_\_\_  
 Receiving Hosp \_\_\_\_\_ Rec Doctor \_\_\_\_\_ Ward \_\_\_\_\_ Date \_\_\_\_\_

**AIRWAY**

Consider if ETT required  Correct ETT position  ETT secure  NGT/OGT if intubated or vomiting  Consider hard C collar

**BREATHING**

Resp Rate \_\_\_\_\_ SpO2 \_\_\_\_\_ FiO2 \_\_\_\_\_ Ventilation Parameters \_\_\_\_\_ ETCO2 \_\_\_\_\_ PAWP \_\_\_\_\_  
 Consider if ICC/s required  Correct ICC/s position and function

**CIRCULATION**

Pulse \_\_\_\_\_ Blood Pressure \_\_\_\_\_ Urine Output (IDC) \_\_\_\_\_ Core Temperature \_\_\_\_\_ Arrhythmias \_\_\_\_\_  
 Peripheral (large) IVs x2  All maintenance fluids/blood on pumpsets  Patient and fluids warmed Total fluids IN \_\_\_\_\_  
 Pelvic stabilisation/limb splints  Consider Central line  Consider Arterial line

**DISABILITY**

GCS \_\_\_\_\_ Pupils \_\_\_\_\_ Focal Neurology \_\_\_\_\_ Seizures \_\_\_\_\_

**DIAGNOSTICS**

X-rays \_\_\_\_\_ CT/Scan/s \_\_\_\_\_ ABG \_\_\_\_\_ K / Cr \_\_\_\_\_ ECG \_\_\_\_\_  
 BSL \_\_\_\_\_ Hb \_\_\_\_\_ Other \_\_\_\_\_

**INFUSIONS**

Sedation?  Morphine/Midazolam (50mg:50mg:to total 50ml)  Propofol (40ml neat in 50ml syringe)  Nil  
 Others  
 1. Drug \_\_\_\_\_ Concentration \_\_\_\_\_ Rate \_\_\_\_\_  
 2. Drug \_\_\_\_\_ Concentration \_\_\_\_\_ Rate \_\_\_\_\_  
 3. Drug \_\_\_\_\_ Concentration \_\_\_\_\_ Rate \_\_\_\_\_

**DOCUMENTATION**

Summary letter  
 Photocopies of all notes including ECG's and Ambulance Cases-sheets  
 All relevant X-rays and CT scans – originals or copies

**STABILITY**

Is the patient's overall condition  Improving?  Stable?  Deteriorating?  
 Is there anything more I can do to help this patient without delaying transfer?  
 Clinical and transport advice is available around the clock from an experienced Retrieval Physician for critically ill adult transfers – Ring 1800 650 004.