

Critical Care Tertiary Referral Networks (Perinatal)

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Summary This Policy Directive relates to critically ill neonates and women with high risk pregnancies that require inter-hospital transfer, and should be read in conjunction with complement Policy Directives PD2010_021 Critical Care Tertiary Referral Networks & Transfer of Care (Adult) and PD2010_030 NSW Tertiary Referral Network (Paediatrics).

Replaces Doc. No. Newborn Stabilisation Prior to Transport (Guidelines for Facilities for the) [PD2005_107]
Emergency Obstetric and Neonatal Referrals - Policy [PD2005_156]

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

Audience Emergency Depts, Maternity Units, Neonatal Services

Distributed to Public Health System, Divisions of General Practice, Government Medical Officers, NSW Ambulance Service, NSW Department of Health, Private Hospitals and Day Procedure Centres, Tertiary Education Institutes

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Status Active

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This Policy Directive may be varied, withdrawn or replaced at any time.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.

CRITICAL CARE TERTIARY REFERRAL NETWORKS (PERINATAL)

PURPOSE

This Policy Directive relates to critically ill neonates and women with high risk pregnancies that require inter-hospital transfer, and should be read in conjunction with the Policy Directive PD2006_046; Critical Care Adult Tertiary Referral Networks - Intensive Care Default Policy

Pursuing 'best practice' perinatal care across NSW requires services to embrace an integrated model of maternity care that recognises the need for effectively linked and networked services across primary (role delineation 1 to 3), secondary (role delineation 3 to 5) and tertiary (role delineation 5 and 6) levels of care. This Policy Directive does not replace the requirement for Area Health Services to ensure the establishment and maintenance of tiered networks for the provision of timely access to higher levels of obstetric and neonatal support for women and babies as the need arises.

The NSW Critical Care Tertiary Referral Networks (Perinatal) Policy Directive defines the links between referring hospitals and tertiary referral hospitals, taking into account unit: capacity; AHS birth rates; and, ensuring functional clinical referral relationships.

MANDATORY REQUIREMENTS

Each AHS is required to make certain that escalation plans are in place to ensure the appropriate accommodation of a neonate or a pregnant woman. In the first instance, local escalation plans should promote the tiered network of services within the Area Health Service and the Perinatal Services Network. In circumstances where it is identified that there are beds/cots required beyond the local Network, the local escalation plans should also articulate procedures for clinicians to seek advice and/or support beyond their designated Network. This will be the responsibility of a designated senior Area Health Service position.

Local escalation plans should include direction for clinicians regarding review of all inpatients to determine whether internal transfer of patients within a facility, or across facilities, would improve access to required beds. Where, after thorough exploration of local resources, it is determined that there are no locally available, appropriate resources for patient management, clinicians will escalate these requirements through the NSW neonatal and paediatric Emergency Transport Service (NETS) and the Perinatal Advice Line (PAL) where advice, or transfer, is required.

A tertiary referral hospital designated by the NSW Perinatal Default Matrix must take responsibility for providing critical care, irrespective of bed status, to a specified group of referral hospitals when the Default Perinatal Policy is invoked.

IMPLEMENTATION

Area Health Service Chief Executives are responsible for:

- Meeting the perinatal 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 critically ill neonates and at risk mothers within the referral network have been explored and that all appropriate transfers from NIC and maternity Units within and outside the Area to inpatient wards have been made.

- Ensuring formalised intra-Area and inter-Area referral arrangements are in place for critically ill neonates and pregnant women 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 neonates and women with high-risk pregnancies where required.
- Ensuring that clinical referral and support processes are transparent and effectively communicated to all staff to ensure patients can access timely definitive care. 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 this Policy Directive.

REVISION HISTORY

Version	Approved by	Amendment notes
April 1997 (PD2005_107)	Director-General	Previously Circular 97/38
January 2005 (PD2005_156)	Director-General	Previously Circular 99/71
August 2010 (PD2010_069)	Deputy Director-General Strategic Development	Revised policy replacing PD2005_107 & PD2005_156.

ATTACHMENTS

1. NSW Critical Care tertiary Referral Networks (Perinatal): Procedures.

Issue date: November 2010

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1 BACKGROUND

1.1 Introduction

Owing to the high level of complexity and specialist service requirements, neonatal intensive care and high risk obstetric services are not located in all Area Health Services. However, these services are available to all residents as they are provided through a formalised state network. This statewide network has been in operation since the development of the NSW Pregnancy and newborn Services Network (PSN) in 1990; this network includes the ACT as a partner. In order to provide stronger linkages between referral and other facilities, maternal and newborn service networks will be established in collaboration with clinicians, to support an integrated statewide approach.

This Policy Directive relates to critically ill neonates and women with high risk pregnancies that require inter-hospital transfer, and should be read in conjunction with the Policy Directive PD2006_046; Critical Care Adult Tertiary Referral Networks - Intensive Care Default Policy

This Policy Directive supersedes PD2005_107 Newborn Stabilisation Prior to Transport (Guidelines for Facilities for the) and PD2005_156 Emergency Obstetric and Neonatal Referrals - Policy.

Pursuing 'best practice' perinatal care across NSW requires services to embrace an integrated model of maternity care that recognises the need for effectively linked and networked services across primary (role delineation 1 to 2), secondary (role delineation 3 to 4) and tertiary (role delineation 5 and 6) levels of care.

This Policy Directive does not replace the requirement for Area Health Services to ensure the establishment and maintenance of tiered networks for the provision of timely access to higher levels of obstetric and neonatal support for women and babies as the need arises. The effective operation of the Statewide Perinatal Network relies on the intra- and inter-Area tiered Networks.

The NSW Critical Care Tertiary Referral Networks (Perinatal) Policy Directive defines the links between referring hospitals and tertiary referral hospitals, taking into account unit: capacity; AHS birth rates; and, ensuring functional clinical referral relationships.

Operating in conjunction with this Policy Directive, are clinical super-specialty referral networks which are also defined within this policy directive and include:

1. NSW Severe Burn Injury Service (Adult)
2. NSW Acute Spinal Cord Injury Referrals (Adult)
3. NSW Major Trauma Referrals (Adult)
4. NSW Critical Care Tertiary Referral Networks (Adults)
5. NSW Critical Care Tertiary Referral Networks (Paediatrics)

Each AHS is required to ensure that escalation plans are in place to ensure the appropriate accommodation of a neonate or a pregnant woman. In the first instance, local escalation plans should promote the tiered network of services within the Area Health Service and the Perinatal Services Network. In circumstances where it is identified that there are clinical services required beyond the local Network, the local escalation plans should also articulate procedures for clinicians to seek advice and/or support beyond their designated Network. This will be the responsibility of a designated senior Area Health Service position.

Local escalation plans should include direction for clinicians regarding review of all inpatients to determine whether internal transfer of patients within a facility, or across facilities, would improve access to required beds. Where, after thorough exploration of local Network resources, it is determined that there are no available, appropriate resources for patient management, clinicians will escalate these requirements through the Neonatal and paediatric Emergency Transport Service (NETS) and the Perinatal Advice Line (PAL) where advice, or transfer, is required.

NETS provides statewide coordination of neonatal and paediatric retrieval, and complements the Perinatal Advice Line (PAL) in coordinating difficult or complex high-risk maternal referral consultation and transfer. Women with high obstetric risks who live near NSW borders may be appropriately referred, via mechanisms developed for obstetric transfer, with the adjoining state. Patient transport is arranged by the referring facility in consultation with the NSW Ambulance Service or through NETS.

**To Contact NETS
Call: 1300 36 2500**

All maternity hospitals and other health care facilities have the potential to deal with obstetric patients and as such should have procedures in place for the co-ordination of emergency inter-hospital transfer of obstetric and/or newborn patients. Where there are complications of pregnancy or labour (including preterm onset of labour), it is essential that the clinician responsible is aware of appropriate processes for escalation. If the clinical issue is beyond the normal scope of practice for the facility, the advice of obstetric and neonatal clinicians in a higher delineated unit should be sought. Where a clinician has determined that a patient needs to be transferred to receive the most appropriate care, the parent(s) should be aware of current information including the infant's likely chance of survival; options for care around labour and birth; care of the infant immediately after birth; and, types of ongoing care that the baby may require. The Outcomes for Premature Babies Book, produced by PSN may be a useful resource for clinicians: <http://www.psn.org.au/images/stories/outcomesprematurebabies.pdf>

The NSW Critical Care Tertiary Referral Networks (Perinatal) are supported by a number of organisations; policies and procedures; and, education supports. These include: the NSW Pregnancy and Newborn Services Network (PSN); the Neonatal and paediatric Emergency Transport Service (NETS); the Perinatal and Paediatric Resources System (PPRS); the Pregnancy Advice Line (PAL); as well as evidence based practice; policy; and, guideline development; and statewide education resources.

It is expected that AHSs will ensure the provision of clinical support, cooperation and appropriate education between units through current clinical and education staff. This process will be facilitated through the tiered maternity networks which are currently under development. It is acknowledged that the introduction of the proposed Local Hospital Networks may have an impact on the composition of the perinatal networks in NSW. As that work is progressed, and the perinatal networks finalised, it is acknowledged that there will be a requirement to revise this Policy Directive.

When women have been identified as requiring referral to a higher role delineated 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; The Pregnancy Advice Line is a roster of senior obstetric specialists with high-risk pregnancy expertise from tertiary units who are available for clinical advice as a back-up to the network tertiary referral centre. If neonatal transport needs consideration, the NETS consultant should be included in the discussion, through teleconference facilitated by NETS.

Appendix One details the requirements for facilities for the stabilisation of patients prior to medical retrieval.

1.2 Key definitions

Neonatal and paediatric Emergency Transport Service - NETS is a statewide service of NSW Health that provides expert clinical advice, clinical co-ordination, stabilisation, and emergency treatment and inter hospital retrieval for very sick babies and children up to the age of 16 years; 24 hours a day, 7 days a week.

Perinatal and Paediatric Resource Service (PPRS) - The Perinatal and Paediatric Resources System (PPRS) is a statewide database showing available high-risk obstetric, neonatal and paediatric clinical resources in NSW and ACT. The site is updated regularly (two to three times daily) by all tertiary perinatal and paediatric hospitals in NSW and ACT and is pivotal to the day to day clinical functioning of the NSW Pregnancy and Newborn Services Network, the NSW Paediatric Intensive Care Network, and their medical retrieval arm, the NSW neonatal and paediatric Emergency Transport Service (NETS).

Pregnancy and newborn Services Network (PSN) - The PSN is multidisciplinary organisation of clinicians striving to provide the best care for high risk pregnant women and newborn infants. The aim of the NSW Pregnancy and Newborn Services Network is to improve the process and outcome of maternal and neonatal care in NSW, especially to those women and/or babies at risk of an adverse outcome, through clinical co-ordination, education and research.

Pregnancy Advice Line (PAL) - is a telephone hotline available to provide clinicians and ambulance staff with advice on the management and emergency transfer of women who require intensive care during pregnancy.

Pregnancy Advice Line (PAL) Consultant - fetomaternal specialists and obstetricians with an interest in high risk obstetrics from Level 6 obstetric hospitals in New South Wales and Australian Capital Territory who provide the telephone advice.

Role Delineation - Role delineation identifies the level of clinical complexity that can be safely managed with a clinical service based on the clinical support services available at the facility.

Tiered Maternity Networks – The organisation of maternity services from low risk to high risk in appropriately resources facilities. Role delineations of maternity services range from 1 to 6. The tiered maternity networks reflect complex and the inter-dependent relationships across clinical maternity services. The tiered maternity networks provide guidance for escalation when risk factors are identified beyond the designated role delineation of the local maternity service.

2 High Risk Obstetric Referral Networks and Neonatal Intensive Care

High risk obstetric and neonatal care may be provided in a level 5 or 6 facility, as described by the NSW Guide to the Role Delineation of Health Services. Clinicians will make the decision as to the most appropriate facility for care, based on patient needs in conjunction with available beds and resources.

Whilst recognising the Statewide remit of the NSW Neonatal Network, and that access for all high-risk babies and mothers is the priority, each referral hospital has a primary responsibility for provision of advice and accepting referrals from the associated group of hospitals. This list should be made readily available to all clinical staff likely to receive calls.

The tables below identify hospitals and the tertiary referral hospitals which are the primary source of advice and referral networks.

Referral Hospital: Royal North Shore Hospital	
<ul style="list-style-type: none"> • Gosford • Hornsby • Manly/ Mona Vale • Ryde • Wyong <p>Private</p> <ul style="list-style-type: none"> • Mater • North Shore • North Gosford • Sydney Adventist Hospital 	<ul style="list-style-type: none"> • Cobar • Collarenebri • Coonabarabran • Coonamble • Goodooga • Lightning Ridge • Narromine • Walgett <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Usually refer to Adelaide:</p> <ul style="list-style-type: none"> • Bourke </div>

Referral Hospitals: Westmead & Nepean Hospitals		
Nepean		Westmead
<ul style="list-style-type: none"> • Blue Mountains • Hawkesbury • Lithgow • Bathurst • Condobolin • Dubbo • Dunedoo • Forbes • Gilgandra • Lake Cargelligo • Mudgee • Gulgong 	<ul style="list-style-type: none"> • Oberon • Orange • Parkes • Wellington <p><u>Private</u></p> <ul style="list-style-type: none"> • Nepean 	<ul style="list-style-type: none"> • Auburn • Blacktown <p>Private</p> <ul style="list-style-type: none"> • Norwest • Westmead

Referral Hospital: John Hunter Hospital	
<ul style="list-style-type: none"> • Armidale • Belmont • Glen Innes • Gloucester • Gunnedah • Inverell • Maitland • Manilla • Moree • Muswellbrook • Narrabri • Singleton • Tamworth • Quirindi • Wee Waa • Coffs Harbour 	<ul style="list-style-type: none"> • Grafton • Kempsey • Manning • Port Macquarie • Scott Memorial • Walcha <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>North of Grafton will usually refer to Brisbane, owing to proximity.</p> <ul style="list-style-type: none"> • Ballina • Byron Bay • Casino • Lismore • Murwillumbah • Mullumbimby • Tweed Heads </div>
<p>Private</p> <ul style="list-style-type: none"> • Maitland • Newcastle Private 	<p>Private:</p> <ul style="list-style-type: none"> • St Vincent's Lismore • Baringa

Referral Hospitals: Royal Prince Alfred & Liverpool Hospitals	
Liverpool	Royal Prince Alfred (RPA)
<ul style="list-style-type: none"> • Bowral • Camden • Campbelltown • Fairfield • Bankstown/Lidcombe 	<ul style="list-style-type: none"> • Balmain - emergency only • Canterbury • Concord - emergency only • Griffith • Hay • Narrandera • Leeton
<p>Private:</p> <ul style="list-style-type: none"> • Sydney South West Private 	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>usually refer to Adelaide</p> <ul style="list-style-type: none"> • Broken Hill </div>

Referral Hospital: Royal Hospital for Women	
<ul style="list-style-type: none"> • Milton Ulladulla • Shoalhaven and District • St George • St Vincent's - emergency only • Sutherland • Wollongong <p>Private:</p> <ul style="list-style-type: none"> • Calvary Hurstville • Kareena • Prince of Wales • St George Private • Figtree Private (Illawarra) 	<div style="border: 2px solid black; padding: 10px; width: fit-content; margin: auto;"> <p>usually refer to Melbourne</p> <ul style="list-style-type: none"> • Albury • Cowra • Deniliquin </div>

Referral Hospital: The Canberra Hospital (TCH)	
<p>TCH provide support for</p> <ul style="list-style-type: none"> • Calvary <p>Private:</p> <ul style="list-style-type: none"> • Calvary Private • John James Private within ACT 	<p>and in NSW as follows:</p> <ul style="list-style-type: none"> • Batemans Bay • Bega • Bombala • Cooma • Cootamundra • Goulburn • Moruya • Pambula • Queanbeyan • Temora • Tumut • Wagga Wagga • Young <p>Private:</p> <ul style="list-style-type: none"> • Mercy Care Centre, Young • Calvary – Wagga Wagga

Whilst predominantly providing neonatal surgical services, the neonatal intensive care beds at **Sydney Children's Hospital** and **The Children's Hospital at Westmead** should also be considered when maternity beds are identified at The Royal Hospital for Women and Westmead Hospital, due to campus co-location.

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 the Hunter New England Area Health Service also have appropriate cross border relationships, owing to proximity, to tertiary critical care services in Queensland, South Australia, Victoria and the ACT. These linkages are appropriate and supported by NSW Health.

In specific cases, the referring consultant, medical retrieval consultant and the receiving consultant may decide to refer the woman or neonate to another hospital which is considered more clinically appropriate for the woman or neonate's definitive care. Wherever possible, the woman or parent(s) should be included in these discussions.

3 NSW Statewide Default Paediatric and Neonatal Intensive Care and High Risk Obstetric Bed Policy

Each Area Health Service with tertiary neonatal and obstetric services is required to ensure that all options for placement of critically ill neonates and at risk mothers within the referral network have been explored and that all appropriate transfers from NIC and maternity Units within and outside the Area to inpatient wards have been made.

In situations where it needs to be declared that a combination of no neonatal intensive care and/or high risk obstetric beds are available and a tertiary transfer is necessary, then the Default Perinatal Policy may be invoked. This step is taken only after thorough assessment of statewide Neonatal Intensive Care and High Risk Maternity services capacity and intra-Area default mechanisms within the appropriate Critical Care Tertiary Referral Networks for Perinatal Care.

However, fundamental to this procedure being activated is the principle that:

Where the condition of a patient or fetus is critical and requires immediate emergency treatment, then the process of initiating transfer of the patient must start without delay; regardless of bed issues. If in any doubt, transfer should be to the facility designated by the **NSW Statewide Default ICU Matrix – Perinatal** that is able to provide appropriate emergency treatment irrespective of bed status. This can be addressed following the initiation of emergency care.

In the event of the default system being activated, a referral hospital will be designated as the hospital responsible to provide critical care, irrespective of bed status, as specified in the **NSW Statewide Default ICU Matrix – Perinatal**. This matrix has been developed following consultation with Area Health Services, the Neonatal and paediatric Emergency Transport Service, the Paediatric Intensive Care Advisory Group, the Pregnancy and newborn Service Network, the High Risk Obstetric Group, Maternal & Perinatal Health Priority Taskforce, Neonatal Intensive Care Unit Managers Group and other key stakeholders.

The referring hospital will call the Obstetric or Neonatal Unit at the default matrix tertiary hospital to discuss the patient and arrange appropriate transfer.

Should the first tertiary hospital called be unable to accept the transfer, **that tertiary hospital will make alternative arrangements with another tertiary hospital within the network**; ensuring at all times that the patient's clinical need is met, and communication maintained with the referring centre. No patient should be refused admission without discussion involving the senior specialist at the referral hospital. NETS can provide clinical conference facilities to assist this process but clinical leadership of the process rests with the default matrix tertiary hospital involved.

Where necessary, a rostered consultant is available for the state to discuss clinical (statewide obstetric advisor), system (PSN consultant) or logistic (NETS consultant) issues. In many cases, a solution will be found after a discussion between senior obstetric and neonatal clinicians. If transfer is required and other options are not possible, the patient will be transferred to default referral hospital listed in the matrix.

4 Operational Principles for NETS and PAL

The key principles of the operation of NETS and PAL are:

1. Statewide coordination of neonatal and paediatric retrieval services, in collaboration with the Specialist Neonatal Retrieval Services located at:
 - Newcastle
 - Canberra
 - Victoria (Melbourne)
 - Queensland (Brisbane)
 - South Australia (Adelaide) and
 - Regional adult retrieval services in Orange, Tamworth, Lismore, Sydney and Wollongong.
2. Single point of access for referring hospitals (public and private) anywhere in the state. All critical care transfer requests or consultation (related to high-risk obstetrics, neonates or paediatrics) where a critical care transfer is contemplated must be made through NETS.
3. Use of conference call facilities to:
 - bring the referring clinician in direct contact with the medical retrieval consultant; preferred referral consultant; PAL; and, other clinicians, as appropriate. The patient's **immediate** treatment requirements are the highest priority.
 - consult with various teams, coordination centres, ambulance services and vehicle operators.
4. NETS will **facilitate** the bed-finding process for critically ill or high risk babies and children for more complex or definitive care. NETS does not find beds for patients being electively transferred between hospitals. It is also not the role of NETS to find beds for maternity patients when there is no risk to the baby
5. Where there is a variance in view regarding the clinical appropriateness of the transfer, then the final decision concerning the transfer will be made by the NETS medical retrieval consultant (babies) or PAL Consultant (mothers) following a conference call between the referring clinician, receiving medical consultant. This may need to include discussion with the relevant Area Health Service Executive.
6. If a medical retrieval is planned for a baby or child, NETS will determine the most appropriate transport vehicle to effect the retrieval.

5 Newborn and paediatric Emergency Transport Service (NETS-NSW)

NETS
1300 362 500

- Clinical Co-ordination
- Teleconferencing
- Arrange Paediatric/Neonatal Medical Retrieval
- Advice on nurse escort
- Facilitate identification of neonatal cots
- Problem solving
- Advice for Clinicians uncertain about the process
- Reporting systems “failures”

NETS is the 24-hour coordination service and major provider of neonatal and paediatric retrievals. These services include:

- Clinical advice from a critical care medical retrieval consultant;
- A “one phone call” referral which uses conference call facilities;
- Mobilisation of an appropriate retrieval team or ambulance escort;
- Support to hospitals having difficulties referring high risk obstetric patients;
- Support for Ambulance Service dealing with pre-hospital emergencies;
- Liaison with interstate high risk obstetric, neonatal and paediatric emergency transport services;
- Assistance with Intensive Care support when usual neonatal and paediatric hospital ICU beds are unavailable;
- Assistance with any emergency where routine patterns of referral are unavailable or delayed.
- Liaison and consultation; including PAL.

6 Which Newborns May Need Medical Retrieval?

It is impossible to provide an exhaustive list detailing every consideration that may require referral to a tertiary facility. Table One provides a list that offers cues to facilitate clinical decision-making.

Table One - Seek consultation regarding management and/or transfer of babies that have/are:

Airway	<ul style="list-style-type: none"> ▪ Intubated ▪ Actual or threatened airway obstruction
Breathing	<ul style="list-style-type: none"> ▪ Respiratory distress of early onset ▪ Respiratory distress persistent beyond 4 hours ▪ Apnoea ▪ Oxygen requirement > FiO₂ 0.6 (blood gases available) ▪ Oxygen requirement > FiO₂ 0.4 (blood gases not available) ▪ Respiratory distress with meconium aspiration proven radiologically
Circulation	<ul style="list-style-type: none"> ▪ Shocked (if not sure of threshold, refer) ▪ Significant bleeding
Disability	<ul style="list-style-type: none"> ▪ Born before 35 weeks (outside role delineation) ▪ Born before 33 weeks ▪ Weigh < 2,000g and are outside role delineation facility ▪ Asphyxia with symptoms not rapidly correcting ▪ "Apgar" score persistently less than 7. ▪ Cyanosis despite oxygen therapy ▪ Heart failure or arrhythmia ▪ Seizures ▪ Surgical conditions requiring acute therapy ▪ "Unwellness", especially if initially well.

7 Which Pregnant Women May Need Medical Retrieval?

Critically injured pregnant women should be treated as to any adult in this position, and transferred to the nearest designated appropriate facility (eg. Major Trauma Centre), irrespective of ICU bed status, so that emergency treatment can commence with minimal delay. Where possible it is prudent to transfer a critically injured pregnant woman to a facility that also has an obstetric and neonatal intensive care service.

A number of statewide clinical super-speciality networks operate in tandem with the NSW Tertiary Referral Networks (Perinatal).

These networks are largely determined by the location of the clinical super-specialty services, and in some cases, the imperative to achieve early clinical intervention such as for those patients with major trauma.

The following clinical super-specialty referral networks that may be required for pregnant women:

1. NSW Severe Burn Injury Service Referral Network (Adult)
2. NSW Acute Spinal Cord Injury Referral Network (Adult)
3. NSW Major Trauma Services (Adult)
4. NSW Critical Care Tertiary Referral Networks (Adult)

It is impossible to provide an exhaustive list detailing every consideration that may require referral to a tertiary facility. Table Two provides a list that offers cues that may facilitate clinical decision-making.

TABLE 2 - Conditions requiring consultation regarding management and/or transfer

Hypertension	<ul style="list-style-type: none"> ▪ BP Diastolic > 110mmHg ▪ BP Systolic > 170mmHg ▪ +/- proteinuria $\geq 2+$ ▪ +/- hyperreflexia
Threatened Premature Labour	<ul style="list-style-type: none"> ▪ < 34 weeks gestation ▪ Premature rupture of the membranes ▪ Premature cervical dilation identified with ultrasound scanning
Ruptured Membranes	<ul style="list-style-type: none"> ▪ < 34 weeks gestation
Antepartum Haemorrhage	<ul style="list-style-type: none"> ▪ Bleeding < 34 weeks gestation ▪ Bleeding in excess of 200 mls ▪ Placenta praevia encroaching or covering the internal os
Insulin Dependant Diabetes Mellitus (IDDM) or Gestational Diabetes Mellitus (GDM) on insulin	<ul style="list-style-type: none"> ▪ In the presence of ketoacidosis ▪ Unstable Blood Glucose Levels
Intra Uterine Growth Retardation (IUGR)	<ul style="list-style-type: none"> ▪ Identified on ultrasound assessment
DVT/Pulmonary Embolus/Coagulopathies	
Cholestasis	<ul style="list-style-type: none"> ▪ < 34 weeks gestation

8 NSW Statewide Default ICU Matrix – Perinatal

Each Area Health Service with tertiary neonatal and obstetric services is required to ensure that all options for placement of at risk mothers and critically ill neonates within the referral network have been explored and that all appropriate transfers from NIC and maternity units, within the Area, to inpatient wards have been made.

Access to emergency care for time-critical patients is not to be delayed due to no availability of a Level 5 or 6 maternity or Neonatal Intensive Care bed. The appropriate retrieval service should be contacted immediately regarding such patients.

In situations where it needs to be declared that a combination of no neonatal intensive care beds and/or high risk obstetric beds are available and a tertiary transfer is necessary, then the **NSW Statewide Default Perinatal Bed Policy** may be invoked. This step is taken only after thorough assessment of statewide Neonatal Intensive Care and High Risk Maternity services capacity and intra-Area default mechanisms, and, where they exist, within the appropriate Critical Care Tertiary Referral Networks for Perinatal Care.

Fundamental to this procedure being activated is the principle that:

Where the condition of a patient or fetus is critical and requires immediate emergency treatment, then that patient must be transferred **immediately** to the facility designated by the NSW Statewide Default ICU Matrix – Perinatal that is able to provide appropriate emergency treatment irrespective of bed status; this can be addressed following the initiation of emergency care.

In the event of the default system being activated, a referral hospital will be designated as the hospital responsible to provide critical care, irrespective of bed status, as specified in the **NSW Statewide Default ICU Matrix – Perinatal**. This matrix has been developed following consultation with Area Health Services, the Neonatal and paediatric Emergency Transport Service, Paediatric Intensive Care Advisory Group, Pregnancy and newborn Service Network, High Risk Obstetric Advisory Group, Neonatal Intensive Care Unit Managers Group, Maternal & Perinatal Health Priority Taskforce, and other key stakeholders.

The referring hospital will call the Obstetric or Neonatal Unit at the default matrix tertiary hospital to discuss the patient and arrange appropriate transfer.

Should the first tertiary hospital called be unable to accept the transfer, that tertiary hospital will make alternative arrangements with another tertiary hospital within the network; ensuring at all times that the patient's clinical need is met, and communication maintained with the referring centre. **No patient should be refused admission without discussion involving the senior specialist at the referral hospital.**

NETS can provide clinical conference facilities to assist this process but clinical leadership of the process rests with the default matrix tertiary hospital involved.

Where necessary, a rostered Statewide Perinatal Advisor is available for the state to discuss clinical system or logistic issues and is contactable through NETS. In many cases, a solution will be found after a discussion between senior obstetric, neonatal and retrieval clinicians. If transfer is required and other options are not possible, the patient will be transferred to default referral hospital listed in the matrix.

8.1 Invoking the Default Perinatal Bed Policy

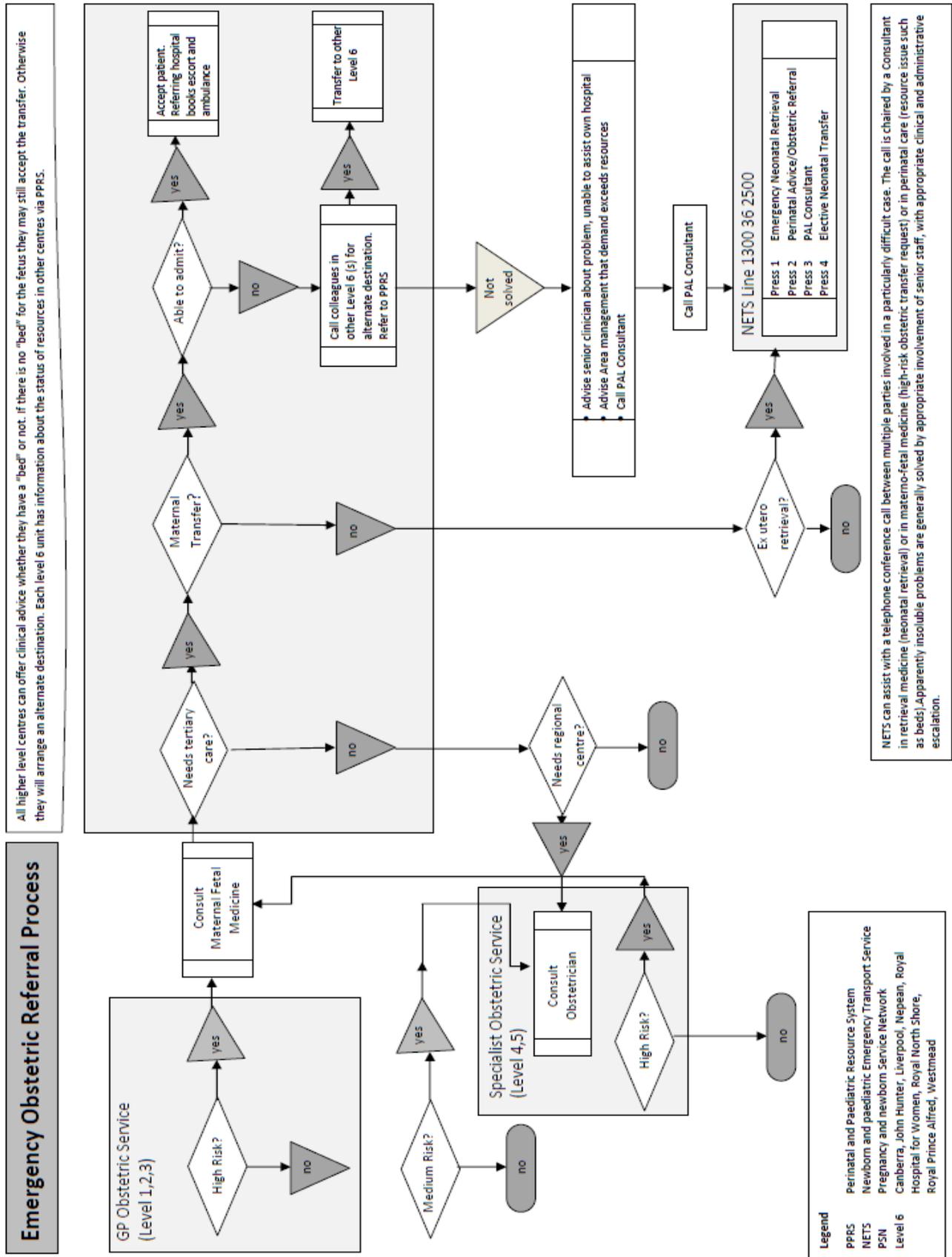
The referring hospital contacts their Network maternity or neonatal Level 6 service to verify that there is no capacity to accept the patient within their Network.

- All units are to review exit blocked beds, liaise with the hospital executive to have them cleared and update PPRS
- The referring hospital verifies that there are no appropriate available beds as shown on PPRS.
- The referring hospital contacts NETS who will explore any alternative destination for a neonatal intensive care bed, or the PAL Consultant for a maternal bed.
- Where no appropriate available bed can be identified across the system the on-duty NETS Consultant, in consultation with the PAL Consultant will invoke the Default Perinatal Bed Policy and contact the receiving NICU and/or Obstetric Consultant.
- The designated tertiary unit will accept the patient, irrespective of bed status, as per the Default Matrix.
- Where there is continued difficulty accessing a maternity bed, the PAL Consultant may need to discuss the issue with the relevant AHS Executive. On-going difficulties should be discussed with the Director, Statewide Services Development Branch.
- If NETS becomes aware of any exit block issues affecting access to tertiary neonatal beds, they will notify the Director, Statewide Services Development Branch who will liaise with the relevant AHS Executive to address these issues.

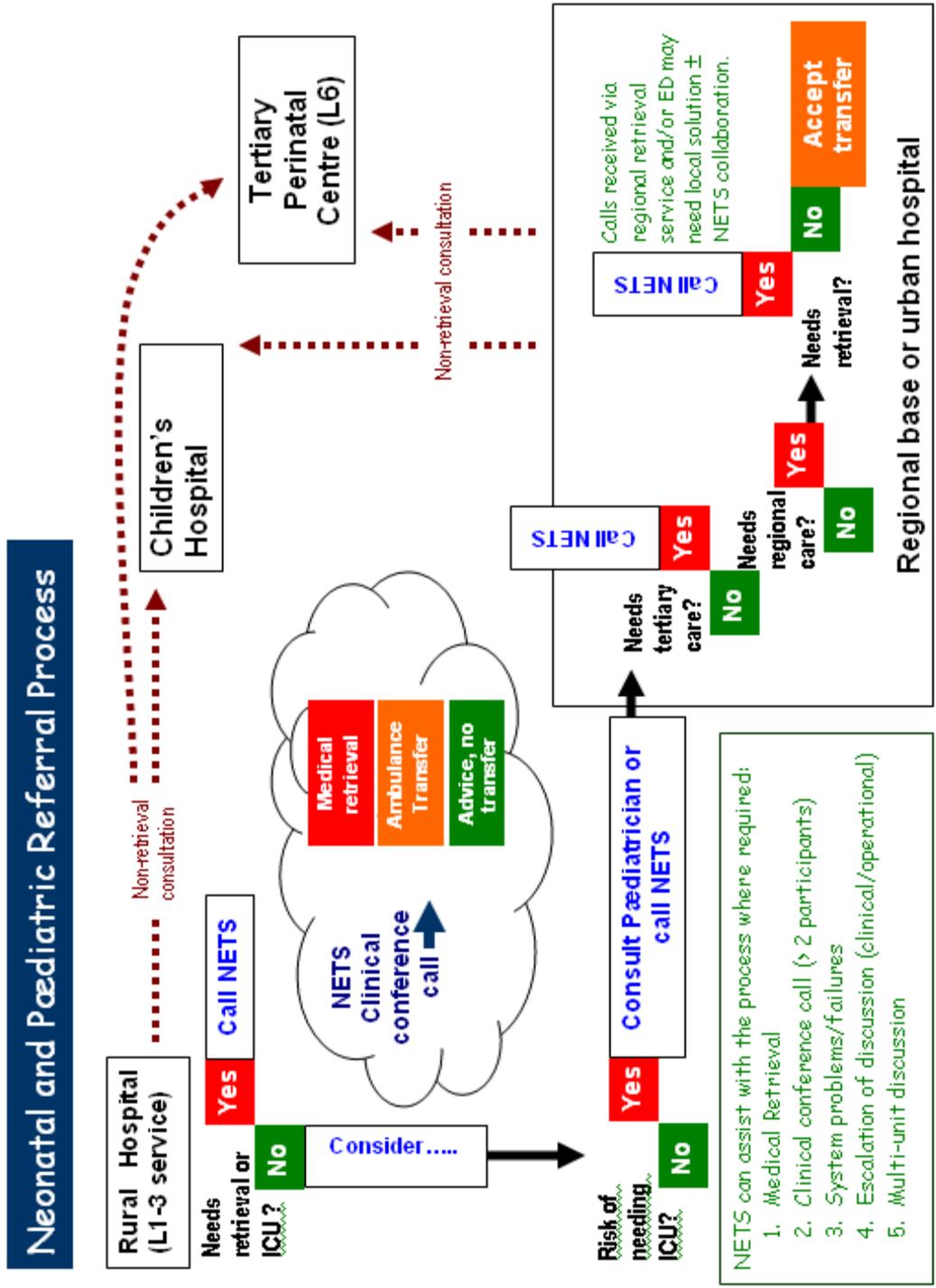
Fundamental to this procedure being activated is the principle that:

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.

9 Obstetric Referral Process



10 Neonatal/Paediatric Referral Process



AO = Admitting Officer. TPC = Tertiary Perinatal Centre. NETS = Neonatal & paediatric Emergency Transport Service. NETS 1300 36 2500

11 Appendix

11.1 Requirements for Facilities for the Stabilisation of Patients Prior to Medical Retrieval 1

These guidelines are provided to assist hospitals using a medical retrieval team to transfer a patient requiring intensive care. It sets out the resources that are required for the safe and efficient stabilisation of patients of all ages. These resources are required at those hospitals at or above role delineation Level 2 for Maternity Services (newborn infants) and at or above Level 1 for all other age-groups.

These guidelines are designed to assist referring hospitals offer optimal care using the combined resources of the referring hospital and the retrieval team to manage, stabilise and prepare patients for transport.

The guidelines were developed by NETS in collaboration with the Ambulance Service Medical Retrieval Unit; regional advisory/retrieval services; and, referring hospitals.

Background

Guidelines were issued in 1997 for newborn patients to promote an effective mechanism for the stabilisation of newborns, from referring hospitals. It was recognised that the scope of these guidelines needed to be expanded to offer advice encompassing all age groups and include new aspects of clinical networking such as telemedicine. Accordingly, this document covers all age groups.

Compliance

It is acknowledged that not all hospitals will be able to immediately provide the physical space specified in this guideline. Hospitals are advised that if there is currently no suitable space within the ED, ICU, children's ward or neonatal nursery, alternative resuscitation areas can be provided in an appropriate area. However, when a hospital is being refurbished or rebuilt, the requirements listed in this circular should be followed and reference made to the functional space requirements contained in the current "Health Facility Guideline".

Where specific essential equipment items listed below are not available at present, provision should be made to include these items in forward planning cycles as soon as possible.

Ventilatory Support

Facilities that have medical officers formally trained in managing ventilated patients may have ventilators capable of supporting Adults, Children, Infants and Neonates — depending on caseload of patients requiring ventilatory support. Where such ventilators are available, they must be complemented by the capacity to measure airway pressure, expiratory tidal or minute ventilation, and end tidal CO₂ (or skin CO₂ monitoring).

Imaging Facilities

If imaging facilities are available in the referring facility, an X-Ray viewing box or Picture Archiving and Communication System (PACS) system must be in a location that allows use without losing visual contact with the patient. In addition, diagnostic images of the patient must be available to accompany the patient to their destination hospital.

Pathology facilities

If Pathology facilities are available in the referring facility, a pathology results viewing system must be in a location that allows use without losing visual contact with the patient.

Access by the mother of a newborn

After resuscitation of a newborn and prior to transport, it should be possible for the NETS Infant Transport Module to be wheeled to the mother's bedside (or vice versa). Sufficient room is needed for the mother to be able to see and touch her baby in the NETS transport system from her bed.

Essential Facilities

- An area or room that **can** be dedicated to the patient for retrieval and the workings of the team (minimum size **21m²** child/adult; **15m²** for a newborn). This area may be created from existing areas for those times a medical retrieval team is present. For instance, by combining two patient care areas into one.
- Easy, uncluttered access for a stretcher or hospital trolleys used by the retrieval team (size 900mm x 2000mm) from hospital entry to patient care area without obstruction to other functions.
- Procedure light (angle-poise type)
- Resuscitation trolley with appropriate drugs and equipment for those age-groups being treated
- Infant resuscitation trolley (open care system for body weight < 5kg):
 - Integrated overhead lighting
 - Variable radiant heat source
 - Swing-away hinge for overhead modules for mobile x-ray access
 - Space available for retrieval team module to be positioned adjacent and at right angles
- Panel fixtures:
 - Oxygen x 2 (reticulated preferred, cylinder supply will suffice in some locations)
 - Medical Air x 2 (reticulated preferred, cylinder supply will suffice in some locations)
 - Suction x 2 (one regulated for low/controlled suction, one high flow (reticulated supply and second high flow preferred)
 - Body-protected GPOs x 10 (2 for retrieval team use, 8 for referring hospital equipment)
- Height adjustable trolley to facilitate the loading and unloading of the patient/transport stretcher/medical equipment
- Counter, bench top or table (min. 550 x 1200mm) for additional treatment equipment
- Wash sink, soap dispenser, paper towel and alcohol/chlorhexidine hand rub dispenser
- Waste receptacle of large capacity with large aperture orifice; positioned close to resuscitation area
- Sharps disposal container, preferably mobile
- Procedure trolley (900mm x 450mm minimum)
- Telephone:
 - Capable of direct call to relevant retrieval services (without using an operator)
 - Handset usable at the bedside of the patient (may use cordless technology)
 - Programmed for 1-key dialling to Regional Advisory/Retrieval Service, NETS, MRU
 - Capable of direct in-dial with that number displayed on handset prominent
- Facsimile machine:
 - In a location that allows use without losing visual contact with the patient
 - Programmed for 1-key dialling to Regional Advisory/Retrieval Service, NETS, MRU
 - Capable of direct in-dial with that number displayed on device prominently
- Photocopier with contrast and brightness adjustment
- In-service training in using the medical retrieval system

Desirable Facilities

- Lighting to meet standards of operating theatre, with adjustable intensity
- Infant resuscitation trolley (open care system for body weight < 5kg):
 - In built frame for X-Ray plate positioning without disturbing the patient for contact-less imaging
- Digital camera for clinical photography (including simple connection to computer for file transfer)
- Computer:
 - In a location that allows use without losing visual contact with the patient
 - That allows access to clinical email services
 - That allows access to approved clinical web-based services (eg. CIAP, NETS, etc.)
 - That allows electronic transmission of digital images
 - That allows rapid access to relevant policies and procedures for care and retrieval
- Capacity to export clinical data from local information systems to retrieval coordination centres and/or receiving hospitals
- Capability of continuously monitoring a patient's ECG, pulse oximetry and automated non-invasive blood pressure measurements
- Interview room immediately accessible to resuscitation area for family conferences