



**Child Health Network for the  
Greater Toronto Area**

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# **Guidelines for the Clinical Scope of Maternal and Newborn Services**

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# Guidelines for the Clinical Scope of Maternal and Newborn Services

## Child Health Network for the Greater Toronto Area

### Background

This document describes a regionalized system of hospital maternal and newborn services in the Greater Toronto Area (GTA). It outlines the complexity of care to be provided at each site, detailing the scope of practice by which each level of care is defined.

The field of maternal and newborn health has been an early adopter of the concept of regionalization. In Ontario, a series of significant reports have emerged over the past few decades. While the path of each planning region in the province has been somewhat different, professionals and planners endorsed and operationalized the concept of regionalization throughout the 1970s, '80s, and '90s. This document represents the consolidation of a number of activities undertaken over recent years to plan a regional system of maternal and newborn services throughout the Greater Toronto Area.<sup>1</sup>

In 1997 the Health Services Restructuring Commission recommended an integrated, accessible, high quality system of care for children and families across the GTA. To this end, the Child Health Network (CHN) was established. One of the aims of this undertaking was to create a regional system of maternal newborn and children's hospital services, organized into levels of care according to complexity of patient need. The current membership of the CHN includes 20 hospitals that provide maternal/newborn, paediatric acute and rehabilitative services, as well as the 10 Community Care Access Centres in the GTA. The CHN was requested to plan for maternal/newborn and children's services at various levels of care, and to recommend clinical service definitions and minimum requirements for each level.

Under the leadership of the CHN, two documents have been completed: Guidelines for the Clinical Scope of Maternal and Newborn Services and Guidelines for the Clinical Scope of Children's Services.<sup>2</sup> The content of both documents reflects input from the CHN membership, provincial and national professional organizations, an Expert Panel appointed by the Ministry of Health and Long Term Care (MOHLTC), and the National Family-Centered Maternity and Newborn Care Guidelines. The Guidelines reflect the MOHLTC's policy regarding maternal/newborn and children's services presented to the CHN in February 2000.

The fundamental purpose of the Guidelines is to propose a system of health care delivery to best meet the needs of the region's mothers and newborns. An opportunity to review the Guidelines will soon emerge as the CHN undertakes a performance evaluation. It will examine issues of quality, access, integration and co-ordination. From what is learned in this evaluation, the CHN will review and modify the Guidelines as appropriate.

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<sup>1</sup> *Review of Maternal and Newborn Services in Ontario*, Ontario Ministry of Health, 1991 and *Taking the Next Steps: Regionalizing Maternal-Newborn and Child Health Services in Metro Toronto*, Metro Toronto District Health Council, 1994.

<sup>2</sup> Children's services are addressed in a separate document.

The CHN warmly acknowledges the dedication, commitment and effort of the people who helped to bring these Guidelines into existence.

## Guiding Principles

From the Maternal and Newborn Services Task Force a number of overarching principles emerged that are fundamental to a regionalized system of care for mothers and newborns. The following points provide the basis for organizing maternal and newborn services within the GTA.

1. There will be four levels of maternal and newborn care in the GTA:
  - level I - primary care;
  - level II - secondary care;
  - level II+ - advanced level II care;
  - level III - tertiary care.
2. In addition to their role within the regional system of care, level I, level II and level III maternal and newborn centres will be responsible for providing care for their own communities. Therefore, maternal and newborn care in level II facilities includes primary care and in level III facilities includes primary and secondary care.
3. Families should be able to receive services as close to home as possible. Accordingly, all hospitals must be able to accept the timely transfer of women and newborns whose care is within their scope of practice and resources.
4. Consultation about the referral and transfer of women and newborns who are beyond the scope of practice, resources and/or expertise of the referring hospital personnel is fundamental to a regionalized system of care.
5. Provision of clinical services, as well as education and research will involve coordination and collaboration among all providers of maternal and newborn care.
6. Counseling services (e.g., genetics, bereavement) should be available and coordinated within each regional cluster.
7. There will be minimum and maximum expectations of care. In order that care can be provided in the appropriate setting, hospitals should not exceed their expected level of care.
8. A framework for evaluation of the system, based on Continuous Quality Improvement principles, is fundamental to ensuring the efficiency and effectiveness of service delivery. Data, including qualitative evidence, will need to be collected in order to monitor and respond to issues of quality, access, integration and coordination of maternal/newborn services in the GTA.

## **A Regional Model for Maternal and Newborn Services**

The fundamental aim of the Guidelines is to ensure access to services as close to home as possible throughout the region, and to facilitate efficient transfer to higher levels of care as required for mothers and newborns. Consistent with the CHN goal to achieve a regionalized model for care for hospital-based maternal and newborn services in the GTA, the Ministry of Health and Long Term Care (MoHLTC) Policy Framework (February 2000) outlined the following:

- Eleven hospitals will provide level II care, focusing on the care of infants of equal to, or greater than, 32 weeks' gestation<sup>3</sup>.
- Five hospitals will provide advanced level II care. Advanced level II centres will provide ventilation for up to 48 hours to newborns of 32 or more weeks' gestation. These centres will accept retro-transfers from tertiary hospitals so that infants are cared for close to home and that appropriate use is made of tertiary facilities.
- Births and ventilation of infants less than 32 weeks' gestation will normally occur in tertiary centres.

The MoHLTC's policy sets maximum capacity levels for each category and delineates the level at which each hospital will function. All institutions delivering maternal and newborn care are expected to provide care in accordance with CHN standards and practice guidelines, consistent with the National Guidelines for Family-Centred Maternity and Newborn Care (2000). It is also expected that institutions will not exceed the maximum scope of care that is outlined in these Guidelines, while ensuring that the minimum scope of care is delivered. Advanced level II maternal and newborn centres will work closely with level III maternal and newborn centres to ensure that high-risk maternal patients and sick neonates are cared for effectively within the GTA.

There has been much discussion of the distinction between level II care at a level II maternal and newborn centre and level II care at an advanced level II maternal and newborn centre. Accordingly, to ensure that mechanisms are in place to facilitate the continued evolution of a regional system of care, the Guidelines are intended to assist hospitals in planning, implementing and evaluating regionalized family-centred maternal and newborn programs and services. It is hoped that each hospital will work towards achievement of its maximum designated level of care in adherence with the MOHLTC policy position. Recognizing that each region and hospital within the CHN is at a different stage of development, it is expected that each hospital within the GTA will:

- provide information on the level of implementation it has reached to meet the expected level of care for its level of care designation and how it fits within a regional plan;
- develop a program plan and timeline for the development of its maternal/newborn program, including the expected maximum level of operation and a process for monitoring achievements in relation to expected milestones; and
- identify the services and resources that will be available, including services expected to be available "in-house".

To facilitate an effective regionalized system of care, members will work in regional clusters to coordinate care. A regional cluster will include CCAC(s), acute care community hospital(s) and one or more maternal/ newborn centre(s) serving a particular geographic area. The members of the regional

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<sup>3</sup> The designation for three hospitals is under review

clusters are expected to work with families, community health service providers and tertiary centres to ensure that maternal and newborn services meet the unique needs of their region.

The following table provides an overview of the MOHLTC designations of level of maternal and newborn care for GTA hospitals.

<b>Level I Maternal and Newborn Centre (Level I Care)</b>	<b>Level II Maternal and Newborn Centre (Level II Care)</b>	<b>Advanced Level II Maternal and Newborn Centre (Level II + Care)</b>	<b>Level III Maternal and Newborn Centre (Level III Care)</b>
Halton Healthcare Services Corporation (Milton site)	Halton Healthcare Services Corporation (Oakville site)	Lakeridge Health Corporation (Oshawa site)	Mount Sinai Hospital
Humber River Regional Hospital (Church site)	Humber River Regional Hospital (Finch site)	North York General Hospital (North York General site)	Sunnybrook Women's College Health Science Centre
Lakeridge Health Corporation (Uxbridge, Bowmanville and Port Perry sites)	Markham Stouffville Hospital	Rouge Valley Health System (Centenary site)	Hospital for Sick Children
Rouge Valley Health System (Ajax/Pickering site)	Scarborough Hospital (General and Grace sites)	The Credit Valley Hospital	
William Osler Health Centre (Georgetown site)	St. Joseph's Health Centre	William Osler Health Centre (Brampton site)	
	St. Michael's Hospital		
	Southlake Regional Health Centre		
	Toronto East General Hospital		
	Trillium Health Centre		
	York Central Hospital		
	William Osler Health Centre (Etobicoke site)		

## **Level I Maternal and Newborn Centres**

### **Definition**

The inpatient services provided at a level I maternal and newborn centre should embrace the Labour Birth Recovery/Labour Birth Recovery Postpartum (LBR/LBRP) model of care. Facilities should have all the resources required to meet the needs of women with healthy pregnancies. It is expected that appropriate community and social support services, including discharge planning, are made available to all families.

The provision of services, including education and bereavement counseling, should involve collaboration and participation with level II, advanced level II, and level III maternal and newborn centres in order to provide coordinated and planned programs throughout the region.

It is expected that a level I maternal and newborn centre will accept timely and appropriate referrals/transfers of mothers and infants from home births, level II, advanced level II, and level III maternal and newborn centres.

### **Maternal**

#### **Minimum scope of services**

- management of pregnancies for women who have experienced no prior stillbirth, infant death or low birthweight infant, have no significant medical disease, no significant pregnancy complications, and for whom fetal growth seems adequate;
- maternal-fetal assessment; including identification of at-risk pregnancies (with early consultation and transfer of care as needed);
- appropriate consultation with medical staff when unanticipated obstetrical or neonatal problems occur.

#### **Maximum scope of services**

- care for healthy mothers and their newborns of a gestational age of 36 weeks' gestation or older, and/or neonates  $\geq 2.5$  kg;
- stabilization, initiation and maintenance of assisted ventilation until transfer;
- care for mothers with transient conditions that are expected to resolve.

#### **Treatments**

In the labour and birth area, ability to perform the following:

- fetal monitoring;
- initiation and maintenance of IV, available 24hrs/day;
- O<sub>2</sub> administration;

- Cesarean section according to the policy of the Society of Obstetricians and Gynaecologists of Canada (SOGC). If unable to follow SOGC policy, have a written screening, triage and transfer policy;
- pharmacological pain relief, administered by appropriately trained personnel.

## **Newborn**

### **Minimum scope of services**

- resuscitation and stabilization of all neonates born in hospital or transferred in from home births, as outlined in the *National Guidelines for Neonatal Resuscitation* and the *National Guidelines for Family-Centred Maternity and Newborn Care, 2000*;
- appropriate consultation with medical staff when unanticipated obstetrical or neonatal problems occur;
- initiation of short-term assisted ventilation in preparation for transfer.

### **Maximum scope of services**

- care for the healthy newborn of 36 weeks' gestation or older, and/or  $\geq 2.5$  kg;
- observation and management of transient conditions (e.g., hypothermia, hypoglycemia responding to enteral feeds, respiratory distress with reducing or no oxygen requirement, hyperbilirubinemia);
- ability to provide care of infants with conditions that are expected to resolve within a short period of time regardless of place of birth.

### **Treatments**

Ability to perform the following:

- continuous monitoring of: cardiorespiratory status, O<sub>2</sub> saturation, non-invasive BP measurement;
- obstetric laboratory tests and diagnostic imaging;
- O<sub>2</sub> therapy;
- Venipuncture, initiation and maintenance of IV prior to transfer;
- endotracheal intubation;
- emergency venous access (e.g., via peripheral or umbilical vein);
- ECG.

## Transfer of care

Consultation with an appropriate centre, which may lead to a transfer of a mother or infant, is required when major medical and obstetrical conditions exceed the capability of a level I centre.

## Resources

### Personnel

Obstetricians	According to professional guidelines
Family Physicians	According to professional guidelines
Midwives	According to professional guidelines
Nurses	Available in-house 24 hrs/day; strive to provide 1:1 staffing ratio for women in labour and 1:4 ratio postpartum
Neonatal resuscitation team	According to <i>National Guidelines for Neonatal Resuscitation</i> , 2000, for level I centres

### Laboratory (available 24hrs/day) (micro technique for neonates)

Within 1 hour	Hematocrit, glucose, total bilirubin, routine urinalysis, blood gases
Within 1-6 hours	CBC, platelet appearance on smear, blood chemistries, blood type and crossmatch, Coombs tests, bacterial smear
Within 24-48 hours	Bacterial cultures and sensitivities, drug screen
Within hospital or facilities available	Viral culture and antibodies
Radiography and ultrasound	Technicians on call 24 hours/day. Portable x-ray and ultrasound equipment available to labour and birth rooms and to nurseries (obstetrical ultrasound capability for placenta/position and fetal presentation)
Blood bank	Technologists on call 24 hours/day, availability of uncrossed negative blood for emergencies
Pathology	Prior agreement with another centre required (transfer of infant or specimen at no cost to the family)

## Level II Maternal and Newborn Centres

### Definition

The inpatient services provided at level II maternal and newborn centres should embrace the LBR/LBRP model of care and have all the functional capabilities provided by level I centres. In addition, those operating at a maximum level should be capable of managing care of mothers and infants at low-to-moderate risk (in accordance with national guidelines for level II nurseries).

Level II maternal and newborn centres will participate in research that will focus on community health issues, including evaluating the effectiveness of maternal and newborn services within CHN regional clusters. It is expected that appropriate community and social support services, including discharge planning, will be made available to all families. In order to provide coordinated and planned programs throughout the region, the provision of services, including education and bereavement counseling, should involve collaboration with any CHN level I, level II, advanced level II, or level III maternal and newborn centre.

### Maternal

#### Minimum scope of services

- ability to provide treatments and resources offered within a primary care setting operating at the maximum level of care;
- appropriate consultation with medical staff when unanticipated or anticipated obstetrical or neonatal problems occur.

#### Maximum scope of services

- ability to manage medical/obstetrical conditions arising from pregnancies > 32 weeks' gestation, 7 days/week, 24 hrs/day;
- availability of maternal intensive care 24 hrs/day (monitoring O<sub>2</sub> saturation, ECG, invasive monitoring), including provision of ventilation.

#### Treatments

In the labour and birth area, ability to perform the following:

- maternal-fetal assessment: to include identification of at-risk pregnancies;
- continuous fetal monitoring if required (including scalp pH);
- administration of all blood products;
- Cesarean section within 30 minutes;
- scalp pH;
- ECG.

## **Newborn**

### **Minimum scope of services**

- ability to provide all services, treatments and resources offered within a level I setting;
- resuscitation and stabilization of all neonates born in hospital, or transferred in from home births, as outlined in the *National Guidelines for Neonatal Resuscitation, 2000*;
- appropriate consultation with medical staff when unanticipated or anticipated obstetrical or neonatal problems occur;
- initiation of short-term assisted ventilation in preparation for transfer.

### **Maximum scope of services**

- initial and ongoing care of stable newborns  $\geq 32$  weeks' gestational age;
- collaboration with level III and advanced level II maternal and newborn centres concerning the long-term follow-up of infants at risk for neurodevelopmental delay.

### **Treatments**

Ability to perform all treatments designated for a level I maternal and newborn centre, in addition to the following:

- gavage feeding;
- lumbar puncture;
- O<sub>2</sub> administration, including low-flow oxygen;
- IV fluid maintenance 24 hrs/day;
- catheterization of umbilical vein;
- arterial puncture;
- drainage of pneumothorax pending transfer;
- therapeutic drug monitoring;
- administration of surfactant when deemed essential for stability pending transfer;
- administration of all blood products.

### **Transfer of care**

It is expected that level II maternal and newborn centres will accept timely and appropriate referrals/transfers of mothers and infants from home births, level I, advanced level II, and level III maternal and newborn centres.

Consultation with an appropriate centre, which may lead to a transfer of a mother or infant, is required when major medical and obstetrical conditions exceed the capability of level II maternal and newborn centres, including the following:

### **Maternal**

- congenital malformations requiring special diagnostic procedures or surgical care (in consultation);
- < 32 weeks' gestation if at maximum level of care and < 36 weeks' gestation if at minimum level of care;
- multiple pregnancies > twins.

### **Newborn**

- congenital malformations requiring special diagnostic procedures or surgical care (in consultation);
- increasing respiratory distress;
- infants failing to progress as anticipated;
- infants with conditions requiring exchange transfusion;
- ventilated infants.

### **Retro-transfers**

Level II maternal and newborn centres operating at the maximum level should have the ability to accept from an advanced level II or level III centre retro-transfers of convalescing infants with the following:

- birth weight of no less than 1000 gms and not requiring assisted ventilation;
- tolerance of full or increasing enteral feeding (excluding TPN);
- chronic lung disease requiring oxygen therapy;
- apnea of prematurity requiring little or no stimulation;
- evidence of stable or regressing retinopathy of prematurity;
- condition requiring isolation;
- need for palliative care.

## Resources

### Personnel (to provide minimum level of care)

Family physicians	According to professional guidelines
Midwives	According to professional guidelines
Anesthesiologist	According to professional guidelines
Pediatrician	According to professional guidelines
Nurses	Available in-house 24 hrs/day; strive to provide 1:1 staffing ratio during active labour, 1:3 in Level II nursery; 1:4 postpartum according to National Guidelines
Rehab team	Occupational therapist
Support services	Social worker Discharge planner Pastoral / bereavement support

### Personnel (to provide maximum level of care)

Neonatal resuscitation team	In-house 24 hrs/day (components of team may include family practitioner, ER physician, nurse, respiratory therapist, and/or physicians listed above); comprised of members who are competent at resuscitation as evidenced by current certification with the Canadian Paediatric Society/Canadian Heart and Stroke Foundation Neonatal Resuscitation Program (NRP)
Obstetrician	According to professional and hospital departmental guidelines
Anesthesiologist	According to professional and hospital departmental guidelines
Neonatologist	According to professional and hospital departmental guidelines
Pediatrician	According to professional and hospital departmental guidelines
Family physicians	According to professional guidelines
Midwives	According to professional guidelines
Nurses	Available in-house 24hrs/day; strive to provide 1:1 staffing ratio during active labour; 1:3 in Level II nursery; 1:4 postpartum according to National Guidelines
Respiratory therapist	Available in-house 24hrs/day

Back-up system

A formalized back-up system is required for all personnel in the event they are unable to respond to emergent calls

**Laboratory** (available 24 hours a day) (micro-technique for neonates)

Within 1 hour

Level I plus: electrolytes, BUN, creatinine, coagulation studies, blood from type and screening program

Within 1-6 hours

Level I plus: WBC differential, coagulation studies, magnesium and calcium, urine electrolytes and chemistries, hepatitis B screen

Within 24-48 hours

Level I plus: liver function tests, metabolic screening (e.g., amino acids and organic acids) serum ammonia, HIV screen, therapeutic drug monitoring (e.g., caffeine, tobramycin, vancomycin)

Within hospital or facility available

According to level I

Experienced radiology technicians immediately available in hospital (ultrasound on call). Doppler ultrasound capabilities. Professional interpretation immediately available. Portable x-ray and ultrasound equipment. Ultrasound equipment: in labour and delivery and/or nursery areas: obstetric ultrasound - capability for detailed anatomical scan in second trimester, biophysical profile, placental position, fetal presentation; neonatal head ultrasound. Equipment for emergency GI, GU, or CNS studies available 24 hours/day

Echocardiography

Available weekdays, with interpretation within 24 hours

Blood bank

Experienced technologists immediately available in hospital for blood-banking procedures and identification of irregular antibodies

Available weekdays with interpretation within 24 hours

Pathology

General pathologist to be available daily

## Advanced Level II Maternal and Newborn Centres

### Definition

The neonatal inpatient services provided at an advanced level II maternal and newborn centre should embrace the LBR/LBRP model of care. Advanced level II centres should have all the functional capabilities provided by level I or level II centres. In addition, advanced level II centres should have the resources to manage moderate risk obstetrical and medical problems and carry out fetal diagnostic testing (consistent with National Guidelines for Level II Nurseries).

The advanced level II maternal and newborn centres will participate in research focusing on community health issues, including evaluating the effectiveness of maternal and newborn services within CHN regional clusters. It is expected that appropriate community and social support services, including discharge planning, will be made available to all families. In order to provide coordinated and planned programs throughout the region, the provision of services, including education and bereavement counseling, should involve collaboration with any CHN level I, level II, advanced level II, or level III maternal and newborn centre.

It is expected that advanced level II maternal and newborn centres will accept timely and appropriate referrals/transfers of mothers and infants from home births, and level I, level II and level III maternal and newborn centres.

### Maternal

#### Minimum scope of services

- a system for receiving as referrals, women whose pregnancies are considered to be at moderate risk, at  $\geq 32$  weeks' gestation;
- ability to provide all services, treatments and resources offered at level I or II maternal and newborn centres operating at maximum level of care;
- appropriate consultation with medical staff when unanticipated or anticipated obstetrical or neonatal problems occur;
- availability of maternal intensive care 24 hours/day (monitoring  $O_2$  saturation, ECG, invasive monitoring) including provision of ventilation.

#### Maximum scope of services

- ability to provide care for pregnancies consistent with level II maternal and newborn centres operating at a maximum level, in addition to pregnancies of  $\geq 32$  weeks' gestation, 7 days/week, 24 hrs/day.

#### Treatments

In the labour and birth area, ability to perform the following:

- maternal-fetal assessment: to include identification of at-risk pregnancies;

- continuous fetal monitoring if required (including scalp pH);
- initiation and maintenance of IV, available 24 hrs/day;
- administration of all blood products;
- Cesarean section within 30 minutes;
- monitoring of maternal O<sub>2</sub> saturation and ECG;
- monitoring of invasive arterial lines.

## **Newborn**

### **Scope of Services**

- Ability to provide all services, treatments and resources offered within a Level I Maternal and Newborn Centre or Level II Maternal and Newborn Centre;
- Resuscitation and stabilization of all neonates born in hospital, or transferred in from home births, as stipulated in the *National Guidelines for Neonatal Resuscitation, 2000*;
- Appropriate consultation with medical staff when unanticipated or anticipated obstetrical or neonatal problems occur;
- Coordination and management of neonatal follow-up for at-risk infants as described in CHN document entitled '*Proposal for a CHN-GTA Regionalized Neonatal Follow-Up Program*'.<sup>4</sup>

Neonatal specialists available to provide care and/or consultation for the following:

- level II neonatologists to consult with tertiary centres on the management of ventilated infants;
- level III neonatologists to provide ongoing dialogue regarding system resource management and notification of tertiary outborn facilities of all ventilated infants;
- collaboration with level II and level III maternal and newborn centres for the provision of long-term follow-up of infants at risk for neurodevelopmental delay;
- initial and ongoing care for stable infants  $\geq 32$  weeks' gestational age;
- care for moderately ill newborns who have problems that are expected to resolve rapidly, including those transferred from a level I or level II maternal and newborn centre;
- initiation and maintenance of short-term (up to 48 hours) ventilation with mandatory consultation with a neonatologist.

### **Treatments**

Ability to perform all treatments available in level I or level II maternal and newborn centres, in addition to the following:

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<sup>4</sup> Proposal for a CHN-GTA Regionalized Neonatal Follow-up Program, Child Health Network for the Greater Toronto Area, 1998.

- catheterization of umbilical artery;
- initiation and maintenance of short-term (up to 48 hours) assisted ventilation administration of surfactant;
- insertion of chest tube;
- initiation, maintenance, and monitoring of TPN.

## **Transfer of care**

It is expected that advanced level II maternal and newborn centres will accept timely and appropriate referrals/transfers of mothers and infants from home births, as well as level I, level II and level III maternal and newborn centres.

Consultation with a level III maternal and newborn centre, which may lead to a transfer of mothers or infants, is required when major medical and obstetrical conditions exceed the capability of an advanced level II maternal and newborn centre. Such conditions including the following:

### **Maternal**

- congenital malformations of the neonate requiring special diagnostic procedures or surgical care (in consultation, in immediate post natal period);
- age of < 32 weeks' gestation, singleton;
- multiple pregnancies > twins and age of < 34 weeks' gestation.

### **Newborn**

- congenital malformations requiring special diagnostic procedures or surgical care (in consultation);
- increasing respiratory distress requiring high frequency oscillation, high frequency jet ventilation, nitric oxide, or other ventilatory manipulation;
- failure to progress as anticipated;
- need for ventilation for more than approximately 48 hours.

### **Retro-transfers**

To facilitate tertiary bed access, advanced level II maternal and newborn centres should have the ability to accept the retro-transfers from level III centres of newborns with the following conditions:

- birth weights not less than 800 gm and not requiring assisted ventilation;
- tolerance of increasing enteral feeding;
- need for TPN;
- post surgical recovery; colostomies;

- chronic lung disease requiring O<sub>2</sub> therapy;
- apnea of prematurity which may require nasal CPAP;
- stable or regressing retinopathy of prematurity;
- condition requiring isolation;
- need for palliative care.

## Resources

In addition to the resources identified for level I and level II, access to clinical education in order to maintain and develop staff at the appropriate designated level will be required to ensure the delivery of quality care.

## Personnel

24-hour paediatrician/neonatologist coverage according to professional and hospital guidelines

24-hour obstetrical coverage according to professional and hospital guidelines

24-hour anesthetist coverage according to professional and hospital guidelines

Family physicians According to professional guidelines

Midwives According to professional guidelines

Nurses Available in-house 24 hrs/day; strive to provide 1:1 staffing ratio during active labour and in advanced level II nurseries as required; 1:3 in nursery (except for unstable babies or when better ratio is needed to reflect the acuity of in-patients); 1:4 post partum according to National Guidelines

Respiratory therapist Available in-house 24 hrs/day

Neonatal resuscitation team In-house 24 hrs/day (components of team may include family practitioner, ER physician, nurse, respiratory therapist, and/or physicians listed above)

Back-up system A formalized back-up system is required for all personnel in the event they are unable to respond to emergent calls

Subspecialty Cardiology

Paediatrics	Ophthalmology and/or ROP screener Neurology Genetics ENT
Nutrition experts	Dietician Lactation consultant Occupational therapist specialized in infants with feeding problems
Rehab team	Occupational therapist
Support services	Social worker Discharge planning Pastoral / bereavement support

**Laboratory** (available 24 hrs/day stat)

Level II capability plus TPN bloodwork including lipid levels

- diagnostic imaging (available 24 hrs/day);
- level II capability; in addition, capacity for on-site neonatal cardiac echos;
- capability for on-site neonatal EEG 7 days/week.

## **Level III Maternal and Newborn Centres**

### **Definition**

The inpatient services provided at a level III maternal and newborn centre should have all the functional capabilities provided by level I, level II, and advanced level II centres. In addition, level III centres will provide:

- subspecialty care for high-risk pregnancies including multiple pregnancies > twins and < 34 weeks' gestation and for singletons < 32 weeks' gestation;
- care for unwell, unstable newborns;
- care for mothers with severe medical complications such as cardiac functional impairment; requirements for complex diagnostic/therapeutic procedures; and
- care for infants with anticipated complicated antenatal genetic or fetal anomalies that require immediate neonatal or surgical interventions.

In collaboration, all level III facilities are responsible for organizing an educational program tailored to meet the needs of their maternal and newborn health professionals, and those in institutions within their regionalized system of care. It is expected that appropriate community and social support services, including discharge planning, will be made available to all families. The provision of all services, including education and bereavement counseling, involves collaboration and participation with level I, level II and advanced level II maternal and newborn centres in order to provide coordinated programs throughout the region.

Research initiatives include initial evaluation of new technologies, effectiveness of the provision of maternal and newborn service throughout the health care system, analysis and evaluation of regional data including complications and outcomes.

It is expected that level III maternal and newborn centres will accept timely and appropriate transfers of mothers and infants from home births, level I, level II and advanced level II centres. Level III centres will transfer patients back to advanced level II, level II and level I centres when appropriate, and in a timely manner. In addition, all level III maternal and newborn centres will continue to provide all levels of care for residents of their immediate community.

### **Maternal**

#### **Minimum/maximum scope of services**

- ability to provide all services, treatments and resources offered within level I, level II and advanced level II maternal and newborn centres;
- ability to manage all high-risk pregnancies including those complicated by a diagnosis of congenital malformations or other disorders that may require special diagnostic or therapeutic procedures, pediatric subspecialty consultation, or surgical or medical care or consultation not available in the referring facility.

## **Treatments**

- ability to perform the full range of non-invasive and invasive procedures/treatments required for maternal tertiary intrapartum antenatal care and birth, including intensive care.

## **Newborn**

### **Minimum/maximum scope of services**

Ability to perform all treatments available in level I, level II and advanced level II maternal and newborn centre, in addition to the following:

- resuscitation, stabilization and ongoing care of all neonates born in tertiary facilities;
- care for neonates who are beyond the scope of the practice, resources and/or expertise of the referring hospital personnel;
- neonatal surgery according to the guidelines of the CHN Surgical Services Task Force;<sup>5,6</sup>
- coordination of services for genetic counseling, bereavement and palliative care;
- intensive care monitoring;
- ventilation including high frequency oscillation, high frequency jet ventilation and nitric oxide;
- management of infants with complex organ failure;
- care of infants with major congenital anomalies;
- intensive, rapid or specialized investigations;
- coordination of long-term follow-up for infants at highest risk for neurodevelopmental delay and those enrolled in research studies;
- multiples > twins + <34 weeks' gestation.

### **Transport**

- coordination and timely transport of infants requiring intensive care during transport will be provided by the transport team of The Hospital for Sick Children;
- all (other) newborn transport in the GTA will also be facilitated by the neonatal transport team at The Hospital for Sick Children;
- the neonatal transport team will be notified when maternal transfer is determined to be unsafe or when transfer of the newborn to a level III facility has been predetermined; when time prior to birth permits, the neonatal transport team will attend the delivery.

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<sup>5</sup> Surgical Services Task Force Report, Child Health Network for the Greater Toronto Area, October 1998.

<sup>6</sup> The Hospital for Sick Children will continue to provide all levels of neonatal care for the downtown community of Toronto. All complex neonatal surgery will be performed at The Hospital for Sick Children.

## Treatments

Ability to perform the following:

- a full range of non-invasive and invasive procedures/treatments required for neonatal tertiary intensive care.

## Transfer of care

It is expected that level III maternal and newborn centres will accept timely and appropriate transfers of mothers and infants from home births, as well as level I, level II, and advanced level II maternal and newborn centres, and will transfer patients back to advanced level II and level II centres when appropriate.

## Resources

**Personnel** (must have expertise in neonatal and/or maternal/fetal medicine)

Obstetrician	In-house 24 hrs/day
Anesthesiologist	In-house 24 hrs/day
Neonatologist (or designate)	In-house 24 hrs/day
Family physicians	According to professional guidelines
Midwives	According to professional guidelines
Nurses	In-house available 24 hrs/day; strive to provide 1:1 staffing ratio during active labour and in NICU as required; 1:4 post partum according to National Guidelines
Neonatal resuscitation team	According to National Resuscitation Guidelines, and National Guidelines for Tertiary Maternal and Newborn Centres
Respiratory therapist	In-house 24 hrs/day
Transport personnel	In-house teams 24 hrs/day, availability relative to demand for service
Back-up system	A formalized back-up system is required for all personnel in-house 24 hrs/day, in the event they are unable to respond in an emergency.

**Laboratory** (available 24 hrs/day/stat) (micro-technique for neonates)

**Level I, level II and advanced level II capability plus:**

Within 1 hour                      Level I and level II plus special blood and amniotic fluid

tests

Within 1-6 hours	Level I and level II
Within 24-48 hours	Level I and level II plus: special tests, including plasma and urine amino acids and organic acids
Within hospital or Facilities available	Level I, level II and advanced level II capabilities plus polymerase chain reaction for viruses and electron microscopy
Ultrasound	Level I, level II and advanced level II capabilities plus computerized axial tomography. Ultrasound equipment in labour and birth area, and available in neonatal intensive care unit. Magnetic resonance imaging (may require patient transfer)  Available with interpretation within 6 hours
Blood bank	Resource centre for network. Direct communication to labour and birth area, and nurseries  Available with interpretation within 6 hours
Pathology	Maternal and newborn pathologist to be available daily

Level III maternal and newborn centres also have other technologically sophisticated laboratory and pathology services available during regular business hours.