Guidance Document

Perinatal, Birthing and Newborn Levels of Care

March 2023

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Introduction

In 2011, the Provincial Council for Maternal and Child Health (PCMCH) developed and implemented criteria for maternal and neonatal levels of care (LOC) with the goal of ensuring equitable access to timely, high quality, evidence-based family-centred care for all pregnant people and newborns in Ontario. The guidelines defined service and resource requirements including diagnostic tests and treatments as well as the health human resources necessary to provide care to these populations.

In 2018, PCMCH completed a system-level evaluation of the guidelines that demonstrated an update was required to reflect current practice and services.

In 2021, PCMCH convened Maternal Levels of Care (MLOC) and Neonatal Levels of Care (NLOC) Task Forces to revise the Standardized Maternal and Newborn Levels of Care Definitions. This work is aligned with the work completed by Critical Care Services Ontario (CCSO) to revise criteria related to the levels of care for neonatal intensive care units (NICU), otherwise described as level 2 and level 3 NICU services (Please see Addendum).

The MLOC and NLOC Task Forces were comprised of representatives with a diversity of skills, experience and perspectives from a wide range of practice settings and clinical disciplines and the geography of Ontario. The guidelines are based on evidence-informed practices and system-level evaluations with the goal of clarifying and standardizing definitions and criteria, and formally acknowledging services hospitals can provide with current resources.

PCMCH's revised Perinatal, Birthing and Newborn Levels of Care Guidance Document has been reviewed by all hospitals that provide perinatal, birthing and newborn care in Ontario. These hospitals confirmed available resources, which establishes ownership and accountability for the level of service that can be provided given the criteria detailed within the guidelines.

We recognize that birth occurs in many places including birth centres, homes and other planned out-of-hospital birth locations. The levels of care discussed within this document apply only to in-hospital birthing and newborn services.

A Note About Inclusive Language

PCMCH is committed to advancing equity and promoting diversity and inclusion across the perinatal and child health system in Ontario. This commitment is demonstrated through the intentional use of inclusive and gender-neutral language. Recognizing that this language is continuously evolving, task force members involved with this work came to consensus on the use of 'perinatal' and 'birthing/pregnant individual' rather than 'maternal' and 'birthing/pregnant woman/women'.

Foundational Criteria

All hospitals that provide perinatal, birthing and newborn services are expected to deliver care that includes, but is not limited to, the foundational criteria described below. In circumstances where hospitals experience service reductions or closure, hospitals should mitigate the impacts of these disruptions by following service closure protocols as guided by their respective Ontario Health Region.

Routine Prenatal Care

Routine prenatal care should be provided based on the assessment of needs of the pregnant individual, their family and unborn baby.[1] Frequency of visits and coordination of services should be determined based on this assessment and available resources. Read the Public Health Agency of Canada's Family-Centred Maternity and Newborn Care: National Guidelines, Chapter 3: Care During Pregnancy for more information about best practices in prenatal care.

Informed Consent and Shared Decision Making

The factors that influence a pregnant individual's choice of location for care not only includes available resources and anticipated risk but also economic, social and cultural factors. The pregnant individual's autonomy must be respected even when the location of care does not align with the recommendations of the medical team. The process of shared decision making ensures the location of care is fully informed and respectful of patient preferences and autonomy.

To make an informed decision about location of birth, the pregnant individual should be made aware of the following:

- Services that are available and not available at a specific centre
- The most appropriate location in which to give birth based on clinical assessment and relevant consultations, including circumstances that would warrant the transfer of either the pregnant individual or newborn
- Inherent risks of pregnancy and birth
- Consideration of both birthing parent factors and fetal/newborn factors

Discussions leading to informed choice of location of care should occur throughout all stages of pregnancy, labour, birth and post-birth.

[1] Chapter 3: Care during Pregnancy in: Public Health Agency of Canada. *Family-Centred Maternity and Newborn Care: National Guidelines.* Ottawa (ON): PHAC; 2020

Rural and Remote Considerations

Social, financial, emotional and cultural factors must be considered when service planning with pregnant individuals in rural and remote geographies.[2,3] The impact of transferring to a higher or lower level of care on the pregnant individual, newborn and family needs to be balanced with local resources and skills. For example, logistics and cost of travel for the individual and isolation from family and support networks may play a large role in the pregnant individual's decision about where to deliver and what services they access. These impacts, along with the pregnant individual's decision, should be acknowledged and respected. Further recommendations to guide the provision of perinatal and birthing care in rural and remote environments can be found by reading the Joint Position Paper: Rural Maternity Care, approved by the Canadian Association of Midwives, the Canadian Association of Perinatal and Women's Health Nurses, the College of Family Physicians of Canada, the Society of Obstetricians and Gynaecologists of Canada and the Society of Rural Physicians of Canada.

Cultural Considerations

The population of Ontario is ethnoculturally diverse, and it is important that all care providers acknowledge this diversity and the influence it may have on a pregnant individual and the newborn.[4] Cultural matters that may influence the health of the pregnant individual during pregnancy include:

- Historical experiences with the healthcare system
- An unfamiliar healthcare system and supports
- System exclusion of cultural supports and practices to uphold values and beliefs
- Healthcare providers having different beliefs, expectations and practices
- Healthcare providers having unconscious bias
- Language barriers in both written and verbal communication

Cultural competency is defined as:

"*The knowledge and interpersonal skills that allow providers to understand, appreciate, and work with individuals from cultures other than their own. It involves an awareness and acceptance of cultural differences, self-awareness, knowledge of a patient's culture, and adaptation of skills.*"[5]

It is important to note that cultural safety goes beyond cultural competence as it is more than the acknowledgement of differences, power imbalances and historical factors. Continuous awareness, sensitivity, humility and self-reflection, alongside building trust,

[2] Perinatal Services BC. *Maternal/Fetal and Neonatal Services: Setting the Stage*. Vancouver, BC: Perinatal Services BC; 2020 January 27

[3] Joint Position Paper Working Group. *Joint position paper on rural maternity care*. Can J Rural Med. 2012 Fall;17(4):135-41, E1-9. English, French. PMID: 23017345

[4] Chapter 3: Care during Pregnancy in: Public Health Agency of Canada. *Family-Centred Maternity and Newborn Care: National Guidelines*. Ottawa (ON): PHAC; 2020

[5] Chapter 3: Care during Pregnancy in: Public Health Agency of Canada. *Family-Centred Maternity and Newborn Care: National Guidelines*. Ottawa (ON): PHAC; 2020

is key to practicing cultural safety and must be central to the care one provides.[6] Of note, cultural safety is defined by those who receive care, not by those who provide it.

Indigenous Health

Anti-Indigenous racism, discrimination and bias have had profound negative impacts on the health and wellness of Indigenous peoples in Ontario. Indigenous peoples have faced enormous inequities within the healthcare system, including in perinatal and birthing care, due to historical colonial beliefs and attitudes towards their culture and traditions.

There have been many accounts where Indigenous peoples have received unfair, racist and dangerous treatment within healthcare settings, which have had detrimental impacts to their health, up to and including death. This has been rooted in colonization where accompanying attitudes and practices are deeply embedded within many societal structures inside and outside of the health system. For example, this document describes clinical criteria required at healthcare facilities to support high-quality care to birthing individuals and newborns. However, high-quality care is not guaranteed for Indigenous peoples as Western approaches to perinatal, birthing and neonatal care not only fail to acknowledge the trauma, racism and discrimination experienced by Indigenous peoples, but also fail to incorporate the culture, traditions and governance systems that influence Indigenous wellbeing.[7]

Anti-Indigenous racism and discrimination continues to permeate the health system, including perinatal and child health. This is evident through the ongoing coerced (without free and informed consent) sterilization of Indigenous women.[8] Further, despite birth alerts officially ending in October 2020, these continue to disproportionately impact Indigenous women and families which has a lifelong effect on Indigenous people, including distrust of the healthcare system and providers.

Given the historical and current day harm that anti-Indigenous racism causes, it is highly recommended that all individuals working with the healthcare system complete recognized and validated Indigenous cultural safety training, such as the course offered by the Indigenous Primary Health Care Council, as a minimal requirement in healthcare service delivery.

Healthcare Provider Training

The provision of medical coverage and clinical skills may vary based on the level of perinatal, birthing and newborn care. Healthcare providers must be competent and have the knowledge, skill and judgement to provide care at their designated level of care.

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[6] IBID

[7] Perinatal Services BC. '*Honouring Indigenous Women's and Families' Pregnancy Journeys: A Practice Resource to Support Improved Perinatal Care Created by Aunties, Mothers, Grandmothers, Sisters, and Daughters*' 2021 May, Vancouver, BC

[8] Report of the Standing Senate Committee of Human Rights. *The Scars that We Carry: Forced and Coerced Sterilization of Persons in Canada - Part II*, July 2022.

Hospitals are responsible for ensuring appropriate training is delivered to the healthcare providers on their team and their clinical skills are maintained.

Established Transfer Protocols

All staff involved in the care of pregnant or birthing individuals and newborns are expected to be knowledgeable about the level of care their hospital can provide. Further, it is expected that staff are aware of established referral pathways and processes when a patient requires transport to a higher or lower level of care (e.g., Ontario Life or Limb Policy).

Considerations for Transfer

Transfers of care to other centres may be deemed necessary and appropriate at any stage in the continuum of pregnancy, birth, post-birth and neonatal care. Transfer decision-making is complex and includes not only consideration of the acuity of the patient but local resources and the reality of system constraints. Collaboration is required to ensure that, to the greatest extent possible, all pregnant individuals and newborns are cared for at the most appropriate level of care.

In any case where hospital-based physicians or midwives require support or resources beyond what is locally available to care for any urgent or emergent concerns, CritiCall Ontario will locate a hospital and physician specialist to provide a consultation and facilitate transfer if determined to be necessary. Non-emergent transfers, including those identified prior to hospitalization, should be made by established and formal local referral pathways. When possible, a transfer prior to birth is preferred when there is an anticipatory need that a newborn will require a higher level of care.

When requesting, accepting and/or facilitating transfers, healthcare providers are encouraged to evaluate:

- The gestational age and other neonatal factors that may require specialist consultations, interventions or surgery not available at the current hospital
- Conditions with significant potential to become unstable, even if not unstable at the time of transfer discussion (e.g., severe pre-eclampsia)
- Conditions that require specialized surgical resources (e.g., abnormal placentation)
- Non-obstetrical conditions that require specialized resources (e.g., moderate or severe cardiac disease)

Perinatal, Birthing and Newborn Levels of Care Criteria

The following tables detail the minimum standard criteria required at each LOC for planned births and newborn care. While these criteria detail a minimum standard, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill.

Each table is comprised of three sections:

1. **Definition** – Key characteristics of the LOC.
2. **Criteria and Availability** – Diagnostic tests and/or treatments with requirements for availability at the specific LOC as applicable.
3. **Healthcare Providers** – Healthcare providers and associated skillsets required to support safe births, procedures and/or newborn care at the specific LOC as applicable.

Healthcare Providers

Many different healthcare providers could be involved with the provision of perinatal, birthing and newborn care. These may include, but are not limited to:

- Anesthesiologists
- Dietitians
- Doulas
- Family Physicians
- General Surgeons
- Indigenous Midwives
- Lactation Consultants
- Mental Health Workers
- Midwives
- Nurse Practitioners
- Obstetricians
- Occupational Therapists
- Paediatricians
- Physician Assistants
- Physiotherapists
- Registered Nurses
- Registered Practical Nurses
- Registered Respiratory Therapists
- Social Workers
- Spiritual and Cultural Support
- Traditional Healers

The provision of the associated services by each healthcare provider should be determined based on the needs of the community being served and availability of local resources. To support safe births, criteria related to requirements for specific healthcare providers are detailed within this document.

Gestational Age and Weight Criteria

Gestational age and birth weight criteria were established by PCMCH in 2011. In 2020, CCSO's NICU Levels of Care Task Force discussed whether these should be revised and deemed that the criteria were not in need of revision at this time. Therefore, to ensure alignment between the LOC guidelines, the MLOC and NLOC Task Forces did not revise gestational age or birth weight criteria.

Alignment with Neonatal Levels of Care

Hospitals' self-designated perinatal, birthing and newborn LOC are expected to be aligned to ensure infants are delivered in hospitals that have the resources and expertise to manage care requirements e.g., a Level 1a or 1b birthing hospital is expected to have the ability to provide Level 1 newborn care. For more details related to

requirements of Level 2 and Level 3 neonatal intensive care units, read CCSO's NICU Levels of Care Guidance Document.

Defining Acuity and Complexity

The levels of care are defined by risk (low, moderate and high) and are described by the acuity and complexity of a patient. Acuity refers to the level of severity, or how life-threatening, a condition is. Complexity refers to multiple systems or issues that may be involved in managing a patient's condition, including co-morbidities.[9] The following table defines low, moderate and high risk of the pregnant individual, their fetus(es) and/or the newborn.

Table 1: Defining Acuity and Complexity[10]

Risk Assessment	Acuity	Complexity
Low Risk	Factors that are not anticipated to impact pregnant individual or fetal well-being; if a condition is present requiring increased observation, it is transient.	Pregnant individual, fetal or neonatal conditions that are common, may have a mild impact and can be managed using standard resources and treatment protocols by a low-risk care provider (i.e., midwife or family physician).
Moderate Risk	Factors that have the potential to affect pregnant individual or fetal well-being but not life-threatening; requires increased observation and care.	Pregnant individual, fetal or neonatal medical, surgical or obstetrical conditions that may have a moderate impact and require access to a range of specialty care providers and resources.
High Risk	Factors that have potential to be life-threatening to the pregnant individual or fetus	Pregnant individual, fetal or neonatal medical, surgical or obstetrical conditions with severe impact and require access to multi and/or subspecialty care providers and resources.

[9] Perinatal Services BC. *Maternal/Fetal and Neonatal Services: Setting the Stage*. Vancouver, BC: Perinatal Services BC; 2020 January 27
[10] IBID

Perinatal, Birthing and Newborn Levels of Care Criteria

The following tables outline Perinatal, Birthing and Newborn Levels of Care criteria for Newborn Level 1, and Perinatal and Birthing Levels of Care from Level 1a to Level 3. While these detail the minimum standard criteria required at each LOC for planned births and newborn care, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill. For example, a Level 1b centre may offer planned delivery of uncomplicated dichorionic twin pregnancies when the necessary resources, including skilled providers, are available. When offering care typically available at a higher LOC, hospitals should consider the needs for the pregnant person, their fetus and/or newborn, the full range of resources available as well as the reliability with which they are available.

Newborn Levels of Care Criteria: Level 1

<table>
<tr><th>Gestational Age</th><th colspan="3">Level 1[11]</th></tr>
<tr><td rowspan="9">≥ 36 weeks and 0 days</td><td>Definition</td><td colspan="2">• Provides planned neonatal services to low risk newborns at ≥36 weeks in a mother/baby dyad care model; including minor transient conditions related to physiological adaptation.
• Provides postnatal care of newborns including education and support for parenting, bonding, feeding and lactation.
• Documented process in place for consultation and referral to higher level of care
• Low risk.[12]</td></tr>
<tr><td colspan="2">General Laboratory Criteria</td><td>Availability</td></tr>
<tr><td colspan="2">Bacterial and viral studies, including Bacterial Smear</td><td rowspan="7">• Specimen collection available 24/7
• Can be analyzed on- or off-site
• Micro technique for all routine bloodwork and newborn screening</td></tr>
<tr><td colspan="2">Blood Type and Coombs</td></tr>
<tr><td colspan="2">Drug Screening</td></tr>
<tr><td colspan="2">Neonatal Bilirubin Screening</td></tr>
<tr><td colspan="2">Newborn Screening</td></tr>
<tr><td colspan="2">Point of Care Testing, e.g., Glucose</td></tr>
<tr><td colspan="2">Umbilical Cord pH</td></tr>
</table>

[11] Perinatal, Birthing and Newborn Levels of Care Criteria: While these criteria detail a minimum standard, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill.

[12] Refer to Table 1: Defining Acuity and Complexity for more information.

Newborn Levels of Care Criteria: Level 1 continued

Gestational Age	Level 1[13]	
≥ 36 weeks and 0 days	**Required Standard Criteria**	**Availability**
	Neonatal Resuscitation: A minimum of 1 person who attends every delivery must be current in the provision of neonatal resuscitation as per CPS Guidelines for Neonatal Resuscitation Program (NRP)	24/7
	Ventilation: Establish and maintain a secure method of effective ventilation, e.g., bag mask ventilation, laryngeal mask ventilation (LMA), or endotracheal tube (ETT)	24/7
	Oxygen Therapy: Short-term for stabilization or management	24/7
	Continuous O2 sat monitoring	24/7
	Continuous cardiac monitoring	24/7
	Ability to establish venous access (IV/UVC/IO)	24/7
	Administration of blood products	24/7 or available via on-call
	Emergent drainage of pneumothorax (depending on HCP knowledge and skill, in accordance with CPS Guidelines for NRP[14])	24/7 or available via on-call
	Phototherapy	24/7
	Management and support of effective informed choice feeding	24/7
	Designated Level 1a or 1b for perinatal and birthing care	24/7
	Healthcare Providers	• Postpartum care for the newborn is carried out by healthcare providers depending on the type of patient care needed. • Access to some allied health services (may be off-site).

[13] Perinatal, Birthing and Newborn Levels of Care Criteria: While these criteria detail a minimum standard, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill.

[14] As per CPS Guidelines for Neonatal Resuscitation Program, a qualified team with full resuscitation skills should be immediately available for every resuscitation. Full resuscitation skills may include ventilation, intubation, chest compressions, umbilical venous catheter insertion, medication administration and fluid resuscitation as well as the skills necessary to manage evacuation of a pneumothorax.

Perinatal and Birthing Levels of Care Criteria: Level 1a

Gestational Age	Level 1a[15]		
≥ 36 weeks and 0 days	**Definition**	• Singleton pregnancies with cephalic presentation. • Low risk pregnancies.[16] • Caesarean section may not be available. Birthing person should be informed that in the case a caesarean section is required, they may have to be transferred to a centre that can perform this procedure. • Assesses available resources and completes consultation prior to use of oxytocin for augmentation and induction.	
	Criteria		**Availability**
	Labour analgesia (example: PCA narcotics or nitrous oxide)		24/7
	Electronic Fetal Monitoring		24/7
	Outlet vacuum assisted vaginal delivery		24/7
	Administration of blood products		24/7
	Designated Level 1 for neonatal care		24/7
	Healthcare Providers	• When a caesarean delivery is determined to be necessary and within scope of service, there must be timely access to anaesthetic and surgical services for the operative procedure.	

[15] Perinatal, Birthing and Newborn Levels of Care Criteria: While these criteria detail a minimum standard, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill.
[16] Refer to Table 1: Defining Acuity and Complexity for more information.

Perinatal and Birthing Levels of Care Criteria: Level 1b

Gestational Age	Level 1b[17]		
≥ 36 weeks and 0 days	**Definition**	• Singleton pregnancies. • Low risk pregnancies.[18] • Hospital can provide caesarean section which would allow for a planned birth for a person who may be 1) requiring induction of labour and 2) at a higher risk for caesarean section.	
	Criteria		**Availability**
	Labour analgesia (example: PCA narcotics or nitrous oxide)		24/7
	Electronic Fetal Monitoring		24/7
	Outlet vacuum assisted vaginal delivery		24/7
	Administration of blood products		24/7
	Augmentation and Induction of Labour		24/7
	Caesarean Section		24/7
	D&C		24/7
	Designated Level 1 for neonatal care		24/7
	Healthcare Providers	• Assessment and care by an anaesthesiologist or family physician (FP) anaesthetist for operative deliveries.	

[17] Perinatal, Birthing and Newborn Levels of Care Criteria: While these criteria detail a minimum standard, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill.
[18] Refer to Table 1: Defining Acuity and Complexity for more information.

Perinatal and Birthing Levels of Care Criteria: Level 2a

Gestational Age	Level 2a[19]	
≥ 34 weeks and 0 days and a birth weight of > 1800 grams	**Definition**	• Singleton pregnancies. • Uncomplicated dichorionic twin pregnancies. For a twin pregnancy and gestational age that is < 36 weeks and 0 days, consider consultation and transfer. • Low-risk pregnancies. • Moderate-risk pregnancies can be considered with appropriate consultation.[20]
	Criteria	**Availability**
	Labour analgesia (example: PCA narcotics or nitrous oxide)	24/7
	Regional anaesthesia	24/7
	Electronic Fetal Monitoring	24/7
	Outlet vacuum assisted vaginal delivery	24/7
	Administration of blood products	24/7
	Augmentation and Induction of Labour	24/7
	Caesarean Section	24/7
	D&C	24/7
	Designated Level 2a or higher Neonatal Intensive Care Unit[21]	24/7

[19] Perinatal, Birthing and Newborn Levels of Care Criteria: While these criteria detail a minimum standard, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill.
[20] Refer to Table 1: Defining Acuity and Complexity for more information.
[21] Refer to CCSO's NICU Levels of Care Guidance Document for more details.

Perinatal and Birthing Levels of Care Criteria: Level 2b

Gestational Age	Level 2b[22]	
≥ 32 weeks and 0 days and a birth weight of > 1500 grams	**Definition**	• Singleton pregnancies. • Uncomplicated dichorionic twin pregnancies. For a twin pregnancy and gestational age that is < 34 weeks and 0 days, consider consultation and transfer. • Low-risk pregnancies. • Moderate-risk pregnancies can be considered with appropriate consultation.[23]
	Criteria	**Availability**
	Labour analgesia (example: PCA narcotics or nitrous oxide)	24/7
	Electronic Fetal Monitoring	24/7
	Outlet vacuum assisted vaginal delivery	24/7
	Administration of blood products	24/7
	Augmentation and Induction of Labour	24/7
	Caesarean Section	24/7
	D&C	24/7
	Regional anaesthesia	24/7
	Designated Level 2b or higher Neonatal Intensive Care Unit[24]	24/7

[22] Perinatal, Birthing and Newborn Levels of Care Criteria: While these criteria detail a minimum standard, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill.
[23] Refer to Table 1: Defining Acuity and Complexity for more information.
[24] Refer to CCSO's NICU Levels of Care Guidance Document for more details.

Perinatal and Birthing Levels of Care Criteria: Level 2c

Gestational Age	Level 2c[25]		
≥ 30 weeks and 0 days and a birth weight of > 1200 grams	**Definition**	• Singleton pregnancies. • Low and moderate risk pregnancies.[26] • Uncomplicated dichorionic or monochorionic twin pregnancies. For a twin pregnancy and gestational age that is <32 weeks and 0 days gestation, consider consultation and transfer. • Uncomplicated triplets as expertise and service capacity allows.	
	Criteria		**Availability**
	Labour analgesia (example: PCA narcotics or nitrous oxide)		24/7
	Regional anaesthesia		24/7
	Electronic Fetal Monitoring		24/7
	Outlet vacuum assisted vaginal delivery		24/7
	Administration of blood products		24/7
	Augmentation and Induction of Labour		24/7
	Caesarean Section		24/7
	D&C		24/7
	Obstetrical ultrasound		24/7
	Designated Level 2c or higher Neonatal Intensive Care Unit[27]		24/7
	Healthcare Providers	• MFM consultation available for increased risks (i.e., Delivery of infants with antenatally diagnosed non-life-threatening fetal anomalies not requiring immediate intervention).	

[25]Perinatal, Birthing and Newborn Levels of Care Criteria: While these criteria detail a minimum standard, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill.
[26] Refer to Table 1: Defining Acuity and Complexity for more information.
[27] Refer to CCSO's NICU Levels of Care Guidance Document for more details.

Perinatal and Birthing Levels of Care Criteria: Level 3

Gestational Age	Level 3[28]	
Any Gestational Age	**Definition**	• High risk pregnancies.[29] • All pregnant individual and fetal complications that cannot be managed in a level 1 or 2 level of care.
	Criteria	**Availability**
	Labour analgesia (example: PCA narcotics or nitrous oxide)	24/7
	Regional anaesthesia	24/7
	Electronic Fetal Monitoring	24/7
	Outlet vacuum assisted vaginal delivery	24/7
	Administration of blood products	24/7
	Augmentation and Induction of Labour	24/7
	Caesarean Section	24/7
	D&C	24/7
	Obstetrical ultrasound	24/7
	ICU Care on-site	24/7
	Designated Level 3a or 3b Neonatal Intensive Care Unit[30]	24/7

[28] Perinatal, Birthing and Newborn Levels of Care Criteria: While these criteria detail a minimum standard, some hospitals may provide services that are typically available at a higher LOC hospital depending on local resources and skill.
[29] Refer to Table 1: Defining Acuity and Complexity for more information.
[30] Refer to CCSO's NICU Levels of Care Guidance Document for more details.

Perinatal, Birthing and Newborn Levels of Care Designation by Hospital and Ontario Health Region

Hospital Name	OH Region	Perinatal & Birthing	Newborn
Alexandra Marine and General Hospital	West	1a	1
Bluewater Health - Sarnia	West	2b	2b
Brant Community Healthcare System	West	2b	2b
Cambridge Memorial Hospital	West	2a	2a
Chatham-Kent Health Alliance - Chatham	West	2b	2b
Erie Shores Healthcare	West	1b	1
Grand River Hospital	West	2b	2b
Grey Bruce Health Services - Owen Sound Regional Hospital	West	2b	2b
Groves Memorial Community Hospital*	West	1b	1
Guelph General Hospital	West	2a	2a
Hamilton Health Sciences - McMaster Children's Hospital	West	3	3b
Hamilton Health Sciences - West Lincoln Memorial Hospital	West	1b	1
Hanover and District Hospital	West	1b	1
Huron Perth Healthcare Alliance - Stratford General Hospital	West	2a	2a
Joseph Brant Hospital	West	2b	2b
Listowel Memorial Hospital	West	1a	1
London Health Sciences Centre - Victoria Hospital	West	3	3b
Middlesex Hospital Alliance - Strathroy Middlesex General Hospital	West	1a	1
Niagara Health - St. Catharines Site	West	2c	2c
Norfolk General Hospital	West	1b	1
North Wellington Health Care - Louise Marshall Hospital*	West	1a	1
North Wellington Health Care - Palmerston and District Hospital*	West	1a	1

Hospital Name	OH Region	Perinatal & Birthing	Newborn
South Bruce Grey Health Centre - Walkerton	West	1b	1
St. Joseph's Healthcare Hamilton - Charlton Campus	West	2b	2b
St. Thomas Elgin General Hospital	West	2b	2b
Windsor Regional Hospital - Metropolitan Campus	West	2c	2c
Woodstock General Hospital	West	1b	1
Collingwood General and Marine Hospital	Central	1b	1
Georgian Bay General Hospital - Midland Site	Central	1b	1
Halton Healthcare - Georgetown Hospital	Central	1b	1
Halton Healthcare - Milton District Hospital	Central	2b	2b
Halton Healthcare - Oakville Trafalgar Memorial Hospital	Central	2b	2b
Headwaters Health Care Centre	Central	1b	1
Mackenzie Health - Cortellucci Vaughan Hospital	Central	2c	2c
Muskoka Algonquin Healthcare - Huntsville District Memorial Hospital Site	Central	1b	1
Muskoka Algonquin Healthcare - South Muskoka Memorial Hospital Site	Central	1b	1
Oak Valley Health - Markham Stouffville Hospital	Central	2c	2c
Orillia Soldiers' Memorial Hospital	Central	2c	2c
Royal Victoria Regional Health Centre	Central	2c	2c
Southlake Regional Health Centre	Central	2c	2c
Stevenson Memorial Hospital	Central	1b	1
Trillium Health Partners - Credit Valley Hospital	Central	2c	2c
William Osler Health System - Brampton Civic Hospital	Central	2c	2c
William Osler Health System - Etobicoke General Hospital	Central	2c	2c

Hospital Name	OH Region	Perinatal & Birthing	Newborn
Humber River Hospital	Toronto	2c	2c
Michael Garron Hospital - Toronto East Health Network	Toronto	2c	2c
North York General Hospital	Toronto	2c	2c
Sinai Health - Mount Sinai Hospital	Toronto	3	3a
Sunnybrook Health Sciences Centre	Toronto	3	3a
The Hospital for Sick Children	Toronto	N/A	3b
Unity Health - St. Joseph's Health Centre Toronto	Toronto	2c	2c
Unity Health - St. Michael's Hospital	Toronto	3	2c
Almonte General Hospital	East	1b	1
Brockville General Hospital	East	1b	1
Children's Hospital of Eastern Ontario	East	N/A	3b
Cornwall Community Hospital	East	1b	1
Hawkesbury and District General Hospital	East	1b	1
Hôpital Montfort	East	2a	2a
Kingston Health Sciences Centre	East	3	3b
Lakeridge Health - Ajax Pickering Hospital	East	2b	2b
Lakeridge Health - Oshawa Hospital	East	2c	2c
Lakeridge Health - Port Perry Hospital	East	1b	1
Northumberland Hills Hospital	East	1b	1
Pembroke Regional Hospital	East	1b	1
Perth and Smiths Falls District Hospital - Smith Falls Site	East	1b	1
Peterborough Regional Health Centre	East	2b	2b
Queensway Carleton Hospital	East	2a	2a
Quinte Healthcare - Belleville General Hospital	East	2a	2a
Ross Memorial Hospital	East	1b	1
Scarborough Health Network - Centenary Hospital	East	2c	2c
Scarborough Health Network - General Hospital	East	2c	2c

Hospital Name	OH Region	Perinatal & Birthing	Newborn
The Ottawa Hospital Civic Campus	East	3	2c
The Ottawa Hospital General Campus	East	3	3a
Winchester District Memorial Hospital	East	1b	1
Dryden Regional Health Centre	North West	1a	1
Lake of the Woods District Hospital	North West	1b	1
North of Superior Healthcare Group - Wilson Memorial General Hospital	North West	1a	1
Red Lake Margaret Cochenour Memorial Hospital**	North West	1a	1
Riverside Health Care Facilities Inc - La Verendrye Hospital	North West	1b	1
Sioux Lookout Meno Ya Win Health Centre	North West	1b	1
Thunder Bay Regional Health Sciences Centre	North West	2c	2c
Health Sciences North	North East	2c	2c
Hôpital Notre-Dame Hospital**	North East	1b	1
Lady Dunn Health Centre	North East	1a	1
Manitoulin Health Centre	North East	1a	1
North Bay Regional Health Centre	North East	2c	2c
Sault Area Hospital	North East	2c	2c
Sensenbrenner Hospital	North East	1b	1
St. Joseph's General Hospital Elliot Lake**	North East	1a	1
Temiskaming Hospital	North East	1b	1
Timmins and District Hospital	North East	2a	2a
West Parry Sound Health Centre	North East	1b	1

* 2011 Level of Care; Updated Perinatal, Birthing and Newborn Level of Care not available (assessment pending)
** Intermittent obstetrical service closures due to availability of health human resources may impact level

Acknowledgements

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Addendum

Neonatal Intensive Care Unit (NICU) Levels of Care

Guidance Document

Version 1.0

Critical Care Services Ontario
Updated March 2021

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Levels of Care Guidance Document for the Neonatal Intensive Care Unit	
Version 1.0	Developed February 2021
Contact for Questions and Submissions	Critical Care Services Ontario Email: info@ccso.ca Phone: 416-340-4800 ext. 5577

Introduction to Critical Care Services Ontario

Established in 2005, Critical Care Services Ontario (CCSO) was initially responsible for the early implementation of Ontario's Critical Care Strategy. Today CCSO continues to function with a provincial focus coordinating and developing integrated system solutions for Ontario's critical care system and associated specialty programs. CCSO's work is the result of an ongoing collaboration between critical care providers, hospital administrators, and regional and provincial health system partners including the Ministry of Health.

CCSO has been an instrumental component in the evolution of an integrated critical care system for Ontario. Working closely with system partners, CCSO's implementation of improvement initiatives has facilitated a stronger networked system of care, the development of knowledge translation and educational opportunities, and data analytics to support performance management and system standards.

CCSO provides leadership to facilitate system change and provincial alignment to advance critical care services underpinned by a framework for system improvement. This has been applied across all CCSO program areas including Adult, Paediatric and Neonatal Critical Care, as well as specialty programs in Neurosurgery, Trauma and Burns, and the Life or Limb Policy. (https://criticalcareontario.ca/about/#overview).

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Acknowledgments

The purpose of the Neonatal Intensive Care Unit (NICU) Levels of Care Task Force was to develop revised levels of care document applicable to current practice and service within level 2 and level 3 NICUs in Ontario. This document contains criteria that are based on evidence-informed practiceand input from key stakeholders. The goal is to ensure that neonates have access to a consistent and appropriate level of care close to home and when required. This work has been undertaken by a task force comprised of clinical and operational representatives from both level 2 and level 3 NICUs from across Ontario. The task force also used data provided through a system-level evaluation that was completed in the fall of 2018. This work also takes into account previous work to establish the Maternal and Neonatal Levels of Care completed by the Provincial Council for Maternal and Child Health (PCMCH) in 2011 and updated in 2013.

NICU Levels of Care Task Force Members:

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We would like to thank the NICU Levels of Care Task Force Members for their work and commitment to ensuring that neonates in Ontario have access to a consistent and appropriate level of care.

1. Introduction

1.1 Introduction to the Guidance Document

The purpose of this guide is to outline the expected service level of care to be provided to neonates based on a NICU's level of care. The goal of these levels of care recommendations is to update the Levels of Care definitions for neonatal critical care units to reflect a consistent standard of unit capabilities and expectations, and to operationalize the revised levels to support the following objectives:

- Establish a common standard/understanding regarding unit level capacity and capability;
- Provide a mechanism to ensure units are accountable for providing the Level of Care based on the updated defining criteria; and
- Facilitate efficient patient flow across NICU levels of critical care.

2. Enhancing NICU Critical Care Levels in Ontario

2.1 Background for the NICU Levels of Care

In 2008, the Provincial Council for Maternal and Child Health (PCMCH) created the Maternal-Newborn Advisory Committee Access Work Group to determine the optimal provincial system of care for maternal and newborn services. (PCMCH, 2010). The Access Work Group included representation from family medicine, midwifery, neonatology, pediatrics, and perinatology (PCMCH, 2010).

Following a system level evaluation completed by PCMCH for the maternal-newborn levels of care, it was determined that the existing criteria within the current NICU levels of care required updating to reflect evolving practices. Critical Care Services Ontario (CCSO) convened a group of system leaders from across the province to provide input and guidance reflecting evidence informed practice. This group, the NICU Levels of Care Task Force, represented the operational and clinical perspective from across Level 2 and Level 3 NICUs including representation from Neonatal Transport, neonatal networks and PCMCH

By strengthening the existing maternal-newborn levels of care and adding NICU-specific thresholds and targets when required, there will be more clarity around what is expected for specialized neonatal care in Ontario. The revised NICU levels of care will be reviewed by each organization with approval and sign back provided by the by the hospital Chief Executive Officers (CEOs). This will also establish accountability for the criteria and support of patient flow in the system.

3. Suggested Human Resource Requirements for NICUs

The following suggested Health Human Resource Requirements for NICUs do not specify staffing ratios and the recommendations are for consideration based on a specific NICU level of care, infant acuity and evidence informed information.

3.1 Physician

The provision of medical coverage may vary based on the level of neonatal care. For all level 2 NICUs it is suggested that Paediatricians are the medically responsible care provider with access to a Neonatologist at a Regional Tertiary unit for advanced consults as required. For the level 3 NICUs, Neonatologists are required to be the most responsible care provider due to the complexity and acuity of infants.

3.2 Nursing:

The provision of clinical skills of registered nurses within NICUs will vary depending on the level of care of the NICU. The neonatal nurse is also an advocate for both the infant and family, who works collaboratively with and leveraging family strengths to other members of the interprofessional team to achieve mutually agreed upon goals of care (NANN, 2013).

3.3 Allied health:

The suggested professional staff listed below is not meant to be all inclusive and the number and type of additional professional staff may vary depending on the NICU level of care within an organization. Additional professional staff not listed here may also be included such as Social Work, Pastoral Services, Physiotherapy and/or Occupational therapy.

- **Respiratory Therapists** should be available to support the NICU 24/7/365 for level 2a and 2b NICUs. For the level 2c NICUs, is it recommended to have a RT dedicated to the NICU. For the level 3s, the NICU will require dedicated RTs who have expertise in neonatal respiratory support and must be available 24/7/365.
- **Dieticians** should be available to the NICUs to support the provision of donor milk. Also, for Level 3 NICUs dietician support for neonatal nutritional expertise is a requirement.
- **Pharmacists,** in addition to providing expertise on relevant medications, dosing, routes of administration etc., should also be available to the NICUs to support the provision of standardized TPN solutions as needed. Also, for Level 3 NICUs the expectation is for 7 days a week coverage of staff with neonatal pharmacological expertise.
- **Lactation consultants** should be available for the initiation of early feeding and breast-feeding support in all NICUs across all levels of care.

4. Revised NICU Levels of Care (2021)

4.1 Gestational Age and Weight Criteria

The gestational age and birth weight criteria established by PCMCH in 2013, were discussed and deemed not in need of revision for this iteration of the NICU Levels of Care recommendations. However, the existing criteria were strengthened by the Task Force to define access to care for acute care infants (i.e., infants within the first 72 hours of life). It was also agreed by the Task Force that the maternal and neonatal levels of care would remain congruent to ensure that NICUs did not provide care that was not in alignment with existing maternal services.

In addition to the clarification of criteria for acute care infants, the Task Force also reviewed the criteria for "retro-transfers" that was established by PCMCH in 2013. (PCMCH, 2013). In order to facilitate the continuum of care and to foster the concept of appropriate care closer to home, the criteria for infants being transferred closer to home were revised to reflect current practice.

4.2 Required Standard Criteria for NICUs

The following tables reflect the updated criteria for neonatal levels of care for Ontario NICUs implemented in spring 2021. The revised criteria include practices that are evidence-informed and considered to be the standard level of care for neonatal intensive care units.

Required Standard Treatment for <u>All</u> NICUs: General Laboratory Testing	
Criterion	**Availability**
Bacterial and viral studies	24/365 or available via on-call within 30 minutes
Bacterial smear	24/365 or available via on-call within 30 minutes
Blood type and combs	24/365 or available via on-call within 30 minutes
Continuous O_2 saturation monitoring	24/365
Drug screening	Regional
Metabolic screening	Results available within 12-24 hours depending on the test requested
Micro technique for neonates – all routine blood work and newborn screening	24/365
Therapeutic drug monitoring	24/365 or available within 24 hours
Umbilical cord blood pH	24/365 or available via on-call within 30 minutes

Required Standard Criteria for all Neonatal Intensive Care Units: Criteria for Level 2a NICUs **Acute Care Criteria:** Gestational age ≥ 34 weeks and 0 days ***and*** a birth weight of > 1800 grams **Repatriation Criteria:** Stable infants with a corrected age of > 32 weeks and 0 days ***and*** a weight of > 1500 grams and not requiring ventilator support or advanced treatments or investigations.		
Criteria (category)	**Detail of Criteria (as needed)**	**Availability**
Neonatal resuscitation	A minimum of 1 person who attends every delivery must be current in the provision of neonatal resuscitation as per CPS Guidelines for Neonatal Resuscitation Program.	24/365
Administration of blood products		24/365 or available via on-call within 30 minutes
Catheterization of the umbilical vein		24/365 or available via on-call within 30 minutes
Drainage of pneumothorax		24/365 or available via on-call within 30 minutes
Enteral feeds	Gavage feeding available	24/365
	Use of pumps for enteral feeds – via slow bolus &/or continuous feeds	24/365
Lumbar puncture		24/365 or available via on-call within 30 minutes
Management of substance-exposed infants requiring oral pharmacologic management		24/365
Oxygen therapy	Short term for stabilization or management	24/365
Prostaglandin E1	Available for IV administration	24/365
Ventilation **Recommend consultation with tertiary centre if baby still requires CPAP at 4-6 hours of age.**	Surfactant is available for administration after consultation with tertiary site via CritiCall	24/365 or available via on-call within 30 minutes
	Intubation prior to transport	24/365 or available via on-call within 30 minutes
	Ability to initiate positive pressure ventilation with or without initiation of CPAP	24/365
	CPAP management – including ongoing evaluation and management of an infant for up to 4-6 hours or until transport team arrival.	24/365 or available via on-call within 30 minutes
IV management for up to 48 hours (short term)		24/365

Standard Treatment – All Level 2a Standards <u>Plus</u> Additional Items for Level 2b NICUs **<u>Acute Care Criteria</u>:** Babies born at a gestational age of ≥ 32 weeks *and* 0 days ***<u>and</u>*** a birth weight of > 1500 grams **<u>Repatriation Criteria</u>:** Stable infant with a corrected age > 30 weeks and 0 days ***<u>and</u>*** a weight > 1200 grams ***<u>and</u>*** not requiring any form of invasive or non-invasive ventilation, or advanced treatments or investigations**.**		
Criteria	**Detail Criteria**	**Availability**
Surfactant administration	Ability to intubate and administer surfactant, extubate to CPAP for short term (< 4 hours) management	24/365 or available via on-call within 30 minutes
CPAP duration and management **Recommend consultation with tertiary centre via CritiCall required if baby requires CPAP at 4-6 hours of age**	CPAP management can be provided for up to 48 hours of age NOTE: Maximum Parameters for CPAP (Must consult via CritiCall required if these are reached or exceeded at any time): FiO2 ≥ 30% and/or PEEP Pressure > 8 cm H20 and/or rapidly increasing pressure requirements	24/365 or available via on-call within 30 minutes
Invasive Ventilation **Requires consultation via CritiCall with tertiary centre.**	Ability to initiate as a temporary intervention until transport team arrives. Non-invasive respiratory support using any form of high flow nasal cannula FiO2 and noninvasive ventilation is not recommended	24/365 or available via on-call within 30 minutes
Central line maintenance - umbilical &/or peripheral or Percutaneous Intravenous therapy	Includes surveillance for Catheter-related bloodstream infection (CRBSI)	24/365 or available via on-call within 30 minutes
Intravenous Therapy	Able to provide IV therapy for greater than 1 week (long term)	24/365
Total Parenteral Nutrition (TPN)	Standard solutions available for administration	7 days/week or Dietician expertise required if patient-specific TPN to be ordered.
Use of Donor Milk	For information on eligibility requirements, please refer to the Rogers Hixon Ontario Human Milk Bank	Able to provide donor milk as required

Standard Treatment – Additional for Level 2c NICU **Acute Care Criteria:** Babies born at a gestational age of ≥ 30 weeks and 0 days ***and*** a birth weight of > 1200 grams **Repatriation Criteria**: Baby with a corrected gestational age of ≥ 28 weeks and 0 days ***and*** a weight of ≥ 1000 grams; stable on CPAP for a minimum of 48 hours and not requiring non-invasive or invasive ventilatory support.		
Criteria	**Detail Criteria**	**Availability**
Thoracentesis and/or chest tube initiation and maintenance		24/365
Echocardiography		On-call or alternate availability within 48 hours and remote reporting to cardiology.
Electroencephalogram (EEG)		On-call or availability within 48-72 hours Ability to have remote reporting to neurology
Invasive BP monitoring capabilities		24/365
Non-invasive ventilation	Must consult tertiary care via CritiCall if any of the following occur: • $FiO_2 \geq 30\%$ • PEEP > 8 cmH_2O **and/or** • Rapidly increasing pressure requirements May be able to provide non-invasive support for up to 14 days of age	24/365
Invasive Ventilation	Ability to initiate as a temporary intervention until transport team arrives Requires consultation via CritiCall with tertiary centre if baby requires invasive ventilatory support at 4-6 hours of age. If invasive ventilation is required it may be continued up to 48 hours of age in consultation with a tertiary centre.	24/365
Neonatal Follow up Clinic	Specific services offered by the Neonatal Follow-up Program vary by each program or region.	Access regionally or access Tertiary Care as necessary
PICC line maintenance		24/365

Standard Treatment – Additional for Level 2c NICU **Acute Care Criteria:** Babies born at a gestational age of ≥ 30 weeks and 0 days ***and*** a birth weight of > 1200 grams **Repatriation Criteria**: Baby with a corrected gestational age of ≥ 28 weeks and 0 days ***and*** a weight of ≥ 1000 grams; stable on CPAP for a minimum of 48 hours and not requiring non-invasive or invasive ventilatory support.		
Criteria	**Detail Criteria**	**Availability**
Retinopathy of Prematurity screening	Screening may be done by Ophthalmology or through the use of a RetCam™ if available.	Ability to provide screening 52 weeks/year and to do weekly screening when required May be done locally or Regionally
Use of Donor Milk	For information on eligibility requirements, please refer to the Rogers Hixon Ontario Human Milk Bank	Able to provide donor milk as required

Standard Treatment – Additional for Level 3a and 3b NICUs **Acute Care Criteria:** Babies born of any gestational age and birth weight		
Criteria	**Detail Criteria**	**Availability**
Amplitude integrated Electroencephalography (aEEG)		24/365
Echocardiography		24/365 or available within 30 minutes via on call
Unstable respiratory and cardiovascular systems	Long term management of high acuity infants and medically complex and fragile infants	24/365
Ventilation	All modalities, unlimited duration	24/365
Optional for 3a: Management of babies with Hypoxic Ischemic Encephalopathy (HIE) with the use of an active thermal device		24/365
Pathology	**Laboratory analysis**	
Additional Requirements Level 3b (optional for Level 3a)		
Management of babies with Hypoxic Ischemic Encephalopathy (HIE) with the use of an active thermal device		
Continuous EEG capabilities	Available within 12-24 hours	
On-site surgical and/or sub-specialty capabilities	24/365 or available on call within 30 minutes	

5. Conclusion

CCSO and partners have updated the NICU Level of Care to develop clear and measurable definitions, the scope of services and admission criteria according to the designations. All revisions and updates incorporate evidence-informed current practices where possible and consensus of the Task Force in circumstances when published evidence was not available. NICUs will determine their Level of Care by completing the self-assessment tool.

To ensure neonates are receiving appropriate care in NICUs with corresponding capabilities, all NICU's will be accountable for maintaining their self-identified Level of Care. The updated Levels of Care will allow better understanding of each NICU's capabilities and promote improved patient flow in the system. Using data analysis and a Performance Management framework, CCSO will work to ensure accountability of each NICU to its designation and ensure that Ontario's youngest patients and their families have access to the most appropriate level of care when required.

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