

Neonatal Nursing Technical Skills Checklist

For Level 2 and Level 3 Neonatal Intensive Care Units

September 2023

Version Control

Neonatal Nursing Technical Skills Chec	klist
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Public Information

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About Critical Care Services Ontario

Established in 2005, Critical Care Services Ontario (CCSO) led the implementation of Ontario's first Critical Care Strategy and now centrally coordinates and develops integrated system solutions for critical care (Adult, Paediatric and Neonatal) and specialty programs aligned with critical care (Neurosurgery, Trauma and Burns, and the Life or Limb Policy). CCSO's work is the result of an ongoing collaboration between critical care providers, hospital administrators, partners from the Ministry of Health, Ontario Health, and other health system leaders.



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1. Introduction

The College of Nurses of Ontario (CNO) defines competency as the knowledge, skill, ability and judgment required for safe and ethical nursing practice (College of Nurses of Ontario). Competencies may involve skills, which are not only tasks, but are behavioural actions that require the Registered Nurse to use depth and breadth of knowledge, skill and judgment, which allows them to safely practice and competently adapt to changes in the health care environment, ensuring high quality and safe care (Petty, 2014; Mirlashari J, 2016).

This Neonatal Nursing Technical Skills Checklist is a compendium document to the Practice Standards for Neonatal Nursing Practice in Ontario (2021). The checklist is to be used in conjunction with the Standards as well as any relevant hospital policies arising within the site's region, procedures and guidelines. This skills checklist includes suggested neonatal nursing skills that can guide the skill development of individuals who work in Level 2 Neonatal Intensive Care Units (NICUs), Level 3 NICUs as well as novice NICU nurses who are completing their orientation/preceptorship and who are expected to demonstrate competence in all relevant Level 2 and/or Level 3 skills by its completion.

This skills checklist is not exhaustive, instead it is intended to be resource that can be modified to meet the needs of each NICU environment.



2. NICU Skills Checklist

1 = Performs with direct supervision 2 = Performs with indirect guidance		Self-Asse	Self-Assessment		ptor
2 = Performs with 3 = Competent to perform n/o = No opportu	independently and safely	Mid-point	Final	Mid-point	Final
Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
	Physical Assessr	nent		· · ·	
General					
Performs full head-to-toe assessment, including vital signs					
Performs a focused assessment related to the patient's current condition					
	System-Related S	Skills			
Cardiac	•				
Asses	sment				
Auscultation; heart Sounds/Murmurs, rhythm					
Pulses					
Blood Pressure (non-invasive)	Blood Pressure (invasive), using transducer				
Blood Pressure (invasive) Level 2c	Blood Pressure (invasive)				
Heart Rate					
Pulse Oximetry					
Perfusion; skin colour/temperature, capillary refill; peripheral, central					
Equipment/	Procedures				
Set up cardiac monitor, including lead placement, age-appropriate limit setting					
Pulse oximeter, including probe placement, limit setting					
Interpret lab findings relevant to cardiac, e.g., blood gas					
Perform neonatal resuscitation					



	direct supervision	Self-Asse	essment	Prece	ptor
3 = Competent to perform	indirect guidance independently and safely unity to practice	Mid-point	Final	Mid-point	Final
Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Care fo	r Infants				
Post-resuscitation					
Undiagnosed cardiac murmur	Undiagnosed cardiac murmur				
Undiagnosed cardiac defect	Undiagnosed cardiac defect				
Diagnosed cardiac defect	Diagnosed cardiac defect				
Heart failure	Heart failure				
Respiratory					
	sment				
Lung assessment; auscultation, palpation, inspection					
Respiratory pattern, rate, work of breathing					
Skin/nail bed colour					
Identify abnormal blood gas results and report findings to team					
Readiness for extubation					
Apnea/bradycardia					
Equipment	/Procedures				
Provides oral and nasopharyngeal suctioning, including:	Lung assessment including percussion as required				
Use of appropriate suctioning modalities (wall/portable)	Assist with intubation including medication administration for conscious sedation				
Use of appropriate device, e.g., soft tip, appropriate size	Interpret and collaborate to manage infant with abnormal blood gas				
Assist with intubation	Assist with extubation				
 Assist with surfactant administration, as per unit policy/procedure 					
Set up/ apply/ monitor/ manage oxygen therapy including:	Implement respiratory support appropriate for infant response/condition				



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
 nasal cannula, including high and low flow 					
 nasal continuous positive airway pressure/CPAP 					
Mask oxygen					
 Set up/check bag/mask 					
 Set up/ monitor oxygen tank, and/or blender 					
 Effective use of bag/ mask to provide ventilation 					
Set up/monitor non-invasive oxygen saturation					
Identify signs/symptoms of pneumothorax (clinically, x-ray)					
 Assist with needle aspiration of pneumothorax and/or chest tube placement 					
• Set up underwater seal for chest tube, using device available					
Identify abnormal blood gas and report findings to team					
Assist with extubation					
Care of I	nfants				
Respiratory distress	Initiation and ongoing management of arterial/venous lines				
Transient tachypnea of newborn	Evolving chronic lung disease				
Meconium aspiration	Ventilation – non-invasive and invasive (including High Frequency Oscillation (HFO)/High Frequency Jet Ventilation (HFJV))				
Pneumothoraces	Initiation, monitoring and weaning of iNO				
Pneumonia					



	Self-Assessment Pre		Prece	eceptor	
independently and safely	Mid-point	Final	Mid-point	Final	
Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)					
sment					
Procedures					
EEG and Cerebral Function					
Assist with initiation of cooling procedures for infant with acute/unstable HIE					
Infonto					
U					
	(includes all Level 2 NICU Skills plus additional skills) sment Procedures EEG and Cerebral Function Monitoring (CFM) Assist with initiation of cooling procedures for infant with	Indirect guidance independently and safely unity to practice Mid-point Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills) Image: Constraint of the second se	Indirect guidance independently and safely unity to practice Mid-point Final Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills) additional skills) sment sment <	indirect guidance independently and safely mity to practice Additional Level 3 NICU Skills additional skills) Additional skills) Additional skills) Additional skills additional	



	Performs with direct supervision		essment	Preceptor		
	indirect guidance independently and safely unity to practice	Mid-point	Final	Mid-point	Final	
Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)					
Implement neuro-protective interventions, e.g., developmental supportive care practices	Altered neurological status associated with genetic abnormality					
	Post-op neurosurgery Ventriculo-peritoneal shunt or					
	reservoir Acute intraventricular hemorrhage (IVH)					
	Subgaleal hemorrhage Neural tube defects					
Gastro-intestinal	CNS infections, e.g., meningitis					
	tion and Fluid Management)					
Abdominal inspection						
Auscultation of bowel sounds						
Inspection						
Palpation						
Nutritional status (height/length and weight) including growth patterns on growth chart						
	Procedures					
Naso and orogastric (NG) tube placement	Gastric decompression (constant or intermittent suction)					
Confirm NG tube placement, using pH	Post-operative wound assessment and care					
Support infant feeding, e.g., breastfeeding	Prolonged Total Parenteral Nutrition (TPN)/Lipids					
Use of lactation aides, e.g., finger feeding, other devices	Gastrostomy tubes					
Sets up/monitor gravity feeds/enteral feeding pump feeds	Abdominal drains					
Measurement of abdominal girth/circumference						



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Care of I	nfants				
Gastro-esophageal reflux	Possible necrotizing enterocolitis (NEC)				
Feeding Intolerance	Abdominal malformations, e.g., Gastroschisis/Oomphalocele				
Established 'ostomy' e.g., colostomy	Post-gastro-intestinal surgery, e.g., tracheoesophageal atresia/fistula, new ostomy such as colostomy				
Instruct/assist mothers to express breast milk (see Nutrition and Fluid Management for additional skills)	Gastic decompression (continuous or intermittent suction)				
Short-term TPN/Lipids					
Renal/Genitourinary					
Assess	ment				
Calculates daily intake/output Intake ml/kg/day Output mL/kg/hr Weight gain/loss 					
Intake/output calculation monitoring					
Assessment of skin for turgor, edema, abdominal distention					
Identification of abnormal renal lab results, e.g., creatinine, blood urea nitrogen					
Equipment/P	rocedures				
Collection of urine sample					
Diaper weights					
Urinalysis; pH, specific gravity, dipstick					
Urine culture					
Insertion/care of Foley catheter					
Assist with suprapubic bladder tap/aspiration					



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Care for					
Urinary tract infection (UTI)	Extrophy of the bladder				
	Agenesis of kidneys				
	Hydronephrosis				
	Renal failure, including dialysis				
Endocrine/Metabolic (See also Nu	trition and Fluid Management)				
Asses	sment				
Identify serum glucose abnormalities; hypo and hyperglycemia	Identify abnormality of AST/ALT, direct/total bilirubin, thyroid screening				
Differentiate between jitteriness and seizures					
Identify abnormalities of calcium, potassium, sodium, indirect bilirubin					
Identify physiologic jaundice					
Identify appropriate glucose monitoring					
schedule in collaboration with team					
Equipment/	Procedures				
Point of Care Device	Calculate: Glucose mg/kg/min Electrolytes mEq/kg/day				
Heel stick blood sampling					
Phototherapy; standard, fiber optic, bili- blanket, including eye patch application and skin care	Assists with set up and exchange transfusion procedure including monitoring and sampling				
Care for					
Physiologic jaundice	Inborn errors of metabolism				
Pathologic jaundice	Biliary atresia				
Breastmilk jaundice	Sepsis with multi-organ failure				
Infants of diabetic mothers (IDM)	Persistent hypo or hyperglycemia				
Transient electrolyte abnormality	Persistent electrolyte abnormality				
	Hypothyroidism				
	Ambiguous genitalia				
	Post exchange transfusion				
	management				



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Orthopaedics/ Dermatology					
Assess	ment				
Joints:					
inspection, palpationmovement (range of motion)					
Skin					
inspection, palpation					
Circulation					
 Identification of potential fractures (e.g., clavicle) 					
Detect presence of skin lesions					
Detect skin breakdown					
Equipment/P	rocedures				
Splints/casts	Traction for congenital hip dysplasia (CHD)				
Application of skin barrier creams	Harness for CHD				
Use of humidity in isolette					
Developmentally supportive positioning					
Strategies to prevent pressure injury (consult Wound Care Specialist as required)					
Care for	Infants				
Skin breakdown	CHD				
Premature skin management	Talipes Epqinovarus (Club foot)				
Pressure injury	Brachial plexus injury				
	Clavicle fracture				
	Other fractures				
Haematology/Infection					
Assess	ment				
Signs and symptoms of infection – early vs. late onset					
Signs and symptoms of anemia					
Signs and symptoms of polycythemia					



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Signs and symptoms of abnormal bleeding					
Equipment/F	Procedures				
Handwashing/Hand Hygiene	Anti-viral preparation/administration				
Routine precautions/isolation					
Lab sampling for CBC/differential, blood culture, CRP, platelets					
LP-assist with procedure					
Urine culture					
Wound culture					
Culture of any lesions					
Antibiotic preparation/ administration					
Blood product checks/administration					
Care for	Infants				
Evolving bacteremia/septic shock, pre- transfer	Bacteremia/septic shock				
Risk of/Transient sepsis	Herpetic infection				
•	Viral infection				
	Osteomyelitis				
Vascular Access/Phlebotomy					
Assess	ment				
Insertion of IV device					
Monitor IV insertion site for patency, extravasation					
Monitor Peripherally Inserted Central Catheter (PICC); assess patency,	CVL/PICC misplacement resulting in complications, e.g., pneumothorax,				
dressing	pleural/ pericardial effusion				
Administration/monitoring of blood					
products; e.g., packed cells, platelets					
Recognizes signs of Peripheral IV (PIV) injury					
Equipment/F	Procedures				
Removal of interstitial PIV	Blood draw from appropriate access device				



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Draw venous blood samples	Assist with PICC, umbilical venous, umbilical arterial line placement				
Insertion of PIV; IV cannula, butterfly, as per NICU policy					
Capillary blood sampling IV tubing changes					
IV pump programing/management, including use of IV pump drug library					
Assist with UA/UV line placement (securing, measuring, documenting)					
Care of I					
Use of extravasation tool for documentation and monitoring	Peripheral Arterial Lines				
With PIV, UAC, UVC, PICC, CVL, as per NICU policy	Management of extravasation (e.g hyaluronidase, phentolamine)				
Receiving blood transfusion	Complications from peripheral/central lines				
Pain/Neonatal Abstinence Syndro	ome (NAS)				
Assess					
Makes efforts to differentiate between pain and agitation	Assesses pain responses of sedated infant				
Recognizes signs of infant pain					
Routine assessment (minimum Q4-6H) and documentation of pain					
using a validated pain score, including pre/post procedure, pre/post analgesia, post-operative					
Identifies maternal/infant risk factors for NAS (before and after birth)					
Assesses for NAS symptoms, e.g., CNS irritability, yawning, hiccups, sneezing, mottled skin, feeding problems, sleep pattern disturbance					



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Completes Finnegan Abstinence score every 4 hours and reports findings to health care team (if applicable)					
Implementation of the Eat, Sleep, Console for assessment and management of NAS (if applicable)					
Equipment/P	rocedures				
Routinely uses pharmacologic and non- pharmacologic interventions to prevent and/or treat pain (e.g., sucrose, topical anaesthetic agents, containment, parental presence, etc.) during painful procedures/events/therapies	Complex opioid weaning				
Educates family caregivers about infant's pain response and engages them in infant's pain management plan	Assesses and documents response to opioid withdrawal/weaning, e.g., Withdrawal Assessment Tool (WAT- 1)				
Administers analgesics according to policy/procedure					
Provides supportive care for infants with NAS/elevated Finnegan Scores, e.g., quiet, dim environment, swaddling, supportive positioning, consider demand feedings					
Provides supportive care using the Eat/Sleep/Console Practices for infants experiencing withdrawal symptoms					
Care of I	nfants				
Low dose opioid infusions	Regional anaesthesia, e.g., epidural				
Oral pain medication	Local injected anaesthetic agents, e.g. Lidocaine				
Topical pain medication	High dose opioid infusions				
Dorsal penile nerve block (used for circumcision), as per NICU policy	Preterm infants experiencing NAS				



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Late Preterm or Full-Term infants experiencing NAS					
Restraints	1				
Assess	ment				
Apply principles of least restraint in care, as per hospital and NICU policy (Least Restraint Law, Ontario 202)	Need for pharmacologic restraint (e.g., sedation, muscle relaxation)				
 Consider need for restraints including: Prevention of infant injury Protect a vulnerable site, e.g., surgical wound Maintain infant position during treatment/procedure Prevention of accidental device removal, e.g., IV, ETT, NGT Monitor infant in restraints, as per unit and hospital policy (in accordance with CNO and Legislative standards) Reassess ongoing need for restraints in collaboration with clinical team 					
Equipment/F	Procedures				
Apply restraints only as required to ensure patient safety and as per Hospital/NICU policy/ procedures	Log-rolling infant who is muscle relaxed, sedated				
Choose protective strategy that matches need of infant	Teaching family members to be 2 nd pair of hands to facilitate infant repositioning				
Document assessments, use of restraints, rationale and ongoing decision-making in health record					
Collaborate with physician/team to obtain consent from family caregiver for use of restraints					



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		Mid-point	Final	Mid-point	Final
Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Ensure a medical order is placed when restraints are required					
Care of	Infants				
Restrained using physical device or approach, as per provincial legislation, hospital and/or NICU policy/procedure, e.g., mitten, elbow, mummy, holding/preventing infant from moving See References for additional	Muscle-relaxed and/or deep sedation				
information Medication Administration					
Assess Review infant's birth and health history, current clinical issues, response to medications					
Knowledge of high-alert medications that require "independent double check" by two nurses prior to medication administration					
Assesses infant's response to each dose of medication administered					
Equipment/F	Procedures				
Review all prescribed medications prior to administration, in accordance with CNO standards and guidelines					
Double-check appropriateness of drug dose/weight (e.g., mg/kg), indication, frequency, timing, route, requirement for an independent double check, all in accordance with organizational guidelines, e.g., formulary					
Verify correct patient identification (using at least 2 unique identifiers) with					



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
medication record, using organizational strategies to ensure correct administration, e.g., barcode scanning, use of automated dispensing cabinets (ADCs)					
Administers all medications as per hospital/NICU policies, including use of flushes (NGT, IV)					
Document administered medication as per hospital/NICU policy and CNO documentation standards and guidelines					
Medications may include: antibiotics/anti-infectives, electrolytes, vaccines, anti-convulsants, respiratory					
stimulants, bronchodilators, steroids, diuretics, etc.					
Nutrition and Fluid Management	· · · · · · · · · · · · · · · · · · ·				
Assess	ment				
Weight gain/loss, head circumference Growth curve percentiles					
Feeding readiness, ability, endurance, volume taken/feed (cue-based feeding)					
Fluid balance (intake, output, presence of edema, urine SG, etc.)					
Identification of electrolyte imbalance					
Routine glucose monitoring	Glucose intake calculation (mg/kg/min)				
Oral/enteral feeding tolerance, e.g., feeding volume, aspirates, emesis	Energy intake calculation (kcal/kg/day)				
Stooling pattern					
Impact of medications such as diuretics, vitamins, electrolytes					
Parental preferences and supports re: feeding, including breastfeeding					



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Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
Ongoing (daily) assessment of maternal milk supply, if applicable					
Equipment/F	Procedures				
Use of expressed breast milk (EBM)	Administer high concentration				
pumping process, including how parents access pump for home, milk labeling, storage and transport	glucose infusions, greater than D12.5W				
Use of two unique identifiers to confirm correct EBM or infant-specific formula, including independent double check if required by hospital/NICU policy	Administer high concentration electrolyte solutions				
Weighing infants	Administration of medications, e.g., glucagon, diazoxide for prolonged hypoglycemia; insulin for hyperglycemia				
Measurement of head circumference					
Glucose monitoring (bedside/POCT device, lab)					
Administering high concentration glucose infusions, up to D12.5W					
Care for	Infants				
Transient electrolyte imbalance, e.g., hypo/hyper glycemia	Significant/sustained glucose and/or electrolyte imbalance				
Transitioning from enteral to oral feeds	Significant feeding intolerance requiring investigation				
Compromised intrauterine growth Requiring TPN/Lipids, as per NICU policy	Persistent hyperinsulinism				
Use of donor milk to support feeding as indicated	Hypopituitarism				
Feeding of chronic infants with chronic lung disease	Hypothyroidism				
	Inborn errors of metabolism				



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3 = Competent to	rms with indirect guidance perform independently and safely o opportunity to practice	Mid-point	Final	Mid-point	Final
Level 2 NICU Skills	Additional Level 3 NICU Skills (includes all Level 2 NICU Skills plus additional skills)				
	Extreme prematurity				
	Persistent feeding intolerance requiring investigation				
	Complex feeding and nutritional needs/demands				



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