Competencies Profile - Interfacility Critical Care Transport of Maternal, Neonatal, and Paediatric Patients

Recommendations for a Minimum Set of Standards

July 4, 2012
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### Competencies Profile - Interfacility Critical Care Transport of Maternal, Neonatal, and Paediatric Patients

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Preamble
Competencies Profile - Interfacility Critical Care Transport of Maternal, Neonatal, and Paediatric Patients

Recommendations for a Minimum Set of Standards

CAPHC Transport Systems

July 4, 2012

Purpose and Application of this Transport Competencies Profile

At a national symposium entitled "Transport Systems moving our Children across Systems – Challenges, Barriers and Enablers", held at CAPHC’s 2008 Annual Conference in Edmonton, conference delegates identified the need to develop national standards for the interfacility transport of critically ill maternal, neonatal, and paediatric patients.

In 2009, CAPHC established a National Transport Systems Steering Committee comprised of multidisciplinary experts from across the country that began to address this issue.

In June 2010, the Transport Systems Steering Committee initiated working groups to develop specific national standards. The Practitioner Profile Working Group, a team of Canadian neonatal and paediatric transport experts, was established to define and recommend a set of minimum standards for Canadian maternal, neonatal, and paediatric critical care transport practitioners.

Critical Care Transport Practitioners and Teams are responsible for the stabilization and safe transport of critically ill neonatal, paediatric and/or high risk maternal patients.

Unstable neonatal and paediatric patients may be classified as the following:

- Potential for or compromised airway, respiratory distress, respiratory failure and/or requiring assisted ventilation support
- Cardiovascular instability and/or need for cardiovascular support
- Altered level of consciousness
- Low birth weight and the extremely low birth weight preterm neonate
- Paediatric trauma
Unstable maternal patients may be classified as the following:
- Threatened preterm labour and/or high risk maternal conditions

Critical Care Transport teams also participate in repatriation transports.

Due to the unique and dynamic nature of each transport, critical care transport practitioners must acquire numerous competencies to meet the needs of a variety of transport scenarios. Patient outcome during transport is influenced by a multitude of decisions regarding assessment, stabilization and transport conditions. While each individual member of a transport team may not possess all of the required competencies, the critical care transport team, by the collective sum of its members’ individual skills and abilities, will meet the recommended minimum set of required competencies.

The following Transport Competencies Profile is presented by the CAPHC Transport Systems Practitioner Profile Working Group as recommendations for a minimum set of standards for Canadian maternal, neonatal, and paediatric critical care transport teams. These competencies cover a broad spectrum of requirements which, for the purposes of this Profile, have been summarized under the following seven categories:

- Professional Responsibilities
- Communication
- Health and Safety
- Assessment and Diagnostics
- Therapeutics
- Integration
- Transportation

Every critical care transport is unique. Optimal patient outcome involves maternal, neonatal, and paediatric critical care transport teams striving for and achieving best practices. Mastery of the competencies listed in this Profile by all critical care transport practitioners will promote optimal patient outcome during transport.
Section 1

Professional Responsibilities
1. Professional Responsibilities

1.1 GENERAL COMPETENCY - Function as a professional

1.1.a Maintain patient dignity.

1.1.b Reflect professionalism through use of appropriate language.

1.1.c Dress appropriately and maintain personal hygiene.

1.1.d Maintain appropriate personal interaction with patient.

1.1.e Ensure confidentiality of all patient and organizational information in compliance with relevant provincial and federal legislation.

1.1.f Participate in quality management programs.

1.1.g Utilize community support resources as appropriate.

1.1.h Maintain membership and participate in relevant professional interest group or association.

1.1.i Behave ethically.

1.1.j Function as patient advocate.

1.2 GENERAL COMPETENCY - Participate in continuing education and maintenance of skills

1.2.a Develop personal plan for continuing professional development.

1.2.b Self-evaluate and set goals for improvement as related to professional practice.

1.2.c Incorporate relevant evidence from medical literature into practice.

1.2.d Participate in/facilitate transport research.
Section 1
Professional Responsibilities

1.3  **GENERAL COMPETENCY - Possess an understanding of the medico-legal aspects of the profession**

1.3.a  Comply with scope of practice.
1.3.b  Recognize patient and family rights and the implications on the role of the provider.
1.3.c  Include all pertinent and required information on the appropriate documents.

1.4  **GENERAL COMPETENCY - Recognize and comply with relevant provincial and federal regulations**

1.4.a  Function within relevant legislation, policies and procedures, as well as, within established local, provincial and program standards.

1.5  **GENERAL COMPETENCY - Function effectively in a team environment**

1.5.a  Work collaboratively with a partner.
1.5.b  Accept and deliver constructive feedback.
1.5.c  Work collaboratively with other emergency response agencies.
1.5.d  Work collaboratively with other members of the health care team.

1.6  **GENERAL COMPETENCY - Make decisions effectively in a transport environment using patient specific resources**

1.6.a  Exhibit reasonable and prudent judgment.
1.6.b  Practise effective problem-solving.
1.6.c  Delegate tasks appropriately.
Communication
2. Communication

2.1 GENERAL COMPETENCY - Practise effective verbal communication skills which are considerate of cultural factors

2.1.a Deliver an organized, accurate and relevant report utilizing telecommunication devices.

2.1.b Deliver an organized, accurate and relevant verbal report.

2.1.c Deliver an organized, accurate and relevant patient history.

2.1.d Provide information to patient and family about their situation and how they will be treated.

2.1.e Interact effectively with the patient, families, bystanders and other health care professionals who are in stressful situations.

2.1.f Speak in language appropriate to the listener.

2.1.g Use appropriate terminology.

2.1.h Ensure communication with media is consistent with organizational policy.

2.2 GENERAL COMPETENCY - Practise effective written communication skills

2.2.a Record organized, accurate and relevant patient information.

2.2.b Prepare professional correspondence.

2.3 GENERAL COMPETENCY - Practise effective non-verbal communication skills which are considerate of cultural factors

2.3.a Exhibit effective non-verbal behaviour.

2.3.b Practise active listening techniques.

2.3.c Establish trust and rapport with patients and colleagues.

2.3.d Recognize and react appropriately to non-verbal behaviours.
2.4 **GENERAL COMPETENCY - Practise effective interpersonal relations**

2.4.a Treat others with respect which includes consideration of cultural factors.

2.4.b Exhibit empathy and compassion while providing care.

2.4.c Act in a confident manner.

2.4.d Act assertively as required.

2.4.e Manage and provide support to patients, families, bystanders, relatives and other health care professionals manifesting emotional reactions.

2.4.f Exhibit diplomacy, tact and discretion.

2.4.g Exhibit conflict resolution skills.
Section 3

Health and Safety
3. Health and Safety

3.1 GENERAL COMPETENCY - Maintain good physical and mental health

3.1.a Maintain personal and work/life balance.

3.1.b Develop and maintain an appropriate support system.

3.1.c Manage personal stress.

3.1.d Practise and maintain effective strategies to improve physical and mental health related to shift work.

3.1.e Exhibit physical strength and fitness consistent with the requirements of professional practice.

3.1.f Exhibit physical strength and fitness consistent with the requirements in the transport environment.

3.1.g Ability to work in the confined spaces of an aircraft/ambulance.

3.1.h Meet height and weight requirements as set out by the organization particularly to air transport systems. To ensure safe flight operations, weight limits for the crew are established on the basis of industry standards, the type and configuration of aircraft used and the environment in which it operates.

3.2 GENERAL COMPETENCY - Practise safe lifting and moving techniques in different modes of transport

3.2.a Practise safe biomechanics.

3.2.b Transfer patient from various positions using applicable equipment and/or techniques.

3.2.c Transfer patient using emergency evacuation procedures and/or techniques.

3.2.d Secure patient using applicable transport equipment and/or techniques.

3.2.e Lift patient and transport equipment in and out of different modes of transport as appropriate.
Section 3
Health and Safety

3.3 **GENERAL COMPETENCY - Create and maintain a safe work environment**

3.3.a Assess environment for safety.

3.3.b Wear clothing appropriate to the expected or potential environmental conditions.

3.3.c Access and participate in health and wellness programs as appropriate.

3.3.d Address potential occupational hazards.

3.3.e Exhibit defusing and self-protection behaviours appropriate for use with patients and others.

3.3.f Conduct procedures and operations consistent with WHMIS and hazardous materials management requirements.

3.3.g Practise infection control techniques.

3.3.h Integrate universal precautions and safe handling procedures (Personal Protective Equipment).

3.3.i Maintain and disinfect equipment as appropriate.
Section 4

Assessment and Diagnostics
Section 4
Assessment and Diagnostics

4. Assessment and Diagnostics

4.1 GENERAL COMPETENCY - Obtain patient history

4.1.a Obtain patient history.

4.2 GENERAL COMPETENCY - Conduct complete physical assessment and interpret findings

4.2.a Conduct patient assessment and interpret findings.

4.2.b Assess and prioritize needs of multiple patients.

4.2.c Conduct ongoing patient assessments, interpret findings and adjust care as appropriate.

4.3 to 4.16. GENERAL COMPETENCIES - Conduct complete physical assessment demonstrating appropriate use of inspection, palpation, percussion and auscultation, and interpret findings.

4.3 GENERAL COMPETENCY - Conduct cardiovascular system assessment and interpret findings

4.3.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric cardiovascular illnesses and injuries including, but not limited to:

4.3.a.1 Congenital heart abnormalities
4.3.a.2 Pneumopericardium
4.3.a.3 Arrhythmias
4.3.a.4 Heart failure
4.3.a.5 Persistent pulmonary hypertension
4.3.a.6 Myocarditis, Endocarditis, Pericarditis
4.3.a.7 Cardiomyopathies
4.3.a.8 Intracranial aneurysm
4.3.a.9 Thoracic aortic dissection
4.3.a.10 Infarction/Ischemia
4.3.a.11 Pericardial tamponade
4.3.a.12 Traumatic injuries including aortic or peripheral vascular disruption, myocardial contusion
4.3.a.13 Shock
4.3.a.14 Pregnancy-induced hypertension
4.3.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.3.b.1 Heart sounds
4.3.b.2 Pulse (rate, rhythm, quality) and perfusion
4.3.b.3 Chest x-ray
4.3.b.4 Blood Pressure (BP) by invasive and non-invasive means (including mean arterial pressure)
4.3.b.5 4 limb BP
4.3.b.6 Pre/post-ductal oxygen saturations
4.3.b.7 Oxygenation index
4.3.b.8 EKG (3-lead and/or 12-lead)

4.4 **GENERAL COMPETENCY - Conduct neurological system assessment and interpret findings**

4.4.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric neurologic illnesses and injuries including, but not limited to:

4.4.a.1 Meningomyelocele
4.4.a.2 Intracranial and intraventricular haemorrhage
4.4.a.3 Hypoxic Ischaemic Encephalopathy and Asphyxia
4.4.a.4 Post-Resuscitation Syndrome
4.4.a.5 Seizures
4.4.a.6 Stroke – ischemic/hemorrhagic
4.4.a.7 Altered mental status – metabolic, structural causes
4.4.a.8 Meningitis, Encephalitis
4.4.a.9 Tumors
4.4.a.10 Head and spinal cord injury
4.4.a.11 Hydrocephalus

4.4.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.4.b.1 Pupils
4.4.b.2 Level of consciousness (including AVPU, GCS)
4.4.b.3 Sarnat staging
4.4.b.4 Neurologic exam including primitive and deep tendon reflexes, tone, strength, cranial nerve assessment with ability to illicit and describe lateralizing findings
Section 4
Assessment and Diagnostics

4.5  **GENERAL COMPETENCY - Conduct respiratory system assessment and interpret findings**

4.5.a  Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric respiratory illnesses and injuries including, but not limited to:

4.5.a.1  Apnea
4.5.a.2  Transient Tachypnea of the newborn
4.5.a.3  Respiratory Distress Syndrome
4.5.a.4  Pneumonia, Bronchitis, Bronchiolitis, Croup
4.5.a.5  Bronchopulmonary Dysplasia
4.5.a.6  Pierre-Robin Sequence
4.5.a.7  Choanal Atresia
4.5.a.8  Tracheoesophageal Fistula, Esophageal Atresia
4.5.a.9  Tracheomalacia, Laryngomalacia
4.5.a.10  Congenital Diaphragmatic Hernia
4.5.a.11  Pneumothorax
4.5.a.12  Pulmonary Interstitial Emphysema
4.5.a.13  Pulmonary hemorrhage
4.5.a.14  CCAM, Congenital Lobar Emphysema, Pulmonary sequestration
4.5.a.15  Aspiration syndromes
4.5.a.16  Pleural effusion, Hemothorax
4.5.a.17  Pulmonary Embolism
4.5.a.18  Asthma
4.5.a.19  Foreign body aspirations
4.5.a.20  Burns
4.5.a.21  Flail Chest
4.5.a.22  Penetrating injuries
4.5.a.23  Toxic inhalation
4.5.a.24  Tracheobronchial disruption
4.5.a.25  Epiglottitis
4.5.a.26  Bacterial Tracheitis
4.5.a.27  Pulmonary Edema

4.5.b  Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.5.b.1  Respiratory rate, effort, excursion and symmetry
4.5.b.2  Breath sounds
4.5.b.3  Diaphragm excursion
4.5.b.4  CXR
4.5.b.5  Pulse oximetry
4.5.b.6  Transillumination
4.5.b.7  End tidal C0₂
4.6  **GENERAL COMPETENCY - Conduct obstetrical assessment and interpret findings**

4.6.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal and fetal conditions, illnesses and injuries including, but not limited to:

4.6.a.1 Disseminated intravascular coagulation
4.6.a.2 Maternal hypertension (including preeclampsia, eclampsia)
4.6.a.3 HELLP
4.6.a.4 Gestational Diabetes
4.6.a.5 Uteroplacental insufficiency
4.6.a.6 Incompetent cervix
4.6.a.7 Polyhydramnios, Oligohydramnios
4.6.a.8 Maternal infections (urinary tract, toxoplasmosis, rubella, cytomegalovirus, herpes simplex, HIV, Strep B, and others)
4.6.a.9 Multiple fetuses
4.6.a.10 Placental abruption
4.6.a.11 Placenta previa
4.6.a.12 Uterine rupture
4.6.a.13 Fetal presentations
4.6.a.14 Prolapsed cord
4.6.a.15 Normal fetal heart rate and variability, abnormal fetal heart rate patterns

4.6.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.6.b.1 Fetal position and presentation
4.6.b.2 Cervical dilatation and contractions
4.6.b.3 Fetal heart rate by auscultation

4.7  **GENERAL COMPETENCY - Conduct gastrointestinal system assessment and interpret findings**

4.7.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric gastrointestinal illnesses and injuries including, but not limited to:

4.7.a.1 Imperforate Anus
4.7.a.2 Abdominal wall defects (Omphalocele and Gastrochisis)
4.7.a.3 Tracheoesophageal Fistula
4.7.a.4 GI obstruction
4.7.a.5 Malrotation, Volvulus
4.7.a.6 Intussusception
4.7.a.7 Necrotizing enterocolitis

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4.7.a.8 Gastroenteritis
4.7.a.9 Hirschsprung's Disease
4.7.a.10 Peritonitis
4.7.a.11 Biliary Atresia
4.7.a.12 Acute and Chronic Liver Failure
4.7.a.13 Gastroesophageal Reflux
4.7.a.14 Cholecystitis, Biliary Colic
4.7.a.15 Hepatitis
4.7.a.16 Pancreatitis
4.7.a.17 Appendicitis
4.7.a.18 Crohn’s Disease, Ulcerative Colitis
4.7.a.19 Penetrating abdominal injuries
4.7.a.20 Blunt abdominal trauma
4.7.a.21 Esophageal disruption

4.7.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.7.b.1 Abdominal distention
4.7.b.2 Bowel sounds
4.7.b.3 Abdominal discolouration
4.7.b.4 Guarding and peritoneal signs
4.7.b.5 Abdominal x-ray

4.8 **GENERAL COMPETENCY - Conduct genitourinary system assessment and interpret findings**

4.8.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric genitourinary illnesses and injuries including, but not limited to:

4.8.a.1 Hyperspadias, Hypospadias, and ambiguous genitalia
4.8.a.2 Hemolytic Uremic Syndrome
4.8.a.3 Renal failure
4.8.a.4 Testicular torsion
4.8.a.5 Vaginal bleeding in pregnancy
4.8.a.6 Renal Calculi and Colic
4.8.a.7 Traumatic renal and bladder injuries

4.8.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.8.b.1 Newborn genitalia (including gender neutral descriptors for cases of ambiguous genitalia)
4.9 **GENERAL COMPETENCY - Conduct integumentary system assessment and interpret findings**

4.9.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric integumentary illnesses and injuries including, but not limited to:

4.9.a.1 Burns
4.9.a.2 Lacerations, avulsions, abrasions
4.9.a.3 Urticaria
4.9.a.4 Necrotizing Fasciitis
4.9.a.5 Epidermolysis Bulosa
4.9.a.6 Herpetic infections

4.9.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.9.b.1 Skin eruptions – location, distribution, description
4.9.b.2 Burns – percent body surface area, degree, distribution

4.10 **GENERAL COMPETENCY - Conduct musculoskeletal assessment and interpret findings**

4.10.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric musculoskeletal illnesses and injuries including, but not limited to:

4.10.a.1 Amputations
4.10.a.2 Compartment Syndrome
4.10.a.3 Dislocation
4.10.a.4 Muscular dystrophies
4.10.a.5 Myopathies
4.10.a.6 Necrotizing Fasciitis
4.10.a.7 Sprains, subluxations
4.10.a.8 Fractures – open, closed, appendicular, axial
4.10.a.9 Osteomyelitis
4.10.a.10 Septic joint
4.10.a.11 Rhabdomyolysis

4.10.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.10.b.1 Joint examination
4.10.b.2 Muscle bulk and symmetry
4.10.b.3 Appendicular skeletal x-ray
Section 4  
Assessment and Diagnostics

4.11 **GENERAL COMPETENCY - Conduct assessment of the immune system and interpret findings**

4.11.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric immune related illnesses including, but not limited to:

- 4.11.a.1 Sepsis
- 4.11.a.2 Chorioamnionitis
- 4.11.a.3 Immunodeficiency states (including HIV, SCID)

4.11.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

- 4.11.b.1 Uterine tenderness

4.12 **GENERAL COMPETENCY - Conduct assessment of the endocrine system and interpret findings**

4.12.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric endocrine illnesses including, but not limited to:

- 4.12.a.1 Hypoglycemia, Hyperglycemia
- 4.12.a.2 Inborn errors of metabolism
- 4.12.a.3 Diabetes Insipidus
- 4.12.a.4 Syndrome of inappropriate diuretic hormone
- 4.12.a.5 Cerebral salt wasting
- 4.12.a.6 Adrenocortical insufficiency
- 4.12.a.7 Diabetes Mellitus, Diabetic Ketoacidosis
- 4.12.a.8 Cushing’s Disease
- 4.12.a.9 Hypocalcemia

4.12.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

- 4.12.b.1 Serum electrolytes
- 4.12.b.2 Blood glucose
- 4.12.b.3 Fluid status

4.13 **GENERAL COMPETENCY - Conduct assessment of the ears, eyes, nose and throat and interpret findings**

4.13.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric ENT illnesses and injuries including, but not limited to:

- 4.13.a.1 Eye trauma
- 4.13.a.2 Burns, chemical exposure

continued /
4.13.a.3 Corneal injuries
4.13.a.4 Penetrating injury
4.13.a.5 Facial and neck trauma
4.13.a.6 Epistaxis
4.13.a.7 Epiglottitis
4.13.a.8 Upper airway obstruction
4.13.a.9 Peritonsillar, Retropharyngeal Abscess
4.13.a.10 Tracheostomies

4.13.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.13.b.1 Head, neck, intraoral examination

4.14 GENERAL COMPETENCY - Conduct multisystem assessment and interpret findings

4.14.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric multisystem illnesses and injuries including, but not limited to:

4.14.a.1 SGA, LGA, IUGR
4.14.a.2 Malaria
4.14.a.3 Radiation exposure
4.14.a.4 Genetic disorders
4.14.a.5 Maternal diseases affecting the fetus or neonate
4.14.a.6 Paediatric oncological conditions
4.14.a.7 Hanging
4.14.a.8 Immunosuppression and transplants
4.14.a.9 Maltreatment
4.14.a.10 Hyperthermia, Hypothermia
4.14.a.11 Electrical shock
4.14.a.12 Shock (hypovolemic, cardiogenic, distributive and obstructive)
4.14.a.13 ISUM (Infants born to Substance-Using Mothers)
4.14.a.14 Anemia
4.14.a.15 Bleeding disorders
4.14.a.16 Overdose
4.14.a.17 Poisoning, accidental ingestion
4.14.a.18 Air embolism
4.14.a.19 Anaphylaxis
4.14.a.20 Decompression sickness
4.14.a.21 Heat cramps/exhaustion/stroke
4.14.a.22 Drowning, near drowning
4.14.a.23 Autoimmune disorders
4.14.a.24 Shock
4.14.a.25 Assault
4.14.a.26 Blast/crush injuries
4.14.a.27 Falls
4.14.a.28 Rapid deceleration injuries
4.14.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.14.b.1 All involved systems
4.14.b.2 Appropriate labs which may included CBC, electrolytes, glucose, blood gas, lactate
4.14.b.3 Available x-rays

4.15  **GENERAL COMPETENCY - Conduct fluid and electrolyte assessment and interpret findings**

4.15.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric musculoskeletal illnesses and injuries including, but not limited to:

4.15.a.1 Dehydration
4.15.a.2 Hyper/hypo-natremia
4.15.a.3 Hyper/hypo-kalemia
4.15.a.4 Hyper/hypo-calcemia
4.15.a.5 Metabolic acidosis

4.15.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.15.b.1 Electrolytes
4.15.b.2 Blood Gas
4.15.b.3 Lactate

4.16  **GENERAL COMPETENCY - Conduct psychiatric assessment and interpret findings**

4.16.a Demonstrate advanced knowledge/understanding of the pathophysiology of maternal, neonatal and paediatric psychiatric illnesses including, but not limited to:

4.16.a.1 Panic and anxiety disorders
4.16.a.2 Attention deficit hyperactivity disorder
4.16.a.3 Autism Spectrum Disorder, pervasive developmental delay spectrum disorders
4.16.a.4 Delirium
4.16.a.5 Anorexia Nervosa, Bulimia
4.16.a.6 Depression
4.16.a.7 Psychosis
4.16.a.8 Delusional disorder
4.16.a.9 Homicidal/Suicidal ideation

4.16.b Conduct advanced assessment and interpretation, including determination of normal vs. abnormal, of:

4.16.b.1 Mental status exam
Section 5

5 Therapeutics
5. Therapeutics

5.1 GENERAL COMPETENCY - Assessment and Diagnostics: Technical Devices and Equipment

5.1.a Demonstrate proficiency with respect to the application, operation, utilization and interpretation of devices/equipment including, but not limited to:

- SpO\textsubscript{2} monitoring
- 3 lead Electrocardiogram (ECG) monitoring
- 12 lead Electrocardiogram (ECG) monitoring
- BP monitoring (noninvasive and invasive)
- Oxygen and air cylinder(s)
- Self inflating bagging system
- Flow inflating bagging system
- T-piece bagging system (i.e. NeoPuff)
- End-tidal CO\textsubscript{2} monitoring
- Transcutaneous PO\textsubscript{2}/CO\textsubscript{2} monitoring
- Noninvasive and invasive ventilator operations/modes
- Inhaled nitric oxide delivery
- Chest drainage system
- Defibrillator
- Point of Care Testing (glucometer and blood gas/electrolyte analysis)

5.2 GENERAL COMPETENCY - Therapeutics: Technical Procedures and Skills

5.2.a Demonstrate clinical proficiency and describe indications, maintenance, complications and adverse effects of procedures/skills including, but not limited to:

- Airway patency
- Positioning strategies to maintain airway patency
- Suctioning:
  - Oropharynx
  - Beyond oropharynx
- Oxygen and air administration
- Nasal prong and mask application
- Bag mask ventilation
- Oropharyngeal airway
- Nasopharyngeal airway
- Supraglottic airway device, (e.g. laryngeal mask airway)
- Subglottic airway device, (i.e. tracheostomy tube)
- Intubation

continued /
Section 5
Therapeutics

5.2.a.12 Percutaneous cricothyroidotomy
5.2.a.13 Needle thoracotomy
5.2.a.14 Chest tube insertion/drainage
5.2.a.15 Peripheral intravenous insertion
5.2.a.16 Venipuncture
5.2.a.17 Umbilical venous insertion/sampling
5.2.a.18 Umbilical arterial insertion/sampling
5.2.a.19 Intraosseous needle insertion
5.2.a.20 Peripheral arterial puncture/line insertion/sampling
5.2.a.21 Capillary blood sampling
5.2.a.22 Blood product administration
5.2.a.23 Cardioversion
5.2.a.24 Defibrillation
5.2.a.25 Transcutaneous pacing
5.2.a.26 Urinary catheter insertion
5.2.a.27 Burn care
5.2.a.28 Neonatal therapeutic hypothermia

5.3  GENERAL COMPETENCY - Therapeutics: Certification

5.3.a  Maintain appropriate courses/certification(s) including, but not limited to:

5.3.a.1 BCLS
5.3.a.2 NRP
5.3.a.3 PALS
5.3.a.4 ACLS
5.3.a.5 ATLS
5.3.a.6 STABLE or ACORN course for level one entry
5.3.a.7 Aero-medical physiology and flight safety course
5.3.a.8 ALARM or ALSO
5.3.a.9 Underwater survival and winter survival training course(s)
5.3.a.10 Land ambulance safety training
5.3.a.11 Other as required or prescribed by employer resulting from Quality Assurance and Quality Improvement processes.

5.4  GENERAL COMPETENCY - Therapeutics: Pharmacology

5.4.a to 5.4.k. - Describe indications, actions, administration method, compatibilities and adverse effects, and demonstrate safety in administering agents including, but not limited to:

5.4.a Antimicrobials:

5.4.a.1 Ampicillin
5.4.a.2 Tobramycin/Gentamicin
5.4.a.3 Cefotaxime/Ceftriaxone

continued /
5.4.a.4 Vancomycin
5.4.a.5 Metronidazole
5.4.a.6 Acyclovir

5.4.b Cardiovascular:
5.4.b.1 Dopamine
5.4.b.2 Dobutamine
5.4.b.3 Milrinone
5.4.b.4 Epinephrine
5.4.b.5 Norepinephrine
5.4.b.6 Vasopressin
5.4.b.7 Prostaglandin E1
5.4.b.8 Adenosine
5.4.b.9 Amiodarone

5.4.c Anticonvulsants:
5.4.c.1 Phenobarbital
5.4.c.2 Phenytoin
5.4.c.3 Fosphenytoin
5.4.c.4 Lorazepam
5.4.c.5 Midazolam
5.4.c.6 Diazepam

5.4.d Pain, Sedation:
5.4.d.1 Sucrose
5.4.d.2 Fentanyl
5.4.d.3 Morphine
5.4.d.4 Midazolam/Lorazepam
5.4.d.5 Ketamine
5.4.d.6 Chloral hydrate
5.4.d.7 Propofol

5.4.e Paralysis and Reversal Agents:
5.4.e.1 Pancuronium
5.4.e.2 Succinylcholine
5.4.e.3 Rocuronium
5.4.e.4 Naloxone
5.4.e.5 Neostigmine

5.4.f Fluid, Electrolyte and Glucose Agents:
5.4.f.1 D5W, D10W, D12.5W, D15W, D5W0.9%NaCl, D10W0.2%NaCl
5.4.f.2 Glucagon
5.4.f.3 Insulin
5.4.f.4 0.45%NaCl, 3% saline
5.4.f.5 Preparation of electrolyte solution as required, (add KCl and/or NaCl to the bag)
5.4.g Blood Products:
- Packed RBCs
- Platelets
- FFP
- Cryoprecipitate
- Albumin
- IVIG

5.4.h Resuscitation:
- Epinephrine
- Calcium gluconate
- Calcium chloride
- Sodium bicarbonate (4.2 %, 8.4%)
- 0.9% saline

5.4.i Respiratory Agents:
- Surfactant
- Nitric oxide
- Salbutamol inhalation/infusion
- Ipratropium bromide
- Epinephrine inhalation
- Magnesium sulphate

5.4.j Newborn Prophylaxis:
- Vitamin K1
- Erythromycin ointment

5.4.k Other Agents:
- Lidocaine
- Atropine
- Hydrocortisone
- Mannitol
- Heparin
- Furosemide
- Caffeine

5.5 **GENERAL COMPETENCY - Therapeutics: Ventilation**

5.5.a Demonstrate understanding of basic concepts and core knowledge of mechanical ventilation.
5.5.b  Appropriately initiate, apply and maintain artificial ventilation including:

- 5.5.b.1  Noninvasive ventilation (CPAP/BiPAP)
- 5.5.b.2  Invasive ventilation
- 5.5.b.3  High-frequency oscillatory ventilation
- 5.5.b.4  High-frequency jet ventilation

5.5.c  Monitor mechanical ventilation and make appropriate interventions.

5.5.d  Recognize effects and complications of mechanical ventilation.
Section 6

Integration
6. Integration

6.1 GENERAL COMPETENCY - Utilize differential diagnostic skills, decision-making skills and psychomotor skills in providing care to patients

6.1.a Provide care to patient experiencing illness or injury to any body system.

   6.1.a.1 Infer a differential diagnosis.
   6.1.a.2 Infer potential complications of illnesses, injuries and prematurity.
   6.1.a.3 Integrate care based on patient presentation.
   6.1.a.4 Communicate information to patient and/or parent/guardian regarding care.
   6.1.a.5 Integrate the approach, assessment, treatment and transportation of the patient.
   6.1.a.6 Justify approach, assessment, care and transportation decisions.

6.2 GENERAL COMPETENCY - Conduct ongoing assessments and provide care

6.2.a Conduct ongoing assessments based on patient presentation and interpret findings.

   6.2.a.1 Integrate ongoing assessments based on patient presentation.
   6.2.a.2 Evaluate results of ongoing assessments.
   6.2.a.3 Integrate assessment and patient care procedures.
   6.2.a.4 Justify ongoing assessment decisions.

6.2.b Re-direct priorities based on assessment findings.

   6.2.b.1 Integrate management priorities.
   6.2.b.2 Communicate changes to patient, family, or primary caregiver(s).
   6.2.b.3 Communicate changes to appropriate medical control physician/communication centre.
   6.2.b.4 Justify approach, assessment, care and transportation decisions.
6.3 GENERAL COMPETENCY - Demonstrate an understanding of the growth and developmental needs of the ill or injured youth, child, infant or neonate

6.3.a Utilize an age appropriate approach when caring for the patient.

6.3.a.1 Describe the transition process from intrauterine to extrauterine life for the neonate.
6.3.a.2 Describe the normal development of premature and term infants.
6.3.a.3 Perform accurate gestational assessment.
6.3.a.4 Demonstrate understanding of the physical needs of the "micro" premature and unstable term infant.
6.3.a.5 Deliver developmentally appropriate care to the "micro" premature infant.
6.3.a.6 Deliver developmentally appropriate care for the stages of growth and development for patients 0-18 years.
6.3.a.7 Utilize the most appropriate method of physical examination for each age group.
6.3.a.8 Demonstrate awareness of safety hazards and use of appropriate communication to ensure patient safety for each age group.

6.4 GENERAL COMPETENCY - Integrate principles of patient-focused family-centred care

6.4.a Deliver patient care in a respectful, collaborative manner in keeping with the philosophy of family-centred care (FCC).

6.4.a.1 Integrate FCC philosophy into practice.
6.4.a.2 Assess each patient/family's knowledge, abilities, coping skills and unique needs.
6.4.a.3 Incorporate patient/family participation in care where appropriate.
6.4.a.4 Identify parent/family stressors and integrate FCC with practice.
6.4.a.5 Ensure patient/family information needs are met.
6.4.a.6 Assist patient/family in their decision-making processes by actively providing complete, realistic and accurate information in clear and simple terms.
6.4.a.7 Optimize opportunity for families to be present with child including during procedures and resuscitation.
6.4.a.8 Deliver patient care respecting cultural and spiritual beliefs of the family.
6.4.a.9 Deliver appropriate care respecting cultural and spiritual beliefs of the family during transports in which the death of a patient occurs.
Section 7

Transportation
7. Transportation

7.1 **GENERAL COMPETENCY - Prepare transport equipment for service**

7.1.a Conduct safety checks.

7.1.b Recognize conditions requiring removal of transport equipment from service.

7.1.c Demonstrate familiarity with all vehicle equipment and vehicle devices within critical care transport team’s domain.

7.1.d Recognize changes in weather, and environmental conditions may impact the performance of some equipment.

7.2 **GENERAL COMPETENCY - Transport patients in ground ambulances/alternative ground transportation**

7.2.a Secure all equipment appropriately.

7.2.b Transfer patient in and out of vehicle safely.

7.2.c Communicate with other transport personnel to ensure patient and team safety.

7.2.d Ensure safety policies in place for the use of alternative transportation vehicles.

7.3 **GENERAL COMPETENCY - Transfer patient to air ambulance**

7.3.a Safely approach stationary rotary-wing aircraft.

7.3.b Safely approach stationary fixed-wing aircraft (i.e. propeller/jet aircraft).

7.4 **GENERAL COMPETENCY - Transport patient in air ambulance**

7.4.a Prepare patient for air critical care transport.

7.4.b Recognize the stressors of flight on patient, crew and equipment, and the implications for patient care.
7.5 **GENERAL COMPETENCY - Decision to Transport by Air**

7.5.a Understand the pertinent criteria for choosing to transport by air which may include transportation logistics, pertinent clinical factors, safety factors and specific "real time" circumstances which influence the choice of mode of transport.

7.5.b Ability to recognize that to determine the most appropriate mode of transport, multiple factors must be considered including, but not limited to, the clinical condition of the patient, time to transport and aviation/safety logistics.

7.5.c Establish clinical priorities for care appropriately in combination with transport logistics. (e.g. when to "stay and play" vs. "snatch and run")

7.6 **GENERAL COMPETENCY - Prepare patient-appropriate equipment for care and transport**

7.6.a Prepare equipment and supplies appropriate for patient's age, size and condition.

7.6.b Describe the checking, loading and securing of equipment and supplies.
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**Resource Material**
- BC Ambulance Service (BCAS) Infant Transport Team: ITT Competency Document
- Ontario Neonatal and Pediatric Transport Education Program (Children’s Hospital of Eastern Ontario, London Health Sciences Centre, McMaster Children’s Hospital & The Hospital for Sick Children – Provincial Collaboration)
- IWK Health Centre Clinical and Core Competencies for Transport Personnel
- AAP – Air and Ground Transport of Neonatal and Pediatric Patients – 3rd edition
- Canadian Aerospace Medicine and Aeromedical Transportation Association – Level 1 Aeromedical Training Program
- Accreditation Canada, Qmentum Program, Standards, Emergency Medical Services – Version 5, 2011