

## **13<sup>th</sup> Annual Canadian PEM Review Course Objectives**

### **Overall learning Objectives:**

- Review current literature and guidelines on core topics in pediatric emergency medicine utilizing a case-based approach.
- Recognize variations in practice patterns given various clinical environments.
- Review strategies to improve bedside ultrasound skills for acute care problems in children.
- Critically appraise pediatric emergency medicine literature.

### **Session Objectives (listed alphabetically by title):**

#### **Behavioural & Mental Health Presentations (Pre-Recorded Online Lecture)**

- Review behavioral and mental health topics in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.

#### Specifically:

- Review an approach to suicidal ideation and suicide screening
- Review various approaches to management of the violent patient
- Review an approach to the management of a psychosis

#### **Cardiology Presentations**

- Review paediatric cardiac emergencies.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.

#### Specifically:

- Approach to chest pain
- Approach to syncope
- Approach to murmurs
- First presentation acyanotic and cyanotic congenital heart disease
  - Definitions normal pre-post ductal saturations
  - Definitions of normal upper and lower limb blood pressure differential
  - Definitions of normal heart size on CXR
- Management of hypercyanotic spells (tet spells)

- Pericarditis
- Myocarditis
- Cardiac tamponade
- Congestive heart failure
- Supraventricular tachycardia
- Heart block
  - Review indications and logistics of pacing in the ED

### **Child Maltreatment** (Pre-Recorded Online Lecture)

- Review child maltreatment topics.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.

Specifically:

- Identify the importance of first presentations of child abuse
- Review the patterns of childhood physical, sexual, and emotional abuse
- Examine an approach to emergency department assessment of children presenting with concerns for maltreatment

### **Critical Appraisal** (Pre-Recorded Online Lecture)

- Review various types of study designs
- Discuss the interpretation and utility of P values
- Discuss the interpretation and utility of confidence intervals
- Review of diagnostic statistics, prognostic statistics, and confounding variables

### **Dentistry Presentations** (Pre-Recorded Online Lecture)

- Review paediatric dental presentations to the emergency department.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.

Specifically:

- Recognize the most appropriate dental nomenclature/numbering system
- Review the identification and management of:
  - Primary tooth trauma including avulsion, subluxation, and fracture
  - Permanent tooth trauma including avulsion, subluxation, and fracture
  - Dental caries
  - Dental abscess and cellulitis
  - Intraoral laceration repair
  - Common paediatric intraoral lesions

### **Dermatology Presentations** (Pre-Recorded Online Lecture)

- Review dermatology topics in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach for the following:
  - Eczema, eczema herpeticum, eczema coxackium
  - Periorificial Dermatitis
  - Diaper dermatitis
  - Fungal skin infections
  - Scabies
  - Pityriasis Rosea
  - Gianotti-Crosti Syndrome
  - Giant urticaria/Urticaria Multiforme
  - Erythema multiforme
  - Serum sickness-like reaction
  - Staph scalded skin
  - Stevens Johnson
  - TENS
  - RIME

### **Endocrine Presentations**

- Review endocrinology emergency department presentations in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review diagnostic pearls, indicated investigations, and subsequent management utilizing a case-based approach for the following:
  - DKA
  - Acute Adrenal Insufficiency
  - Ketotic hypoglycemia of childhood
  - Congenital Adrenal Hyperplasia
  - Pheochromocytoma
  - Thyroid Storm
  - Diabetes insipidus
  - SIADH

### **Environmental Presentations** (Pre-Recorded Online Lecture)

- Review environmental emergencies in children utilizing a case-based approach.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.

Specifically:

- Review the acute management of submersion injuries and key prognosticators
- Review the identification and acute management of hypothermia and cold related injuries (frostbite)
- Review the identification and management of heat related illness (heat cramps, heat exhaustion, heat stroke)
- Review the acute management of inhalational injury/management of house fire victims
- Review the acute management of various electrical injuries, including lightning strike

### Gynecology Presentations

- Review gynecology emergency department presentations in children, presenting material at the level of a PEM fellow/adult emergency medicine consultant.
- Highlight evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.
  - Specific knowledge of
    - Sexually transmitted infections
    - Pelvic Inflammatory Disease
    - Ovarian Torsion
    - Retained Foreign Body
    - Abnormal Uterine Bleeding in Adolescents
    - Ectopic Pregnancy
    - Labial adhesions
    - Perineal trauma

### Hematology Presentations (Pre-Recorded Online Lecture)

- Review hematology topics in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach of the following:
  - Iron deficiency anemia
  - Management of transfusion reactions
  - Idiopathic thrombocytopenic purpura
  - Disseminated intravascular coagulopathy
  - Sickle cell disease and its complications
  - Thalassemia major
  - Methemoglobinemia
  - Hemophilia
  - Von Willebrand Disease

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### Infectious Disease Part 1 and Part 2 (Pre-Recorded Online Lecture)

- Review infectious disease emergency department presentations in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.

Specifically:

- Review approach to the febrile infant, with discussion of difficult clinical scenarios:
  - Review use of low-risk criteria to risk stratify young infants
  - Neonate with history of fever at home and no fever in the ED
  - Infant < 60d with URTI/bronchiolitis and fever
- Review approach to the unimmunized febrile child
- Review approach to fever in the returning traveler
- Review diagnostic pearls and emergency department management of other infectious emergency department presentations:
  - Skin infections: Cellulitis, Erysipelas, Impetigo
  - Herpetic Whitlow
  - Lymphadenitis
  - Toxic Shock syndrome
  - Mastitis
  - Omphalitis
  - Necrotizing fasciitis
  - Measles
  - Mumps
  - Rubella
  - Varicella
  - Roseola
  - Erythema infectiosum
  - Infectious mononucleosis – unusual presentations ie/ genital ulceration
  - Cat scratch disease
  - Lyme disease
  - Botulism
  - Tetanus and rabies prophylaxis
  - Pertussis
  - Tuberculosis
  - Pneumonia
  - COVID-19 and MISC
  - Strep pharyngitis/Scarlet Fever
  - Acute otitis media
  - Sinusitis
  - UTI
  - Bacteremia
  - Meningococemia
  - Meningitis
  - Osteomyelitis
  - Septic Joint

### **Metabolic Presentations** (Pre-Recorded Online Lecture)

- Review metabolic emergencies in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.

Specifically:

- Discuss when to suspect an inborn error of metabolism in a young child in the emergency department.
- Review initial investigations when an inborn error of metabolism is a consideration.
- Review treatment principles when facing a child with an inborn error of metabolism.

### **Neurology Presentations**

- Review neurologic emergencies in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach for the following:
  - Status epilepticus
  - Common seizures subtypes (BRE, JME, Infantile Spasms, Febrile Seizure)
  - Cerebrovascular events
  - Hydrocephalus and ventriculoperitoneal shunt malfunctions
  - Cerebral/epidural abscesses
  - Neurogenic shock identification and management
  - Benign intracranial hypertension
  - Transverse myelitis
  - Optic neuritis
  - Facial nerve palsy (Bells palsy)
  - Labyrinthitis
  - Differential diagnosis for ataxia
  - Differential diagnosis for weakness
  - Migraine

### **Oncology Presentations** (Pre-Recorded Online Lecture)

- Review oncology topics in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach for the following:
  - Febrile neutropenia
  - Hyperleukocytosis
  - Tumour lysis syndrome
  - Graft vs Host Disease

- Typhlitis
- Leukemia
- Lymphoma
- CNS tumours
- Neuroblastoma
- Retinoblastoma
- Wilms Tumours
- Bone Tumours
- Soft tissue Tumours

### **Ophthalmology Presentations** (Pre-Recorded Online Lecture)

- Review ophthalmologic emergency department presentations in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review diagnostic pearls, indicated investigations and subsequent management utilizing a case-based approach for the following:
  - Corneal foreign body/abrasion
  - Hordeolum and chalazion
  - Iritis and Uveitis
  - Glaucoma
  - Ophthalmia neonatorum
  - Dacryocystitis and nasolacrimal duct obstruction
  - Periorbital and orbital cellulitis
  - Globe rupture
  - Penetrating globe trauma

### **Ortho: Upper Limb Fractures**

- Review upper limb fractures in children utilizing a case-based approach.
- Identify evidence-based management and variations in practice patterns where appropriate.

Specifically:

- Review the presentation and management of common upper limb fractures in childhood.
- Discuss indications for reduction, circumferential cast vs splinting and follow up.

### **Ortho: Lower Limb Fractures**

- Review lower limb fractures in children utilizing a case-based approach.
- Identify evidence-based management and variations in practice patterns where appropriate.

Specifically:

- Review the presentation and management of common lower limb fractures in

childhood.

- Discuss indications for reduction, circumferential cast vs splinting and follow up.

### **PALS and NRP Review and Update** (Pre-Recorded Online Lecture)

- Utilize a case-based approach to highlight algorithms with a focus on most recent changes.
- Compare and contrast PALS vs NRP

### **Plastic Surgery Presentations** (Pre-Recorded Online Lecture)

- Review plastic surgery emergencies in the paediatric emergency department.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review diagnostic pearls, indicated investigations, and subsequent management utilizing a case-based approach for the following:
  - Fractures of the scaphoid, metacarpals, and phalanges
  - UCL injuries of the thumb
  - Phalanx dislocation
  - Volar plate injuries
  - Paronychia
  - Felon
  - Hair Tourniquet
  - Fishhook removal
  - Scald burn management
  - Care of the amputated digit

### **POCUS in PEM**

- Identify evidence-based management and variations in practice patterns where appropriate.
- Utilize a case-based approach to review PEM POCUS applications.

Specifically:

- Review the utility and evidence around eFAST in the paediatric emergency department
- Review the highest yield applications of POCUS in the paediatric emergency setting

### **Procedural Sedation**

- Review procedural sedation topics in children utilizing a case-based approach.
- Identify evidence-based management and variations in practice patterns where appropriate.

Specifically:

- Identify candidates for ED procedural sedation
- Describe indications for PSA
- Review common sedation medications and their applications



- Identify factors to be considered when selecting a sedation medication
- Provide an approach to addressing potential complications

### **Surgical Emergencies Part 1**

- Review abdominal surgical emergencies in children for the following:
  - Appendicitis
  - Peritonitis
  - Cholelithiasis
  - Typhlitis
  - Meckel's diverticulum
- Review indicated investigations and subsequent management utilizing a case-based approach for the following:
  - Atresia/stenosis
  - Malrotation/volvulus
  - Hirschsprung
  - Intussusception
  - Foreign Body/bezoar
  - SMA
  - Pyloric Stenosis
  - Stoma complications
- Identify evidence-based management and variations in practice patterns where appropriate.

### **Surgical Emergencies Part 2 (Pre-Recorded Online Lecture)**

- Review abdominal surgical emergencies in children for the following
  - Upper GI bleed (PUD, Esophageal varices, Esophagitis, Foreign Body, Mallory-Weiss)
  - Lower GI Bleed (Meckel's diverticulum, Intussusception, NEC, toxic megacolon, Polyps, Angiodysplasia/AVM)
  - Rectal Prolapse
- Review indicated investigations and subsequent management utilizing a case-based approach for the following:
  - Upper GI bleed (PUD, Esophageal varices, Esophagitis, Foreign Body, Mallory-Weiss)
  - Lower GI Bleed (Meckel's diverticulum, Intussusception, NEC, toxic megacolon, Polyps, Angiodysplasia/AVM)
  - Rectal Prolapse
- Identify evidence-based management and variations in practice patterns where appropriate.

## **The Difficult Airway**

- Identify evidence-based management and variations in practice patterns where appropriate.
- Utilize a case-based approach to review considerations around the difficult pediatric airway.

Specifically:

- Identify predictors of a difficult pediatric airway
- Discuss the use of various supplemental equipment in management of a difficult pediatric airway (bougie, GlideScope, airway introducer etc)
- Review indications and techniques for needle cricothyroidotomy and a surgical airway
- Review difficult airway cases highlighting the key considerations for various scenarios. (Anterior mediastinal mass, house fire victim, anaphylaxis, epiglottitis, patient with anatomic congenital anomalies, patient with Down syndrome, upper GI bleed, tracheal foreign body).

## **Toxicology Presentations**

- Review toxicology topics in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.

Specifically:

- Discuss a general approach to the intoxicated patient
- Review the common toxidromes
- Identify and review the management of the common toxicologic presentations
- Identify the most serious paediatric ingestions

## **Trauma #1: Abdo/Thoracic/Pelvis Trauma**

- Review abdo/thoracic/pelvic trauma in children.
- Review indicated investigations and subsequent management utilizing a case based approach.
- Identify evidence-based management and variations in practice patterns where appropriate.

Specifically:

- Discuss common and important thoracoabdominal injuries
- Discuss traumatic coagulopathy and review damage control resuscitation
- Discuss literature around TXA
- Review the literature on trauma fluid and inotropic support
- Discuss the role of imaging in evaluation of thoracoabdominal injury
- Summarize changes to ATLS specific to pediatrics

## Trauma #2: Head and Neck Trauma

- Review head and neck trauma in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.

Specifically:

- Identify key differences in childhood trauma presentations.
- Review management of severe head injury
- Review clearance of C-Spines
- Review factors involved in imaging decisions in head and neck trauma
- Update on changes to ATLS specific to pediatrics

## Upper and Lower Airway Presentations

- Review upper and lower airway presentations in children utilizing a case-based approach.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach.
- Review diagnostic pearls, investigations, and emergency department management of:
  - Pulmonary sling
  - Neck masses: Branchial cleft cyst, Cystic hygroma, Thyroglossal duct cyst
  - PE
  - Foreign Body Aspiration/FB nare
  - Septal hematoma
  - Croup
  - Epiglottitis
  - Bacterial tracheitis
  - Retropharyngeal abscess
  - Peritonsillar abscess
  - Asthma
  - Bronchiolitis
  - Penetrating neck trauma
  - Tracheobronchial injury/rupture
  - Tension pneumothorax

## Urology & Nephrology Presentations (Pre

Recorded Online Lecture)

- Review urology and nephrology presentations in children.
- Identify evidence-based management and variations in practice patterns where appropriate.
- Review indicated investigations and subsequent management utilizing a case-based approach of the following:

Urology:

- Phimosis and paraphimosis
- Balanitis
- Priapism
- Epididymitis
- Testicular Torsion
- Testicular Fracture
- Laceration to the scrotum/penis
- Zipper trauma
- Hydrocele
- Hernia
- Urethral prolapse
- Ureterocele
- Urinary retention

Nephrology:

- Hypertensive Urgency/Emergency
- Approach to frank hematuria
- Glomerulonephritis
- Nephrotic Syndrome
- Hemolytic-uremic syndrome
- Henoch-Schoenlein purpura
- Renal tubular acidosis
- Nephrolithiasis

25% of this program is dedicated to participant interaction.

This program has received no financial support.

This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada, and approved by Continuing Professional Development, Schulich School of Medicine & Dentistry, Western University. You may claim a maximum of **XX** (credits are automatically calculated).

This **Group Learning** program has been certified by the College of Family Physicians of Canada and Quebec Chapter for up to **XX Mainpro+ credits**.

**CERT Session XX**

Each participant should claim only those hours of credit that he/she actually spent participating in the educational program.