

FORMAL ACADEMIC CURRICULUM

PEDIATRIC SURGERY MCMMASTER UNIVERSITY

1- Pediatric surgery Summer series

Over the first several weeks of training, we conduct one-hour practical reviews of some essential topics for the new resident in pediatric surgery. These are conducted weekly at the start of the academic half-day and the following topics are covered:

- Lines and tubes
- Critical Care Management of Shock
- Trauma TTA and TTL responsibilities-Trauma Current concepts
- NEC: When to operate for NEC?
- Intestinal Atresia-Difficult Case Management
- Hirschsprung's peri-operative management, Surgical options for HD
- CDH Embryology/Pathophysiology of CDH/Management
- Prenatal diagnosis - What's new in prenatal therapy?

2- Research Workshop: Becoming an Academic Pediatric Surgeon: A Clinical Health Research Workshop

Day 1 Topic (Denotes applicable adult learning principle [20])	Modality
<p><u><i>Session 1: Why Health Research? (1-5)</i></u></p> <ul style="list-style-type: none"> • Lecture: Outlining the need for clinical research in pediatric surgery (Identifying the problem). • Exercise: Reflect on a time when you did not know if the treatment you provided was the most effective or the best option for the patient. • Discussion: What is the participant's reason for attending the workshop, what are their expectations, how do they think the workshop will enable them as surgeons? How do they define health research, what are their impressions surrounding health research as a tool in patient care? 	<p>Didactic lecture, personal reflection exercise</p>

<p><u>Session 2: Research Evidence (2-7)</u></p> <ul style="list-style-type: none"> • Lecture: Define research evidence, overview on how to find it, what methods are best for busy clinicians, overview on resources and tools available specifically for clinicians. • Tutorial: Demonstration of literature searching using a pediatric surgery problem. • Exercise: Individual searching exercise on a topic of individual importance or interest. • Discussion: How did the exercise go? Any problems? Any new insights? How does the participants see implementing the tools into their daily clinical practice 	<p>Didactic lecture, tutorial and individual exercise</p>
<p><u>Session 3: Critical Appraisal (2-7)</u></p> <ul style="list-style-type: none"> • Lecture: Levels of evidence and rationale. Role of pre-appraised evidence for surgeons and tools used in critical appraisal. • Exercise: Find 1 relevant pre-appraised piece of evidence and then find 1 non pre-appraised piece of evidence and use the corresponding tool to appraise the quality. • Discussion: Time associated with critical appraisal and how to overcome this. Thoughts/reflections on exercise, usability of tools and databases? 	<p>Didactic lecture, individual exercise</p>
<p><u>Session 4: Practical Overview of Study Designs (2-7)</u></p> <ul style="list-style-type: none"> • Lecture: What does a busy clinician need to know about study design? How to work with an epidemiologist. Overview of what design answers what type of research question. Overview of appropriateness and limitations of each design. • Exercise (Game): match correct study design to appropriate research question. Choose appropriate design for an individual research question. • Discussion: Reflection on exercise. Discussion on role of epidemiologist and appropriate study designs. 	<p>Didactic lecture, group game and individual exercise</p>
<p><u>Session 5: Practical Considerations (2-7)</u></p> <ul style="list-style-type: none"> • Lecture: Overview of research ethics processes and application forms, data collection strategies, data management strategies, data analysis and role of biostatistician, research support staff, research finance. • Exercise: Individual exercise involving outline logistics of their own research study. Participant must include all aspects discussed in lecture and a time estimate attached to each step. • Discussion: Presentation of research outlines and discussion of questions or challenges faced by participants. 	<p>Didactic lecture, individual exercise</p>
<p><u>Session 5: Practical Considerations (2-7)</u></p> <ul style="list-style-type: none"> • Lecture: Overview of research ethics processes and application forms, data collection strategies, data management strategies, data analysis and role of biostatistician, research support staff, research finance • Exercise: Individual exercise involving outline logistics of their own research study. Participant must include all aspects discussed in lecture and a time estimate attached to each step. • Discussion: Presentation of research outlines and discussion of questions or challenges faced by participants. 	<p>Didactic lecture, individual exercise</p>

<u><i>Session 6: Day 1 Summary (1,5)</i></u>		
<ul style="list-style-type: none"> • Discussion of Day 1, completion of quantitative evaluations 		
Day 2		
Topic (Denotes applicable adult learning principle [20])		Modality
<u><i>Session 1: Overview and Reflection of Day 1 (1,4,6)</i></u>		Group discussion
<ul style="list-style-type: none"> • Group Discussion: What did you learn, what won't/will work for you, where are there still gaps? Expectations of today 		
<u><i>Session 2: Research Opportunity in Pediatric Surgery (1-5)</i></u>		Didactic lecture, personal reflection exercise
<ul style="list-style-type: none"> • Lecture: Overview of CAPSNet, APSA clinical outcomes group, MPSRC, ISD, EPIQ • Exercise: Individual reflection: which collaboration would you want to join? Why? What are the next steps to get involved? • Discussion: Presentation of group interests. Discuss professional issues with working in large collaborative and how to integrate into a existing research network 		
<u><i>Session 3: Research Funding (2-7)</i></u>		Didactic lecture, tutorial and individual exercise
<ul style="list-style-type: none"> • Lecture: Funding opportunity overviews (CIHR, NGO, Internal). Discuss components of applications and associated documents (i.e, CCV, budgets, letters of support). Review 2 examples of funding applications as a group. • Exercise: Critique funding examples as a group. Identify a potential funding source for individual research idea and create a grant outline • Discussion: What makes a grant competitive? What were the challenges in critiquing and outlining your own grant? 		
<u><i>Session 4: Knowledge Dissemination (2-7)</i></u>		Didactic lecture, individual exercise
<ul style="list-style-type: none"> • Lecture: Overview of types of knowledge disseminations (abstract, conference presentation, manuscript, patient communication, media releases, newsletters and study summaries for funders). Rationale for broad knowledge dissemination-beyond the academic world. Resources for manuscript preparation and how to select a journal. • Exercise: Given the study summary provided write either an abstract, press release, pt patient summary • Discussion: Reflection on exercise. Discuss different modes of knowledge dissemination and the importance of knowledge dissemination 		
<u><i>Session 5: Day 2 Summary (1,5)</i></u>		
<ul style="list-style-type: none"> • Discussion of Day 2, completion of quantitative evaluations 		

3- Academic Half-Day

The first 90 min each week consists of a discussion of all in-patients on the service. We call this activity **Patient Review Rounds**.

The objectives of those rounds are:

- To review the patients hospitalized under the pediatric surgery service.
- To review the patients hospitalized under other services that the pediatric surgery group is actively following.
- To provide all levels of trainees on the pediatric surgery service (medical students, pediatric residents, general surgery residents and pediatric surgery residents) and opportunity to present cases to the attending surgeons.
- To take a patient with a particular condition and elaborate on that condition to solidify knowledge.
- To discuss amongst the entire group of surgeons management issues for complicated patients.
- To ensure proper communication as the weekend approaches to the pediatric surgeon who will be on call.

CanMEDS roles targeted during this activity:

- Medical expert, Communicator, Collaborator, Manager, Scholar

The rest of the academic half-day is built on a monthly schedule. **Week 1** we have **Chapter Rounds**, where a portion of the major pediatric surgery textbook is reviewed.

The objectives of Chapter rounds are:

- To review and discuss the main topics relating to pediatric general surgery over a 2 year period by dividing the material in 24 topics.
- To encourage all members of the service to regularly return to the textbooks and review and improve their baseline knowledge.
- To ensure that the pediatric surgery residents acquire this knowledge during the course of their training.
- To provide a source of formal teaching for all learners from medical students to attending surgeons.

CanMEDS roles targeted during this activity:

- Medical Expert, Communicator, Scholar

We have recently adopted SCORE (Surgical Council on resident Education) as a means of going through the required knowledge. This web-based resource is used in most pediatric surgery training programs across North America. The trainees and faculty members have access to a list of teaching modules which include readings, videos,

quizzes and study schedules to name a few. There are 26 modules that we cover over a 24 month period. www.surgicalcore.org

Year 1

- Omphalocele, gastroschisis
- Duodenal atresia, stenosis, webs, annular pancreas;
- Anorectal malformation
- Malrotation
- Choledochal cyst
- undescended Testis
- ECMO, lung physiology
- Intussusception
- Inguinal hernia
- Wilms Tumor
- GERD and Barrett's esophagus
- Germ cell tumors

Year 2

- Branchial Cleft cysts
- Intestinal atresia
- Esophageal Atresia and TEF
- Congenital Diaphragmatic Hernia
- Hirschsprung's
- Abdominal and Thoracic Trauma
- Biliary Atresia
- Appendicitis
- Neuroblastoma
- ovarian and adnexal problems
- Hepatoblastoma

Week 2, we have morbidity and mortality rounds

The objectives of those rounds are:

- To review the complications and deaths of patients under the care of the pediatric surgery service.
- To give pediatric surgery fellows the opportunity to present patient cases to the attending surgeons.
- To expose surgical trainees at all levels to the processes of quality improvement and quality assurance through peer review of complications.
- To develop a culture of safety.
- To discuss amongst the entire group of surgeons complications and strategies for prevention.

CanMEDS roles targeted during this activity:

- Communicator, Collaborator, Manager

Week 3, we have Journal Club, where we work on the same topic that we reviewed at chapter Rounds earlier that month. For this activity, the residents select pertinent literature articles. Journal Clubs are attended by our Research staff who have degrees in methodology and statistics.

The objectives of Journal Club are:

- To review the best original and review articles on the cause, course, diagnosis, natural history, prevention, treatment, or economics the pediatric surgical disorder discussed earlier that month at chapter rounds, and on quality improvement and continuing medical education intervention trials in pediatric surgery.

- To summarize this literature in the form of "structured abstracts" that describes the objectives, methods, results, and evidence-based conclusions of studies in a reproducible, accurate, and applicable fashion.
- To provide a learning environment where trainees and attending surgeons can improve their ability to critically appraise the literature.
- To provide a forum where individual surgeon's practices can be improved using an evidence-based approach.

CanMEDS roles targeted during this activity:

- Medical Expert, Manager, Scholar

Week 4, we have combined Surgery-Radiology-Pathology (SRP) Rounds

The objectives of SRP rounds are:

- To have a multidisciplinary discussion of the most interesting and challenging patients encountered on the pediatric surgery service.
- Specifically to expose surgical trainees of all levels to imaging discussed and reviewed by a staff pediatric radiologist.
- Specifically to expose surgical trainees of all levels to pathologic findings (macroscopic, microscopic and molecular) as presented by a pediatric pathologist.
- Preparation of brief, succinct, to the point presentations by the residents/fellows.
- To develop healthy and productive inter professional relationships across specialties.

CanMEDS roles targeted during this activity:

- Medical Expert, Collaborator, Communicator, Scholar

4- Pediatric Surgery Rounds

Those rounds take place a noon every Monday. They consist of a mix of presentations by mostly general surgery and pediatrics residents on a topic of their choice, assisted by a staff or pediatric surgery residents. Several times per year, the rounds are more multidisciplinary such as trauma, where ED staff and PCCU staff would also come.

5- Combined MFM-Neonatal-Surgery Rounds

These rounds take place quarterly and cover a topic of interest to these 3 disciplines. Recent examples would be abdominal wall defects, and Congenital Diaphragmatic Hernias. The format is built around real cases and the resident/fellow from each discipline prepares a portion.

The objectives of MFM-Neo-Surgery rounds are:

- To have a multidisciplinary venue to discuss a select group of cases whose outcomes depends on these 3 specialties.
- Specifically, the expose surgical trainees to the challenges and concerns faced by their colleagues from other disciplines.
- To provide the pediatric surgical trainees an opportunity to teach to other specialists
- Preparation of brief, succinct, to the point presentations by the residents/fellows.
- To develop healthy and productive inter professional relationships across specialties.

CanMEDS roles targeted during this activity:

- Medical Expert, Collaborator, Communicator, Scholar

6- Neonatology-surgery Case Conference

This meeting takes place once per month. Neonatologists and their fellows/residents get together with the surgical team to discuss patients whose care we share. The objective are similar to those of the MFM rounds, except that they are focused on the care of babies in the post-natal period.

7- Ethics Seminars

On a 2 year rotating cycle, they take place 4 times per year and are attended by a clinical ethicist. The objectives of the ethics seminars are:

- For residents to become familiar with the most common ethical concepts.
- For residents to be exposed to a variety of ethical topics (8 workshops over the 2 year training period).
- For residents to be provided with relevant reading material.
- To expose the resident,s and have them actively participate in a discussion of the selected topic with attending surgeons and possible clinical ethicists in attendance.

CanMEDS roles targeted during this activity:

- Communicator, Collaborator, Scholar, Professional

Each seminar covers the following topics:

- a) Informed consent
- b) The mature minor
- c) Neonatal end of life care
- d) Surgical Error
- e) Multiculturalism
- f) Maternal-Fetal dilemmas
- g) Child Abuse
- h) Research and Innovation

8- Telemedicine Conferences

Organized by the Hospital for Sick Children, this teleconference brings together most pediatric centers in Canada 4 times per academic year. A group is responsible for preparing a topic and cases for each teleconference. McMaster was the site who presented in May 2012, March 2014 and we have been participants at all the other teleconferences for the last 3 years.

9- Global MD Webinars

These video-conferences are organized several times per year by the Children's National Medical Center in Washington. Our residents and staff have attended the following ones over the past 2 years, and the cost is covered by the program.

- Surgery Update
- Therapeutic Endoscopy: Advanced Endoscopic Procedures
- Pediatric Surgical Oncology
- Esophageal Atresia
- Fetal Surgery
- Adolescent Obesity (including surgical management and a *live case*)
- Pediatric Trauma II: Global Burden of Injury to Children New Concepts and Controversies “How I do it!”
- Pediatric Bowel Management II

10- Courses/Conferences

Additionally, the residents in our program have funds set aside to attend other courses and conferences that are not offered locally. Examples of those are the Pena Course on management of anorectal anomalies, the MIS course, the oncology review course. Conferences sponsored have included CAPS, APSA, AAP. Each resident in our program over the last 2 years have availed themselves of this opportunity. The specific courses and conferences attended by each resident can be found in their file.

Revised & Approved by RPC September 2014