

Adapted from Canadian Association of Pediatric Surgeons (CAPS)

I. Preamble

A rotation in Pediatric Surgery should give residents the opportunity to become familiar with the peculiar needs of infants and children as surgical patients. Some of the surgical diseases encountered in children are similar in their presentation, management and outcome with their adult counterparts; others are quite different. The fundamental principles of surgical care, however, are similar to those that govern surgical practice in other age groups.

MEDICAL EXPERT

Knowledge: Basic Science and Anatomy

1. The resident should have an awareness of human anatomy and normal physiology involving the chest, abdomen and inguinal region.

Knowledge: General Clinical

At the end of the rotation, the Pediatric resident should be able to:

2. Demonstrate the unique communication skills necessary to obtain thorough, focused pediatric histories from children, parents or other caregivers;
3. Elicit key physical signs in children despite potential poor compliance;

Knowledge: Specific Clinical Problems

At the end of the rotation, the Pediatric resident should be able to:

4. Recognize the unique natural history of surgical diseases in children and use the information in reaching a diagnosis;
5. Recognize the heat regulation problems in infants and the need for careful environmental control during evaluation and management;
6. Recognize the limited host resistance and high risk of nosocomial infections in newborns, and the need for aseptic protocols to minimize environmental hazards;
7. Recognize the need to individualize drug dosage and fluid administration on the basis of weight, and be able to calculate expediently fluid and electrolyte requirements using standard formulas;

8. Recognize and accommodate for the altered physiological systems (such as immature hepatic and renal function) that affect drug and anesthetic administration;
9. Recognize the differences between types of sutures and choose the appropriate type and size for various wounds;
10. Predict the risk of apnea post anesthesia and post narcotic administration in small infants;
11. Appraise the place for nonoperative management of solid viscus injuries;
12. Diagnose and apply principles of initial care and care during transport in the following neonatal conditions whose definitive management should only be undertaken in specialized pediatric facilities with qualified pediatric surgeons: congenital diaphragmatic hernia, esophageal atresia / tracheoesophageal fistula, gastroschisis / omphalocele, intestinal atresia, Hirschsprung's disease, imperforate anus, intestinal malrotation, major pulmonary parenchymal disease (congenital lobar emphysema, CCAM, etc.)
13. Diagnose and refer the following problems that may be seen initially by a general surgeon but will almost always be best managed in a specialized pediatric facility:
 - congenital lesions of the lungs and mediastinum
 - gastroesophageal reflux (surgical management)
 - chest wall deformities (pectus excavatum and carinatum)
 - solid tumors of childhood (e.g. neuroblastoma, Wilms' tumor, hepatoblastoma)
14. Diagnose and provide the initial management of several conditions which, while ideally managed in a special pediatric facility, may demand initial (and occasionally definitive) management locally because of urgency or distance:
 - incarcerated inguinal hernia in the neonate
 - aspirated and ingested foreign bodies
 - acute abdomen in the neonate or infant
 - acute gastrointestinal bleeding
 - blunt abdominal and thoracic trauma
15. Diagnose, evaluate and optionally treat the following conditions which can be managed by experienced general surgeons or referred to a pediatric general surgeon (depending on prior experience and local resources). The pediatrician may be consulted and help in the diagnosis, management, and may recommend referral to a pediatric surgeon.:
 - a) Head and Neck:
 - acute & chronic lymphadenitis, thyroglossal duct cyst
 - dermoid cyst, congenital torticollis,
 - branchial cleft cyst and sinus,
 - lymphangioma/hemolymphangioma, tongue tie
 - b) Abdomen
 - umbilical hernia, umbilical granuloma
 - inguinal hernia, pyloric stenosis
 - intussusception, Meckel's diverticulum, appendicitis

- c) Scrotum
communicating hydrocele, undescended testicle
torsion of testis & appendix testis, epididymitis

16. Formulate a clear plan for the evaluation of a child presenting with:
- bilious vomiting
 - non-bilious vomiting
 - acute abdominal pain
 - chronic abdominal pain
 - constipation
 - rectal bleeding
17. Predict common post-operative complications in children and initiate their treatment.
18. Apply pediatric trauma principles in the initial resuscitation and management of traumatized children.

Knowledge: Technical

1. Demonstrate aseptic technique in performing operative and bed-side procedures
2. Recognize the appearance of normal & abnormal tissues in the operating room
3. Gain proficiency in a variety of psychomotor skills (e.g. reduction of incarcerated inguinal hernia, wound closure, knot-tying, Percutaneous insertion of central lines etc.)
4. Recognize the differences between types of sutures and know the type and size appropriate for various types of wounds

COMMUNICATOR

Convey pertinent information from the history and physical examination in different circumstances (over the phone, in written form, during ward rounds and conferences).

COLLABORATOR

1. Be able to coordinate care involving many different team members, including anesthesia, intensive care, diagnostic imaging, nursing, and laboratory facilities
2. Consults effectively with other physicians.

MANAGER

1. Recognize that many surgical problems, although conceptually and technically within the realm of expertise of general surgeons, are more appropriately managed where there are special pediatric facilities (special pediatric expertise in anesthesia, intensive care, diagnostic imaging, nursing, and laboratory facilities);
2. Is able to prioritize and manage multiple simultaneous clinical demands.

HEALTH ADVOCATE

1. The resident should be a trauma prevention and health improvement advocate
2. The resident should recognize and respond appropriately.

SCHOLAR

Value the critical need of ongoing systems of peer review, maintenance of competence, and evaluation of outcomes in the surgical management of sick children.

PROFESSIONAL

1. Appreciate the peculiar emotional and ethical issues surrounding the care of a sick child and the need to involve parents, children's advocates and other health care-givers in many difficult situations;
2. Be aware of the life-long significance of surgical management decisions in children and their impact on quality of life
3. Appraise the ethics of research concerning children;
4. Appreciate the sometimes complicated issues surrounding informed consent and refusal of treatment in children, especially in situations where "quality of life" is a major issue.

Neurosurgical Aims and Objectives for the Pediatric Residents Rotating through Pediatric Surgery

Preamble

The pediatric neurosurgical service is a two practitioner service providing a full range of neurosurgical care to infants and children. "Elective" cases are generally seen in consultation in the 3F clinic, and admitted following appropriate outpatient evaluation and preparation. Children who are in acute distress and potentially unstable are generally admitted either to the "step-down" unit or to the intensive care unit under the appropriate critical care pediatric specialist. Children in whom the diagnosis is unclear and require in-patient evaluation or observation for conditions, which may or may not require neurosurgical intervention are commonly admitted under the general pediatric service. In both those situations, the neurosurgical service remains very closely involved with their management in a consultative basis, maintaining frequent communication with the caregiving team on the ward, as well as with the patient and family. Thus the pediatric resident will have the opportunity to act in either a primary role or in a consultative role, depending on whether or not the neurosurgeon is the "most responsible physician". In any case, since the "raison d'être" of the rotation is education, the resident is encouraged to maintain close observation of all cases, even when not responsible for hands on care.

Medical Expert/Clinical decision Maker

Knowledge:Basic Science and Anatomy

The resident should have an awareness of human anatomy and normal physiology involving the central nervous system.

Knowledge:General clinical

1. Recognizing that the pediatric resident will also have an opportunity to attend Neurosurgery clinics during their neurology/neurosurgery rotation, this rotation will afford an inpatient experience that will enhance their ability to recognize appropriate referral situations, and understand the care their own patients will receive when referral is required. By the completion of the rotation, the resident will be expected to:
2. Be comfortable in using parental (guardian) history and personal observation in assessing alterations in mental status and levels of consciousness in infants and children
3. Be able to initiate diagnostic and therapeutic interventions in children with suspected increased intracranial pressure
4. Acquire a facility in the clinical skills of neurological assessment of infants and the use of the anterior fontanelle to assess intracranial pressure.

Knowledge: Specific Clinical Problems

By the completion of the rotation, the resident will be expected to

1. Have a basic understanding of the pathophysiology of active hydrocephalus and the shunting systems commonly used for its' management
2. Understand the pathophysiological basis for the treatment of acute head injuries
3. Recognize the acute, subacute, and chronic complications of ventriculoperitoneal CSF diversion
4. Recognize the common cranial deformities of infancy

Specific learning objectives, beyond those demanded by the above "Aims" section, will be generated in response to the clinical material which presents during the rotation, supplemented by any specific goals negotiated between the resident and the pediatric neurosurgeon.

Other CANMED goals (Communicator, Collaborator, Manager, Health Advocate, Scholar, Professional) are covered in this document under the general objectives.

Clinical Resources

Outpatient Clinics:

General neurosurgery clinics: 3F – Tuesday and Thursday mornings
Mrs. Carol Hirst clinical nurse specialist

Neuroncology clinics: 3F34 – 1st and 3rd Tuesday afternoons

Head injury followup clinics: 3F – 2nd and 4th Friday afternoons
{variable; check with Dr. H.}

Spina Bifida clinic: 3F – 3rd Friday afternoon

Elective OR time: Wednesday 9:00 –15:00. [It is understood that the Wednesday afternoon teaching sessions are a priority; the pediatric resident is of course excused from the OR during those sessions, but is strongly encouraged to observe neurosurgical procedures when times do not conflict with the didactic sessions.]

Miscellany

Dr. Hollenberg's office is room 4E8, telephone extension 75233, pager # 2385 (or through McMaster paging 75030). Dr. Hollenberg's secretary is Mrs. Tanis Bunganich,

ext. 75235. Dr. Singh's office is MDCL 5027 and Dr. Gunnarson's office is 4E5. Their secretary is Ms. Fidelma DiFlorio and her extension is 75237.

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