Welcome to the pediatric surgical rotation!!
The purpose of the rotation is to give you an opportunity to learn surgery by caring for
infants and children requiring surgery consultations and treatments and by working as a
member of the pediatric surgical team.

LEARNING OBJECTIVES
At the completion of the rotation, you will be able to:
1. assess and manage children requiring surgery: pre, intra, post-op care
2. assess and manage the child with abdominal pain
3. assess and manage the child “with lumps and bumps”, especially scrotal swellings
4. experience a variety of other pediatric surgical conditions

RESPONSIBILITIES
- assess and manage pediatric general surgery patients under the supervision of the
  attending pediatric general surgeons. The attending pediatric general surgeons are: Dr.
  B.J. Hancock (service chief), Dr. Nathan Wiseman, Dr. Suyin Lum Min and Dr. Kris Milbrandt
- be on call “one in four” and provide a prompt response to calls from the surgical wards,
  the emergency department, consultation from the pediatric wards and from outside
  referring physicians. You will be the "first responder"; you must carry a functioning
  beeper and you will always have a back-up graduate physician, either the resident or the
  attending surgeon. These people may be called through hospital paging or directly at
  home. If during the day you are very busy with first calls, ask your peers or residents to
  help out with the work. Cindy Holland, Nurse Practitioner on Pediatric General Surgery,
  is also available for assistance.
- Clerks who are off-call should leave by noon the day following call.
- follow your own assigned patients closely. You will be responsible for no more than
  five patients at a time. In most cases, the patients you admit will become "your"
  patients. However you should also be familiar with all the patients on the service.
  Normally there are ten to fifteen inpatients and numerous Day Surgery patients. Your
  involvement with the latter category is limited to their assessment and follow-up in the
  clinics and their Day Surgery procedures.
- you will be responsible for the initial assessment of patients assigned to you, their
  admission history and physical exam, orders, OR and progress notes, laboratory results
  and participate in your patient’s surgery. Keep a list of your clinical experience. This list
  will be reviewed and discussed during the exit interview.
- you will need to become familiar with the HSC computer system for looking up
  laboratory results.
become familiar with the Medical Reconciliation form for Home Medications.

NOTE: clinical clerks will be responsible for obtaining a countersign for all chart orders. The countersigns may be obtained from the resident, Nurse Practitioner or the attending surgeon at the time the order is written and you may need to contact these people directly in the operating room or through paging. Contact the patient's attending surgeon directly for a countersign, even if he/she is not on call and whenever there is no second call Pediatric General Surgery resident. Otherwise, call the Pediatric Surgeon On Call. Please see the list of telephonenumbers below.

**SCHEDULE** (see the attached Pediatric Surgery Education/Service Schedule)
Rounds with the resident normally begin at 7:00 AM on ward CK3 or as otherwise agreed upon. Clerks are to prioritize their activities in the following order:
- daily surgical seminar (9 AM Mon-Thur; 8 AM Friday) and other teaching sessions during the rotation
- on call duties
- the clinics
- the OR case assignment
- inpatient record keeping—e.g. progress notes etc.

The OR case assignment is finalized by the resident and clerks during the previous signout round and cases should be distributed on an equitable basis. Please note that surgery takes place on most days and that 70% of the surgeries are on a Day Surgery basis. Clerks need to be given an opportunity by the resident to be first assistant and be involved in suturing and other surgical skills (insertion of I.V., N/G tubes, foley catheters) at the discretion of the operating surgeon, senior resident or senior nurse.

**SERVICE ROUNDS:**
These are normally held on Wednesday mornings between 11:30-12:30 as follows:

First Wednesday of the month: House staff Topic Presentation CH304
Second Wednesday: Diagnostic Imaging rounds CS115; tel. 74989
Third Wednesday: Pathology Rounds, MS473 (to be confirmed)
Fourth Wednesday: House staff Topic Presentation CH304
Fifth Wednesday: T.B.A.

**Joint Surgical-Emergency CME Rounds:**
These rounds will occur three times throughout the year during the 11:30-12:30 Service Round schedule. The dates and location will be announced.

**Pediatric Trauma Rounds:**
These rounds are scheduled five times a year. They are held in the Annie Bond Room, Community Services Building from **7:45-8:45 am**:
The Pediatric General Surgery Office will advise you is rounds are scheduled during your rotation.
ORIENTATION
You will be given an orientation (entrance interview) by one of the attendings (usually Dr. Hancock) during the first day of the rotation. Please call 787-1246 for an appointment if you did not receive one in your orientation package. You are also to identify yourself to the head nurse of the surgical ward on CK3, or her/his designate, on the first day of this rotation.
It is important to dress professionally at all times, particularly for the clinics.

EVALUATION
You are to receive a mid-rotation interview and an exit interview and written evaluation at the end of this rotation. When you begin the rotation, please confirm these appointments with Dr. Hancock by calling her secretary at 787-1246. You are to bring along your completed self-evaluation form obtained from the Surgical Education office, GH604, 787-3154.
The written evaluation information will be based upon the opinions from the attending pediatric surgeons, the senior surgical resident and the head nurses. These persons will review your written work, your response to questions during the course of your work and their direct observations of your performance. You should receive a verbal evaluation midway during the rotation.
You are expected to keep a log of your clinical experience on this rotation and bring it to the exit interview. A list of the patients (inpatients and clinic patients) and operations / ward procedures you participated in will suffice.
You will also be required to complete the end-of-rotation evaluation form and the teacher evaluation forms. The latter will be returned to the service chief and other surgeons well after the rotation for confidentiality.

IMPORTANT PRINCIPLES DURING THIS ROTATION
-communication is the key to good learning and good patient care.
-the history and physical is still the key to most surgical diagnoses
-most of the learning in the clerkship is by the case study method. Read about the condition and treatment of the patients under your care. Patient specific reading is more effective than general reading. An assortment of Pediatric Surgery texts may be found in the Children’s Hospital Library. The required pediatric surgical chapter is found in “Essentials of Surgical Specialties” by Peter F. Lawrence, 2005 edition, Williams and Wilkins. The clerk must have read chapter 2 (Surgical Diseases of Children) of this text before the end of the rotation.
-be aggressive in seeking out your own learning activities. The clerk knows best his or her own deficiencies and should seek opportunities to correct them. If there are ward procedures to be done, the clerk is encouraged to do them under supervision e.g., Foley catheterization, starting I.V.’s
-when ordering laboratory tests, please remember that these cost money and are usually uncomfortable for the patient; you need to look up and document the results. Get in the habit of predicting the lab results. It’s not only good medical practice but also fun.
-speaking of fun, do enjoy yourself on the rotation!
TELEPHONE NUMBERS:

Some useful telephone numbers:

Dr Hancock: 787.1246  Clinic: 787.2401  OR room 2, 787.2092
Dr. Lum Min: 787.4203  X ray, 787.2288  OR room 3, 787.2082
Dr. Wiseman: 787.2682  Call room, 787.4082  OR room 4, 787.1095
Paging: 787.2071  Call room combo, 314  OR room 5, 787.1063
Ped Day Unit: 787.2449  Operating room, 787.2240 & 787-7391 787.7798
Ward CK3: 787.4785/7786  Cindy Holland
Emergency: 509.8809  OR room 1, 787.2045

Dr BJ Hancock
Head, Section of Pediatric General Surgery
AE 401 Medovy House (AE401 as of January 10, 2008), 7671 William Avenue
787.1246 or paging 787.2071

Perioperative Orders in Pediatric Surgery
There are no routine orders for children requiring surgery except for the post-operative
orders of the Complicated Appendectomy Care Map and the Trauma Standard Order
Sheet (see below). The Care Maps are found in the Post Anesthetic Recovery Room.
Pre-op orders depend on the needs of each patient. For example, coagulation screens are
done routinely, but are reserved for any patient with a history of easy bruising,
prolonged bleeding from a cut or a positive family history. A pre-op chest x-ray would be
required in any patient with respiratory symptoms and signs but not as a routine. Hence,
pre-op tests are performed as indicated. The exception is a preoperative CBC for any
infant less than 1 year of age. Many children requiring elective surgery have no pre-op
tests at all. Fasting orders and instructions are available on the wards and the operating
room.

FLUID AND ELECTROLYTES IN SURGICAL PATIENTS
Determining fluid and electrolytes begins with an assessment and replacement of the
patient's existing deficit, calculation and administration of maintenance fluids, and
keeping up with ongoing losses. Hence, three components of fluid therapy.
For illustration purposes, we will consider fluid therapy for a 12 year patient, weighing 25
kilograms who comes in to the emergency room at 15:00 hrs with a three day history of
abdominal pain, vomiting for 24 hours, virtually no intake and dehydration. His
abdominal exam indicates a perforated appendicitis. The surgeon wants you to ready the
patient for an appendectomy which is planned for 17:30 hours; you are going to have to
work quickly!!
A. Deficit
Assessment of Hydration:
These include:
- history of fluid intake, vomiting, urine frequency and concentration
- assessment of vital signs (BP, pulse rate, pulse pressure, temperature)
- assessment of skin turgor, mouth and mucus membranes
- assessment in the young infant of fontanels, absence of tears
- urinalysis: urine specific gravity, ketones
- serum electrolytes, BUN, creatinine; serum Na is usually low in perforated appendicitis and vomiting
- deficits may be categorized as:
  - mild (5% or less of body weight (BW))
  - moderately severe (5-15 % BW)
  - severe (>15%)

Deficit Replacement:
Assuming the patient's kidneys, heart and lung status are normal and the patient is not hypernatremic, the patient may be given a bolus of crystalloid, usually Normal Saline or Ringer's Lactate. The volume of fluid bolused is usually 10-20 ml per kilogram per bolus over 30-60 minutes. The end-point is a reversal of the clinical signs of fluid deficit and adequate urine output with a specific gravity of less than 1.010. If necessary, the bolus may need to be repeated. For ongoing fluid replacement of your patient with a perforated appendicitis, use Normal Saline or Ringer’s Lactate at 1 ½ to 2 times maintenance until your patient goes to the operating room. Follow urine specific gravity with each void to monitor the patient's progress. This patient will be put on the Care Map for Complicated (perforated) Appendicitis post-operatively.

B. Maintenance for well hydrated patients:
Sufficient fluids need to be given for normal insensible loss and obligatory urine output. Normally, pediatric patients are given D5 1/2 NS. Potassium should be added when urine output is well established and the patient is not hyperkalemic.
Maintenance volumes are calculated as follows:
4 ml/kg/hour for up to 10 kilogram body weight, plus
2 ml/kg/hour for 10-20 kilogram body weight, plus
1 ml/kg/hour for >20 kilogram body weight
Thus, for example, the volumes administered would be:
5 kg infant: 5 times 4= 20 ml per hour
15 kg child: 10 times 4, plus 5 times 2=50 ml per hour
25 kg child: 10 times 4, plus 10 times 2=, plus 5 times 1=
65 ml per hour
Total daily maintenance fluid requirement (per 24 hours) can also be calculated as follows:
100 ml/kg/24 hrs for up to 10 kg body weight, plus
50 ml/kg/24 hrs for 10-20 kg body weight, plus
25 ml/kg/24 hrs for >20 kg body weight
Incidentally, this formula can also be used to calculate normal calorie requirements.
Remember, a "D5 ½ NS" solution is pretty "anemic" with respect to calories. The patient will need TPN after a week-sooner in young infants.

C. Ongoing Losses
Ongoing losses are generally replaced volume for volume if they can be quantitated. Hence, for example, nasogastric losses are replaced volume for volume with half normal saline or even normal saline. Fever requires extra fluids, usually 10% of maintenance per centigrade degree of fever. For example, a patient with a persistent fever of 39° C could benefit from a maintenance of 2 times 10%≈20% or 120 % maintenance fluid therapy. On the other hand, ongoing losses on the basis of continuing third spacing or diarrhea are next to impossible to quantitate. Urine output, urine specific gravity, daily body weight and biochemical status should be used to assess adequacy of fluid therapy in these cases.

Medication Orders
Always check the dosages in the Pediatric Dosage Handbook found on each ward. Remember, the margin of error in pediatric dosages is small. In fact, there is zero tolerance for drug errors. For this reason, Children’s Hospital has a Medication Order Writing Standard that is mandatory for ordering medications:
1) All medication orders must be printed or written legibly and must comply with the order writing standard
2) Abbreviations, acronyms and symbols must be avoided
3) Medication orders for pediatric patients who weigh less than 50 kg must include the dosage by weight as milligrams per kilogram per day or milligrams per kilogram per dose OR body surface area (m²).
   For example, when ordering a medication such as Morphine for your 25 kg patient, the order should be written:
   Morphine 2.5 mg IV q2 h PRN (0.1 mg/kg/dose)
   An antibiotic, such as Metronidazole should be written as:
   Metronidazole 250 mg IV q8 h for 5 days (10 mg/kg/dose or 30 mg/kg/day)
   If you have any questions, speak to the person on second call or the pharmacist. All clerk drug orders must always be co-signed by a graduate physician.
4) Complete the Medication Reconciliation Form for home medications on all Day Surgery patients and patients admitted to hospital. For patients being admitted, once the Medication Reconciliation form is signed and dated indicating if medications are to be continued or not, it is acceptable to write on the Physician Order Sheet to “refer to the Med. Rec. form” without rewriting all these medications. Changes in these orders must be written in full on the Physician Order Sheet.
Pediatric Trauma Admissions
The Pediatric Committee for Major Trauma has formulated a special Trauma History and Physical form to assist in Trauma admissions. It is a preprinted, fill-in-the-blank 2-sided form with a yellow stripe, much like the regular blank History forms. They must be used for all Trauma admissions to hospital. Extra copies can be found on the side wall in Emergency. The folder is marked.
In addition, there is a pre-printed Order Sheet for Trauma admissions that is found in the same place as the History and Physical forms and in the Trauma Admission package. If you have difficulty finding these forms, just ask the ward clerk in Emergency.