Pediatrics into Basic Sciences

- Goal:

Experience pediatric conditions embedded into the basic science curriculum

- Objective:

Utilize common pediatric clinical conditions when integrating clinical correlates to the basic sciences

1. Importance of Peds in pre-clinical curriculum
2. Discussion of "Pediatric Disciple Directors"
3. Peds Case Based learning, integrated into curriculum
4. Peds specific lectures
5. “Life Cycles” Course
5. Question of the Month examples

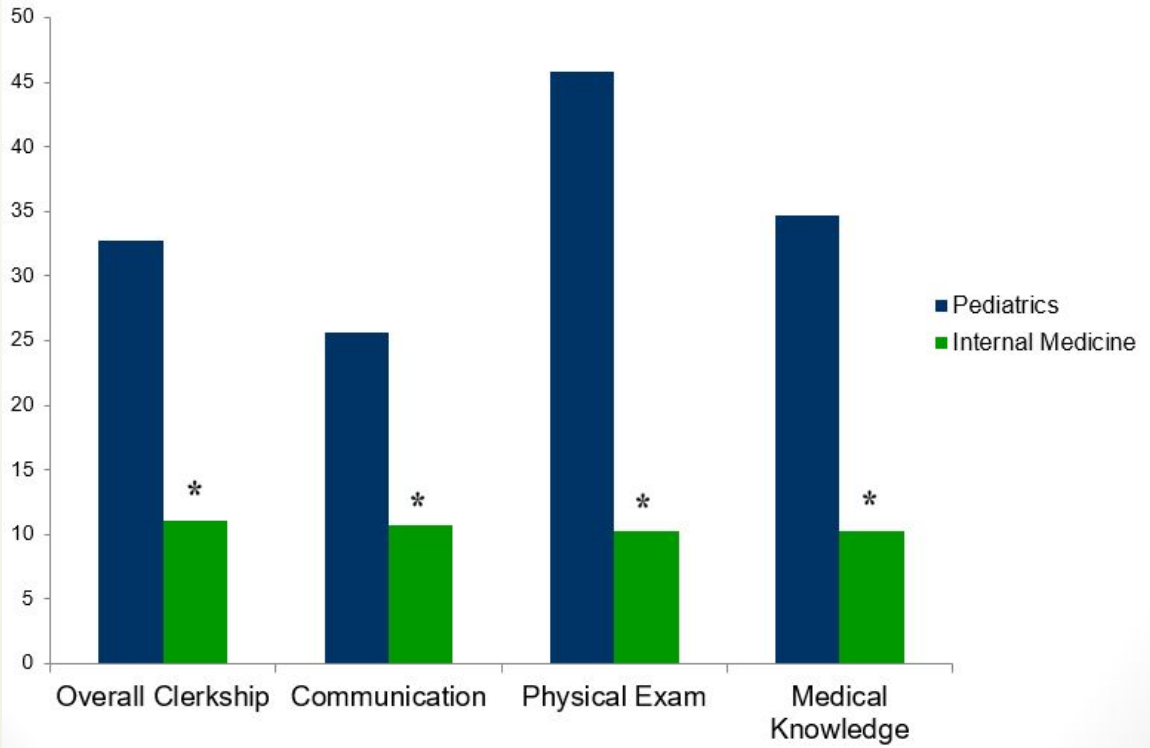
Weinstein, Held, Gibbs, Hammond PAS 2015

- Survey of 3 medical schools
- 1-5 Likert scale (1 poor, 5 excellent)

Overall clerkship Preparation (# of total responses)	% Responding "Poor" or "Fair"	% Responding "Good," "Very Good," or "Excellent"
Pediatrics† (229)	33%	67%
Int Med† (208)	11%	89%
OB-Gyn† (96)	31%	69%
Family Med* (72)	4%	96%
Surgery* (63)	30%	70%

†Data from all three schools *Data from two schools

Percent students reporting "inadequate" preparation: Pediatrics vs Internal Medicine

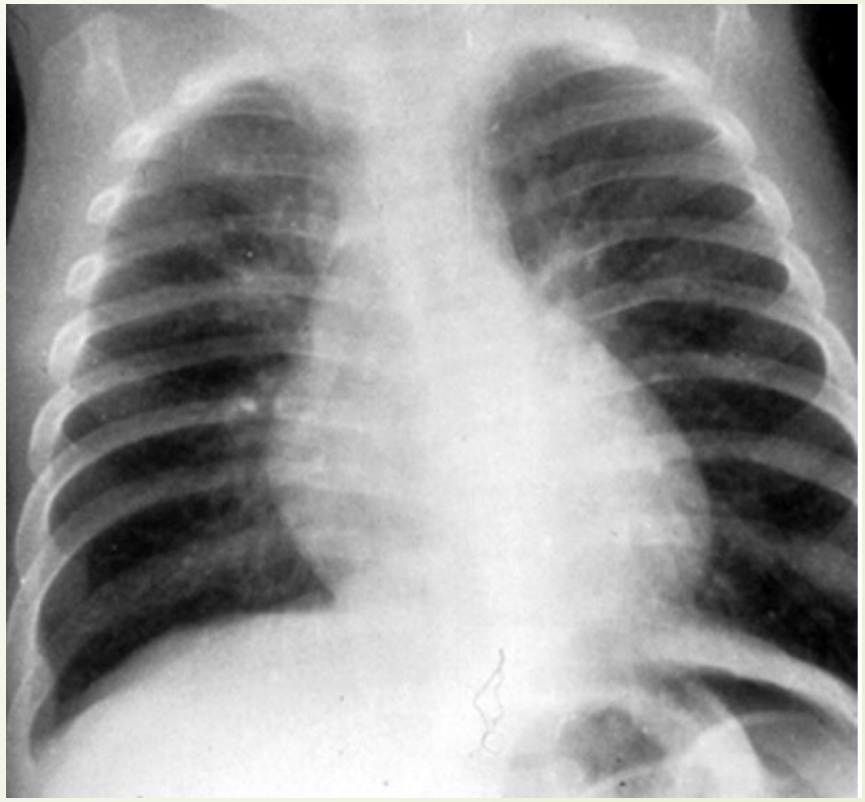


Three school comparison: ǂ $p < 0.05$ * $p < 0.005$

Discipline Directors/Protected Time

Case Based Learning/Integrated Pediatric Curriculum

- A 6 month old boy presents to his pediatrician with 2-3 days of runny nose and wet cough, and last night was coughing, wheezing, and having trouble breathing (parents describe he was breathing really fast and hard and couldn't get comfortable). He is cranky and not eating as well but is still making urine normally. No vomiting or diarrhea.
- On exam Temperature is 100 degrees F, Heart rate is 150, BP is 90/50, and RR is 50, Oxygen saturation is 90% on Room Air. He looks like he is breathing hard, and you note intercostal retractions and coarse breath sounds on your exam. He had a chest x-ray done and it appears as follows:



Please list the pathophysiologic mechanisms by which RSV causes "Bronchiolitis" and accordingly, for each mechanism list treatment(s).

26	Food to Fuel	Low body mass index	Anorexia nervosa	Learn nutritional needs, specific vitamin and mineral deficiencies
28	Food to Fuel	Nausea/ Vomiting In a child	Pyloric stenosis, Duodenal atresia or Malrotation (embryology)/Volvulus or Intussusception or Meckel Diverticulum, annular pancreas	Common symptom in a child; Learn anatomy of stomach, small and large intestine.
29	Food to Fuel	Abdominal pain	Gallstone pancreatitis; Cholecystitis, cholangitis, hepatitis or appendicitis,Current Pathophysiology Case	Common symptom in an adult and child; Learn anatomy and physiology of the biliary system. medical/ surgical treatment of gallstone pancreatitis.
35	Food to Fuel	Altered sensorium	Diabetes type 1- DKA, Current Pathophysiology case	Endo, Life threatening emergency, broad differential
42	Brain, Behavior, cognition and mechanics, BRAIN	Unconsciousness	TBI (with either contusion, Subdural hematoma, subarachnoid hemorrhage) with hydrocephalus/increased ICP	Most common cause of neurological disease; Life threatening ; incorporate mechanisms of cerebral activation, decerebrate/decorticate ridigity; possible cortical sequelae
44	Brain, Behavior, cognition and mechanics, BRAIN	Sudden Jerky movement of extremities- in adult	Epilepsy*- child and adult, Pseudoseizure	Prevalence (4^{th} leading neurological disorder)
47	Brain, Behavior, and Cognition	Fever, headache, stiff neck	Meningitis, Current Pathophysiology case	Life threatening, 1/10,000

Peds Specific Lectures

“Life Cycle” Courses

Question of the month

- **Cases of the week, from Blair Hammond, MD, Mt. Sinai, NY**
- **This week's case is thanks to our teaching resident, Theresa Zhou!**
- **History:** 4 y F with painful lesion to right third finger x 2 days. Patient also has crusted lesions around right eye…

- **Diagnosis: Herpes simplex virus type 1 infection – manifesting as herpetic whitlow & eczema herpeticum**
- **Etiology:** Inoculation of HSV-1 at mucosal or skin sites, which permits entry of virus into epidermis, dermis, and eventually sensory and autonomic nerve endings
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- **Primary Infection:**
- · Onset is usually sudden, with appearance of multiple characteristic vesicular lesions superimposed on an inflammatory, erythematous base
- · Primary infection may also be associated with systemic symptoms – fever, malaise
- · In general, severity and number of lesions is considerably less with reactivation
- · Lesions can be painful and last for 10-14 days
- · Vesicles usually grouped at single anatomic site; however, autoinoculation can occur
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- **Differential Diagnosis:**
- Skin / nail infections
- · Herpetic whitlow – HSV infection of the finger
- o Can occur as complication of primary oral or genital herpes by inoculation of the virus through a break in the skin
- o Majority of children with herpetic whitlow also have oral lesions
- o Untreated, gradually heal over 2-3 weeks, but have potential to recur
- o Usually appear as one or grouped vesicles on an erythematous base
- o Usually monolateral, more painful than pruritic
- · Cellulitis / abscess
- o Bacterial infection of skin, usually caused by local flora that is inoculated through break in the skin
- o Important to distinguish this from herpetic whitlow, as herpetic whitlow does NOT require antibiotics or I&D
- · Acute paronychia
- o Bacterial infection of nail fold, usually manifests as swelling, erythema, and purulent collection on contiguous with lateral nail, most often caused by Staph aureus

- **Treatment:** Acyclovir is useful if begun early during primary HSV infection, or if symptoms are severe. Treatment with oral acyclovir results in earlier disappearance of fever, shorter duration of lesions, decreased duration of odynophagia, and reduced viral shedding. Prompt initiation within 72 hours is important to obtain maximal clinical benefit. Usual duration of treatment is 7 to 10 days. In severe cases of odynophagia, patients may require IV acyclovir and hydration. Involvement of areas like the eye are also indications for IV vs po therapy.
- **Update on our patient:** She received IV acyclovir given the proximity of her eczema herpeticum to the right eye, though evaluation by ophthalmology showed no ocular involvement (phew). The herpectic whitlow improved over a few days with treatment. Her eye initially improved after 24h of IV acyclovir, but still had continued redness of her eyelid on HD#2, and wound culture was found to be growing Staph aureus = bacterial superinfection. Clindamycin was added, and she was able to be transitioned to po acyclovir and antibiotics to continue treatment at home.
- **References:** UpToDate: Clinical manifestations and diagnosis of herpes simplex virus type 1 infection *and* Treatment of herpes simplex virus type 1 in immunocompetent patients