Highlights of the 25th Annual Whistler

Update in Emergency Medicine Conference 2012

Part 2

INFECTIOUS DISEASES UPDATE (Dr. David Carr)

- High bioavailability antibiotics – eg, fluoroquinolones, TMP-SMX, linezolid, doxycycline, metronidazole and clindamycin can be used *po* to replace *IV* drugs in most non-lifethreatening infections
- Nitrofurantoin has poor bioavailability, which is exactly why you want to use it in simple UTIs (it goes to the urine, not to the tissues), but not in pyelonephritis

Pelvic inflammatory disease (PID)

- Lower abdominal/pelvic pain in sexually active woman + adnexal tenderness, cervical motion tenderness or uterine tenderness = PID until proven otherwise
- Outpatient treatment for mild disease as per CDC: Ceftriaxone 250mg IM x1 (or Cefoxitin 2g IM + Probenecid 1g PO concurrently) for gonorrhea, PLUS doxycycline 100mg PO BID x14d for chlamydia (Azithromycin 1g PO x1 can be used for uncomplicated chlamydial infection, not for PID), WITH OR WITHOUT Metronidazole 500mg PO BID x14d for bacterial vaginosis (which is often associated)

Skin infections

- Consider MRSA in spider bites, furuncles, carbuncles, and health care workers – prevalence increasing rapidly in Canada in all groups, but still lower than the U.S.
- Fist line MRSA Rx = TMP-SMX; also condiser doxycycline, clindamycin, linezolid or vancomycin if severe/treatment failure
- Prophylactic antibiotic treatment is NOT required for mammalian bites except in immunosuppressed patients and for human bites – antibiotic of choice is Clavulinic acid x5d for prophylaxis, and Pip-tazo for infected wounds
- HIV transmission – Highest risk is receptive anal intercourse; contact with bodily fluids (feces, urine, saliva, tears and vomiting) is low-risk unless tainted with blood
    - In counselling patients, remember that HIV prophylaxis therapy has 1/5,000 risk of serious adverse events, and 1/50,000 risk of death

Modified from Table 1. Estimated risk of infection after exposure to an HIV positive source. From Spence, JM. Should emergency departments offer postexposure prophylaxis for non-occupational exposure to HIV? CJEM *2003;5(1)38-45*

Type of exposure	Per-contact risk
Receptive anal intercourse; asymptomatic source	0.008–0.032
Receptive anal intercourse (1° HIV infection)	0.1–0.3
Insertive anal intercourse	0.0003
Receptive vaginal intercourse	0.0005–0.002
Insertive vaginal intercourse	0.0003–0.0009
Oral intercourse*	Not quantified, low risk. Increased risk if lesions or sores in mouth
Needle sharing	0.0067 (mathematical modelling data)
Occupational percutaneous exposure	0.003
Bite	No contact with blood — low risk

<u>Recommendation for HIV prophylaxis treatment:</u>

Use the Table on next page to estimate risk

Table 2. Risk level and treatment recommendation

Risk level	Suggested treatment
< 1/1000	Definitely indicated
1/1000–1/10 000	Recommended but optional
1/10 001–1/100 000	Optional but not recommended
>1/100 000	Not indicated

Reference available upon request

Mathematical model to estimate risk of HIV transmission:

Step A. Identify source population (choose one):	**Score**
Known HIV carrier:	
Acute AIDS illness*	1
Asymptomatic	10
Unknown HIV status:	
High-risk situation†	100
Low-risk situation (other)	1000

A value = _____

Step B. Identify inoculum type (choose one):	
Fresh blood	1
Body fluids at risk (e.g., semen)	10
Dried old blood	100
Low-risk secretions (tears, saliva, urine)	1000

B value = _____

Step C. Identify method of transmission (choose one):	
Intravenous	1
Deep intramuscular	10
Deep transcutaneous with visible bleeding at site	100
Superficial transcutaneous with no visible bleeding	200
Mucosal contact only	500
Intact skin	1000

C value = _____

Total score (Z) = A × B × C = _____ AND Basic risk = 1 / Z = _____

Step D. Estimate volume of inoculum (choose one):	**Modifier**
Massive (e.g., transfusion)	100
Measurable (> 1 mL)	10
Moderate (large-bore hollow needle > 22 g)	5
Small (small-bore hollow needle < 22 g)	3
Trace surface only (e.g., suture needle)	1

Total risk = Basic risk × Modifier (D) = _____

*End-stage AIDS, hospitalized, known high-viral load
†Suspected HIV, injection drug user, unknown needle with high local prevalence of HIV

Reference available upon request

PEDIATRIC ULOGOGIC EMERGENCIES (Dr. Dennis Scolnick)

- UTIs:
    - Febrile children up to 36mo old should have consideration for urinalysis even when another focus of infection has been found, especially if the fever has lasted 48-72hrs (12.5% UTIs, versus 5% if fever has lasted <24hrs)
    - Toddlers may initially have a bag urine because the negative predictive value is good, but infants probably up to 8mo old (definitely up to 3mo old) NEED a culture (clean catch, catheter or suprapubic aspiration) because dipstick may be negative in this patient population
    - Oral antibiotics of choice: Cephalexin or nitrofurantoin (NOT Amoxicillin); always treat for 10 days and always admit ALL children <6mo old
    - True positive results in young children mean they require follow up ultrasound (for abnormal anatomy), and consideration for voiding cystourethrogram (VCUG – for vesicoureteral reflux), although it is controversial whether or not vesicoureteral reflux requires preventative antibiotics
- Painful genital area:
    - DDx: testicular torsion, epididymitis (pain localized to postero-lateral testicle, and treated with NSAIDs only if no concomitant UTI), torsion appendix testis (blue dot sign), hernia in scrotum, direct trauma, Henoch-Schonlein Purpura, Kawasaki's, tumor, hydrocele (transillumination)
    - Testicular torsion is defined by (a) sudden onset of (b) excruciating pain that is (c) felt over the whole testicle, (d) often starting during exercise, with (e) high-riding or sideways testicle, and (f) absent cremasteric reflex
        - Fever is also often present, and pain will decrease with "opening of the book" – temporizing measure until surgery
    - Balanitis = inflammation of the penis glans only, vs. balanoposthitis = infammation of glans and foreskin in uncircumcised males
        - Treatment: sitz baths BID, gently milking foreskin (but no retraction), NSAIDs ± hydrocortisone ointment; Cephalexin ONLY IF cellulitis
    - Paraphimosis: forcibly retracted foreskin and strangling glans; treatment: apply pressure from top-down to squeeze edema out while pulling foreskin, for 5-10min; provide pain relief and sedation PRN
    - Inguinal hernia in female = ovaries until proven otherwise (get ultrasound)
    - Vomiting NYD child needs to be undressed to prevent missing "silent" systems – CNS (hemorrhage, tumor, AVM) and GI/GU (volvulus, testicles)

PEARLS & PITFALLS IN SHOCK (Dr. Anil Chopra)

- Patients in shock need aggressive fluid resuscitation (if >50% IVC collapse with inspiration on ultrasound, more fluid needed), even if it means leading to pulmonary edema, and vasopressors won't work unless the tank is full
- High oxygen demands associated with increased respiratory effort, so consider intubation, sedation and paralysis in severe sepsis, even if not a respiratory cause
- HCO_3^-: No human evidence of improved outcomes, and animal evidence that it may hurt – alkalinizes urine but paradoxically acidifies intracellular milieu; also shown to decrease oxygen delivery at tissues (more tightly bound to hemoglobin) and worsen ventricular contraction (due to decreased ionized calcium levels)
- Antibiotic choices in shock:
    - 25% of infections are respiratory in origin (mostly S. pneumo) – treat with Imipenem, Pip-tazo or Cefipime AND Levofloxacin or Azithromycin, WITH Vancomycin if suspect MRSA or patient is very sick
    - 25% of infections are urinary in origin (mostly E. coli) – Ceftriaxone AND Fluoroquinolone (Levofloxacin or Ciprofloxacin)
    - 15% of infections are skin in origin (Strep or Staph) – treat with , WITH Vancomycin if suspect MRSA (eg, pacemaker or central line) or a joint is involved, which is present in 35-40% of cases
    - 15% of infections are abdominal in origin (mostly E. coli, enterococcus, Bacteroides fragilis), and often have GI comorbidity or had prior abdominal surgery – treat with Imipenem or Pip-tazo AND Metronidazole
    - Unknown source: Vancomycin AND Ceftriaxone AND Metronidazole
- Steroids not required early on in the management (ie. in the ED), unless patients are adrenally deficient (eg, Addison's disease) or steroids dependent
- Vasopressors:
    - Norepinephrine (0.05-0.2μg/kg/min) and dopamine (5-20μg/kg/min) have no difference in outcomes, but dopamine leads to higher rates of tachydysrhythmias and is less effective in cardiogenic shock
    - Consider adding dobutamine (5-20μg/kg/min) in poorly perfused patients, or epinephrine (2-10μg/min) in refractory shock
- Lactate clearance is prognostically related to survival, and can be used as a marker of perfusion instead of mixed central venous saturation

- Anaphylactic shock:
    - Epinephrine always given IM initially, but in very sick patients consider epinephrine IV 25-50mcg boluses until infusion can be arranged
        - IV Epinephrine RECIPE: Take 10cc out of a 50cc NS bag, and put in 10cc of 1:10,000 epinephrine (1mg amp) – result will be 10mcg/cc, and can give 5cc boluses prn
- Toxic shock syndrome:
    - Group A Strep or Staph (tampons and post-op) are usual etiologies
    - Treatment: Clindamycin (which decreases production of endotoxins but bacteriostatic) AND Vancomycin (bacteriocidal)
        - Consider immune globulin, which also kills the toxins