Antimicrobial Stewardship: Acute Care Hosp/LTCF Outpatient ?

[JCAH requirement] [Insurance/CMS]
What is driving?

- Increasing abic resistance: mrsa, ESBL, carbapenemase producers (*academics*)
- Improved outcomes: (*consumer*)
  - Get well (tomorrow)
  - No adverse effects
  - Reasonable $
- Saves $$$ and drug shortage: less abic days and lower LOS (*Hosp system or Insurance Co*)
Goals for today

Cover points that are not commonly emphasized in outpt infections (NOT about infants and pregnancy...look up the drug and dosing)

ASP criticism from EIN participants: the weakest point is physician/provider’s inability to prove the diagnosis (quickly) so we can safely limit abic exposure.

- It’s dangerous to use abics and it’s dangerous not to use abics.
- Even appropriate use of abics drives abic resistance.
Cellulitis w/o abscess

- Usually B hemolytic streptococcus or non-typeable strep; BUT there are no ABSOLUTES!
- Obese, chronic lymphedema, venous insuff/stasis, +/- DM, +/- trauma, tinea pedis
- Toxigenic dz (systemic effects) not usually bacteremic x Group B strep
  - PO abics fail in acute setting [approved indication for prophylaxis]
  - NEVER tmp-smx alone (no activity vs streptococci)
  - Cephalexin and/or clindamycin (toxin production)
  - Look for the CABG scar
Cellulitis w/o abscess
Not the typical presentation

- Cat/dog bite: Pasteurella multocida, Capnocytophagia post splenectomy
- Human bite or CFI: mixed anaerobes
  - Crushed nerve, open fx, compartment syndrome
- Fresh water: Aeromonas hydrophila
- Salt water: Vibrio species [cirrhotic/post splenectomy]
- Sewage: Coliforms
- Tick or Biting fly: suppurative lymphadenitis F tularensis
- Hot tub: Pseudomonas overgrowth
- NPW through foam rubber insert: PSA [osteitis]
- Paronychia: SA, candida, HSV [osteo in DM or PVD]
**Cellulitis with ABSCESS**

**MRSA/MSSA;** tmp-smx, clinda, doxy, quinolone; then linezolid or tidezolid $$$ (oritavancin)

**Drainage alone (80% success);** add abics and when blood cultures needed:

- >5cm and cellulitis or po not working
- Location: face (ear/nose), hand or foot (closed space), perineum (navel to knees)
- DEVICE: pacemaker, prosthetic valve, graft, prosthetic joint, breast w or wo implant, VAD
Recurrent MRSA or MSSA
(make sure of dx! ddx of sores!)

- Every day: clorox wash pillow case, sheets, bed clothes, and towels; colored clothes in hot water!
- No bar soap and use alcohol gel 60%, esp last thing at night around fingernails
- Bath in chlorhexidine 2% or ¼ cup clorox in tub 2-3X a week
- No shaving, piercing, picking (nose/orifices), or pets
- Clean any injury promptly w alcohol gel and mupiricin
- Do not sleep w kids or another infected person or pets
- Do not share clothes or fail to wash (the clothes and yourself) post exercise (athletics, exercise mat, or working in yard)
- No Tishimingogo hot tubs; care for pools and hot tubs
- No artificial nails
- Tool work belts cause trauma
- Favorite tractor/boat/bucket seat or cushion is never cleaned; in kids a blanket or doll or toy
- No smoking (cig smoke effects staph virulence)
UTI: the urine culture

2 reasons to treat asx bacteriuria

- Pregnancy and prior to surgery (TUR)

UTI but neg urine culture? False negative

- Prior abics
- Organism not supported by routine media: Neisseria, ureaplasma, mycoplasma, chlamydia, syphilis, anaerobes, (yeast grow slow); TB, Blasto, Crypto
- Ureteral (complete) obstruction: stone, tumor
UTI: the culture

Pos urine culture but NO infection: false positive

Collection

- Clean catch: >10 fifth, single organism, min epithelial cells, some pyuria (unless neutropenic)
- Cath spec: >10 third, may have >1 organism, no epithelials and some pyuria
- Cult in broth or ARD bottle (oh my! Like DST)

Transport: plated within 2 hours or kept refrigerated; doubling time of GNR at RT

Processing: what goes on in the lab
Gastroenteritis

- **Viral, toxigenic, invasive**
- **Invasive:** Sal, Shig, Campy, Yersinia usually the bloody flux = abic
  - Cdifficile: enterotoxin and cytotoxin = abic
  - Candida: overgrowth = abic
- **Toxigenic:** enterotoxigenic Ecoli (shiga toxin);
  Ecoli 0:157 HUS = no abic
- **Viral:** norovirus (60%); focus on epidemiology
- **Diarrhea can occur w endotoxin release (sepsis)**
Know Thy Abic

Confusion/fall, seizure, INR, glucose and caffeine metabolism, prolongs QT, tendon injury:

Confusion, seizure, rx ESBL:

Bad taste, seizure, INR, antabuse rxn:

Nausea, seizure, leukopenia and thrombocytopenia, rx mrsa:

Rash, AAD/nausea, anemia Coombs pos, thrombocytopenia, leukopenia:

Nausea, tinnitus/hearing loss, prolongs QT:

Rash (SJ), hemolytic anemia G6PDdef, INR, hepatitis:

Rash, diarrhea esp Cdiff:

Hearing loss, balance (not reversible), NM weakness, renal failure:
Summary

Make the right diagnosis (most difficult part of ASP)
Base abic choice on the dx and any micro data available (80% empiric/20% cult driven)
Base abic dosing on safety, cost, tolerability, antimicrobial spectrum
Make sure they get well, “and if not, start over!”
Hx, PE, Lab and Rad studies…medicine can be simple, but it is not always easy!