**Case presentations in ID**

**Case 1**
- 21YOM Hx Down’s Syndrome admitted with 5 day hx of fever >105, cough sob.
- CXR bilat infiltrates, MRSA screen +
- BAL cults –
- Treated with broad spectrum abx without improvement.
- Resp Viral panel + RSV

**Case 2**
- 50YOF ESRD admitted to ICU with septic shock, bilateral pneumonia.
- Patient intubated pressors started
- Broad spectrum abx
- All cults –
- Resp viral panel + Parainfluenza 3

**Respirtory Virus Panel**
- Most studies have shown >50% of patients admitted for CAP have viral etiology
- Problem has been no rapid test to dx respiratory viral pathogens
- Now rapid accurate PCR dx possible

- Patient treated with po Ribavirin and steroids
- Abx stopped
- Patient extubated and eventually discharged

- All abx discontinued
- Steroids started
- Patient extubated did well and discharged
Respiratory virus panel
- Rapid less than 24 hr turn around
- Sensitivity 98%, Specificity 98%
- Viruses on panel
  - Influenza h1N1, Influenza AH3
  - Influenza B
  - RSV, Parainfluenza, Rhinovirus
  - Adenovirus, Metapneumonia
- Cost $250

Respiratory virus panel Our experience 1st 6 months
- N=610
- 286+ 47%
- Influenza 26
- RSV 47
- Parainfluenza 30
- Adenovirus 14
- Metapneumonia 14
- Rhinovirus 136

Respiratory virus panel allows
- Rapid dx of common viral pathogens
- Stopping abx
- Possible antiviral tx
- Prophylactic tx family members
- Decreases other dx testing
- Steroid tx

Case 3
- 65YOM transferred from another hospital with 2 day hx fever>103, confusion, abnormal labs.
- Labs: wbc 2,000 60% bands, Creat 4.0, pltlet count 5k
- Initial dx TTP however peripheral smear –
- ID consult requested

Human Ehrlichiosis
- 1st case 1987
- Similar to RMSF
- Tick borne
- Very common, seroprevalence studies as high as 20%
- 2 Major types
  - Human monocytic Ehrlichosis
  - Human Granulocytotropic Anaplasmosis

- No Travel
- All cultures –
  - Ehrlichia chaffeensis PCR +
  - Patient treated with doxycycline with resolution of all sx, abnormal labs
**Ehrlichia Clinical Presentation**

- Multisystem dz, duration 23 days
- Sxs: Fever, chills, weight loss, rash
- Labs: thrombocytopenia, leukopenia
- Dx: PCR on blood, serology
- Treatment: Doxycycline
- Can be fatal

**Case 4**

- 65YOF admitted with fever, chills, odontophagia, cough for 1 week.
- No other medical problems
- Data: CXR nodular infiltrates
- Wbc 2,000, 2% reactive lymphs
- EGD ulcerative esophagitis, CMV+, CMV PCR blood 20,000
- Treated with ganclovir with resolution of all sx's

**CMV Disease**

- Most common cause FUO adults age 20-40
- Sxs: Fever up to 8 weeks, Increased LFT's, reactive lymphs
- Dx: CMV serology, slow
- CMV PCR on blood
- Usually no tx unless end organ dz

**CMV Disease**

- Marked increased CMV disease in normal hosts
- CMV esophagitis
- CMV colitis: common after bowel injury such as ischemic colitis
- CMV pneumonia: commonly isolated from BAL normal hosts
- WHY more common?

**Case 5**

- 30YOM admitted with 2 week Hx of pustular painful skin lesions, fever, SOB weight loss. No other medical problems.
- PE: Fever 104, pustular skin lesions, bilat crackles
- Labs normal

- Hospital course:
  - Started on IV abx, cults all –
  - Condition worsened, intubated for ARDS
  - Histo urine Ag>30, HIV –, Ampho started
  - Skin Bx, BAL + Blasto
Blastomycosis
- Fungal infection similar to histoplasmosis
- Presentation:
  - Pulmonary: Mass felt to be cancer
  - Bilateral infiltrates, can be rapidly progressive
- Skin lesions; "cold abscesses"
- Dx: Bx, culture Blasto Ag, serology usually not helpful
- Histo Ag cross reacts
- Mortality 60-80%
- Tx: Amphotericin B
- Itraconazole for mild disease
- Dramatic increase Blasto cases central Indiana past 5 years
  - 2000 1-2 cases/yr
  - 2010 15-20 cases/yr
- ? Global warming

Case 6
- 61YOM epidural steroid injection L3-4 Columbus IN 9-20-12
- Steroid from NECC contaminated lot
- Developed increasing back pain, MRI 12-12 Vertebral osteo
- 1-15-2013 Open Bx done cults , CDC PCR + Exserohilum
- Voriconazole started, confusion, dose reduced
- 3-1-13 70% reduction pain

Steroid Fungal Meningitis
- 720 cases as of 3-2013
- Indiana 84 cases, 3rd most
- Contaminated lots from NECC Indiana: Evansville, Fort Wayne, Elkhart, South Bend, Columbus
- 17,000 contaminated lots
- 1st case 9-18-2012, Contaminated lots recalled NECC 10-6-2012
**Steroid Fungal Meningitis**
- 2002: 5 cases Exserohilum meningitis from steroid injections from a compounding Pharmacy
- Clinical Syndromes
  - Meningitis 60%
  - Spinal Osteomyelitis or epidural abscess 30%
  - Basilar stroke 5%
  - Septic arthritis of peripheral joint 5%

**Clinical Syndromes**
- Meningitis 60%
- Spinal Osteomyelitis or epidural abscess 30%
- Basilar stroke 5%
- Septic arthritis of peripheral joint 5%

**Primary symptom pain, initial MRI, LP often normal**
- Cultures almost always negative
- CDC PCR + 50% Exserohilum

**Definitive Diagnosis often not possible. Empiric treatment often given**
- Treatment prolonged
  - Voriconazole, duration unknown

**Case 7**
- 70YOF with multiple medical problems admitted with severe diarrhea, abdominal pain, cachexia. 6 prior bouts c difficle colitis past 6 months, was on oral Vancomycin, no recent antibiotics
- PE: Afebrile, wasted, weight 84 pounds, abdomen distended, tender
- Data: Ciff PCR +, NAP1-, CT Normal, WBC normal
- Patient treated with Stool transplant via Colonoscopy
- Disease free 2 years later

**Recurrent C Difficle Disease**
- Huge problem: 40% of patients that get c difficle will have recurrent disease
- Risk Factors:
  - Elderly
  - Female 10:1 Male
  - Comorbid conditions
  - Prior Treatment Flagyl

**Recurrent C difficle Treatment Options**
- Prolonged oral Vancomycin taper, indefinite treatment
- Oral vancomycin + Rifaximin “chaser”
- If NAP1 - Fidaxomicin 10 days, cost $3500
- IVIG
- Stool transplant: Considered treatment of choice, recent NEJM 92% cure rate

**Case 8**
- 35YOF admitted with fever 105, back pain
- Started on Zosyn for Pyelonephritis
- Blood, urine cults + E coli ESBL
- Antibiotics changed to Ertapenem, patient did well
Case 9

- 36YOF from Puerto Rico admitted with fever, back pain, pyuria
- History recurrent UTIs, recently on Keflex, Diabetic
- Urine, blood cults + Carbapenem Resistant Klebselia
- Treatment changed to Colostin, patient developed ARF
- Tigecycline started, slowly improved
- Hospitalized 3 additional times next 6 months with Resistant Klebselia infections

E coli ESBL and Carbapenem Resistant Enterobacteriaceae (CRE) Infections

- E coli ESBL now 10% E coli isolates, 50% community aquired
- 1st reported USA 1980's
- Most patients prior quinilone exposure
- Treatment
  - IV Meropenem, Ertapenem
  - PO Fosfomycin 3 gram packet cost $165

CRE Infections

- 1st reported USA 1990's
- Dramatic increase past 2 years Methodist 60 cases 2012, USA 1.2% 2000, 5% 2012
- Usually causes severe invasive disease with bacteremia Mortality 50%
- Risk Factors: LTAC, ECF, Prior antibiotics, DM, trauma
- Treatment: Colostin, Tigecycline some recommending combination treatment
- ? Being driven by E coli ESBL epidemic

Case 10

- 25YOWM admitted with infected index finger after trauma. Started on Vancomycin and Zosyn. After 24 hours improved ready to be discharged but noted decreased urine output. Creatine 1.0 on admit, rechecked after 24 hours 3.5. Antibiotics stopped, over next 7 days creatine peaked at 11, renal biopsy revealed interstitial nephritis, never needed dialysis eventually discharged day 11 with creatine 1.4.

Acute renal failure from Vancomycin +/- Zosyn

- Noted over past 5 years, we have seen >25 cases
- EIN post >30 institutions noted same problem
- Mechanism speculative: Increased Vancomycin through dosing, impurities in Vancomycin/Zosyn, Others
- In past multiple researchers hases stated Vancomycin alone not nephrotoxic, Many reports recently of ARF from Vancomycin alone.

Case 11

- 45YOF admitted with fever, back pain for 2 months from pain center where she was getting a steroid injection in L/S spine.
- PMH: DM, PPM for afib
- Data: CT chest bilateral PE, Blood cultures Enterococcus
- ID consult requested for ? Significance enterococcus in blood
Serial blood cultures + 10 days for enterococcus
TEE 3 cm vegetation on PPM lead, TV veg
PPM removed surgically
MRI L/S spine diskitis/epidural abscess
Eventually discharged to complete 8 weeks IV antibiotics

PPM/ ICD Endocarditis
- > 3 million Americans have PPM
- 400,000 PPM placed per year infection rate 2%
- 150,000 ICD placed per year infection rate 5-6%
- 18,000 cases Endocarditis from PPM/ICD per year USA
- More common than Endocarditis native valve or PVE

Case 12
- 18YOF admitted 8-12 with fever for 3 days, Headache, stiff neck photophobia.
- CSF 101 WBC 50% L cults –
- Hospital course: No abx, Improved and discharged 8-14. All cults –
- 8-18 Patient received call from Health dept telling her she has WNV. 8-20 I get + WNV serology

Case 13
- 60YOM “street actor” admitted with LE paralysis, confusion.
- CT, MRI normal
- CSF 28 WBC 70 L Protein 463, cults –
- Treated for GBS, no improvement
- WNV IGM strongly positive, WNV RNA PCR CSF, Serum +
- Treated with interferon alpha 14 days rehab, now ambulatory

Case 14
- 74YOM admitted HMH with 1 week fever confusion, weakness
- CT, MRI normal
- LP 1200 WBC, 70% L Protein>200, cults –
- Txed with acylovir, abx, no improvement
- WNV IGM +, WNV RNA PCR CSF, Serum +
- Treated with interferon alpha 14 days with slow improvement

WNV Infection USA
- 1st reported NYC 1999 Last emerging disease of 20th century
- 25% of patients infected symptomatic
- 1/150 Neuroinvasive disease
- 13,000 cases Neuroinvasive disease thru 2011
- > 1 million infected
- 2009-2011 only 400 case/yr USA
- CDC recently declared WNV not a “substantial public health concern”
2012 WNV Return
- 4725 Cases USA thru 10/23 (2009-11 400 cases/yr)
- 2413 Neuroinvasive
- 219 Deaths
- >1000 cases Dallas Found to be related to mild winter temperatures, increase winter rains

Clinical Manifestations Neuroinvasive isease
- Menningitis
- Encephalitis
- Flaccid Paralysis
- Usually asymmetric
- Polio like
- GBS

WNV Diagonosis
- Occurs July thru October
- Serological testing
- IGM positive within 3 days Sensitivity >90%
- IGG positive after 7 days
- RNA PCR positive 1st 14 days of infection
- CSF 60% sensitive
- Serum 30-60% sensitive

Future Tx WNV
- No active clinical trials
- All prior clinical trials failed to enroll enough patients to demonstrate efficacy
- IVIG
- Interferon
- Vaccines
- 4 licensed equine vaccines
- 3 successful phase 1, 2 human vaccine trials
- No phase 3 human trials planned