Intra-abdominal Infection (non-CDI):
Community acquired: IV Ceftriaxone 1g +/- IV/PO Metronidazole 500mg, OR Cefotaxin 1-2g +/- IV/PO Metronidazole 500mg, OR Ciprofloxacin 500mg PO/400mg IV + Metronidazole 500mg (severe PCN allergy)
Risk for MDROs: IV Piperacillin/tazobactam 2.25-4.5g (IV Aztreonam + Metronidazole if severe PCN allergy)

Meningitis/Encephalitis
LP, blood cultures, CT/MRI; ID consult recommended

Meningitis:
- Age > 60 AND normal host immunity: Vancomycin 15-20mg/kg x 1 IV + Ceftriaxone 2g IV
- Age >60 OR Immunosuppressed: Vancomycin 15-20mg/kg x 1 IV + Ceftriaxone 2g IV + Ampicillin 2g IV

Suspect HSV Encephalitis
IV Acyclovir 10 mg/kg (max 800mg)

Anaphylaxis to Penicillin
Vancomycin 15-20mg/kg IV + Levofloxacin 750mg IV OR Ciprofloxacin 400mg IV

Neutropenic Fever
Look for focal sx/signs on exam and history, blood cultures, UA/UCx, CXR

Treatment: Cefepime 2g IV

MMC Criteria for adding IV Vancomycin
- Blood cultures positive for GP organisms
- Clinically suspect catheter or skin source (cellulitis, chills with infusion through catheter)
- h/o MRSA or other MDRO infection
- Infiltirate on CXR
- Severe sepsis or hemodynamic instability

Severe Illness: Can add Gentamicin 5-7mg/kg x 1 IV IBW

Severe Penicillin allergy
Vancomycin 15-20mg/kg IV (GP coverage)
*for intra-abdominal source, can add metronidazole 500mg IV

Catheter-associated Bloodstream Infection
Send at least 2 sets of blood cultures (culturpr line and peripheral blood), remove line and send tip for culture

Treatment
IV Vancomycin 15-20mg/kg + Cefepime 1-2g +/- Gentamicin 5-7mg/kg IBW x 1 (if sepsis or h/o MDRO); If HD OR severe PCN allergy: IV Vancomycin 15-20mg/kg + Gentamicin 5-7mg/kg IV IBW x 1
*If endocarditis suspected remove line and consult ID!

UTI
Change Foley, UA/UCx, U/S of kidneys if suspect pyelitis or obstruction, BCx if febrile

Cystitis
Vancomycin 500mg PO, OR TMP/SMX 1 DS tab PO, OR Nitrofurantoin 100mg PO (for CrCl >30ml/min), OR Ceftriaxone 1g IV

Severe PCN allergy: Ciprofloxacin 500mg PO OR, TMP/SMX 1 DS tab PO

Complicated UTI/pyelonephritis (without h/o MDRO)
Ceftriaxone 1g IV

Severe Illness OR h/o MDRO
Cefepime 1-2g IV +/- Gentamicin 3mg/kg IV IBW x 1

Anaphylaxis to Penicillin
Gentamicin 3mg/kg IV IBW, OR Aztreonam 1-2g IV, OR Ciprofloxacin 400mg IV (if from home ONLY)

Clostridium difficile Infection (CDI)

Obtain CBC, BMP, abdominal Xray or CT if ileus, stool C diff, STOP unnecessary PPI, antibiotics, laxatives; surgery/GI/ID consult recommended for severe or fulminant disease

First episode: PO Vancomycin 125mg every 6 hours (mild to moderate disease)

- Severe disease: age >60, Temp > 101 F, WBC count >15K, _HCO_3_, AKI, extensive colitis on CT, SBO/obstruction or ileus, t creatinine, albumin <2.5mg/dl; add IV Metronidazole 500mg q8h and consider higher dose of PO Vancomycin

Fulminant disease (ileus, hypotension, multi-organ failure, megacolon, ICU status); PO vancomycin 500mg, PR vancomycin 500mg, IV metronidazole 500mg q8h

Skin & Soft Tissue Infection

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncomplicated Cellulitis OR Diabetic Foot Infection</td>
<td>MRSA: PO - Bactrim 1-2 DS tabs, OR Doxycycline 100mg, OR ClindAMYcin 600mg IV - Vancomycin 15-20mg/kg</td>
</tr>
<tr>
<td></td>
<td>MSSA: PO - Dicloxacillin 500mg, OR Cephalexin 500mg, OR Amox/clav 500-875/125mg IV - Cefazolin 1-2g</td>
</tr>
<tr>
<td>Purulent = S. aureus</td>
<td></td>
</tr>
<tr>
<td>Non-purulent, streaky/diffuse = Strep</td>
<td></td>
</tr>
<tr>
<td>*Note local high MRSA prevalence</td>
<td></td>
</tr>
<tr>
<td>Severe Soft Tissue, OR Complicated Diabetic Foot Infection</td>
<td>Limb threatening, h/o MDRO or prior abx, toxic: Vancomycin 15-20mg/kg IV + Piperacillin/tazobactam 2.25-4.5g</td>
</tr>
<tr>
<td>Suspect Necrotizing Infection</td>
<td>Call Surgery/ID consult, add ClindAMYcin 900mg IV to severe regimen (refine later based on cultures)</td>
</tr>
</tbody>
</table>

Antimicrobial Stewardship Program

Empiric Guide for Antibiotic Initiation, Adult Inpatients

Moses/Einstein

Notes:
- This is not intended to replace clinical judgment
- ID assistance recommended for severely compromised hosts, pregnancy, organ transplant, etc.
- Dose and frequency may depend on renal function and weight (e.g. IV vancomycin, gentamicin, acyclovir, SMX/TMP, etc.)
- Always send 8-10cc/ blood cx bottle
- Look at prior micro results to help guide you
- MDRO = multilidig resistant organism
- PCN = penicillin
- Recommendations may be amended for drug shortages

Take an antibiotic time out at 48-72hrs
Is this antibiotic still needed? Can it be narrowed or switched to PO? How long do I plan to treat?

Clarifying an Allergy

Non-IgE mediated penicillin reaction: non-urticarial rash, injection site reaction, unknown/remote reaction (hard to forget anaphylaxis!)

IgE mediated/immediate hypersensitivity reaction: requires prior drug exposure) urticarial rash, dyspnea, hoarseness, bronchospasm, facial/tongue swelling, anaphylaxis

- Loss of IgE occurs each decade
- PCN-cephalosporin cross reactivity rate: ≤ 5%; depends on side chains; benefit of cephalosporin may outweigh risk
- Take opportunity to challenge while in monitored setting; look back at administered meds from prior admits to see if β-lactam even given

Version 2018
### Aspiration
- Serial CXR, CBC, sputum culture

### If treatment required (often caused by chemical irritation, not infectious process)
- Amoxicillin/clavulanate 500-875/125mg PO, OR Ampicillin/sublactam 1.5-3g IV, OR Cldamycin 600mg IV, OR doxycycline 100mg PO; ~3-5 days duration

### Influenza
- Rapid influenza/RSV PCR, CXR
- **Treatment:** For patients at high risk for severe disease & complications; sx onset w/in 48-72h

### Community Acquired Pneumonia
- CBC, CXR, Urine Ag for Legionella/S. pneumoniae, sputum culture, influenza PCR if in season

### Hospitalized, non-severe
- Ceftriaxone 1g IV + Azithromycin 500mg PO (stop if Legionella Ag neg); Levofloxacin 500mg PO if anaphylaxis to Penicillin

### Severe CAP/ICU
- Ceftriaxone 1g IV + Azithromycin 500mg IV + Vancomycin 15-20mg/kg

### Severe CAP, Anaphylaxis to Penicillin
- Levofloxacin 500mg IV + Vancomycin 15-20mg/kg

### COPD Exacerbation
- **GOLD Criteria for Antibiotics**
  1. Sputum purulence and either increased sputum volume or dyspnea OR
  2. Severe disease requiring positive pressure ventilation

- **Mild:** Doxycycline 100mg OR Azithromycin 500mg
- **Moderate:** PO: Amoxicillin/clavulanate 500-875/125mg, OR Levofloxacin 500mg (severe PCN allergy)
- **IV:** Amoxicillin/sublactam 1.5-3g, OR Ceftriaxone 1g, OR Levofloxacin 500mg (severe PCN allergy)

### Severe + Risk Factors for MDROs:
- **Anti-Pseudomonal β-lactam (i.e. Cefepime, Pp/Taz; see HCAP below), OR Levofloxacin 750mg IV (severe PCN allergy)**

### Hospital Acquired Pneumonia
- Sputum culture, CXR or CT thorax
- **Healthcare-associated PNA (HCAP):** milder cases can be treated like CAP; severe cases should be treated as HAP/VAP

### ATS-IDSA Risk Factors for MDROs (use criteria as a guide; not all patients require broad spectrum antibiotics):
- IV antibiotic use within 90d
- Current inpatient stay at least 5d
- Septic shock or ARDS at time of VAP
- Acute renal replacement therapy prior to VAP

### Mild Disease/Limited Healthcare Exposure
- Ceftriaxone 1g +/- Vancomycin 15-20mg/kg x IV

### Severe Disease/VAP
- Vancomycin 15-20mg/kg x IV + either Cefepime 1-2g IV OR Piperacillin/tazobactam 2.25-4.5g IV; add Gentamicin 5-7mg/kg x 1 IV for severe illness or h/o MDRO

### Anaphylaxis to Penicillin:
- Vancomycin 15-20mg/kg x IV + either Aztreonam 1-2g OR Ciprofloxacin 400mg IV (anti-pseudomonal quinolone); add Gentamicin 5-7mg/kg x 1 IV if severe illness or h/o MDRO

### Antibiotic Durations

<table>
<thead>
<tr>
<th>Syndrome</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD exacerbation, meets criteria for antibiotics</td>
<td>3-5 days</td>
</tr>
<tr>
<td>CAP</td>
<td>5-7 days</td>
</tr>
<tr>
<td>Complicated CAP (empyema, bacteremic S. aureus, PNA, abscess, legionella)</td>
<td>Duration variable up to several weeks (ID consult recommended); 7-21 days for Legionella based on severity</td>
</tr>
<tr>
<td>HAP/VAP (empircic treatment OR isolation of specific pathogen such as MRSA, Pseudomonas, MDRO, etc.)</td>
<td>Approximately 7 days (ID input suggested for complicated cases or if double coverage being considered)</td>
</tr>
<tr>
<td>Bacterial Meningitis</td>
<td>7-21 days depending on organism isolated (ID consult recommended)</td>
</tr>
<tr>
<td>HSV Encephalitis</td>
<td>14-21 days (ID consult recommended)</td>
</tr>
<tr>
<td>Catheter-related bloodstream infection (catheter removal recommended for source control)</td>
<td>CoNS: 5-7 days if transient S. aureus: up to 4-6 weeks GNB (not Pseudomonas): 7-14 days if neg BCx and source controlled Candida spp.: at least 14 days from first neg BCx</td>
</tr>
<tr>
<td>For Staph aureus, Pseudomonas, Yeast, and/or recurrent bacteremias – ID consult recommended</td>
<td></td>
</tr>
<tr>
<td>Influenza</td>
<td>Oseltamivir 5 days; up to 7-10 days only if critically ill</td>
</tr>
<tr>
<td>Uncomplicated UTI</td>
<td>3-5 days</td>
</tr>
<tr>
<td>Pyelonephritis/complex UTI</td>
<td>7-10 days; ≥14 days if abscess (ID consult rec.)</td>
</tr>
<tr>
<td>Intra-abdominal source</td>
<td>4-7 days if source controlled</td>
</tr>
<tr>
<td>Skin and Soft Tissue</td>
<td>Pathogen/case specific; 5 to ≥ 14 days if systemic illness, deep infection, non-healing, unusual pathogen, compromised host – ID and Surgery input suggested</td>
</tr>
<tr>
<td>(if discrete lesion drained, often no further abx needed)</td>
<td></td>
</tr>
<tr>
<td>Neutropenic fever</td>
<td>Hold Abx once afebrile ≥ 48h with negative cultures, resolving neutropenia, if documented source, treat accordingly for site and organism</td>
</tr>
<tr>
<td>(ID consult suggested)</td>
<td></td>
</tr>
<tr>
<td>C. difficile colitis</td>
<td>Initial episode &amp; 1st recurrence: 10 days 2nd recurrence: PO Vancomycin x 14 days, then taper over several weeks – see ASP homepage for details</td>
</tr>
</tbody>
</table>