UW TASP tele-antimicrobial stewardship program | echo

August 21, 2017

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Agenda

- Didactic: *IV to PO Conversion*
- Case Discussions
- Open Discussion

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IV to PO Conversion

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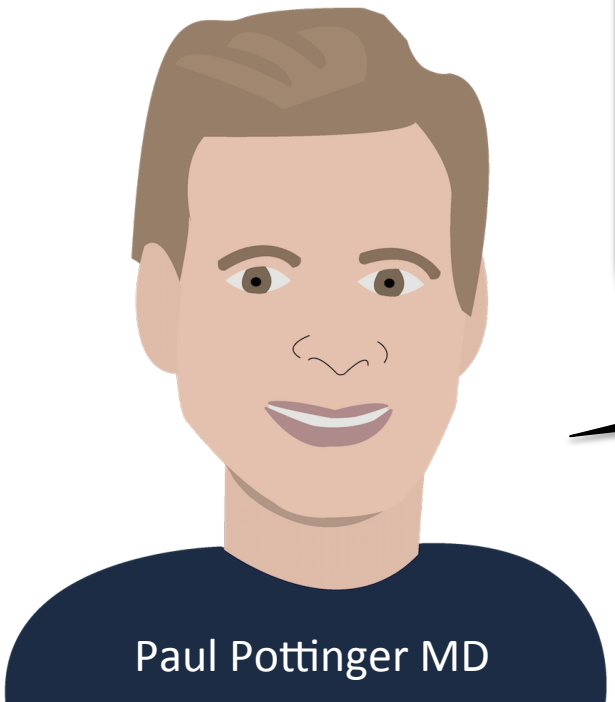
August 21, 2017

Disclosures



- No financial conflicts of interest
- Everything we discuss is QI, thus protected from legal discovery under WA State Code

Question…

Do you have a standing protocol for converting IV to PO abx when appropriate?

A. Yep
B. Nope
C. I'm not sure…

IV or PO…
That is the Question

Abx administration considerations

- Timeliness of achieving levels in target body compartment or fluid?
- Delay in establishing IV access vs. swallowing a pill?
- Tolerability… vein sclerosis vs. nausea / vomiting?
- Certainty re: absorption?
- Medication cost, administration cost?
- Regulatory penalties for PO at time of admission?
- Options for outpatient completion?

Concern: *Obs vs Inpatient Status*

Perception

To be “full” inpatient status, it’s got to be IV.

Reality

- ✓ Severity of illness, not abx route, dictates status…
- ✓ *BUT*, IV route *DOES* support severity in mind of billing / coding team.

Synthesis: *Obs vs Inpatient Status*

Two Midnights Rule (as of January 2015)

- ✓ To be "full" inpatient status, admitting MD only needs to state anticipated LOS of at midnights, with rationale.
- ✓ This trumps abx route.

Never too late to convert

- ✓ Even if IV dose given in ER or on HD 1, conversion may be safe & appropriate, and should not affect obs vs inpatient status.

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Concern: *MD Reluctance*

Perception

- ✓ IV is just plain better
- ✓ “E” in “ER” is for “Emergency”
- ✓ Soothes us doctors

Reality

- ✓ PO may be equally efficacious
- ✓ Expedite discharge
- ✓ Less expensive
- ✓ Avoid IV complications

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Synthesis: *PharmD Conversion Protocol*

Automatic IV to PO conversion by PharmD (no MD order needed) if criteria are met….

IV to Oral Conversion Order for Patients Receiving Target Medications

Automatic therapeutic interchange is approved by the UW Medicine Pharmacy and Therapeutics Committee for all UW Medicine inpatients receiving target IV medications when specified criteria are met.
Target medication list: ciprofloxacin, digoxin, fluconazole, levofloxacin, linezolid, metronidazole, moxifloxacin, pantoprazole, ranitidine, and rifampin.

Criteria for IV to PO conversion:

1. **Functioning gastrointestinal tract**
   - Tolerating at least 1000mL/day of oral fluids or 40mL/hr of enteral nutrition; Tolerating other oral medications.
   - Able to swallow or has a functioning NG/feeding tube in place. (Only those medications available in liquid formulations or which can be crushed/suspended in liquid will be given via feeding tubes.)
2. **Clinically stable**
   - For antimicrobial therapy the patient must be afebrile (temperature less than 38°C) for at least 24 hours, and if leukocytosis was initially present the WBC must be decreasing.
   - For digoxin, the patient must be hemodynamically stable.

Exclusion criteria:

- Patient with an unreliable absorption of oral/enteral medications (i.e. patients with severe diarrhea, short bowel syndrome, active inflammatory bowel disease, grade 3 or 4 mucositis, active gastrointestinal bleeding, or emesis).
- Patients on vasopressors.
- Patients receiving fluoroquinolone therapy that are also receiving oral divalent cation therapy (e.g. iron, calcium, magnesium, etc) and/or enteral feedings.

☐ Ciprofloxacin - Discontinue IV and start _____mg _____(route) _____(frequency).

☐ Digoxin - Discontinue IV and start _____mg _____(route) _____(frequency).

☐ Fluconazole - Discontinue IV and start _____mg _____(route) _____(frequency).

☐ Levofloxacin - Discontinue IV and start _____mg _____(route) _____(frequency).

☐ Linezolid - Discontinue IV and start _____mg _____(route) _____(frequency).

☐ Metronidazole - Discontinue IV and start _____mg _____(route) _____(frequency).

☐ Moxifloxacin - Discontinue IV and start _____mg _____(route) _____(frequency).

Pantoprazole - ☐ Discontinue IV and start Pantoprazole _____mg PO _____(frequency).
☐ Discontinue IV and start Lansoprazole _____mg PFT _____(frequency).

☐ Raniditine - Discontinue IV and start _____mg _____(route) _____(frequency).

☐ Rifampin - Discontinue IV and start _____mg _____(route) _____(frequency).

PHARMACIST SIGNATURE (per P&T Protocol)	PRINT NAME	PAGER	DATE	TIME

PT.NO

NAME

DOB

UW Medicine
Harborview Medical Center – UW Medical Center
University of Washington Physicians
Seattle, Washington

IV TO ORAL CONVERSION ORD-TARGET MEDS

U2741

WHITE - MEDICAL RECORD

UH2741 REV MAR 09

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Synthesis: *PharmD Conversion Protocol*

Eligible Meds:

- ✓ Cipro, Levo, Moxi
- ✓ Metronidazole
- ✓ Rifampin
- ✓ Fluconazole
- ✓ Linezolid
- ✓ Digoxin
- ✓ Pantoprazole
- ✓ Ranitidine

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Synthesis: *PharmD Conversion Protocol*

Eligible Patients:

1. Functional GI
   - ✓ Tolerating other PO meds
   - ✓ > 1 liter / day PO or 40 ml / hr Tube Feeds
   - ✓ Can swallow, or has tube in place (some meds cannot go via tube)
2. Clinically Stable
   - ✓ Afebrile x 24 hours
   - ✓ WBC falling
   - ✓ Digoxin: hemodynamically stable

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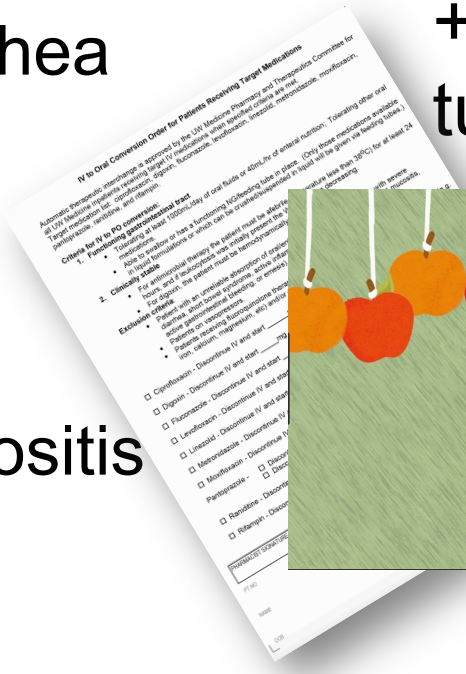
Synthesis: *PharmD Conversion Protocol*

Exclusion Criteria:

1. Critically ill on pressors
2. Unreliable absorption
   - ✓Severe diarrhea
   - ✓Vomiting
   - ✓GI bleeding
   - ✓Short gut
   - ✓Severe mucositis
   - ✓IBD flare
3. FQ should not be given to pts getting divalent cations (Mg++, Ca++, Fe++, etc) or tube feeds.


IV to Oral Conversion Order for Patients Receiving Target Medications

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Concern: *Stepping Down*

PNEUMONIA

A. Community-acquired pneumonia [non-aspiration risk] (*S. pneumoniae, atypicals*)
Diagnosis: Send sputum gram stain & culture, CXR, urinary pneumococcal antigen and blood cultures.
- Ceftriaxone 1 gm IV q24h **PLUS**
- Azithromycin 500 mg PO/IV q24h x 5 days
- If previous MRSA colonization or infection, **CONSIDER ADDING:** Vancomycin**

Typical Duration: 7 days

B. CAP with cavitary lesion(s) (*Oral anaerobes and MRSA*)
- Ampicillin/Sulbactam 3 gm IV q6h **PLUS**
- Azithromycin 500 mg PO/IV q24h **PLUS**
- Vancomycin**

Typical Duration: 10-21 days

CF or Lung transplant patients: Call Pulmonary Transplant and Transplant Infectious Diseases Consult.

C. Healthcare associated pneumonia [i.e. from skilled nursing facility, etc]
- Cefepime 2g IV q8h +/- Vancomycin** if h/o MRSA infection/colonization

Typical Duration: 7 days

D. UWMC only: Ventilator-associated Pneumonia (VAP) regardless of hospitalization day
- Treat as **Healthcare associated pneumonia (section C)**

E. HMC only:
- **Early onset VAP (i.e. ≤ 4 days of hospitalization or ventilation) or aspiration:** Ceftriaxone 1g IV q24h **OR** Ampicillin-sulbactam 3g IV q6h

Typical Duration: 7 days
- **Late-onset [> 4 days inpatient],** treat as **Healthcare associated pneumonia (section C)**

F. For all Pneumonia pts:
⇒ **Anaerobic coverage such as Piperacillin-tazobactam is NOT recommended for HAP or VAP.**
⇒ **During flu seasons, send Flu testing and then give oseltamivir 75mg - 150mg PO/NGT q12.**
⇒ **Yeast in the sputum rarely represents true infection.**

BLOODSTREAM

A. Suspected Line infection (MRSA, Gram-negative rods)
*Diagnosis: Order antibiotics immediately and draw paired, simultaneous, **quantitative** blood cultures from all central line lumens AND one peripheral site. Central line CFU x2 more than peripheral site CFU strongly suggests line infection.*
- Vancomycin** **PLUS**
- Cefepime 2gm IV q8h
- Please consult Infectious Diseases if considering line salvage

B. Suspected endocarditis, hemodynamically stable, no valve insufficiency:
Diagnosis: Draw 3 sets of blood cultures prior to antibiotics and consult Infectious Diseases.
- Vancomycin** **PLUS**
- Ceftriaxone 2gm IV q24h
- Consult Infectious Diseases

CELLULITIS

Not-applicable to device-related infections (eg ICD, pacemakers, VADs, etc): Consult Infectious Diseases
A. Non-purulent skin/soft tissue infection:
(Streptococcus species)
- Cefazolin 2g IV q8h
- PO option for Strep/MSSA: Cephalexin 500mg QID

B. Purulent/abscess forming skin/soft tissue infection:
(*S.aureus:* MSSA or MRSA)
Diagnosis: I&D abscess; send pus (not wound swab) for gram stain and culture.
- *Usually abx are unnecessary unless significant surrounding cellulitis or pt clinically unstable*
- Vancomycin**
- De-escalate when culture data available
- PO options for MRSA: Bactrim or Doxycycline (Consult ID)

Typical Duration: 5-7 days; Consult Infectious Diseases for PO step-down options

NECROTIZING SOFT TISSUE INFECTION

(MRSA, Group A strep, *Clostridium sp* and mixed anaerobes, Gram-negative rods)
Diagnosis: Suspect NSTI in septic patients, rapid skin lesion progression, pain out of proportion to physical findings & hyponatremia. STAT surgery and Infectious Diseases consult. Focus therapy based on culture results and patient response.
- Vancomycin** **PLUS**
- Penicillin 4 million units IV q4h **PLUS**
- Clindamycin 1200 mg IV q6h **PLUS EITHER**
- Levofloxacin 750mg IV q24h **OR**
- **For Neutropenic pts:** Gentamicin 7 mg /kg IV q24 hours (replace Levofloxacin)
- **For Fournier's:** replace Penicillin with Piperacillin-tazobactam: 4.5gm x1, then 4 hours later, start 3.375gm IV q8h infused over 4 hrs

Typical Duration: 10-14 days after debridement

INTRA-ABDOMINAL

A. Community-acquired, mild-moderate (Enteric Gram-negative rods, anaerobes)
- **HMC only:** Ertapenem 1g IV q24h
- **UWMC only:** Ceftriaxone 2g IV q24h **PLUS** Metronidazole 500mg PO/IV q8h
- For uncomplicated ***biliary*** infections, anaerobic coverage usually not necessary, use Ceftriaxone alone

Typical Duration: 4 days following source control

B. Hospital-acquired, severe physiological disturbance, advanced age, immunocompromised
- Vancomycin** **PLUS**
- Piperacillin-tazobactam 4.5gm X 1, then 4 hours later, start 3.375gm IV q8h infused over 4 hours

Typical Duration: 4-7 days from source control; if source control is not attained, then duration is variable.

C. Intra-abdominal infections:
⇒ **Double anaerobic coverage is not required (i.e. metronidazole + piperacillin/tazobactam)**
⇒ **Abdominal Transplant patients: Same as above and consult Transplant Infectious Diseases**

URINARY

A. Community Acquired Pyelonephritis (Enteric Gram-negative rods)
Diagnosis: Clean catch midstream U/A with reflexive gram stain and culture (UACRC). Neutropenic and transplant patients may not mount WBC response; appropriate to cover these patients empirically even without positive U/A if presentation suggests pyelonephritis.
- Ceftriaxone 1 gm IV q24h
- If patient hemodynamically unstable or history MDRO, **CHANGE TO:** Ertapenem 1g q24h

Typical Duration: 14 days

B. Catheter-associated UTI or Hospital- acquired:(Resistant Gram-negative rods)
Diagnosis: In symptomatic pts, obtain specimen from new foley, or from sterilized port on existing foley, not from collection bag or urimeter. Send U/A with reflexive gram stain and culture (UACRC). WBCs and Bacteria on direct stain suggests infection, but colonization also very common.
- Ceftazidime 2g IV q8h
- If GPC seen on gram stain, add: Vancomycin**
- De-escalate or discontinue coverage if alternate source found for patient symptoms.

Typical Duration: 7-14 days

C. UTIs in abdominal Transplant patients: Same as above and consult Transplant Infectious Diseases

CONCERN FOR MULTI-DRUG RESISTANT ORGANISMS (MDRO)

If previous infection or colonization with highly resistant Gram-negative pathogens such as *Acinetobacter, Pseudomonas*, or ESBL, instead of the listed agent, **consider:** Meropenem 1 gm IV q8h, or 2 gm IV q8h for meningitis *(ID consult required for use beyond 72 hours)*

****Vancomycin Dosing:**
Loading dose IV x1 (2 gm if ≥70 kg, 1.5 gm if <70kg), then 15 mg/kg IV q8-12 hours

✓ Syndromic care pathways can help

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Discussion: *Successes… Challenges?*

- ✓ What has helped?
- ✓ What has NOT helped?
- ✓ Next steps you are considering?
- ✓ How can we help?

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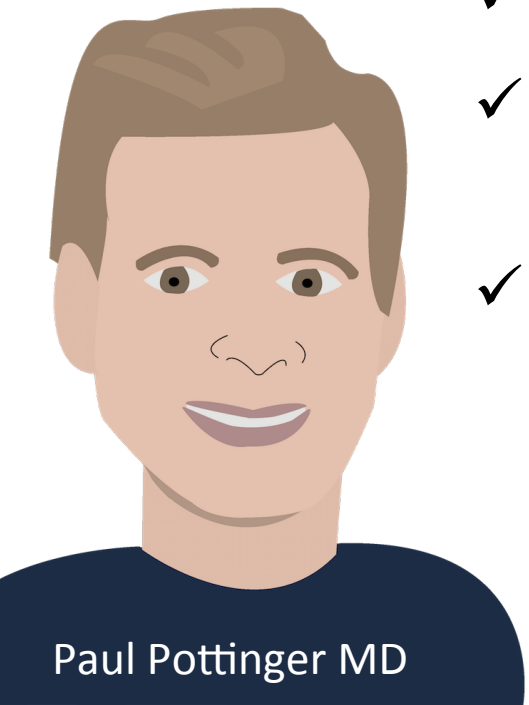
Conclusions

IV to PO: *Opportunities for Antimicrobial Stewardship*

- ✓ Sometimes IV is the better way to start
- ✓ PO abx have many advantages over IV
- ✓ Making the change is tough!
- ✓ Same-drug auto switch may be easiest starting place
- ✓ Incorporate step-down criteria into care plans



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