Converting antibiotics from intravenous (IV) to oral (PO) when possible is better for the individual and the health care system.

Disadvantages of IV therapy:
- Risk of line related complications (eg. thrombophlebitis, cellulitis, bacteremia, endocarditis)
- Increased cost
- Prolonged hospital stay

Benefits of PO antibiotics:
- Increased patient satisfaction
- Reduced length of hospital stay
- No mobility restriction for patients
- Reduced resources/medication preparation time

Bioavailability of Antibiotics:
- Corresponds to the blood levels achieved after oral administration (i.e. the percentage of drug available to be used by the different tissues).
- Certain oral antibiotics* have high bioavailability where blood levels are nearly equivalent to the IV form.

Switch Therapy:
- When the oral formulation has high bioavailability, IV and oral formulations are considered interchangeable. In this case, the PO route is PREFERRED.
- Clinical contraindications to switch therapy include malabsorption, short gut, GI bleeding and persistent vomiting.

*The following antibiotics should be given orally whenever possible:
- Clindamycin
- Fluconazole
- Fluoroquinolones
- Linezolid
- Metronidazole
- TMP-SMX

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Step-Down Therapy:

- Involves de-escalating a patient from IV to oral antibiotics once clinically improved (the oral formulation is not equivalent to IV).
- Step down should take into account clinical syndrome and culture results.

When is my patient ready for step-down?
- Hemodynamically stable
- Clinically improving
- Afebrile
- Decreasing WBC
- Functional GI tract (tolerating food, feeds or other oral medications)

When is step-down NOT appropriate?
- Bacteremia (generally requires a minimum of 14 days IV therapy from first negative blood culture)
- Endocarditis
- Osteomyelitis/septic arthritis
- Central nervous system infection (e.g. meningitis)

Examples of oral step-down options*:

<table>
<thead>
<tr>
<th>IV Antibiotic</th>
<th>Oral Antibiotic</th>
<th>Oral Bioavailability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ampicillin 1-2 g IV q6h</td>
<td>Amoxicillin 500 mg TID</td>
<td>80%</td>
</tr>
<tr>
<td>Cefazolin 1-2 g IV q8h</td>
<td>Cephalexin 500 mg QID</td>
<td>90%</td>
</tr>
<tr>
<td>Cefuroxime 0.75-1.5 g q8h</td>
<td>Cefuroxime axetil 0.5-1 g BID</td>
<td>52%</td>
</tr>
<tr>
<td>Piperacillin-tazobactam 4.5 g IV q8h</td>
<td>Amoxicillin-clavulanate† 875 mg BID</td>
<td>80%</td>
</tr>
</tbody>
</table>

† Does not cover *Pseudomonas*, whereas piperacillin-tazobactam does

*Ensure that pathogen identified is susceptible

Antibiotic Time-Out:

Perform an Antibiotic Timeout 48 to 72 hours after initiating antibiotics and consider the following:

1. Is my diagnosis correct — does the patient have an infection and do they require antibiotics?
2. Can I use PO over IV antibiotics (switch therapy)?
3. Can I change the antibiotics(s) based on susceptibilities (target therapy)?
4. Can I step-down the antibiotic(s) based on clinical improvement?


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