

IV to PO Conversion

Quick Reference Guide for Hospital Pharmacists

What is IV to PO conversion?

A process of reviewing all patients on select IV antibiotics daily, assessing each patient's eligibility for conversion to PO, and recommending conversion to the prescribing doctor.

Why should I perform IV to PO conversions?

Reason 1: It has many benefits for the patient and the hospital.¹⁻²

- Improved patient comfort and mobility
- Reduced exposure to nosocomial pathogens through the IV site
- Decreased risk of phlebitis
- Reduced preparation and administration time
- Lower costs (drug cost, IV tubing, syringes, IV pumps)
- Decreased length of stay

Reason 2: It's an upcoming CMS requirement.³

1. C.2.e The facility has a system in place to identify patients currently receiving intravenous antibiotics who might be eligible to receive oral antibiotic treatment.

Key Point: IV to PO conversions benefit both the patient and the healthcare facility. In addition, having a system in place to identify eligible patients is an upcoming CMS requirement.

What medications are eligible for IV to PO conversion?

- Azithromycin ••Ciprofloxacin ••Clindamycin
- Doxycycline ••Fluconazole ••Levofloxacin ••Linezolid
- Metronidazole ••Trimethoprim/sulfamethoxazole

[See table below for more information.]

Key Point: Antibiotic Stewardship Committee identified these broad-spectrum antibiotics as eligible for IV to PO conversion.

How do I perform IV to PO conversion?

The **pharmacist** completes these steps:

1. Prints list of patients on antibiotics **each morning** (sometime after the first dose).
2. Reviews the list against the IV to PO inclusion/exclusion criteria below to assess each patient's eligibility.
3. If a patient meets criteria, fills out an IV to PO sticker (see image at right) and place it in the patient's chart in the Orders section.

Key Point: Review all patients on IV antibiotics each day for opportunities for IV to PO conversion. Make this process part of your daily workflow.

The **physician** reviews the recommendation and signs and dates if in agreement. Then the **pharmacist** enters the new PO order and documents the intervention.

Pharmacist Recommends IV to PO Conversion

Your patient meets the following criteria:

- Able to take oral medications
- Able to absorb medications orally
- Disease severity does not preclude use of oral medications

Discontinue: IV _____ PO q _____

Start: _____ PO q _____

If you agree with this IV to PO conversion, please sign:
Provider signature: _____
Date: _____ Time: _____

Please refer to IV to PO Standard Operating Procedure for detailed explanation of criteria.

Which patients are eligible for IV to PO conversion? (INCLUSION criteria)

Patient criteria:

- Tolerating oral fluids
- Able to sufficiently absorb oral medications via oral, nasogastric, or feeding tube route

Clinical criteria:

- Received >24 h of ordered IV antimicrobial
- Signs and symptoms of infection resolving or improving; clinical stability confirmed with the following parameters:
 - Negative blood cultures for ≥48 hours
 - White blood cell (WBC) count stable/normalizing
 - Afebrile: Temp <100.4°F (38°C) for >24 h

Which patients are NOT eligible for IV to PO conversions? (EXCLUSION criteria)

Absorption status

- Age <14 years
- No oral intake (NPO) status; ordered bowel rest for fistula, pancreatitis, inflammatory bowel disease, or abdominal surgeries
- Malabsorption syndrome: obstruction, ileus, persistent nausea, vomiting or diarrhea, short bowel syndrome, motility disorder of the GI system, gastroparesis
- Active gastrointestinal bleed

Physical ability

- Difficulty swallowing or at risk for aspiration, unless the patient can take medications via feeding tube
- Continuous nasogastric (NG) suction or NG output >150 mL ≥2 times in a 24-hour period
- Uninterrupted tube feeds (**Note:** Tube feeds are not an absolute contraindication for IV to PO conversion. Use oral formulations that are easy to administer via NG tube or use crushed and slurried tablet formulations.)
- Patient refusal of oral medication

Disease severity

- ICU vasopressor dependent or hemodynamically unstable
- Decreased consciousness, seizures
- Immunocompromised status (neutropenia ANC <1,000 cells/mm³)
- Serious or life-threatening infection or disease state that requires the full duration of IV therapy (e.g., CNS infection, bacteremia, endocarditis, osteomyelitis, septic arthritis, fungemia, endophthalmitis, orbital cellulitis)
- **Note:** Staphylococcus bacteremia should **not** be treated with PO medications.

References

1. Kuti JL, Le TN, Nightingale CH, Nicolau DP, Quintiliani R. Pharmacoeconomics of a pharmacist-managed program for automatically converting levofloxacin route from IV to oral. *Am J Health-Syst Pharm.* 2002; 59(22):2209-2215.
2. Mertz D, Koller M, Haller P, et al. Outcomes of early switching from intravenous to oral antibiotics on medical wards. *J Antimicrob Chemother.* 2009;64(1):188-199.
3. Centers for Medicare & Medicaid Services. Pre-decisional surveyor worksheet: assessing hospital compliance with the condition of participation for Infection Control. Pilot draft. Published May 18, 2012.

Drug	IV Dose	Equivalent PO Dose	IV:PO Ratio	Special Considerations
	Dose based on normal renal function. For renal insufficiency, please adjust dose.			
Azithromycin (Zithromax®)	250 mg q24h 500 mg q24h	250 mg daily 500 mg daily	n/a	Do NOT change to PO for critically ill or immunocompromised patients Reduced oral bioavailability is usually compensated by good tissue penetration; 200 mg/5 mL suspension
Ciprofloxacin (Cipro®)	200 mg q12h 400 mg q12h 400mg q8h	250 mg BID 500 mg BID 750mg BID	1:1.25	Same schedule; separate dosing from sucralfate or multivalent cations by 2-4 hours; hold tube feeds 1 hr before & 2 hrs after administration. Cipro solution is contraindicated for feeding tubes. It binds to the tube causing clogging.
Clindamycin (Cleocin®)	600-900 mg q8h	300-450 mg TID-QID	n/a	When treating PID, oral conversion dose is 450 mg q8h; 75 mg/5 mL suspension
Doxycycline (Vibramycin®)	100 mg q12h	100 mg BID	1:1	Separate dosing from multivalent cations by 2-4 hours; administer with at least 8 oz of fluid; pt must be able to sit upright for at least 30 mins after taking
Fluconazole (Diflucan®)	200 mg q24h 400 mg q24h 800 mg q24h	200 mg daily 400 mg daily 800 mg daily	1:1	Same dose & schedule; 40 mg/mL suspension
Levofloxacin (Levaquin®)	250 mg q24h 500 mg q24h 750 mg q24h	250 mg daily 500 mg daily 750 mg daily	1:1	Same dose & schedule; separate dosing from sucralfate or multivalent cations by 2-4 hours; hold tube feeds 1 hr before & 2 hrs after administration
Linezolid (Zyvox®)	600 mg q12h	600 mg BID	1:1	Same dose & schedule; 100 mg/5 mL suspension
Metronidazole (Flagyl®)	250 mg q6h 500 mg q6h 500 mg q8h	250 mg QID 500 mg QID 500 mg TID	1:1	Same dose & schedule; 20 mg/mL suspension
TMP/SMZ (Bactrim®, Septra®)	8-20 mg/kg/day (divided q6h, q8h, q12h)	8-20 mg/kg/day (divided q6h, q8h, q12h)	1:1	Same dose & schedule; 40 mg/200 mg/5 mL suspension

*TMP/SMZ: trimethoprim/sulfamethoxazole