

Considerations for IV-to-PO Conversions

Converting patients from IV to oral meds has a number of benefits. For example, it can help reduce drug costs and workload for nurses and pharmacy staff, IV lines can be removed earlier, and it can possibly provide another option when an IV medication is in short supply. There are three different types of IV-to-PO conversions: sequential (replacing an IV med with its oral formulation), switching (replacing an IV med with an oral formulation that has the same effects), and step-down (replacing an IV med with an oral formulation that has similar effects).^{1,2,11} The following table lists considerations for IV-to-PO conversions of commonly used meds. Keep in mind, **you'll need to consider multiple factors when looking at the possibility of conversion** (e.g., renal/hepatic dosing adjustments, indication, disease severity). In addition, consider interactions between oral meds and enteral feeding (for more details see our algorithm, *A Stepwise Approach: Selecting Meds for Feeding Tube Administration*).

NOTE: Doses in this chart do not take into consideration adjustments for kidney or liver dysfunction, or for weight. Some of the dose conversions below are approximations. As appropriate, monitor and adjust the oral dose.

Med	IV-to-PO Considerations	Comments
Acetazolamide	Doses for IV and immediate-release tabs are the same. ³	NA
Amiodarone	If <1 week IV infusion: switch to 400 to 1,600 mg/day PO. ¹⁴ If 1 to 2 weeks IV: switch to 400 to 800 mg/day PO. ¹⁴ If >2 weeks IV: switch to 100 mg to 400 mg/day PO. ¹⁴ Administer above oral doses until total load (IV plus PO) of 6 g to 10 g is reached, then start oral maintenance dose (100 mg to 400 mg once daily, depending on the indication). ¹⁴	Oral dosing is dependent on the indication. ¹⁴ Oral doses can be given once daily or divided BID if patients have GI intolerance or total daily dose is 800 mg to 1,000 mg or higher.
Ampicillin	Convert to PO amoxicillin. ⁶ Dose conversion will depend on indication. Ampicillin and amoxicillin have nearly identical spectrums of activity. ⁴	Amoxicillin has better GI absorption than PO ampicillin. ⁴
Ampicillin-sulbactam	Convert to PO amoxicillin-clavulanic acid. Dose conversion will depend on indication. Ampicillin-sulbactam and amoxicillin-clavulanic acid have nearly identical spectrums of activity. ⁴	NA
Azithromycin	500 mg IV Q24H to 500 mg PO Q24H. ⁶	NA
Bumetanide	Dose of IV and PO bumetanide are the same. ³	Up to 85% to 95% of oral bumetanide is absorbed. ³

Med	IV-to-PO Considerations		Comments
Cefazolin	Convert cefazolin 1 g IV Q8H to cephalexin 500 mg PO Q6H. ⁶		NA
Ciprofloxacin	200 mg IV Q12H to 250 mg PO Q12H. ³ 400 mg IV Q12H to 500 mg PO Q12H. ³ 400 mg IV Q8H to 750 mg PO Q12H. ³		NA
Clindamycin	Convert 600 mg IV Q8H to 300 to 450 mg PO Q6H. ⁶		NA
Dexamethasone	Doses of IV and PO dexamethasone are the same. ⁷		The bioavailability of oral dexamethasone has been reported as 60% to 100%. ³
Digoxin	50 mcg IV to 62.5 mcg (0.0625 mg) PO. 100 mcg IV to 125 mcg (0.125 mg) PO. 200 mcg IV to 250 mcg (0.25 mg) PO. 400 mcg IV to 500 mcg (0.5 mg) PO.		Digoxin oral tablets are 60% to 80% bioavailable.
Diltiazem	For an IV infusion rate of:	Convert to PO dose of: ¹⁰	Oral dose = (IV drip rate [mg/hr] x 3 + 3) x 10. ¹⁰ Divide daily doses of oral products as appropriate per formulation.
	3 mg/hr	120 mg/day	
	5 mg/hr	180 mg/day	
	7.5 mg/hr	260 mg/day	
	10 mg/hr	330 mg/day	
	15 mg/hr	480 mg/day	
Doxycycline	Dose and frequency of IV and immediate-release PO are the same. ⁵		NA
Enalaprilat	For Hypertension: Enalaprilat 1.25 mg IV Q6H to enalapril 5 mg/day PO. Enalaprilat 0.625 mg IV Q6H to enalapril 2.5 mg/day PO.		Adjust initial dose based on blood pressure response. Oral enalapril doses may be given once daily or divided twice daily. ³
Esomeprazole	Dose and frequency of IV and PO esomeprazole are similar. ⁵		Bioavailability of oral esomeprazole is around 90% with repeated daily dosing. ³

Med	IV-to-PO Considerations	Comments
Famotidine	Dose and frequency of IV and PO famotidine are the same. ⁵	NA
Fluconazole	Doses of IV and PO fluconazole are the same. ⁶	NA
Furosemide	IV to PO conversion is ~1 mg IV to 2 mg PO. ¹²	Bioavailability is ~50% for furosemide tablets and oral solution. ¹²
Hydrocortisone	Doses of IV and PO hydrocortisone are the same. ⁷	Corticosteroid dose and dose frequency is determined by disease severity.
Hydromorphone	1.5 mg IV is equianalgesic to 6 to 7.5 mg of immediate-release PO. ^{8,13} Dose conversions are approximate. Titrate to response.	See our chart, <i>Equianalgesic Dosing of Opioids for Pain Management</i> , for more details.
Hydralazine	Double the IV dose and administer orally, then titrate to effect. ³	NA
Isavuconazonium	Doses and frequency of IV and PO isavuconazonium are the same. ³	NA
Labetalol	Following inpatient IV treatment, start PO treatment with 200 mg PO x1, then 200 or 400 mg PO 6 to 12 hours later depending on blood pressure response. Titrate PO dose up to 1,200 mg Q12H if needed.	Administer an oral dose once blood pressure has started to increase following discontinuation of IV labetalol.
Lacosamide	Dose and frequency of IV and PO lacosamide are the same. ³	NA
Levetiracetam	Dose and frequency of IV and PO (immediate-release) are the same. ⁵	NA
Levofloxacin	Dose and frequency of IV and PO are the same. ⁶	NA
Levothyroxine	Increase the IV dose by ~20% to 25% for oral administration. Dose should then be titrated based on clinical status and lab results. ³	Bioavailability of oral levothyroxine is about 50% to 75%. ³

Med	IV-to-PO Considerations	Comments
Linezolid	600 mg IV Q12H to 600 mg PO BID. ⁶	NA
Methylprednisolone	Dose of IV and PO methylprednisolone are the same. ^{3,7} Methylprednisolone 4 mg is equivalent to prednisone or prednisolone 5 mg. ^{3,7}	Corticosteroid dose and dose frequency is determined by disease severity.
Metoprolol	Equivalent maximal beta-blocking effect may be achieved with IV and PO doses (mg) in a ratio of 1:2.5. Note that patient variability may exist and caution should be used if converting patients on large chronic oral doses to intravenous metoprolol. For example, consider converting an oral daily dose of 50 mg to 2.5 mg to 5 mg IV Q6H (ratio range of 5:1 to 2.5:1). ¹⁴	The duration of action is shorter with the IV formulation, compared to oral. Monitor and adjust dose as needed. ⁹ Divide daily doses of oral products as appropriate per formulation.
Metronidazole	Doses of IV and PO are the same. ⁶	NA
Morphine	10 mg IV is equianalgesic to 30 mg PO. ^{8,13} Dose conversions are approximate. Titrate to response.	See our chart, <i>Equianalgesic Dosing of Opioids for Pain Management</i> , for more details.
Moxifloxacin	400 mg IV Q24H to 400 mg PO Q24H. ⁵	NA
Pantoprazole	Dose and frequency of IV and PO pantoprazole are the same. ⁵	NA
Phenytoin	The total daily dose of IV and PO phenytoin are the same. ⁵ Note that frequency differs. IV is often administered Q8H while oral forms should be administered based on the formulation (which may be once daily if extended-release).	Bioavailability of oral phenytoin is 90% to 100%; however, absorption rates vary between different products. ³
Rifampin	Dosing recommendations for IV and PO rifampin are the same. ⁵	NA
Trimethoprim-sulfamethoxazole	Dose and frequency of IV and PO are the same. ⁶	NA

Med	IV-to-PO Considerations	Comments
Valproate sodium	The total daily dose of IV valproate sodium and oral valproic acid/divalproex products are the same. ³	Divide daily doses of oral products as appropriate per formulation.
Voriconazole	Convert 200 mg IV Q12H to 200 mg PO Q12H. ^{5,6}	NA

Abbreviations: BID = twice daily; GI = gastrointestinal; NA = not applicable; PO = oral; IV = intravenous; TID = three times daily.

Information in the above chart is from the following US product labeling, unless otherwise specified: *Pacerone* (September 2020); digoxin tablet (Amneal Pharmaceuticals, February 2019); enalaprilat injection (Hikma Pharmaceuticals, May 2022); labetalol injection (Hospira, November 2022); metoprolol injection (Baxter Healthcare, February 2023).

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Levels of Evidence

In accordance with our goal of providing Evidence-Based information, we are citing the **LEVEL OF EVIDENCE** for the clinical recommendations we publish.

Level	Definition	Study Quality
A	Good-quality patient-oriented evidence.*	<ol style="list-style-type: none"> 1. High-quality randomized controlled trial (RCT) 2. Systematic review (SR)/Meta-analysis of RCTs with consistent findings 3. All-or-none study
B	Inconsistent or limited-quality patient-oriented evidence.*	<ol style="list-style-type: none"> 1. Lower-quality RCT 2. SR/Meta-analysis with low-quality clinical trials or of studies with inconsistent findings 3. Cohort study 4. Case control study
C	Consensus; usual practice; expert opinion; disease-oriented evidence (e.g., physiologic or surrogate endpoints); case series for studies of diagnosis, treatment, prevention, or screening.	

***Outcomes that matter to patients** (e.g., morbidity, mortality, symptom improvement, quality of life).

[Adapted from Ebell MH, Siwek J, Weiss BD, et al. Strength of Recommendation Taxonomy (SORT): a patient-centered approach to grading evidence in the medical literature. *Am Fam Physician* 2004;69:548-56. <https://www.aafp.org/pubs/afp/issues/2004/0201/p548.html>.]

References

1. Shrayteh ZM, Rahal MK, Malaeb DN. Practice of switch from intravenous to oral antibiotics. *Springerplus*. 2014 Dec 9;3:717.
2. Wetzstein GA. Intravenous to oral (iv:po) anti-infective conversion therapy. *Cancer Control*. 2000 Mar-Apr;7(2):170-6.
3. Clinical Pharmacology powered by ClinicalKey. Tampa (FL): Elsevier. 2024. <http://www.clinicalkey.com>. (Accessed April 29, 2024).
4. Gilbert DN, Chambers HF, Eliopoulos GM, et al, Eds. Sanford Guide Web Edition. Sperryville, VA: Antimicrobial Therapy, Inc., 2024. <https://webedition.sanfordguide.com/en>. (Accessed April 29, 2024).
5. Cyriac JM, James E. Switch over from intravenous to oral therapy: A concise overview. *J Pharmacol Pharmacother*. 2014 Apr;5(2):83-7.
6. Sunnybrook Health Sciences Centre. Intravenous to oral conversion. Last updated April 18, 2018. <https://sunnybrook.ca/content/?page=antimicrobial-stewardship-iv-oral>. (Accessed May 6, 2024).
7. Furst DE, Saag KG. Overview of the pharmacologic use of glucocorticoids. Last updated March 11, 2024. In UpToDate, Post TW (ed), UpToDate, Waltham, MA 02013.
8. Clinical Resource, *Equianalgesic Dosing of Opioids for Pain Management*. *Pharmacist's Letter/Pharmacy Technician's Letter/Prescriber's Letter*. March 2023. [390329].
9. Dasta JF, Boucher BA, Brophy GM, et al. Intravenous to oral conversion of antihypertensives: a toolkit for guideline development. *Ann Pharmacother*. 2010 Sep;44(9):1430-47.
10. UW Health. Atrial fibrillation – rate control drugs. March 20, 2019. <https://www.uwhealth.org/cckm/cpg/cardiovascular/related/Atrial-Fibrillation-Mgt---Rate-Control-Drugs-190312.pdf>. (Accessed April 29, 2024).
11. Mazumder SA. Intravenous-to-oral switch therapy. Updated November 13, 2023. <https://emedicine.medscape.com/article/237521-overview#a2>. (Accessed April 29, 2024).
12. Ezekowitz JA, O'Meara E, McDonald MA, et al. 2017 Comprehensive Update of the Canadian Cardiovascular Society Guidelines for the

- Management of Heart Failure. Can J Cardiol. 2017 Nov;33(11):1342-1433.
13. Tan S, Lee E, Lee S, et al. Morphine Equianalgesic Dose Chart in the Emergency Department. J Educ Teach Emerg Med. 2022 Jul 15;7(3):L1-L20.
 14. Lexi-Drugs. UpToDate LexiDrug. UpToDate Inc. <https://online.lexi.com>. (Accessed May 8, 2024).

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