

# IV to PO Conversion of Antimicrobials Small Intervention, Big Impact

Bonnie.Prokesch@UTSouthwestern.edu  
5323 Harry Hines Blvd, Dallas, TX 75235  
Phone: 214-648-8806 | Fax: 469-419-3019



Wenjing Wei, PharmD, BCPS-AQ ID<sup>1,2</sup>; Norman Mang, PharmD, BCPS<sup>1,2</sup>;  
Jessica K. Ortwine, PharmD, BCPS-AQ ID<sup>1,2</sup>; Bonnie C. Prokesch, MD<sup>2</sup>

<sup>1</sup>Parkland Health & Hospital System, Dallas, TX; <sup>2</sup>University of Texas Southwestern Medical Center, Dallas, TX

## BACKGROUND

- Many oral (PO) antimicrobials achieve equivalent therapeutic concentrations when compared to intravenous (IV) formulations
- IV to PO conversion has been identified as “low-hanging fruit” with significant benefits, including:<sup>1</sup>
  - Increased patient comfort, mobility, and satisfaction
  - Decreased infusion-related adverse events
  - Decreased risk of healthcare-associated infections from intravenous catheters
  - Reduction in length of stay
  - Reduction in medication costs
- IV to PO Pharmacy Auto-Switch Policy approved by P&T in 2004
- Low number of pharmacist-initiated IV to PO switches due to extensive time required to review patient’s chart and concern for physician push-back

## OBJECTIVE

Improve pharmacy-initiated IV to PO conversions of eligible antibiotics, cost avoidance, and percentage of eligible antimicrobials ordered as PO

## METHODS

- Criteria to identify potential conversions in Epic were updated and patients were considered eligible for evaluation for IV to PO conversion unless:
  - Significant nausea/vomiting/diarrhea in the last 24 hours
  - Nonfunctioning gastrointestinal tract or malabsorption syndromes
  - Receiving TPN or continuous tube feeding (moxifloxacin only)
  - Active small bore feeding tube as only source of non-liquid medication administration
  - NPO and medications not permitted
  - Hemodynamic instability requiring vasopressor support
- Education was provided in-person and as pocket cards with guidance on antimicrobials eligible for IV to PO conversion
- IV to PO implemented as a pharmacy departmental goal for FY18
- Creation of IV to PO note to be placed in EMR at the time of order conversion

## RESULTS

- Initial revisions and improvements to electronic decision support tool were completed in October 2017

Unit	Admission Date	Service Teams	IV to PO Switch	IV to PO Antibiotics
THIRTEEN HOSP A	4/22/18	Hospitalist C	●	clindamycin (CLEOCIN) 600mg in 50mL D5W PREMIX
TWELVE HOSP MED	4/21/18	Hospitalist I	●	clindamycin (CLEOCIN) 600mg in 50mL D5W PREMIX
SEVEN MOTHER BABY MFM	4/2/18	Ob Mfm	●	metroNIDAZOLE (FLAGYL) IVPB 500 mg/100mL
FIFTEEN MED PCU	3/28/18	Hospitalist O	●	metroNIDAZOLE (FLAGYL) IVPB 500 mg/100mL
EIGHT GEN SURG	4/16/18	Medicine A2 Team	●	clindamycin (CLEOCIN) 600mg in 50mL D5W PREMIX
NINE ORTHO	4/13/18	Medicine B Team	●	metroNIDAZOLE (FLAGYL) IVPB 500 mg/100mL
FIFTEEN MED ICU	4/19/18	Pulmonary Micu II Team; Gyn Oncology Team	●	linezolid (ZYVOX) IVPB 600 mg
EIGHT GEN SURG	4/23/18	Egs II Team	●	metroNIDAZOLE (FLAGYL) IVPB 500 mg/100mL
FIVE SURG ICU	4/2/18	Gyn Oncology Team	●	ciprofloxacin in 5% dextrose (CIPRO) IVPB DOSE: 400 mg metroNIDAZOLE (FLAGYL) IVPB 500 mg/100mL

**Green:** Meets all criteria, review and determine appropriateness of change and auto-convert  
**Yellow:** May not meet all criteria, review chart to determine appropriateness and discuss with team  
**Red:** Does not meet criteria for switch, do not convert

- Pharmacist-initiated IV to PO conversions increased from an average of 8 orders/month pre-CDSS and chart note to 29 orders/month in the 6 month, post-intervention period (Figure 1)
- Cost avoidance (dollars saved by ordering medication as PO) increased by an average of \$3188/month (Figure 2) in the post-intervention period
- In the 4 months pre-intervention, 11434 of 31791 (36%) medication orders were administered as IV; whereas, 12440 of 47168 (26%) were administered as IV in the 6 month post-intervention period (Figure 3)

Figure 1: Total number of IV to PO Conversions, pre- and post-intervention

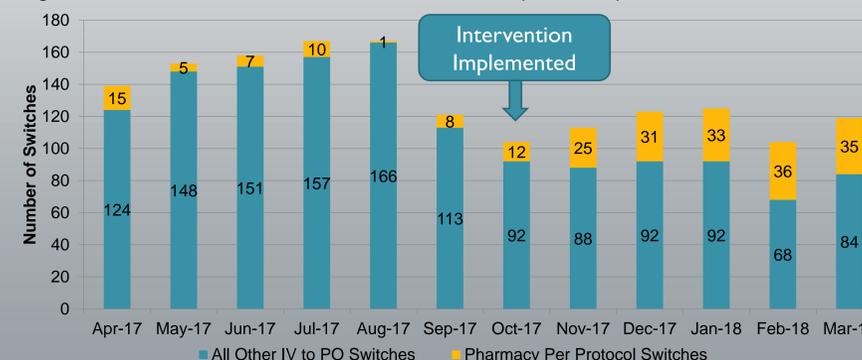


Figure 2: Cost avoidance and potential cost savings

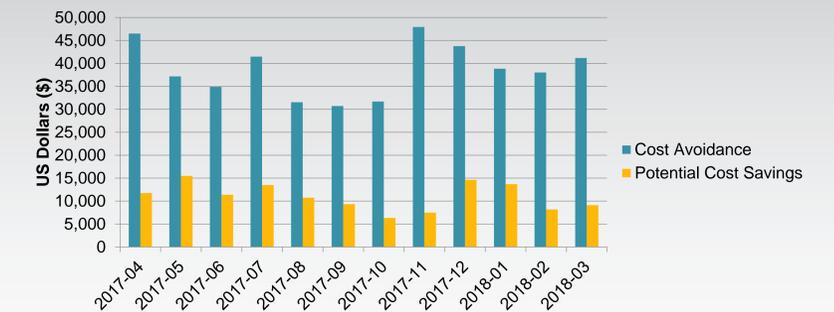
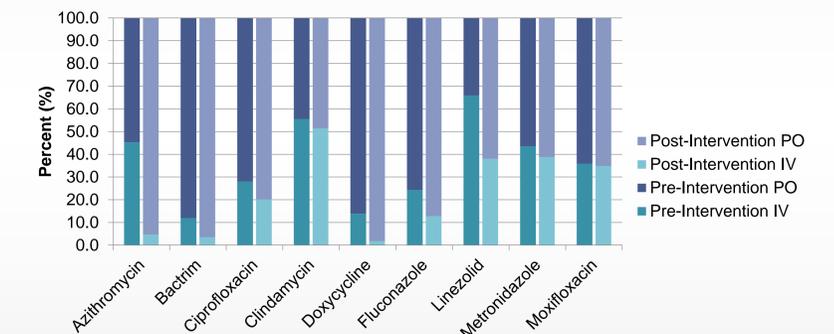


Figure 3: Percentage of medications ordered as IV and PO, pre- and post-intervention



## DISCUSSION

- In the post-intervention period, switches initiated by pharmacists increased substantially
- Revisions to the decision support tool decreased pharmacist time spent on chart review
- IV to PO chart notes improved communication with the treating team & eased pharmacist concerns of interfering with provider autonomy
- IV administration of highly bioavailable antibiotics decreased by 785 doses/month
- Nationwide fluid shortage occurred during the post-intervention period and put pressure on providers and pharmacists to use PO whenever possible, including on initiation
- Increased use of PO on initiation may have decreased the number of eligible IV antibiotic for switches, correlating with overall decrease in total IV to PO switch

## REFERENCES

1. Goff DA, Bauer KA, Reed EE, et al. Is the “low-hanging fruit” worth picking for antimicrobial stewardship programs? Clin Infect Dis;2012;55(4):587-92