

Swallowing the costs: Timely switching of parenteral to oral therapy

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Aims

- To determine the potential benefits of early IV to PO switching against established clinical criteria for a targeted range of therapies.

Background

- In a single morning snapshot 241 parenteral orders were made with 29 orders having the potential to be changed to an oral form.
- Switch/Step down guidelines has been previously established at FSH for antimicrobials, with no guideline on other classes with highly bioavailable drugs, which could be potentially stepped down from IV to PO.
- Switching clinically eligible patients from parenteral (IV) to oral (PO) formulations can deliver benefits such as reduced drug and consumable cost.
- An additional benefit identified was a reduction in nurse drug preparation time.

Figure 1: Distribution of the classes in the order



Methods

- A retrospective analysis of all inpatient parenteral orders was conducted using data from automated dispensing cabinets.
- All withdrawals by nurses between 5am and 10am on a specified day across a 783 bed hospital were reviewed against predetermined clinical criteria to assess if the orders were eligible for conversion from IV to oral.
- The cost of eligible orders was compared with the unchanged orders using procurement costs for drug and consumables.
- A time-in-motion study measured average preparation times by nurses to determine an average time saved for conversions to oral.
- The sum difference in drug, consumable and time were then extrapolated to an annual benefit using a multiplier of three dosing intervals per day.

Table 1: Inclusion and Exclusion criteria used to determine parenteral to oral switch eligibility

	Inclusion	Exclusion
Medication eligible to be switched from parenteral to oral preparations	<ul style="list-style-type: none"> Over 18 On oral therapy Hemodynamically stable: Observation chart no ADDS score >3 for 24 hours. No signs of shock or vasopressors Tolerating a soft regular diet or NG feeds/PEG whilst on oral therapy. 	<ul style="list-style-type: none"> Unable to absorb oral therapy due to Vomiting, diarrhoea. Recent partial removal of stomach. GI blockage or obstruction, ileus or decreased transit time. Thiamine: Wernicke's encephalopathy and acute alcohol withdrawal. Jejunial feeds Pantoprazole: Active GI bleed NG tube with aspirations. No Oral medicines status
Antimicrobials	<p>Criteria in the above section and:</p> <ul style="list-style-type: none"> Two consecutive temperatures of 38C or less over 24 hours 48 hours or more of IV antibiotic treatment and relevant marker are improving (WCC, CRP). Antibiotic pathogen is identified and treatable with orals 	<p>Criteria in the above section and:</p> <ul style="list-style-type: none"> Endocarditis Meningitis Bone and joint infections Immunocompromised patients Patients with positive blood culture in the last 2 days Cystic fibrosis Inadequately drained abscesses and empyema ID review within 12 hours before order.
References	<ol style="list-style-type: none"> Kuper K. Intravenous to oral therapy conversion. In: Competence tools for health-system pharmacists. 4th ed. American Society of Health System Pharmacists; 2008. Mui E, Gin D, Meng L, Sterling C, Mohabir R, Weiser T. Medication Monitoring: Intravenous to Oral Therapeutic Interchange Program. 2nd ed. Stanford: Stanford Hospital and Clinics; 2013. Fitzsimons K. Antimicrobial Prescribing Policy at Fiona Stanley Hospital. 1st ed. Perth: Fiona Stanley Hospital; 2015. 	

Results

- The most common parenteral preparations eligible for conversion, representing 52% (15) of the sample were piperacillin/tazobactam, pantoprazole and paracetamol.
- The overall cost benefit for all eligible medications and consumables for this time period was \$40.88 and \$212.85 respectively, extrapolated to an annual benefit of \$44,640.96 and \$232,432.20.
- The benefit of nurse time saved was 93 minutes, extrapolated to an annual benefit of approximately 70 days and 14 hours.

Figure 2: Potential percentage cost of the switched order from the original

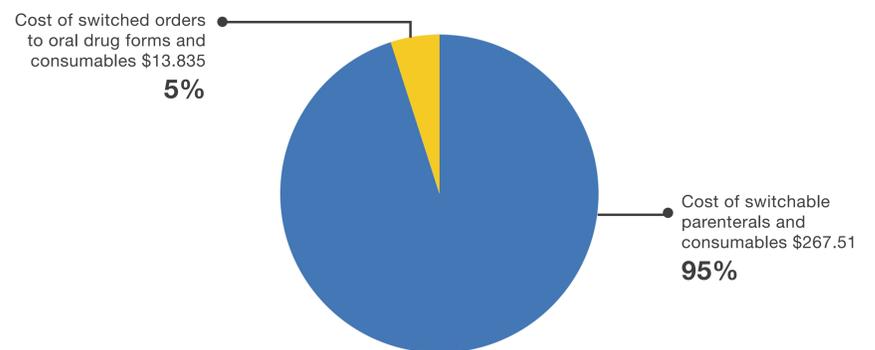


Figure 3: Nursing preparation time comparison between wards in a single morning order

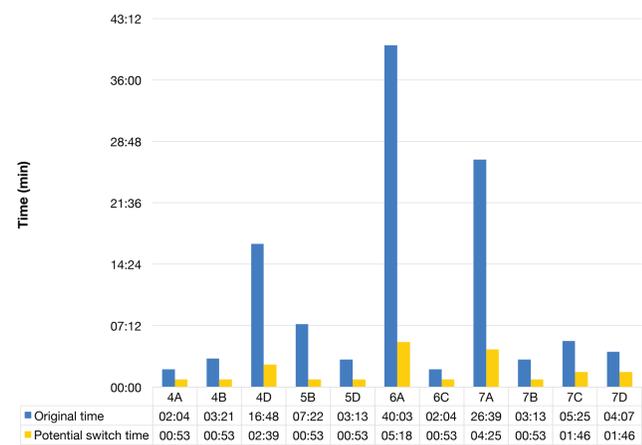


Figure 4: Projected cost and time savings



Conclusion

This study has identified that there are significant financial and time benefits to be gained through implementing early conversion of a small range of IV drugs in clinically eligible patients.

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