

# Timely Clinical Pharmacist Review of High-Needs Surgical Patients with a Pharmacy Referral System

Bonnie Jongue, Jeenal Patel, Olivia Rofe

Department of Pharmacy, Eastern Health, Melbourne, Victoria

## Background

Many patients who are admitted to surgical wards are taking regular medications that are unrelated to their admission<sup>1</sup>. Omission of such medications post-surgery has been found to result in more non-surgical complications and puts surgical patients at an increased risk of adverse drug events<sup>2</sup>. Patients who had their regular medications reintroduced earlier post-operatively were shown to have decreased morbidity and mortality<sup>1</sup>. Clinical pharmacists are therefore duly placed to review this patient population.

In order to prioritise which patients are at greatest need of receiving care from a pharmacist, Eastern Health Pharmacy have developed a high needs assessment criteria, based on the current literature, for acute inpatients<sup>3,4,5</sup> (Figure 1).

## Aim

To compare the number of high-needs surgical patients admitted to a metropolitan public hospital, that had admission medication reconciliation (AMR) completed within 24 hours of admission, before and after a clinical pharmacy referral system by registered nurses (RNs) and an electronic medication management (EMM) system was implemented.

## Method

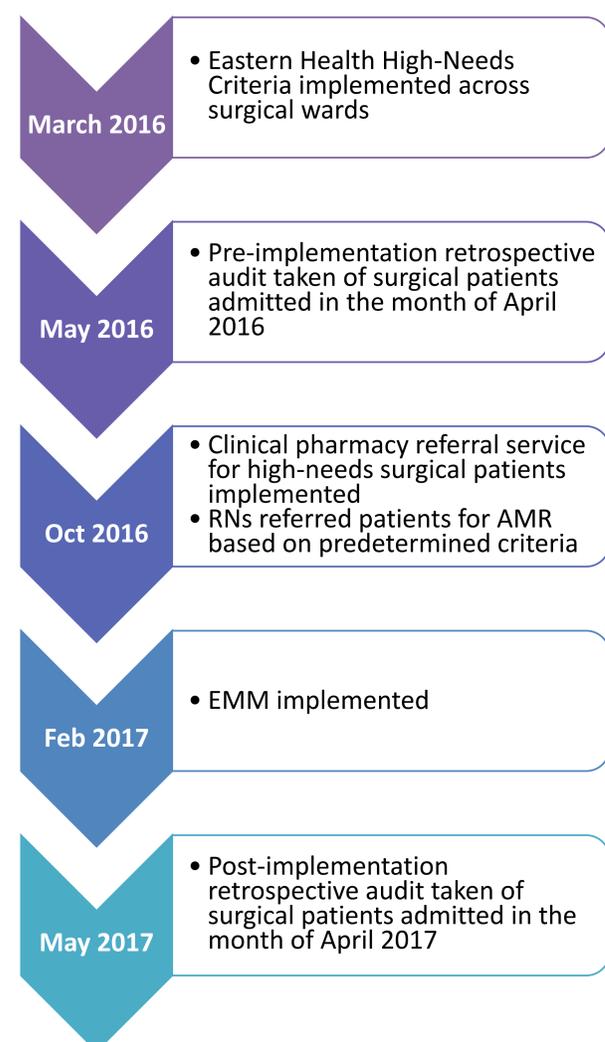


Figure 1.	Eastern Health High Needs Criteria
Dosing criteria	Taking >5 medications
	Taking >12 doses per day
	Self-administration (cf. requires assistance)
Medication criteria	Uses inhaler
	Uses injectables
	Swallowing difficulty
	Anticholinergics
	Sedative hypnotics (zopiclone, zolpidem)
	Sedating antihistamines
	Antidepressants
	Tricyclic antidepressants
	Anticoagulants/antithrombotics
	Anticonvulsants
	Psychotropics
	Oral cytotoxics
	Immune suppressants
	Insulin or oral antihyperglycemics
	Other endocrine drugs (eg. EPO, GRH agonists, SERMs, thyroxine, denosumab)
	Medications that require TDM (eg. warfarin, digoxin, amiodarone, phenytoin, clozapine, lithium)
	NSAIDs
Opioids	
Antimicrobials	
Organ impairment	Renal impairment (eGFR <30)
	Hepatic impairment

## Results

Figure 2. Results	Pre-implementation	Post-implementation
Number of AMR completed	173	96
Number of timely referrals by RNs	-	70
High-needs patients (%)	80	100
Elective admissions (%)	66	56
Emergency admissions (%)	34	44

Figure 3. Time to AMR completion

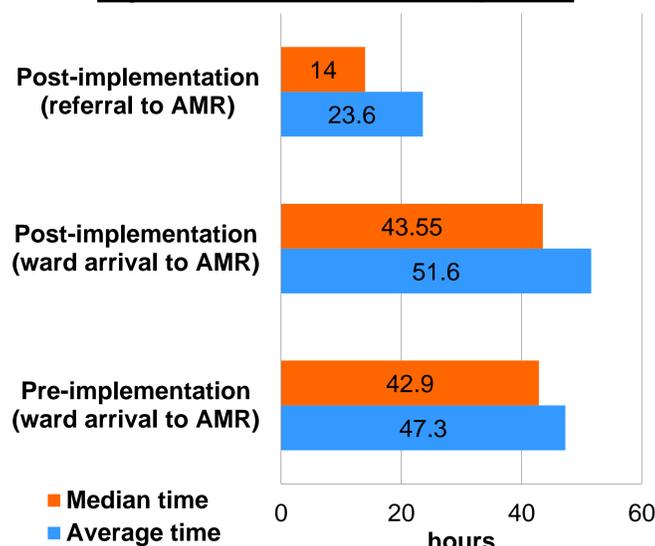


Figure 4. Pre-implementation Ward arrival to AMR completion times

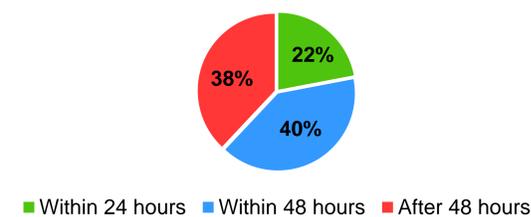
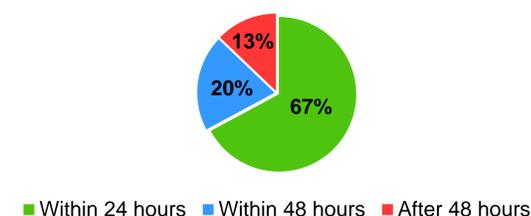


Figure 5. Post-implementation Referral to AMR completion times



## Discussion

This audit demonstrates that the implementation of a pharmacy referral system on surgical wards has significantly improved average AMR time by 50.1% (from 47.3 hours to 23.6 hours). Although the time from ward arrival to AMR completion, pre-and post implementation are comparable, clinical pharmacists are able to accept referrals and review and prioritise high-needs patients, such as emergency admissions, in a timely manner.

As the referral system was not implemented across all the surgical wards, the post implementation data does not represent the total number of high-needs AMR completed in April 2017.

## Limitations

- RNs were not 100% compliant with the referral process and hence high-needs patients were not always captured and referred to pharmacy.
- At times, referrals were made after AMR had been completed and verbal referrals or referrals made by other healthcare professionals were accepted, therefore were excluded from the data.
- Specific AMR completion times were not recorded pre-intervention therefore timeliness could only be measured in 24 hour periods. Due to the implementation of EMM, post-implementation AMR time completion was more accurate.

## Implications for practice

The introduction of a pharmacy referral system by RNs on admission, has improved time to AMR by clinical pharmacists for high-needs surgical patients. As this audit only represents a snapshot of a referral procedure over one month, it would be beneficial to complete an audit over a greater length of time in the future.

## References

1. Kennedy J, Van Rij A, Spears G, Pettigrew R, Tucker I. Polypharmacy in a general surgical unit and consequences of drug withdrawal. *British Journal of Clinical Pharmacology*. 2008;49(4):353-362.  
 2. Boeker E, de Boer M, Kiewiet J, Lie-A-Huen L, Dijkgraaf M, Boormeester M. Occurrence and preventability of adverse drug events in surgical patients: a systematic review of literature. *BMC Health Services Research*. 2013;13(1):364.

3. Effect of a ward-based pharmacy team on preventable adverse drug events in surgical patients (SUREPILL study). *British Journal of Surgery*. 2015;102(10):1204-1212.  
 4. The Society of Hospital Pharmacists of Australia. Fact Sheet – risk factors for medication-related problems. [Internet] *SHPA Federal Council*. 2015 [cited 7 Nov 2016]. Available from: <http://www.shpa.org.au/SHPA/ccms.r?PageId=6008&DispMode=goto%7C10478>  
 5. Peterson J, Kripalani S, Danciu I, Harrell D, Marvanova M, Mixon A et al. Electronic Surveillance and Pharmacist Intervention for Vulnerable Older Inpatients on High-Risk Medication Regimens. *Journal of the American Geriatrics Society*. 2014;62(11):2148-2152.