

Drug classes associated with geriatric readmissions: the canary in a coal mine

K.Y Loh¹; L. Tay¹

1. Geriatric Medicine, Department of General Medicine, Sengkang General Hospital, Singapore

Introduction

- Older adults are at increased risks of drug-related problems, contributed by increasing incidence of multimorbidity with age, and the consequent polypharmacy.
- Polypharmacy and inadequate drug management are risk factors for adverse drug events, which frequently leads to hospital readmissions.

Objective

- We aim to investigate the drug classes associated with 30-day readmissions in hospitalised older adults.

Results: Baseline demographics

- 1507 consecutive admissions were analysed.
- 30-day readmission occurred in 331 patients (22.0%).
- Greater length of stay, higher comorbidity burden, hospitalisation in the one year preceding index admission, frailty and polypharmacy were associated with 30-day readmission (Table 1).

Table 1: Baseline characteristics for patients with and without 30-day readmission

	Readmission (N=331)	No readmission (N=1176)	P value
Age (years)	77.0 (8.2)	76.1 (7.7)	0.068
Gender			0.261
Female	159 (48.0%)	606 (51.5%)	
Male	172 (52.0%)	570 (48.5%)	
Race			0.026
Chinese	256 (77.3%)	960 (81.6%)	
Indian	19 (5.7%)	79 (6.7%)	
Malay	51 (15.4%)	132 (11.2%)	
Others	5 (1.5%)	5 (0.4%)	
Length of stay (days)	6.6 (5.4)	5.7 (4.4)	<0.001
Charlson Comorbidity Index			<0.001
Low	38 (11.5%)	281 (23.9%)	
Medium	128 (38.7%)	524 (44.6%)	
High	86 (26.0%)	235 (20.0%)	
Very high	79 (23.9%)	136 (11.6%)	
Severity of illness index			0.235
Level 1/2	199 (60.1%)	755 (64.2%)	
Level 3/4	132 (39.9%)	421 (35.8%)	
Previous admission 1 year	206 (62.2%)	512 (43.5%)	<0.001
Frailty			<0.001
Non-frail (CFS 1-4)	68 (20.5%)	332 (28.2%)	
Mild frailty (CFS 5)	146 (44.1%)	568 (48.3%)	
Moderate frailty (CFS 6)	60 (18.1%)	160 (13.6%)	
Severe frailty (CFS 7-8)	57 (17.2%)	116 (9.9%)	
Polypharmacy (≥ 5 medications)	238 (71.9%)	693 (58.9%)	<0.001

CFS: Clinical Frailty Score

Methodology

- We prospectively studied patients aged 65 years and above admitted to a general medical department in Sengkang General Hospital, Singapore, between October 2018 and January 2020.
- Medication lists were obtained from electronic medical records at admission.
- Unplanned readmission within 30 days of discharge was tracked through the hospital's electronic health records.
- Medications were classified according to the World Health Organisation's Anatomical Therapeutic Chemical classification system.
- Univariate logistic regression was performed for the association of drug classes with 30-day readmission.

Results: Drug classes associated with 30-day readmission

- Drugs for acid-related disorder, drugs for constipation, antithrombotic agents, antianaemic preparations, cardiac therapy, diuretics, beta-blocking agents and analgesics (Table 2) were significantly associated with 30-day readmission.

Table 2: Univariate logistic regression models for drug classes on 30-day readmission

Admission Drug Class*	30-day Readmission OR (95% CI)	P-value
A02 Drugs for acid-related disorder	1.62 (1.27-2.07)	<0.001
A06 Drugs for constipation	1.96 (1.41-2.73)	<0.001
B01 Antithrombotic agents	1.40 (1.09-1.79)	0.007
B03 Antianaemic preparations	2.22 (1.68-2.91)	<0.001
C01 Cardiac therapy	1.70 (1.23-2.34)	0.001
C03 Diuretics	1.41 (1.04-1.90)	0.026
C07 Beta-blocking agents	1.55 (1.21-1.99)	<0.001
N02 Analgesics	1.56 (1.02-2.39)	0.040

Separate univariate logistic regression models were performed with each drug class as independent variables, on outcomes of 30-day readmission

*ATC classification, second level, therapeutic subgroup; OR: Odds ratio; CI: Confidence interval

Conclusion

- Drug classes associated with 30-day geriatric readmissions include drugs for acid-related disorder, constipation, antithrombotic agents, antianaemic preparations, cardiac therapy, diuretics, beta-blocking agents and analgesics.
- Patients on the above drug classes should herald a higher index of scrutiny during admissions, and necessitate closer follow-up upon discharge.