

Continued use of potentially inappropriate medication after hospital discharge: a retrospective cohort study

Judith de Ruijter – van Dalem ^{a,b}, Marjo Janssen ^c, Johanna HM Driessen ^{a,b}, Carl EH Siegert ^d, Alex Marmorale ^e, Daniala L Weir ^f, Fatma Karapinar- Çarkit ^{a,b,c}

^a Department of Clinical Pharmacy & Toxicology, Maastricht University Medical Center+, Maastricht, The Netherlands

^b Department of Clinical Pharmacy, CARIM, Cardiovascular Research Institute Maastricht, Maastricht University, Maastricht, The Netherlands

^c Department of Clinical Pharmacy, OLVG Hospital, Amsterdam, The Netherlands

^d Department of Internal Medicine, OLVG Hospital, Amsterdam, The Netherlands

^e Epic Systems Corporation, Verona, Wisconsin, United States

^f Division of Pharmacoepidemiology and Clinical Pharmacology, Department of Pharmaceutical Sciences, Utrecht University, Utrecht, the Netherlands; Utrecht Institute of Pharmaceutical Sciences, Department of Pharmaceutical Sciences, Utrecht University, Utrecht, The Netherlands

Purpose

We report on the incidence of continued use of in-hospital-initiated opioids, benzodiazepines, and antipsychotics post-discharge in The Netherlands.

Methods

- A retrospective cohort study in a Dutch teaching hospital.
- Patients aged ≥18 years.
- Admitted to the hospital between Jan 2019–May 2023 and receiving a new prescription of an opioid, benzodiazepine or antipsychotic which is continued at discharge.
- Primary outcomes: incidence of continued potentially inappropriate medication (PIMs) prescriptions post-discharge and duration of use (<30 days, 30-182 days and >182 days).
- Descriptive statistics were used for analysis.

Results

- Benzodiazepines were prescribed among many departments, opioids mainly by (orthopedic) surgeons, and antipsychotics by internal medicine physicians, Table 1.
- A substantial number of patients had a duration of PIM use >182 days post-discharge (13.4% of opioid, 20.9% of benzodiazepine and 36.0% of antipsychotic medication users), Figure 1.
- There is no difference in duration of use between patients below or above 65 years, Table 2.
- The most frequently initiated opioid was oxycodone (80.8%); for benzodiazepines this was oxazepam (41.3%) and temazepam (31.5%), and for antipsychotics this was quetiapine (39.3%) and haloperidol (34.8%).

Conclusions

- Antipsychotics were most often continued >182 days post-discharge, followed by benzodiazepines and opioids.
- PIMs are not more often discontinued in elderly.

These results highlight the importance of recognizing PIMs and emphasize the need for careful evaluation of discontinuing these medications at hospital discharge or specifying a discontinuation date.

Table 1. Baseline characteristics of patients with a potentially inappropriate medication

Characteristics	Benzodiazepines (n = 1,005)		Opioids (n = 5,652)		Antipsychotics (n = 178)	
Department of hospital admission						
Cardiology	150	(14.9)	155	(2.7)	19	(10.7)
Gastrointestinal liver department	68	(6.8)	229	(4.1)	2	(1.1)
Geriatric department	22	(2.2)	60	(1.1)	14	(7.9)
Gynaecology	67	(6.7)	221	(3.9)	9	(5.1)
Internal medicine	165	(16.4)	271	(4.8)	46	(25.8)
Neurology	104	(10.3)	127	(2.2)	16	(9.0)
Orthopedics	20	(2.0)	1227	(21.7)	3	(1.7)
Pulmonology	103	(10.2)	182	(3.2)	12	(6.7)
Surgery (general)	125	(12.4)	2141	(37.9)	17	(9.6)
Surgery (other)	56	(5.6)	546	(9.6)	3	(1.7)
Psychiatry	14	(1.4)	1	(0.0)	22	(12.4)
Urology	31	(3.1)	190	(3.4)	1	(0.6)
Other	80	(8.0)	302	(5.4)	14	(7.9)

Data are presented as number (%) of individuals, unless stated otherwise.

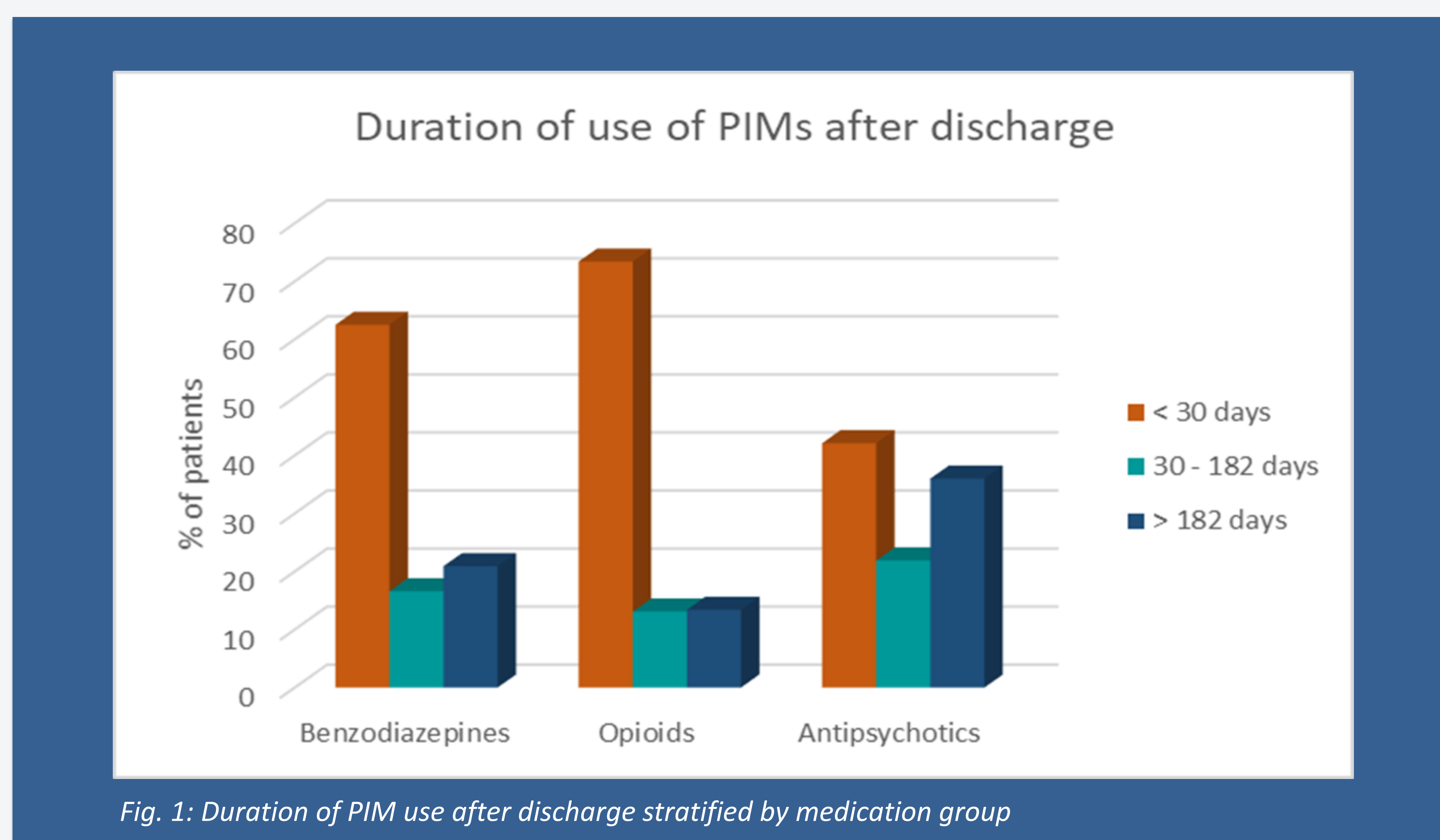


Fig. 1: Duration of PIM use after discharge stratified by medication group

Table 2. Duration of potentially inappropriate medication use stratified by age

Duration of use	Benzodiazepines (n = 1,005)		Opioids (n = 5,652)		Antipsychotics (n = 178)	
< 30 days	628	(62.5)	4151	(73.4)	75	(42.1)
age < 65 years	317	(31.5)	2165	(38.3)	23	(12.9)
age 65+	311	(30.9)	1986	(35.1)	52	(29.2)
30 - 182 days	167	(16.6)	741	(13.1)	39	(21.9)
age < 65 years	99	(9.9)	326	(5.8)	15	(8.4)
age 65+	68	(6.8)	415	(7.3)	24	(13.5)
> 182 days	210	(20.9)	760	(13.4)	64	(36.0)
age < 65 years	100	(10.0)	378	(6.7)	23	(12.9)
age 65+	110	(10.9)	382	(6.8)	41	(23.0)

Data are presented as number (%) of individuals