Prescription indicator tools and drugs associated with medication review in patients using automated drug dispensing systems

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Introduction

In a previous study we showed that patients using automated drug dispensing had more drug changes after a medication review compared to patients in a waiting-list group (2.2 vs.1.0 per patient)[1]. The number of drug changes related to a recommendation in the medication review was also higher (1.3 vs. 0.2). The present study is an in-depth analysis into the type of recommendations for patients who received a medication review. Our first objective is to examine which drug groups are associated with recommendations resulting in drug changes. Our second objective is to examine which prescribing indicator tools are associated with these recommendations.

Material&Methods

Design and Setting

Cross-sectional analysis within the intervention arm of a pragmatic randomised controlled study in a primary setting.

Patients

Patients were recruited from six Dutch community pharmacies. Patients were eligible if they were home-dwelling, aged 65 years and over and used five or more different drugs of which at least one had to be dispensed in an automated dispensing system.

Intervention

Patients were randomly allocated to receive a medication review at start of the study (intervention group) or after six months (waiting-list group).

Main outcome measures

The primary outcome measures were:
1. the number of recommendations resulting in drug changes associated with drug groups and prescription indicator tools in the intervention group;
2. the number of recommendations not resulting in drug changes associated with drug groups and prescription indicator tools in the intervention group .

Results

Fifty-five patients in the intervention group received 246 recommendations leading to a drug change (4,5 per patient). Seventy-two recommendations resulted in drug changes (33%).
The three drug groups with the most recommendations resulting in drug changes were agents acting at the renin-angiotensin system, other nervous system drugs and psychoanaleptics (see Table 1),
Drug groups with the most recommendations not resulting in drug changes were analgesics, psycholeptics and drugs for acid related disorders (see Table 2).
The three prescription indicator tools resulting in most drug changes were 'too low dose of lipid lowering drug' , 'ineffective drug for urinary incontinence' and 'aspirin without gastroprotection in patients aged > 70 years' (see Table 3).
The three indicator tools not resulting in drug changes were 'ischemic heart disease without lipid lowering drug', 'too high dosage of a benzodiazepine' and 'diabetes without lipid lowering drug' (see Table 4).

Conclusion

This study shows a wide range in uptake of recommendations during a medication review. Additional research is needed to identify reasons why specific recommendations are (not) acted upon.

Table 1: Top 5 drug groups with the highest percent of recommendations resulting in drug changes

Drug group (ATC-3)	Number of recommendations		
	Resulting in drug change	Total	Percent of total resulting in drug change
Agents acting on the Renin-Angiotensin System (C09)	3	5	60%
Other nervous system drugs (N07)	3	5	60%
Psychoanaleptics (N06)	5	9	56%
Beta blocking agents (C07)	7	14	50%
Drugs for obstructive airway diseases (R03)	6	15	40 %

Table 2: Top 5 drug groups with the lowest percent of recommendations resulting in drug changes

Drug group (ATC-3)	Number of recommendations		
	Resulting in drug change	Total	Percent of total resulting in drug change
Analgesics (N02)	0	5	0%
Psycholeptics (N05)	1	18	6%
Drugs for acid related disorders (A02)	1	14	7%
Calcium channel blockers (C08)	1	10	10%
Drugs used in diabetes (A10)	4	25	16%

Table 3: Top 5 prescription indicator tools with the highest percent of recommendations resulting in drug changes

Prescription indicator tool	Number of recommendations		
	Resulting in drug change	Total	Percent of total resulting in drug change
Too low dose of lipid lowering drug	2	2	100%
Ineffective drug for urinary incontinence	2	3	67%
Aspirin without gastroprotection	8	13	62%
Use of ineffective drugs for dizziness	3	5	60%
Inhalation type not suitable	2	4	50%

Table 4: Top 5 prescription indicator tools with the lowest percent of recommendations resulting in drug changes

Prescription indicator tool	Number of recommendations		
	Resulting in drug change	Total	Percent of total resulting in drug change
Ischemic heart disease without lipid lowering drug'	0	14	0%
Too high dosage of benzodiazepine	0	9	0%
Diabetes without lipid lowering drug	0	7	0%
Calcium channel blocker not effective for indication	0	7	0%
Use of opioids without laxative	0	6	0%

References

1. Kwint HF, Faber A, Gussekloo J, Bouvy ML. Medication review in patients using automated drug dispensing systems reduces drug related problems. Submitted.

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