IS MULTI-DOSE DISPENSING ASSOCIATED WITH MORE APPROPRIATE USE OF MEDICATIONS BY OLDER PEOPLE?

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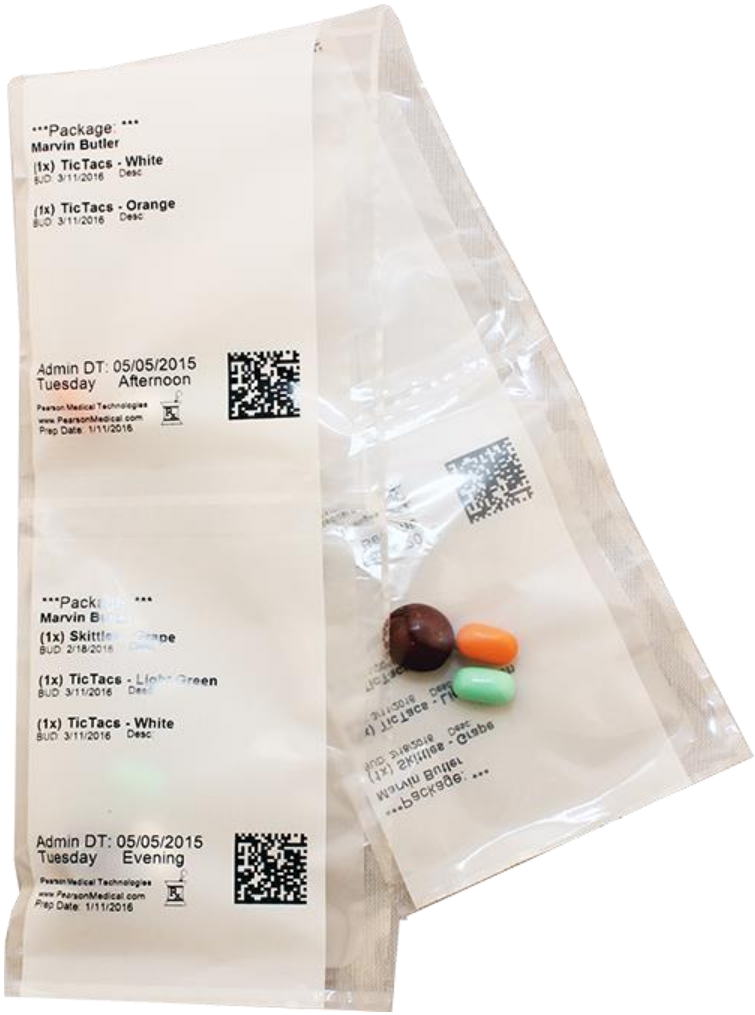
MDD

- Multi-dose dispensing (MDD) is a new health technology designed to promote medication adherence
- With MDD the regularly used tablets and capsules are machine-packed into unit-dose pouches labelled with the patient's data, medicine contents, and timing of dose intake
- The service is most applicable for older patients with multiple medications, and/or with a limited ability to maintain appropriate medication use, and whose medication list is not frequently changed.
- MDD is assumed to be suitable for patients enrolled in home care services, and long-term residents of institutions (e.g., nursing homes).



http://www.pearsonmedical.net/the-need-for-pharmacists-intervention-to-simplify-medication-regimen-to-reduce-hospital-readmissions/
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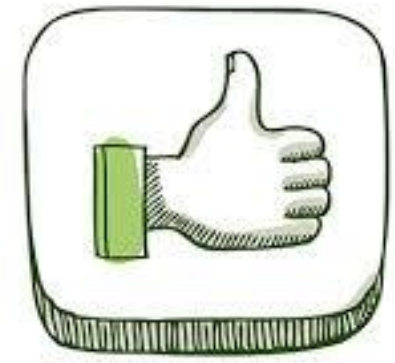
Pros and cons



- improve patient safety
- reduce medication errors
- increase adherence
- decrease medication costs
- save time

- increase inappropriate medication use
- lower quality of drug treatment
- increased number of medications after a patient’s transition to MDD

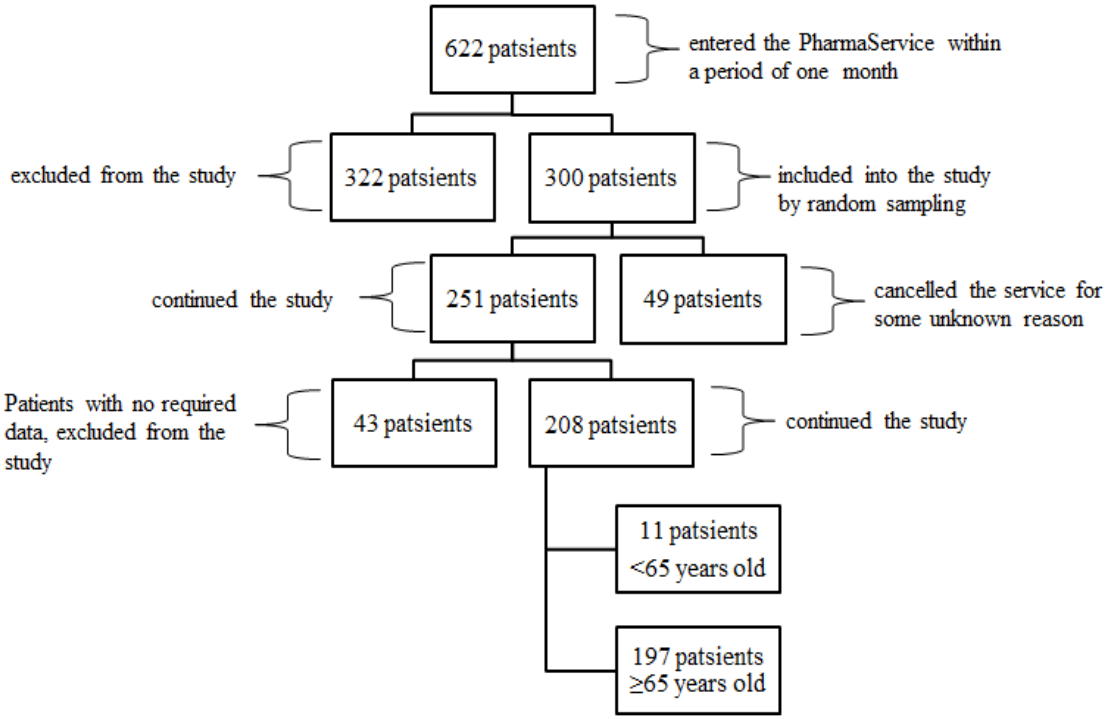
Aim

The aim of the present study was to identify potential inappropriate medication use of those patients who have initiated use of MDD service. Medication use among older MDD service patients was evaluated within 6 months from the initiation of MDD for

- appropriateness by means of ***EU(7)-PIM*** (Potentially Inappropriate Medication) list and
- DDIs (drug-drug interactions) with help of the ***Inxbase/Riskbase System***.

Study sample

- A retrospective register-based study
- PharmaService Oy, Finland
- September 2015 - March 2016
- 6 months period
- 208 patients
- Data:
  - patient's gender
  - age
  - underlying diseases
  - MDD medications



Results

Table 1. Characteristics of the multi-dose dispensing (MDD) patients (n=208)

Parameter/Variable	n	%
Gender		
Female	143	68.8
Male	65	31.2
Age (years)		
< 65	11	5.3
65-90	163	78.4
> 90	34	16.3
Chronic disease		
Mean number of chronic diseases per person	2.1	
Cardiovascular diseases	186	49.0
Alzheimer's dementia	69	33.2
Severe psychotic and other severe mental disorders	55	26.4
Diabetes mellitus	30	25.0
Asthma and similar obstructive pulmonary diseases	19	14.4
Medications and food supplements		
Mean number of regularly used medications (packed in MDD pouches) per person	5.9	
Mean number of regularly used food supplements (packed in MDD pouches) per person	1.3	
Psychoanaleptics	176	84.6
Beta blockers	132	63.5
Dietary minerals	122	58.7

Demographics

Results

Table 2. Dependence between the number of pouched medications used, the number of chronic diseases, and the prevalence of potentially inappropriate medications (PIMs) among the multi-dose dispensing (MDD) patients (n=208)

	Patients with no PIMs (n=76)		**Patients with PIMs (n=132)**		**All patients (n=208)**	
	N	%	N	%	N	%
Number of chronic conditions per person						
1-3	68	37.4	114	62.6	182	87.5
4-6	8	30.8	18	69.2	26	12.5
Number of medications used per person*						
1-5	41	62.1	25	37.9	66	31.7
5-9	29	24.6	89	**75.4***	118	56.7
9-13	6	25	18	**75***	24	11.6

*p < 0.001

Identification of PIMs

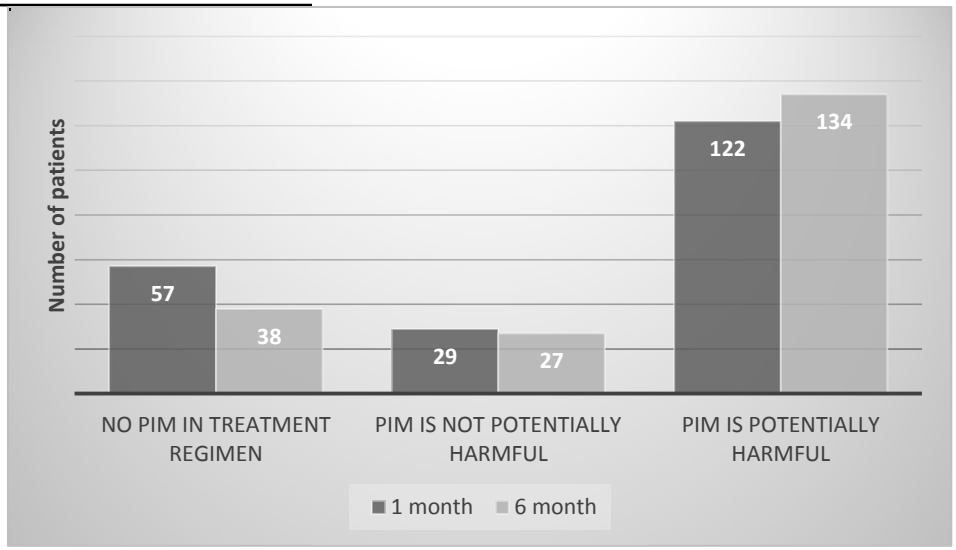


Figure 1. The number of potentially inappropriate medications (PIMs) identified during the study period

Results

Table 3. Dependence between the number of pouched medications, the number of chronic diseases, and the prevalence of C and D class drug-drug interactions (DDIs) based on the SFINX database among the multi-dose drug dispensing (MDD) patients (n=208)

	Patients with no DDIs (n=99)		**Patients with DDIs (n=109)**		**All patients (n=208)**	
	N	%	N	%	N	%
Number of chronic conditions per person*						
1-3	93	51.1	89	48.9	182	87.5
4-6	6	23.1	20	**76.9***	26	12.5
Number of medications used per person*						
1-5	46	69.7	20	30.3	66	31.7
5-9	47	39.8	71	**60.2***	118	56.7
9-13	6	25	18	**75***	24	11.6

*p < 0.001

Prevalence of clinically significant DDIs

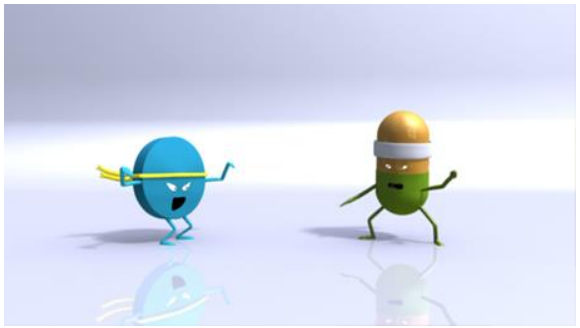


Table 4. Clinically relevant drug-drug interactions (DDIs) identified among the multi-dose drug dispensing (MDD) patients using Inxbase database (n = 208)

Drug-drug interaction	**SFINX**
Carbamazepine+nifedipine[1-6]	D*0**
Citalopram+sulpiride[1-6]	D*0**
Spironolactone+potassium[1-6]	D3***
Carbamazepine+quetiapine[1-6]	D4****
Carbamazepine+risperidone[1-6]	D4****

*D - Clinically relevant interaction. The combination is best avoided.
**0 - Data derived from extrapolation on the basis of studies with similar medications
***3 - Data derived from studies among healthy volunteers and/or pilot studies among patients
****4 - Data derived from controlled studies in relevant patient populations
1-6 - Interactions were found both at first month and six months after joining MDD service

Results

- The number of medications increased for approximately 61% of the patients
- Mostly two medications and/or food supplements were added within six months after joining the service
- 64% of the MDD service patients have a risk of PIMs
- 2.4% of the MDD service patients are susceptible to clinically significant drug interactions
- The most common PIMs in our sample were associated with the use of acetylsalicylic acid, and potentially dangerous PIMs were related to pantoprazole taken for a longer period (more than 8 weeks) than recommended