Physician acceptation and clinical importance of interventions made by a clinical pharmacist for older inpatients

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The research reported on this poster was supported by the *Fonds National de la Recherche Scientifique*. The investigators retained full independence in the conduct of this research.

ABSTRACT

Purpose : To describe the type of interventions made by a clinical pharmacist for frail elderly inpatients, their acceptance by physicians, and their clinical importance.

Methods : The study was part of a randomized controlled trial assessing the impact of a clinical pharmacist on inappropriate prescribing, for patients admitted on an inpatient geriatric unit. All interventions made by the clinical pharmacist during the study period were recorded by type of person eliciting the intervention, type of intervention, and acceptation of intervention. The contributions were externally validated by a panel which comprised two geriatricians and one clinical pharmacist with expertise in geriatrics, using a predefined scale (minor, moderate, major, extreme, deleterious). When individual ratings differed, the panel discussed to reach a consensus for each intervention.

Results : The pharmacist made 1179 interventions for 101 patients (mean age±SD: 82.2±6.9 years; mean number of regularly prescribed drugs±SD: 7.8±3.5). The majority of interventions (76.9%) were initiated by the pharmacist itself. The most frequent types of interventions were to discontinue a drug (22.2%), to educate the physician without direct treatment change (18.2%), to add a new drug (16.8%), to change dosage (12.5%), to switch to another drug (8.1%), and to change treatment modalities (7.2%). The types of drugs most frequently involved were drugs acting on the central nervous system (26.3%), cardiovascular system (21.5%), gastro-intestinal and metabolic systems (17.0%), and blood (11.7%). Physicians fully accepted 87.4% of all interventions. From a total of 700 interventions that lead to treatment change and with potential clinical impact, the panel rated the clinical importance of 68.3% of interventions as moderate, and 28.6% as major.

Conclusions: The majority of interventions made by a clinical pharmacist to optimize prescriptions for older inpatients were accepted and were deemed clinically relevant.

INTRODUCTION

- Inappropriate medicines use in older patients is frequent and can lead to adverse outcomes. Geriatric evaluation and management (GEM) programs and collaboration with clinical pharmacists can improve the quality of drug use in older patients [1;2].
- Few studies evaluating drug-related outcomes have been performed with acutely ill elderly patients. Most were conducted in North America [3;4]. Their application to geriatric practice in Europe is not well established.

AIM OF THE STUDY

- To describe the characteristics of interventions made by a clinical pharmacist for patients hospitalized on a GEM unit;
- To measure their acceptance by clinicians and their clinical significance.

METHODS

- Design: Intervention study (part of a randomized controlled trial).
- Setting: Acute GEM unit, Mont-Godinne Teaching Hospital (Belgium).
- Intervention: Pharmaceutical care provided by a clinical pharmacist present on the unit 4 days a week (November 2003 and May 2004):
  - Medication history on admission
  - Analysis of prescribing appropriateness - intervention if problem identified
  - Discharge counseling
  - Answer to questions on medicines asked by other professionals
- Outcome measures:
  - Characteristics of interventions to improve prescribing, and acceptance
  - Clinical significance of interventions with potential clinical impact, initiated by the clinical pharmacist and subsequently accepted (n=700); expert panel used a validated scale [5] and reached consensus
- Analysis: Descriptive analysis using SPSS 11.0
- Study protocol approved by the local Ethics Committee; informed written consent obtained from each patient/caregiver.

RESULTS

Characteristics of patients

- n = 101; 73% female; 72% community-dwelling

	Mean ± SD
Age (years):	82.2 ± 6.9
Number of regularly prescribed drugs per patient:	7.8 ± 3.5
Length of stay (days):	19.7 ± 12.1

Characteristics of interventions

- 1179 interventions during the study period
- 907 (76.9%) initiated by the clinical pharmacist
- Number of interventions per patient (mean ± SD):
  - initiated by the pharmacist : 8.9 ± 6.0
  - initiated by another HCP : 1.6 ± 1.6

Characteristics of interventions made by the clinical pharmacist (n=1179)

DRPs underlying interventions	Nb interventions (%)	Drugs most often involved
Underuse	169 (14.3)	Calcium/vitamin D, antithrombotics, analgesics
No specific problem[a]	140 (11.9)	Psychoanaleptics, psycholeptics, ACEI and ARA, lipid-lowering drugs
Wrong dose	132 (11.2)	Antibiotics, psycholeptics, psychoanaleptics, ACEI and ARA
Inappropriate choice of medicine	109 (9.2)	Psycholeptics, psychoanaleptics, analgesics
Inappropriate duration of therapy	104 (8.8)	Psycholeptics, heparins, anti-asthmatics, antibiotics
No valid indication	74 (6.3)	Antithrombotics, antacids and anti-ulcer drugs
Inappropriate modalities of administration[b]	70 (5.9)	Analgesics, antibiotics, psychoanaleptics, anti-asthmatics
ADR suspected or confirmed	68 (5.8)	Psychoanaleptics, diuretics, analgesics
Error in medication history	55 (4.7)	Psychoanaleptics
Inappropriate follow-up	41 (3.5)	Anti-anemics, cardiac therapy (digoxin)
Prescription-writing error	37 (3.1)	Psycholeptics
Drug-disease interaction	39 (3.3)	Beta-blockers, ACEI and ARA, bisphosphonates, psychoanaleptics
Duplication	34 (2.9)	Psycholeptics, anti-asthmatics
Less costly alternative	34 (2.9)	Miscellaneous
Drug-drug interaction	31 (2.6)	Antithrombotics
Modalities of administration not practical for patient	28 (2.4)	Miscellaneous
Other	14 (1.2)	Miscellaneous

Abbreviations: ACEI: angiotensin-converting enzyme inhibitor; ADR: adverse drug reaction (according to WHO's definition, and when no other DRP identified); ARA: angiotensin-receptor antagonist; DRP: drug-related problem
[a] No underlying DRP, for example when doctors asked a question without the presence of a DRP for a specific patient.
[b] Modalities of administration include frequency of administration, time, route, and formulation

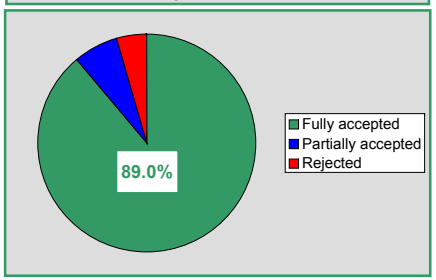
Characteristics of interventions, continued (n=1179)

Most common types of interventions	Nb interventions (%)
Discontinue medicine	262 (22.2)
Educate/inform healthcare professional	214 (18.2)
Add a new drug	198 (16.8)
Change dose	147 (12.5)
Switch to other drug	95 (8.1)

Drugs most commonly involved (ATC 2nd level)	Nb interventions (%)
Psycholeptics (N05) [a]	106 (9.0)
Antithrombotics (B01)	103 (8.7)
Psychoanaleptics (N06) [b]	102 (8.7)
Analgesics (N02)	78 (6.6)
Drugs for obstructive airway diseases (R03)	72 (6.1)

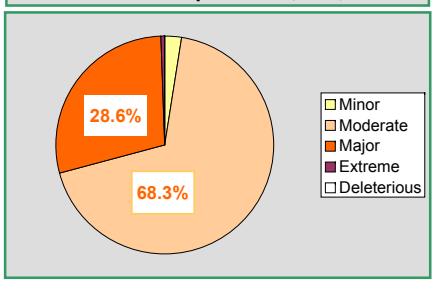
Abbreviations: ATC: Anatomical-Therapeutic-Chemical classification system
[a] Psycholeptics include antipsychotics, anxiolytics, hypnotic and sedatives
[b] Psychoanaleptics include antidepressants and drugs for dementia

Acceptation (n=1179)



« *Partially accepted* »: advice accepted but not/partially acted upon.

Clinical importance (n=700)



« *Moderate* »: intervention that brings care to a more acceptable level of practice, or that may prevent an adverse drug event of moderate importance; « *Major* »: intervention that may prevent serious morbidity, serious organ dysfunction, or a serious adverse drug event.

CONCLUSIONS

- ✓ One of the first European studies to report involvement of a clinical pharmacist in the care of acutely ill frail elderly patients.
- ✓ Successful collaboration overall.
- ✓ Interventions relating to a wide variety of drug-related problems and drugs.
- ✓ Most interventions accepted.
- ✓ Five 'moderate' and two 'major' interventions per patient, on average.

REFERENCES

- Hanlon JT Schmader KE, Ruby CM *et al*. Suboptimal prescribing in older inpatients and outpatients. *J Am Geriatr Soc* 2001;**49**:200-9.
- Simon SR,.Gurwitz JH. Drug therapy in the elderly: Improving quality and access. *Clin Pharmacol Ther* 2003;**73**:387-93.
- Owens NJ, Sherburne NJ, Silliman RA *et al*. The Senior Care Study. The optimal use of medications in acutely ill older patients. *J Am Geriatr Soc* 1990;**38**:1082-7.
- Schmader KE, Hanlon JT, Pieper CF *et al*. Effects of geriatric evaluation and management on adverse drug reactions and suboptimal prescribing in the frail elderly. *Am J Med* 2004;**116**:394-401.
- Hatoum HT, Hutchinson RA, Witte KW *et al*. Evaluation of the contribution of clinical pharmacists: inpatient care and cost reduction. *Drug Intell Clin Pharm* 1988;**22**:252-9.