

EFFECT OF A CLINICAL PHARMACIST INTERVENTION ON UNINTENTIONAL MEDICATION DISCREPANCIES AFTER DISCHARGE: A PROSPECTIVE COHORT STUDY

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BACKGROUND

- Hospital discharge is a critical period for continuity of care, especially with regard to medications.
- The effect of clinical pharmacists' interventions has been mainly evaluated in North-American and Australian settings.

OBJECTIVES

- To evaluate the effect of clinical pharmacists' interventions on the risk of unintentional medication discrepancies detection and classification using a validated instrument¹ after discharge in a European setting taking advantage of the successful launch of clinical pharmacy, in several hospitals in our country.

DESIGN AND METHODS

- Prospective cohort study conducted between July 2009 and April 2010 in the geriatric and orthopedic wards of 3 hospitals in Belgium.
- In hospital 1 (H1), clinical pharmacists routinely perform medication reconciliation on admission and at discharge, and provide counseling to patients and healthcare professionals at discharge.
- In hospital 2 (H2) and 3 (H3), no clinical pharmacist was active (control group).
- All patients enrolled were taking ≥3 chronic medications.
- Each patient was contacted by phone 15 days after discharge to inquire about their current medications.

MAIN OUTCOME MEASURES

- Primary outcome: occurrence of unintentional medication discrepancies and the mean number of medication discrepancies
- Secondary outcome: description of types and causes of medication discrepancies.
- Medication taken by the patient 15 days after discharge were compared to the medication in the discharge letter (reference.)

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RESULTS

- From the 341 patients enrolled, 293 could be reached for interview 15 days after discharge (H1=109, H2+H3=184).
- The prevalence of unintentional medication discrepancies after discharge was 65.0 % (71/109) in the clinical pharmacist's intervention group versus 93.5 % (172/184) in the control group (OR [95% CI]: 0.14 [0.06-0.29]).
- For patient with ≥ 1 unintentional discrepancy, the median number of unintentional discrepancies was 2 [range: 1-12] in the intervention group versus 6 [range: 1-30] in the control group (p <0.001).
- The most frequent types of discrepancies in the control group were addition (28 %), dosage (22 %) and frequency (18 %).

Unintentional medication discrepancies results fifteen days after hospital discharge according to clinical pharmacist intervention vs no clinical pharmacist intervention

PRIMARY OUTCOMES	PATIENT WITH ≥ 1 DISCREPANCIES: TOTAL NUMBER (%)		OR (95% CI)		MEDIAN OF DISCREPANCY PER PATIENT WITH ≥1 DISCREPANCY [RANGE]; TOTAL NUMBER OF DISCREPANCY		P-VALUE
	Intervention (n=109)	Control (n=184)	Univariate	Adjusted ^a	Intervention (n=109)	Control (n=184)	
All	71 (65)	172 (93)	0.14 (0.06-0.29)	0.07 (0.03-0.19)	2 [1-12]; 195	6 [1-30]; 1173	<0.001
Addition	39 (36)	111 (60)	0.36 (0.22-0.61)	0.43 (0.24-0.76)	1 [1-4]; 61	2 [1-11]; 327	<0.001
Dosage	33 (30)	89 (48)	0.47 (0.28-0.80)	0.33 (0.18-0.60)	1 [1-4]; 48	2 [1-12]; 256	0.0014
Frequency	20 (18)	72 (39)	0.36 (0.20-0.65)	0.21 (0.11-0.43)	1 [1-3]; 24	2 [1-12]; 208	<0.001
Length	14 (13)	75 (41)	0.22 (0.11-0.42)	0.20 (0.10-0.41)	1 [1-3]; 20	1 [1-3]; 94	0.185
Detailed medication regimen undocumented	0	67 (36)	<i>0 (undefined)</i>	<i>0 (undefined)</i>	0	2 [1-3]; 128	0 (undefined)
Omission	21 (19)	61 (33)	0.47 (0.26-0.85)	0.40 (0.21-0.77)	1 [1-4]; 27	1 [1-4]; 94	0.098
Brand – generic substitution	4 (4)	29 (16)	0.23 (0.07-0.62)	0.24 (0.09-0.69)	1 [1-1]; 4	1 [1-3]; 35	0.613
Therapeutic substitution	7 (6)	19 (10)	0.55 (0.24-1.35)	0.46 (0.18-1.18)	1 [1-1]; 7	1 [1-4]; 23	0.692
Formulation	4 (4)	8 (4)	0.69 (0.19-2.18)	0.70 (0.21-2.30)	1 [1-1]; 4	1 [1-1]; 8	1
Route	0 (0)	0 (0)	-	-	0	0	-

CI= confidence interval; OR= odds ratio ; n= number of patients followed fifteen days after hospital discharge
OR is odds ratio = Odd of discrepancies in the intervention group/odd of discrepancies in the "non-intervention" group
Significant statistical relationships (p-value < 0,05) are in **bold italic**.
^aAdjusted for age, number of medication at discharge, residential situation before admission, discharge location and ward

- The most frequent causes of the most frequent types of discrepancies in the control group were: instructions to patient at transfer incomplete/inaccurate/illegible, instructions between prescribers at transfer incomplete/inaccurate/illegible and medication history incomplete/inaccurate on admission.

Repartition of causes for addition, dosage and frequency discrepancies

	ADDITION		DOSAGE		FREQUENCY	
	Intervention (n=61)	Control (n=327)	Intervention (n=48)	Control (n=256)	Intervention (n=24)	Control (n=208)
PATIENT LEVEL						
Adverse drug event	0	0	1	1	1	1
Unintentional nonadherence	2	3	11	4	8	2
Self-medication	10	23	0	0	0	0
Intentional nonadherence	0	0	8	2	3	1
SYSTEM LEVEL						
Conflicting information from different informational sources	34	42	12	41	7	30
Information could not be checked by the investigator	0	40	0	43	0	32
Instructions to patient at transfer incomplete/inaccurate/illegible	3	134	3	142	2	114
Instructions between prescribers at transfer incomplete/inaccurate/illegible	4	107	3	124	2	103
Medication history incomplete/inaccurate on admission	12	161	8	97	1	87
Prescription error	0	1	5	5	0	0
Inadequate quantity	0	1	1	4	0	0
Patient barriers not taken into account	2	2	8	1	7	1
Administrative problems	0	0	0	1	0	0
General practitioner has not seen the patient after discharge	3	4	3	0	1	0
Use of previous supply of medicines by the patient (carer)	1	1	3	4	0	0

REFERENCES

1. Claeys C, Nève J, Tulkens PM, Spinewine A. Content validity and inter-rater reliability of an instrument to characterize unintentional medication discrepancies. *Drugs Aging* 2012;29:577-91.

ACKNOWLEDGMENTS

C. Claeys (Pharm) was Aspirant of the Belgian Fonds National de la Recherche Scientifique and also supported by the 'Fonds Alice et David Van Buuren'.

CONCLUSION

- Medication reconciliation and patient counseling performed by clinical pharmacists at discharge significantly decreases the risk of medication discrepancies after leaving the hospital.
- The medication history and reconciliation performed on admission appears also important for minimizing discrepancies after discharge.