

The Impact of Medicines Reconciliation and Structured Patient Interviews on Error Incidence and Severity



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Disclosure Statement

"Conflict of interest: nothing to disclose"



Questionnaire

Responses from 30 countries:

Germany Slovakia Croatia Luxembourg Czech Republic Greece Slovenia Serbia
Bulgaria Finland Sweden Malta Switzerland Denmark Ireland Portugal France
Hungary Spain Estonia Northern Ireland Netherland Austria Bosnia and
Herzegovina Belgium Romania Macedonia Italia Iceland Lithuania

Countries in Europe not covered:

Latvia England Skotland and Wales Albania Montenegro Lichtenstein Poland
Norway Kosovo

1. Setting:

All but a few (Sweden, Finland, Iceland – hospital or health trust) employed by a
hospital pharmacy



2. Is medication reconciliations currently being performed by pharmacists in your *country*?

a. Yes, implemented as standard practice in all/most hospitals for all/most patients **Ireland, Northern Ireland**

b. Yes, implemented in some hospitals for some patients **Germany Slovenia Finland Sweden Switzerland Denmark Ireland France Hungary Spain Austria Belgium Italia Iceland**

c. Yes, but in a small scale/project stage **Slovakia Croatia Luxembourg Czech Republic Greece Serbia Finland Malta Denmark Portugal France Hungary Estonia Austria Bosnia and Herzegovina**

d. No, not that I am aware of **Slovakia Bulgaria Malta Switzerland Estonia Romania Macedonia Lithuania**

e. No, but it is done routinely by other profession **Netherland**



3. Is medication reconciliations currently being performed by pharmacists in your *setting* (or local hospital)?

- a. Yes, implemented as standard practice for all/most patients **Germany
Ireland Northern Ireland**
- b. Yes, implemented for some patients **Czech Republic Slovenia Sweden Denmark
France Spain Italia Iceland**
- c. Yes, but in a small scale/project stage **Slovakia Croatia Luxembourg Czech
Republic Serbia Finland Malta Denmark Portugal Hungary Austria Belgium
Lithuania**
- d. No, not that I am aware of **Germany Slovakia Croatia Malta Switzerland Ireland
Hungary Estonia Austria Romania Macedonia Iceland**
- e. No, but it is done routinely by other profession **Greece Serbia Bulgaria
Switzerland Bosnia and Herzegovina Netherland**



4. For settings (in your country) where medication reconciliation is currently being performed by pharmacists – do you have a systematic approach in place for training new staff?

a. Yes **Germany Slovakia Finland Sweden Denmark Ireland France Spain Northern Ireland Netherland Belgium Italia Iceland**

b. No **Germany Croatia Luxembourg Czech Republic Finland Malta Portugal France Hungary Estonia Austria Romania**

c. Don't know **Slovakia Slovenia Serbia Malta Switzerland**

d. Does not apply since it is not being performed in our setting/country **Greece Serbia Bulgaria Switzerland Ireland Hungary Estonia Austria Bosnia and Herzegovina Macedonia Iceland Lithuania**



5. Do schools of pharmacy (or other institutions) in your country offer courses where medication reconciliation is taught (including theoretical and practical work)?

a. Yes Croatia Czech Republic Slovenia Serbia Finland Sweden Denmark Portugal
France Spain Northern Ireland Bosnia and Herzegovina Belgium Italia

b. No Germany Slovakia Croatia Luxembourg Greece Bulgaria Finland Malta
Switzerland Ireland France Hungary Spain Estonia Netherland Austria Romania
Iceland

c. Don't know Germany Czech Republic Greece Switzerland Ireland Macedonia
Iceland Lithuania



6. Do you have prerequisite courses or training programs for pharmacists performing medication reconciliation in your setting/country?

a. Yes Croatia Denmark France Spain Bosnia and Herzegovina Iceland

b. No, any pharmacist can perform medication reconciliations Germany Slovakia Croatia Luxembourg Czech Republic Greece Slovenia Bulgaria Finland Sweden Malta Switzerland Ireland Portugal France Hungary Estonia Northern Ireland Netherland Austria Belgium Romania Lithuania Italia Iceland

c. Don't know Slovakia Czech Republic Greece Serbia Macedonia



The Impact of Medicines Reconciliation on Error Incidence and Severity

- Medication reconciliation at admission led to a **43% reduction in actual ADEs** caused by errors in admission orders.
 - Boockvar KS, Blum S, et al. Arch Intern Med. 2011 May 9;171(9):860-1.
- A series of interventions, including medication reconciliation, introduced over a seven-month period, successfully **decreased the rate of medication errors by 70% and reduced ADEs by over 15%**.
 - Whittington J, Cohen H. Qual Manag Health Care. 2004;13(1):53-59.
- In another study, the utilization of pharmacy technicians to initiate the reconciling process by obtaining medication histories for a scheduled surgical population **reduced potential ADEs by 80%**
 - Michels RD, Meisel S. Am J Health-Sys Pharm. 2003;60:1982-1986.



Hospital-Based Medication Reconciliation Practices

A Systematic Review: Mueller 2012

- Objective: To summarize available evidence on medication reconciliation interventions in the hospital setting and to identify the most effective practices.
- 26 relevant intervention studies 1966-2012
 - 15 pharmacist related , 6 IT, 5 other, 6 with good quality.
- Results
 - Reduction in medication discrepancies (17 of 17 studies),
 - Reduced potential adverse drug events (5 of 6),
 - Reduced adverse drug events (2 of 2)
 - Inconsistent reduction in post-discharge health care utilization (2 of 8)
- Conclusion
 - Successful interventions included **intensive pharmacy staff involvement** and targeting the intervention to **a high risk patient population**.
 - Higher-quality studies are needed to determine the most effective approaches to inpatient medication reconciliation.

The immense value of the patient interview



The patient interview

- Patient counseling/interview: Empowering patients in their own care and identifies informational needs
- Karapinar F, et al. Effect of medication reconciliation with and without patient counseling on the number of pharmaceutical interventions among patients discharged from the hospital. (*Ann Pharmacother*2009;43:1001-10)
- Eppendorf Hospital in Hamburg: 100% med rec on admission, average 2 minutes/patient...



The patient interview

➤ Custom and practice: A multi-center study of medicines reconciliation following admission in four acute hospitals in the UK
Urban et al. Research in Social and Administrative Pharmacy 10 (2014) 355–368

”Patients were not involved in the majority of reconciliation encounters despite recent research indicating that patient involvement can improve safety”



The impact of the patient interview on suggested changes – a pilot study

Population: patients admitted to two internal medicine wards with at least 5 prescribed drugs.

Method: The pharmacist performed med rec in two steps

1. Hospital list reconciled using list from PC and/or pharmacy records.
2. Patient/carer interview

Discrepancies were recorded for step 1 first then for 1+2. The outcome was compared.

Time was recorded for each step



The impact of the patient interview on suggested changes – a pilot study

Results:

- 50 patients included (36% men).
- Average age: 81 (54-96)
- Average number of prescribed drugs: 10 (5-24)

Time spent:

- Step 1: 4 ± 2 min (2-14)
- Step 2: 16 ± 7 min (6-30)

Discrepancies:

- Step 1: n=120 (omissions>commissions>other)
- Step 1+2: n=135 (omissions>other>commissions)

Most interesting: 30 discrepancies (25%) from the Step 1 list could be deleted after step 2!



Communicating discrepancies with the prescriber



Communication of discrepancies

Words of advice:

- Ensure good relationships and understanding of the service before start!
- Oral communication (+ documentation in case notes), especially in the beginning!
- Check that prescriber has carried out necessary changes!
- Strive for autonomy, i.e. allow the pharmacist to make changes in medication list and document them!



**Medication reconciliation vs
Medication review vs
Medication optimization vs
"Med Rec+" vs
??**



Patient case: Ulla 79 years

Background:

Admitted to a medical ward after arriving at the emergency room debilitated experiencing long standing nausea and tiredness.

Her current diagnoses are chronic arterial fibrillation, angina, COPD and arthritis in her knees. Two years previously she suffered an ischemic stroke and five months ago she was admitted with urosepsis.

Ulla lives in a flat with her husband. They have home help twice weekly, mainly for cleaning.



Patient case: Ulla 79 years

Status:

Blood pressure (mmHg)	145/90
Puls (beats/min)	65
Weight (kg)	60
Calculated CL_{krea} (ml/min)	22

Lab data:

B-Hemoglobin (g/L)	129	[ref 130-170]
P-Sodium (mmol/L)	144	[ref 137-145]
P-Potassium (mmol/L)	3,6	[ref 3,5-5,0]
P-Kreatinin ($\mu\text{mol/L}$)	171	[ref 60-100]
Troponin I	<0,022	[ref <0,022]



Patient case: Ulla 79 years

Medications on admission (hospital list)

T. Behepan (vit B-12) 1 mg	1+0+0+0
T. Folic acid 1 mg	1+0+0+0
T. Digoxin 0,25 mg	1+0+0+0
T. Frusemide 40 mg	2+0+0+0
T. Paracetamol 500 mg	2+0+2+2
Inh. Spiriva (tiotropiumbromid) 18 µg	1+0+0+0
Cream. Fenuril (moisturizer)	For the skin
T. Zopiklon 5 mg	1 at night when needed
Spr. Nitrolingual	1 when needed



Patient case: Ulla 79 years

Meet the physician:

Male senior physician, 60-years. Asks which patient this concerns. Read in the case notes and comments: the patient's puls and blood-pressure is fine and I can't see any problems with the drugs (shows the list of drugs).

Problem/issue	Suggestion for action	Result
1. The patient uses Xalatan 1x1 which is not on the list	<u>Error in medication list</u> Inform doctor, add to list (Xalatan only comes in one strength 50 µg/ml)	Dr asks about dose. Adds Xalatan 50 µg/ml x1 to the list
2. The patient has Ventoline when needed which is not on the list. The description matches a Discus inhaler	<u>Error in medication list</u> Inform doctor, add to list. (Ventoline Diskus only comes in one strength 0,2 mg/dose)	Dr asks about dose, adds Ventoline Diskus 0,2mg/dose when needed.
3. The patient also use an OTC multi-vitamin tablet daily	For information	Dr informed.



Patient case: Ulla 79 years

Which of these important DRPs would be addressed in a Med Rec??

Problem/issue	Suggestion for action
High dose digoxin considering the renal function. Probably the cause of the admission!	<u>Take S-Digoxin</u> and consider lowering the dose (or changing the drug, see 2)
No treatment for angina . Frequent chest pain.	Cardio-selective (COPD) Beta blocker/verapamil/ diltiazem evidence based effect.
Need for anticoagulant for chronic AF? Risk factors: previous stroke, >75 years	<u>Need for anticoagulation.</u> Prescribe warfarine if benefit exceeds risks. Plus, the patient has Angina. Aspirin EBM
Indication Frusemide ? Heartfailure? Takes 80mg per day	<u>Try to discontinue/reduce dose if patient does not have heart failure.</u> If heart failure – ACEi/ARB, beta-blocker are EBM



**Pharmacist vs
Pharmacy technician vs
Physician vs
Nurse vs
??**



Should the Pharmacy Profession Lead the Medication Reconciliation Process?

The “Pro side”, Wong

- ▶ Pharmacists and pharmacy technicians are absolutely the best health care professionals to obtain the best possible medication history (BPMH) which is the most challenging part of Med Rec.
- ▶ Studies have shown that BPMHs obtained by pharmacists are more accurate and more comprehensive than histories obtained by other health care professionals.
- ▶ There is also a growing body of literature supporting the utilization of trained pharmacy technicians in obtaining medication histories.

Rational:

- ▶ Knowledge of both brand and generic names and the various formulations and strengths or concentrations of drugs
- ▶ Knowledge of the hospital formulary and the availability of drugs both in hospital and in the community
- ▶ Hospital pharmacists and pharmacy technicians have relationships with their community pharmacy counterparts and have knowledge of their practices.

Should the Pharmacy Profession Lead the Medication Reconciliation Process?

The “Con side”, Wilson

- ▶ It is simply too complex to be the sole responsibility of any one discipline, be it pharmacy, nursing, or medicine
- ▶ It is best accomplished through the collaborative efforts of the interdisciplinary team to develop a model that suits **the setting**, the **resources** available, and the **needs** of the setting's patients.

CJHP 2011; 64:372-4

7 interventions performed by pharmacists have been determined to have positive effects on mortality*:

- ▶ participating on cardiopulmonary resuscitation teams,
- ▶ providing in-service education,
- ▶ managing adverse drug reactions,
- ▶ providing drug information,
- ▶ participating in medical rounds,
- ▶ managing drug protocols, and
- ▶ obtaining drug histories on admission.

Given the evidence supporting the positive effects of this range of interventions, pharmacists cannot and should not be exclusively dedicated to the medication reconciliation process

*Bond CA et al Pharmacotherapy 2007;27(4):481–493.

Repetition (Fatma):

The medication reconciliation process (4 steps)

-IHI. Protecting 5 million lives from harm. Getting started kit: prevent adverse drug events (medication reconciliation). -Joint Commission on The Accreditation Of Healthcare Organizations. Medication Reconciliation Handbook. ASHP; 2006.

- Verification: compare medication lists
 - Previous vs actual list: collect accurate medication history
- Clarification: check appropriateness
 - Persistence of inappropriate medication/dosages?
 - Undertreatment?
- Reconciliation: document medication changes
 - Reasons for changes? Temporary or chronic use?
- Transmission: communicate updated medication list
 - Patient
 - Next healthcare provider

Thank you for your attention!

