Ente Ospedaliero Cantonale

Institute of Pharmacological Sciences of Southern Switzerland

Medication reconciliation: das EOC-Projekt zu sichere Medikation an Schnittstellen

Herbstkolloquium ICKS

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No conflicts of interest to declare

Transition points / Transitions of care

- Points where a patient moves to or returns from a particular physical location or contact with a healthcare professional for the purposes of receiving healthcare
- Admission / transfer / discharge
- Vulnerable periods
- “multilayered” (place, team, information and documentation) → complexity → risk of losing information & potential for ADEs

Kirke C et al. WHO 3rd Global Patient Safety Challenge: Medication Without Harm - Technical reports on transitions of care. 2017

Adverse drug events

- *"An epidemic patient safety problem"*

Schnipper JL, MD, MPH, FHM
BWH & Harvard Medical School

- Any injuries resulting form medication use, incl. physical harm, mental harm, or loss of function
- 15% of the patients have an ADE during the hospitalization
- 380'000-450'000 preventable ADEs annually in US hospitals*
- Older age, female gender, caucasian
- 25 – 75% preventable

*incremental hospital cost of $5857 each → estimated cost of ADEs = 3.5 billion US dollars in 2006

- Errors resulting in preventable ADE occurred:
  - 56% ordering
  - 34% administration

Hug BL et al. *J Gen Intern Med*. 2010
Aspden P et al. *Quality Chasm Series*. 2007
Bates DW et al. *JAMA*. 1997
Bates DW et al. *JAMA*. 1995

Approaches and Interventions

- Provider-based approach (high-risk drugs, consider drugs, prescribing cascade, deprescribing, DDI, dosing, non-adherence)
- System-based approach
  - Computerized physician order entry (CPOE) / CDSS
  - Electronic medication administration record
    - Standardization
    - Seamless e-transition
  - Bar coding
  - Clinical pharmacology / clinical pharmacy interventions
  - Educational programs / patient empowerment
  - Medication reconciliation

Medication Reconciliation (MedRec)

- Process that identifies medication discrepancies, informs prescribing decisions, and prevents medication errors that could harm patients
- The formal process in which health care professionals' partner with patients to ensure accurate and complete medication information transfer at interfaces of care
- "Identifying the most accurate list of all medications a patient is taking and using this list to provide correct medications for patients anywhere within the health system"

Institute for Healthcare Improvement. 2017

WHO High 5s Project: Action on Patient Safety. 2006

Boockvar KS et al. *Am J Geriatr Pharmcother*. 2006

Medication Reconciliation (MedRec)

- Process to obtain safer prescribing and reduce adverse medication events by:
  - Ensuring patients receive all intended medicines
  - Mitigating common errors of transcription, omission, commission and duplication
  - Ensuring accurate, current and comprehensive medication information follows patients on transfer and discharge

Vira T et al. *Qual Saf Health Care*. 2006

Medication Reconciliation (MedRec)

- 4 Simple Steps to Improve Patient Safety
  1. Collect a comprehensive medication history
  2. Confirm the accuracy of the history
  3. Compare the history with prescribed medicines
  4. Supply accurate medicines information

Vira T et al. *Qual Saf Health Care*. 2006

MedRec - BPMH

- Taking and documenting an accurate preadmission medication history – Best Possible Medication History
  - *“Taking a BPMH is one of the most important things you can do to keep patients safe”* Schnipper JL, MD, MPH; BWH & Harvard Medical School
  - Single most important step to improving medication safety during transitions in care
  - Structured process & cornerstone of MedRec
  - Also often the most difficult (knowledge, sources of information, responsibility, fragmentation, communication)

Components of Inpatient MedRec

- Use at least two sources of information
  - **Patient interview**
  - Patient-owned medication lists (*"assume all lists are inaccurate"*)
  - Family members and other caregivers
  - Pill bottles
  - Pharmacy(ies) where patient fills prescriptions
  - Medication lists and/or notes from outpatient providers
  - Discharge medication orders from recent hospitalizations
  - Transfer orders from other facilities

Medication Reconciliation (MedRec)

- Unintentional medication discrepancies at the time of transitions:
  - 54% admission
  - 62% intra-hospital transfer
  - 71% discharge
- 1/3 have the potential to cause patient discomfort or clinical deterioration

Lee JY et al. *Ann Pharmacother*. 2010

Wong JD et al. *Ann Pharmacother*. 2008

Cornish PL et al. *Arch Intern Med*. 2005

Medication Reconciliation (MedRec)

- MedRec consistently reduces discrepancies, with a decrease in actual and potential ADEs
- Most effective interventions:
  - involvement of pharmacy staff (interprofessional collaboration)
  - targeted high-risk patients: elderly, polypharmacy

Hias J et al. *Eur J Clin Pharmacol*. 2017

Mueller SK et al. *Arch Intern Med*. 2012

National & International Recommendations

- Stiftung für P harta
- The Joint Co goals
- WHO High 5
- WHO Global Medication W

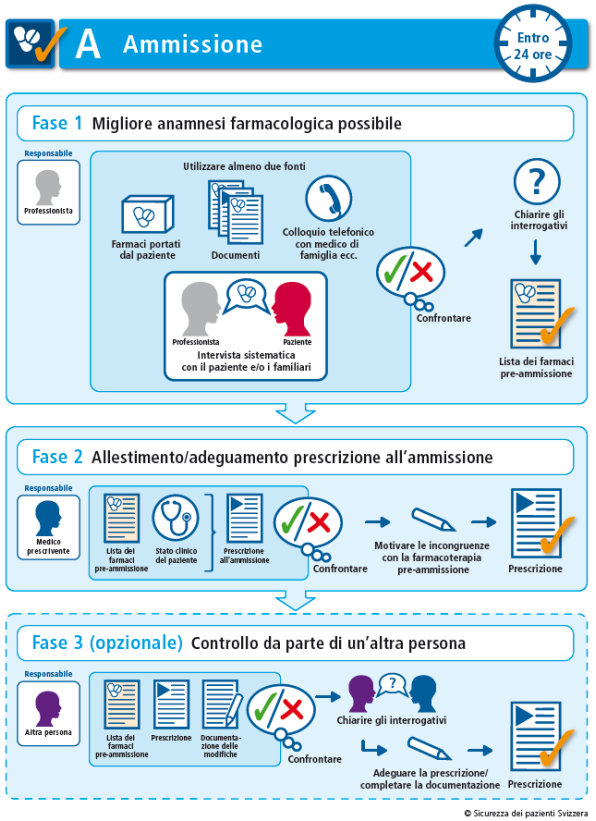
n/. World Health Organization. 2017
nation. *The Joint Commission*. 2017

EOC MedRec Pilot Project *Progress!*

- Internal medicine ward (Ospedale Regionale di Mendrisio): 26 beds

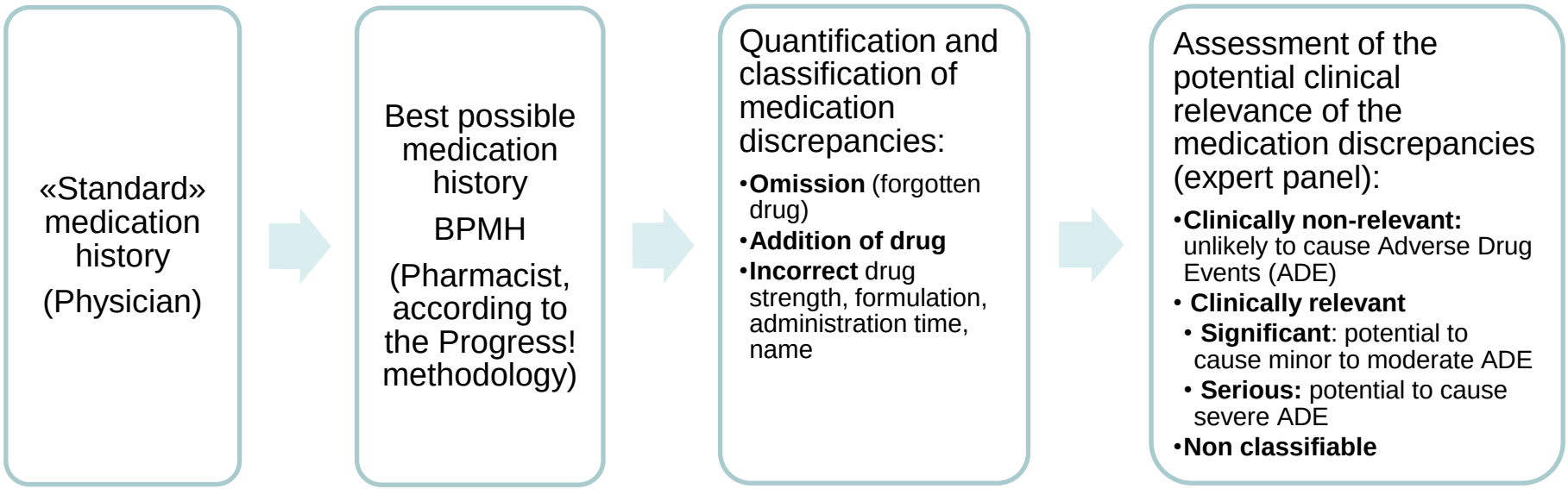
- Pharmacist 50% dedicated to the project
  - Integration in the ward
  - Co-responsible for BPMH with resident physicians

- Period 01.11.2015 – 31.07.2016
  - 457 BPMH / 803 admissions (57%)
  - 91% of the BPMH performed by the pharmacist



EOC MedRec Pilot Project *Progress!*

- Prospective data collection (02.05.2016 - 21.07.2016) - Methods



Gjerde AM et al. *Eur J Hosp Pharm*. 2016

Cornish PL et al. Arch Intern Med. 2005

EOC MedRec Pilot Project *Progress!*

- Prospective data collection - Results

Mean dedicated time:

- Patient's interview: 18 min
- Whole medication reconciliation process: 47 min

Information sources

- Mean **3.14** / patient
- Type
  1. Interview with patients and/or family (93%)
  2. Medicines/Packages (51%)
  3. Written documents from the community pharmacy (32%)

EOC MedRec Pilot Project *Progress!*

- Prospective data collection - Results

	Standard drug history		**BPMH**	
	Mean	Min-Max	Mean	Min-Max
Regular drugs	7.71	1 - 18	9.11	1 - 22
As required drugs	0.86	0 - 7	2.45	0 - 10
Overall therapy	**8.57**	1 - 24	**11.56**	3 - 27

+ 3 drugs

- At least **1** discrepancy / patient
- Mean **5.23** discrepancies / patient (Min 1 / Max 16 / Median 5)
- **63%** omissions / **32%** incorrect / **5%** addition
- **67%** discrepancies detected by patients interview

EOC MedRec Pilot Project *Progress!*

- Prospective data collection - Results

		Discrepancies (n=524)	Involved Patients (n=100)
Clinically **non-relevant** discrepancies		411 (79%)	98
Clinically **relevant** discrepancies	**Significant**	**100** (19%)	**47**
	Serious	**11** (2%)	
Non classifiable discrepancies		2 (0%)	2

One patient out of two had at least one clinically relevant discrepancy

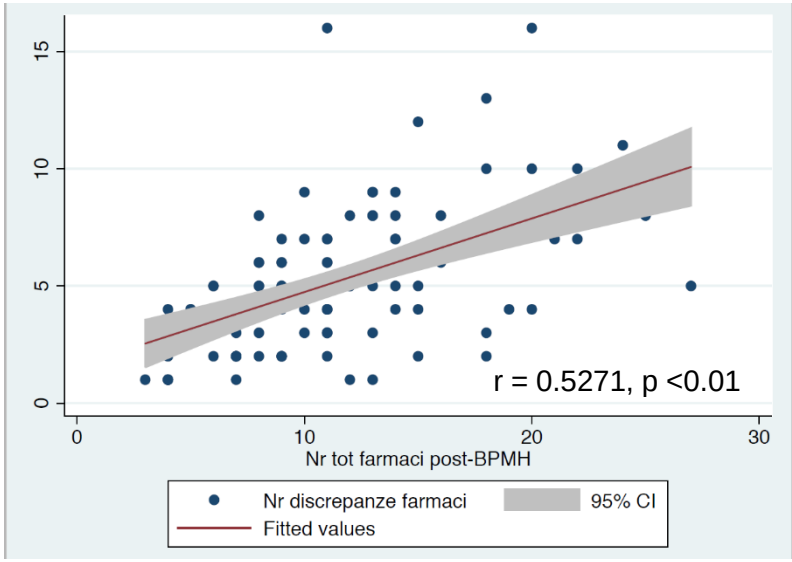
Drug most frequently involved in clinically relevant discrepancies by ATC (significant & serious n=111):

1. Cardiovascular System (29%)
2. Nervous System (23%)
3. Alimentary track and metabolism (14%)

ATC = Anatomical Therapeutic Chemical Classification System

EOC MedRec Pilot Project *Progress!*

- Prospective data collection – Risk factors
  - Age ≥ 85 years (OR 1.58; 95% CI, 1.02 – 2.46; p=0.027)
  - Number of drugs used > 10 (OR 1.68; 95%, CI, 1.04 – 2.70; p=0.02)



  - Residence - home vs. rest home: ↑ risk for people who are living at home alone, not significant (OR 1.46; 95% CI, 0.55 – 3.87; p=0.31)

EOC MedRec Project

- Based on the success of the pilot *Progress!* project and the results of the pilot study
- The EOC General management gave the Institute of Pharmacological Sciences of Southern Switzerland the mandate to elaborate a project to extend the MedRec process to routine care in the EOC hospital network

EOC MedRec Project

- We are currently evaluating different possible models involving several health care professionals

1. Pharmacist (clinical pharmacist)
2. Pharmacy assistant
3. Nurse (dedicated)
4. Resident physician
5. Medical student (Cand. Med.) ← study
6. Combined 2 or 3 & 1
7. Combined 2 or 3 & 4

Detailed SWOT analysis & estimation of costs

Inclusion of a statement from the EOC Dept. of Internal medicine

EOC MedRec Project

- Targeting this resource-intensive intervention towards patients with high-risk features may improve the effectiveness
- High-risk patients:
  - elderly (≥ 85 / 75 / 65)
  - polypharmacy (> 10 drugs)
- Excluding patients from long-term care facilities
- Such criteria might be a useful starting point to identify patients most likely to benefit

Hias J et al. *Eur J Clin Pharmacol*. 2017

Mueller SK et al. *Arch Intern Med*. 2012

EOC MedRec Project

- As soon as we have a decision on the model, we will involve the relevant external partners
  - Cantonal physician
  - Cantonal pharmacist
  - Order of Physicians of Canton Ticino (OMCT)
  - Order of Pharmacists of Canton Ticino (OFCT)
  - Association of Nurses Ticino (ASI Ticino)

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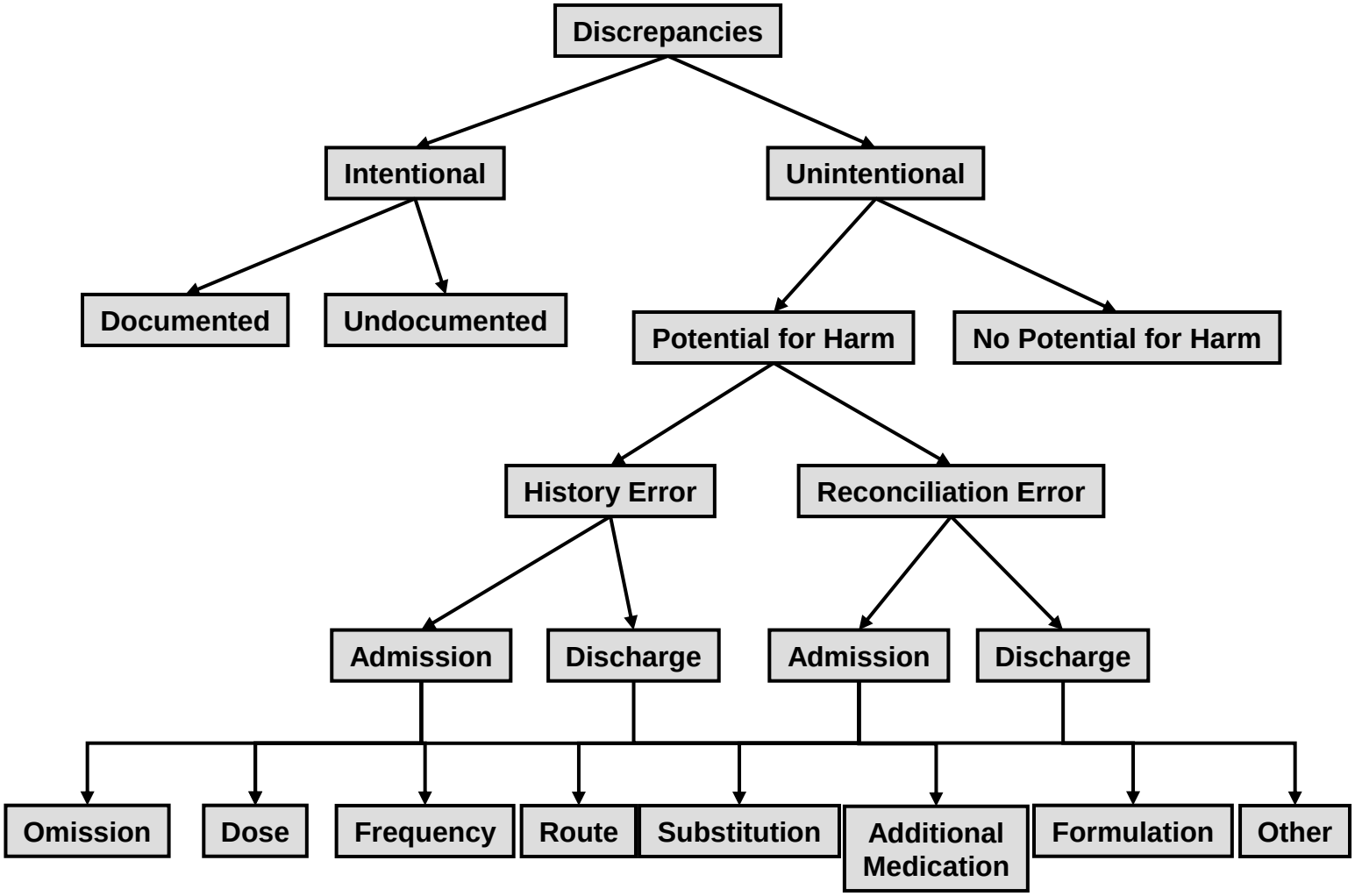
Classification of medication discrepancies



Pippins JR et al. *J Gen Intern Med*. 2008

Medication Reconciliation (MedRec)

- The process of MedRec has 3 steps:
  - Verification – reviewing the patient's medication use history and developing an accurate list of medications
  - Clarification – ensuring that the medications and doses are appropriate and using the current list when writing medication orders
  - Reconciliation – identifying any discrepancies between medication ordered for patients and those on the list, making appropriate changes to the orders, documenting any changes, and communicating the updated list to the next provider (+ patients) within or outside the hospital

Greenwald JL et al. *J Hosp Med*. 2010