The elderly @ risk: reducing medication safely to meet life’s changes
Francesca Venturini
Hospital Pharmacy Services Director
Ospedale Maggiore Policlinico
Milano, Italy

Disclosure

- Relevant financial relationship
- None
Self assessment questions

1. Models of pharmacist’s intervention in medication review are identical across settings and countries (T/F)

2. Simulation medicine uses unrealistic scenarios as learning tools (T/F)

3. Improving the process of medication management automatically means to improve patient outcomes (T/F)

Objectives

Participants will be able to:

1. Explain systematic and patient-centred deprescribing processes
2. Describe the steps involved in deprescribing
3. Demonstrate models of pharmacist involvement
The framework

Medication review performed by hospital pharmacists is not a routine activity in Italy.

The key elements to set up an effective model of med-rev and de-prescribing are:

1. to find good “partners”
2. to target interventions for the best possible impact
3. to build a reputation
4. to build up competencies
5. to be able to measure outcomes

1. The “partners”: the REPOSI registry

The REPOSI registry: network of internal medicine wards to investigate the prevalence and correlates of polymorbidity and polypharmacy in hospitalized elderly patients.
The REPOSI registry

AIMS

◆ To describe the prevalence of multiple concurrent diseases and treatments in hospitalized elderly patients,
◆ to correlate the patient's clinical characteristics with the type and number of diseases and treatments,
◆ to evaluate the main clinical outcomes at discharge.

INCLUSION CRITERIA

◆ 65 years or older
◆ informed consent.
◆ Minimal recruitment: at least the first 5 consecutive pts x index week

MINIMUM DATASET (CRF)

◆ basic socio-demographic details
◆ clinical and laboratory parameters,
◆ diagnoses (comorbidities)
◆ cognitive function (Belissed test)
◆ disability (Barthel index)
◆ drugs at hospital admission, during hospital stay, and at discharge,
◆ clinical adverse events
◆ outcome at discharge and 3-12 months follow-up.

From 2008

6,157 patients aged 65 years or older by 107 Italian and 15 Spanish (only in 2014-2015) internal medicine and geriatric wards and more than 300 clinical investigators
The REPOSI registry:
# of patients with > 5 drugs @ admission vs discharge

2. To target interventions
Number of pharmacists/100 beds – EAHP Survey 2010

2. To target interventions
PLANNING FOR A MULTIDISCIPLINARY APPROACH

- RETROSPECTIVE: to describe the status quo
- PROSPECTIVE: to shape the intervention
- PROSPECTIVE CONTROLLED: to measure the outcomes of the intervention

2. To target interventions
IS MEDICATION RECONCILIATION NEEDED?

Chiarelli MT et al. GIFC 2014
2. To target interventions
IS MEDICATION REVIEW NEEDED?

### NOT ADDRESSED DRUG RELATED PROBLEMS

<table>
<thead>
<tr>
<th>DRUG RELATED PROBLEMS</th>
<th>CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unreported allergies</td>
<td>Acetylcholinesterase inhibitors, NSAIDs, Ketoprofen, Soldesam</td>
</tr>
<tr>
<td>Unreported intolerances</td>
<td>Clopidogrel, KCl</td>
</tr>
<tr>
<td>Unreported ADR</td>
<td>Anticoagulants poisoning, iatrogenic dermatitis by allopurinol, iatrogenic dermatitis by lenalidomide, Diarrhea by clopidogrel, Benzodiazepine abuse, Hypothyroidism by amiodarone, Confusional state by levofloxacin, Hypertensive syndrome by pipera/tazo, Dermatitis by ciprofloxacin</td>
</tr>
</tbody>
</table>

### ARE INFORMATION ON DRUG-DRUG INTERACTIONS RELEVANT FOR PHYSICIANS’ DECISIONS?

**CLINICAL RELEVANCE**

- **INTERCHECK® RATING**
  - A = minor: 17%
  - B = moderate: 39%
  - C = major: 75%
  - D=contrainedicated: 74%

**PHYSICIAN INTERVIEW**

2. To target interventions

IS MEDICATION APPROPRIATENESS FOLLOWED AT DISCHARGE? - The PPIs CASE

PROPHYLAXIS
Chronic treatment w/NSAIDs or low dose ASA plus History of gastric bleeding or Concomitant use of anticoagulants or steroids treatment

TREATMENT
Peptic ulcer HP positive or GERD or Zollinger-Ellison syndrome

PPIs prescription

Yes 31; 57%
No 23; 43%

N =54

2. To target interventions

PLANNING FOR A MULTIDISCIPLINARY APPROACH

• RETROSPECTIVE: to describe the status quo

• PROSPECTIVE: to shape the intervention

• PROSPECTIVE CONTROLLED: to measure the outcomes of the intervention
Medication reconciliation and review performed by the hospital pharmacist in a geriatric hospital setting: identification of Drug Related Problems and model definition – feasibility study

- **PATIENTS:** all consecutive patients admitted with:
  - > 65 years
  - At least 5 drugs at home
  - Life expectancy at least 6 months
  - Informed consent

- **OUTCOMES**
  - Medication discrepancies
  - DRPs
  - Pharmacist’s consultation acceptance

- **INTERVENTION**
  - Once a day for 1 hour within 24-72 hours from admission

---

**FARMACHECK**

1. **PATIENT ADMISSION**
2. **MEDICATION RECONCILIATION WITHIN 24-72 HRS**
3. **MEDICATION REVIEW and DRUG RELATED PROBLEMS IDENTIFICATION**
4. **DRPs PRESENTATION TO THE TREATING PHYSICIAN**
5. **HOSPITAL PHARMACIST ON CALL FOR DRUG RELATED PROBLEMS**
6. **MEDICATION REVIEW AT DISCHARGE**
7. **STRUCTURED DISCHARGE LETTER FOR GP**
8. **FOLLOW-UP CALL AFTER 3 MONTHS**

**END-POINTS:**

- # of identified DRPs
- # & type of accepted DRPs
- # & type of contacts/requests
- # of drugs on the Formulary
- # of intentional/unintentional discrepancies
- Discharge letter meeting requirements
- Patient outcome & compliance
- # of identified DRPs
- # & type of accepted DRPs
- # of intentional/unintentional discrepancies
- Discharge letter meeting requirements
- Patient outcome & compliance
**Medication review: pharmacist’s instruments toolkit**

<table>
<thead>
<tr>
<th>INSTRUMENTS</th>
<th>DRPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERcheck®</td>
<td>Drug – drug interaction, Duplicates, Renal and liver insufficiency, Anticholinergic load (AC burden scale)</td>
</tr>
<tr>
<td>STOPP &amp; BEERS criteria</td>
<td>Inappropriate treatments in the elderly</td>
</tr>
<tr>
<td>Micromedex®</td>
<td>Appropriate dosage and schedule</td>
</tr>
<tr>
<td>Summary of Product Characteristics</td>
<td>In label/ off label use, ADR identification</td>
</tr>
</tbody>
</table>

http://www.intercheckweb.it
MEDICATION RECONCILIATION

No. of patients = 75
No. of prescriptions = 778
No. of discrepancies = 227

Ave discrepancies/pt = 3.02
% discrepancies/prescriptions = 29%

<table>
<thead>
<tr>
<th>DISCREPANCIES</th>
<th>NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omission</td>
<td>131</td>
</tr>
<tr>
<td>Change within drug class</td>
<td>40</td>
</tr>
<tr>
<td>Change with other drug</td>
<td>19</td>
</tr>
<tr>
<td>Reduced dose</td>
<td>17</td>
</tr>
<tr>
<td>Administration route change</td>
<td>11</td>
</tr>
<tr>
<td>Dose increase</td>
<td>8</td>
</tr>
<tr>
<td>Formulation change</td>
<td>1</td>
</tr>
</tbody>
</table>

MEDICATION REVIEW

No. of patients = 75
No. of prescriptions = 778
No. of DRPs = 381

Ave DRPs/pt = 5
% DRPs/prescriptions = 49%

<table>
<thead>
<tr>
<th>DRPs</th>
<th>NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inappropriate drug</td>
<td>139</td>
</tr>
<tr>
<td>DD interaction – contraindicated</td>
<td>113</td>
</tr>
<tr>
<td>DD interaction – major problem</td>
<td>106</td>
</tr>
<tr>
<td>Undetected ADR</td>
<td>11</td>
</tr>
<tr>
<td>Overdosage</td>
<td>9</td>
</tr>
<tr>
<td>Duplicates</td>
<td>3</td>
</tr>
<tr>
<td>Off label</td>
<td>2</td>
</tr>
</tbody>
</table>
MEDICATION REVIEW

DRPs

- Accepted consultation
- Prescription unchanged

<table>
<thead>
<tr>
<th>RPh consultation</th>
<th>NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical monitoring</td>
<td>116</td>
</tr>
<tr>
<td>Therapy withdrawal</td>
<td>43</td>
</tr>
<tr>
<td>Re-evaluation</td>
<td>19</td>
</tr>
<tr>
<td>Dose reduction</td>
<td>9</td>
</tr>
<tr>
<td>Drug substitution</td>
<td>6</td>
</tr>
<tr>
<td>Addition</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>195</td>
</tr>
</tbody>
</table>

FARMACHECK

PHARMACIST CONSULTATION: examples

<table>
<thead>
<tr>
<th>DRUG(S) RELATED TO DRP</th>
<th>REASON</th>
<th>PHARMACIST CONSULTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUROSEMIDE-ALOPERIDOL-</td>
<td>Increased risk of hyponatriemia</td>
<td>Natriemia monitoring</td>
</tr>
<tr>
<td>SERTRALINE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASA-PAROXETINE</td>
<td>The interaction increases the bleeding risk</td>
<td>Substitute paroxetine with fluvoxamine</td>
</tr>
<tr>
<td>ALLOPURINOL</td>
<td>Drug not needed based on uric acid level</td>
<td>Withdrawal</td>
</tr>
<tr>
<td>CITALOPRAM –FUROSEMIDE</td>
<td>The drug-drug interaction increases risk of cardiotoxicity (QT interval, torsades de pointes, cardiac arrest) and hyponatriemia. Avoid citalopram in patients with heart failure.</td>
<td>Substitute citalopram with fluvoxamine</td>
</tr>
<tr>
<td>LANSOPRAZOLE</td>
<td>Unjustified chronic use</td>
<td>Taper therapy withdrawal</td>
</tr>
<tr>
<td>FUROSEMIDE in patient with hyponatriemia at admission</td>
<td>The drug inhibits sodium reabsorption</td>
<td>Natriemia monitoring</td>
</tr>
</tbody>
</table>
3. To build up a “reputation”

- Be part of the physician education process
Target: Internal Medicine specialists/ other specialties Residents

Duration: 3 full days

Clinical Case: from the REPOSI network – clinical scenarios

Methodology: Simulation medicine

What is Simulation Medicine

Medical simulation is the use of a material that in virtual reality creates a standard patient for reproducing health care situations and environments, with the purpose of teaching diagnostic and therapeutic procedures, repeat medical processes and concepts, and decision making by a medical professional or a team of professionals.

Role playing: cognitive and emotional involvement of the trainees in the transfer of theoretical knowledge to practice in a “safe environment” where it is possible to make errors.

Debriefing: constructive critique of the facts, in order to obtain elements to correctly apply theoretical knowledge or to supply to lack of knowledge or human factors.

Interactive disc.: deepening knowledge on technical factors.
SCENARIO #1: Elderly patient @ the ER for a fall episode
SCENARIO #2: Arhythmic episode during hospital stay
SCENARIO #3: Transfer to internal medicine ward after PM positioning
SCENARIO #4: Medication review: clinician and hospital pharmacist
SCENARIO #5: Discharge

I didn’t know omeprazole dose should be tapered b/f withdrawal.

Useful to know that myalgia in that pt may derive from levofloxacin use.

I usually contact pharmacists for authorization on expensive meds.

4. To build up competencies
Examples of MED-REC/ MED-REV projects:
Which training did you require for the performance of the activity?

<table>
<thead>
<tr>
<th>PROJECT/ HOSPITAL</th>
<th>TRAINING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policlinico, Milan</td>
<td>Software training</td>
</tr>
<tr>
<td></td>
<td>Learning by doing</td>
</tr>
<tr>
<td>Camposampiero hospital</td>
<td>Shadowing senior pharmacists</td>
</tr>
<tr>
<td></td>
<td>Self documentation</td>
</tr>
<tr>
<td>Sant’Antonio hospital, Padova</td>
<td>Self documentation</td>
</tr>
<tr>
<td></td>
<td>Learning by doing</td>
</tr>
<tr>
<td>Rovigo hospital</td>
<td>Info exchange with other hospitals</td>
</tr>
<tr>
<td>Alessandria Health District</td>
<td>No training</td>
</tr>
</tbody>
</table>

Issue no. 39, December 2016
4. To build up competencies
MEDICATION REVIEW SERVICES TRAINING PROGRAM

**OPERATIONAL**

<table>
<thead>
<tr>
<th>How to perform med rec &amp; med rev:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Glossary and timing</td>
</tr>
<tr>
<td>• Instruments (DDIs, Rx info)</td>
</tr>
<tr>
<td>DISTANCE LEARNING</td>
</tr>
</tbody>
</table>

**CLINICAL**

<table>
<thead>
<tr>
<th>Elderly and chronic diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular therapy</td>
</tr>
<tr>
<td>Infectious diseases</td>
</tr>
<tr>
<td>Intensive care</td>
</tr>
<tr>
<td>DISTANCE LEARNING</td>
</tr>
</tbody>
</table>

**PHARMACOLOGY**

<table>
<thead>
<tr>
<th>Drug interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTANCE LEARNING</td>
</tr>
</tbody>
</table>

**COMMUNICATION SKILLS**

<table>
<thead>
<tr>
<th>Patient’s interview technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interaction with other health care professionals</td>
</tr>
<tr>
<td>Case scenarios</td>
</tr>
<tr>
<td>3 DAYS WORKSHOP SIMULATION MEDICINE</td>
</tr>
</tbody>
</table>

**QUALITY PROCESSES**

<table>
<thead>
<tr>
<th>How to document clinical pharmacy services</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISTANCE LEARNING</td>
</tr>
</tbody>
</table>

5. To measure outcomes
GOAL OF THE INTERVENTION

**IMPROVING PROCESSES**

**IMPROVING OUTCOMES**
A trained hospital pharmacist-led medication review to reduce unplanned hospital readmissions in the elderly on polyparmacy: a large scale stepped wedge randomized controlled trial

**Background:** In Italy a specific and defined role of hospital pharmacist in the prevention and identification of medication errors and in the support of the management of therapies of hospitalized older people is still lacking.

**Objectives:** to assess the effectiveness of the Med-REC and Med-REV intervention, led by a specifically trained hospital pharmacist as support to clinicians in internal medicine and geriatric wards, on the reduction of 3 month unplanned readmission rate in 75 years or older patients exposed to polypharmacy.

**Methods:** stepped wedge cluster randomized trial (SW-CRT). The randomization unit (cluster) will be the hospital ward. Overall 1530 patients aged 75 years or more, taking at least 5 different drug, will be enrolled in 34 internal medicine and geriatric wards. The participating wards will be firstly randomized to receive the hospital pharmacist-led Med-REC and Med-REV intervention, with (n=17) or without (n=17) a letter for the patient's GP, reporting a detailed indication of the results and decision of the revision done during hospital stay. Secondly the wards will be randomized to the intervention start time.

**Pharmacists' training:** Before starting the Med-REC and Med-REV intervention, all hospital pharmacists will attend to a teaching course implemented by a multidisciplinary team (involving clinical pharmacologists, hospital pharmacists, geriatricians, internists and nurses) aimed to boost their specific knowledge on the Med-REC and Med-REV processes and geriatric clinical pharmacology skills.

**Expected results:** The results of this study will provide the National Health Service with indications the clinical impact of a Med-REC and Med-REV intervention, led by a specifically educated and trained hospital pharmacists to improve health outcomes, drug prescribing and therapeutic adherence after hospital discharge in older patients exposed to polypharmacy.
TAKE HOME MESSAGES

1. Models of pharmacist intervention need to be tailored to the specific setting and capacities

2. Interchange training with doctors: be part of their training as recognized health care professional

3. Demonstrate the effect of your intervention

Self assessment questions

1. Models of pharmacist’s intervention in medication review are identical across settings and countries (T/F)
   - FALSE

2. Simulation medicine uses unrealistic scenarios as learning examples (T/F)
   - FALSE

3. Improving the process of medication management automatically means to improve patient outcomes (T/F)
   - FALSE
Thank you!
Francesca Venturini
francesca.venturini@policlinico.mi.it