Geriatric medication management in care institutions

Mag. pharm. Dr. Elisabeth Kretschmer aHPh
Mag. pharm. Diemut Strasser
Overview

• Threats and Risks of Polypharmacy in the Elderly

• GEMED – a multiprofessional approach to improve care and treatment of nursing home residents in a rural area of Salzburg
Polypharmacy - Risk or Opportunity?

**Definition of Polypharmacy (WHO):** > 5 Drugs
Hyperpolypharmacy; > 10 Drugs
Incidence of Hyperpolypharmacy Age 70 – 90, AT 2014: 8,5 – 12,9 % [1]

**Life Expectancy ↑ since 1970 > 10 years** [2]

**Number of Drugs ↑**  **Risk of Drug IA ↑** [3]
2 Drugs  0,17 % severe IA  0,7 % moderate IA
>8 Drugs  3,58 % severe IA  21,5 % moderate IA

---

D. Strasser, E. Kretschmer

[1] Sauermann R 10/2015 Fachtag Medikation im Alter
[2] OECD
Polypharmacy - **Risk** or Opportunity?

### High Risk Medication
- Methotrexat
- Warfarin
- Opioids
- NSAR
- ASS
- Betablockers

### High Risk Patients
- Age > 80
- 4 comorbidities
- Renal failure
- Heart failure
- Liver disease
- Nr of drugs, > 8
- Previous ADR

Saedder A et al; EurJClinPharmacology 2014

Onder G et al; Arch Intern Med 2010

D. Strasser, E. Kretschmer
Vulnerability of Nursing Home Residents

Somatic, cognitive and affective constraints

- immobility
- instability
- incontinence
- intellectual degradation
- isolation

Sensitivity to ADRs

- confusion
- delirium
- bleeding
- falls
- GIT disturbances
- incontinence
- renal insufficiency
## High Risk Drugs for the Elderly

<table>
<thead>
<tr>
<th>Indication</th>
<th>ATC Groups, Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiolytics, Hypnotics</td>
<td>Benzodiazepines</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>TCA, SSRI, SNRI, MAO-Inhibitors</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>Thioridazin, Haloperidol, Olanzapin, Clozapin</td>
</tr>
<tr>
<td>Cardiovascular Drugs</td>
<td>Diuretics, β-Blockers, ACE-Inhibitors, Ca(^{2+})-Channel Blockers, AT(_1)-Antagonists, α-Blockers, Digitalis, Antiarrhythmics</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>Oxybutinin, Solifenacin, Tolterodin</td>
</tr>
<tr>
<td>Antiemetics, Antihistamines</td>
<td>Metoclopramid, Dimenhydrinat, Doxylamin</td>
</tr>
</tbody>
</table>
Causes of Adverse Drug Events in Nursing Homes

60% Prescription – Dosage errors, interactions, inappropriate drugs
80% Therapy monitoring – insufficient clinical observation, symptom and laboratory monitoring
13% Application – crushing of unsuitable drug formulations, improper storage, handling and documentation
<5% Dispensation


D. Strasser, E. Kretschmer
An opportunity for nurses, pharmacists and doctors to solve/reduce problems concerning medication errors and ADRs in nursing home residents
Medication induced confusion and fall

April 2015

Female, 87 years old
lives at home, needs care for 24 h
(nurse, family)
confusion, sleep disorders, anxiety,
several falls in the last 3 months,
weakness of muscles from thigh to foot,
needs help to move from chair to
wheelchair

Blood Pressure 110/60 (120/80)
Cholesterol 158mg/dl (140-200)

Medication:

- Dabigatran 110mg 1-0-1
- Digitoxin 0,1 mg ½-0-1
- Fosinopril/HCT 1-0-0
- Fosinopril 20 mg 0-0-1
- Amlodipin 10 mg 1-0-0
- Simvastatin 40 mg 1-0-0
- Amitryptilin 10 mg 1-0-2
- Lornoxicam 8 mg 1-0-1

amlodipin ↔ simvastatin
blood level simvastatin 77% ↑ myopathy

June 2015: Lornoxicam, Simvastatin, Amitryptilin EX, Amlodipin ↓
No more fall since change of medication, anxiety↓, mental condition↑
Two Years pharmaceutical Care in the Nursing Home Bad Gastein

2014-2015: weekly visit of the pharmacist in the nursing home
discussion of drug related problems with the nurse, high risk
drugs for the elderly, detection of ADRs
proposals for change/discontinuation of drugs for the doctor

<table>
<thead>
<tr>
<th></th>
<th>Residents (n)</th>
<th>Gender</th>
<th>Age (Ø)</th>
<th>Drugs/Resident (Ø n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>73</td>
<td>24 m; 49 f</td>
<td>81,9 (min 54, max 98); m: 75,8; f: 84,2</td>
<td>8,5 (min 0, max 20); m: 6,2; f: 9,6</td>
</tr>
<tr>
<td>2015</td>
<td>76</td>
<td>31 m; 45 f</td>
<td>81,6 (min 55, max 96); m: 75,8; f: 84,3</td>
<td>8,4 (min 0, max 22); m: 7,3; f: 9,2</td>
</tr>
</tbody>
</table>
Results of 2 years pharmaceutical care in the nursing home Bad Gastein
Results of 2 years pharmaceutical care in the nursing home Bad Gastein

Drug classes

<table>
<thead>
<tr>
<th>Category</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAIN</td>
<td>71</td>
<td>29</td>
</tr>
<tr>
<td>SLEEP</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>MENTAL</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td>CARDIOVASC</td>
<td>58</td>
<td>38</td>
</tr>
<tr>
<td>GIT</td>
<td>26</td>
<td>20</td>
</tr>
<tr>
<td>METABOLISM</td>
<td>28</td>
<td>9</td>
</tr>
<tr>
<td>OTHER</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

D. Strasser, E. Kretschmer
GEMED
A Multiprofessional Medication Management Project in Nursing Homes
A systematic approach to solve problems of polypharmacy

by Diemut Strasser und Elisabeth Kretschmer
GEMED - Goals

- Improvement of quality of the care and treatment of nursing home residents
- Improvement of collaboration and risk communication (nurses-pharmacists-doctors)
- Measurement of the impact of pharmaceutical services in nursing homes
- „Best Practice Model“ for a nationwide roll out
Medication-Therapy-Management
- Screening for Medication Risks, every month

Medication-Process-Management
- Screening for Medication Errors, every 3 months

Medicines Committee
- Pharmacist-Nurse-Doctor (network unit)
- local nursing home, every 3 months

Quality-Circles
- All network units of the study area, every 3 months
GEMED Structure

9 Nursing Homes → 600 Residents
(Salzburg, Region Pongau and Pinzgau)

9 Community Pharmacies
(supplying pharmacies of the study area)

~ 20 Family Doctors (general practitioners) with treatment contract of the residents

Duration of the study: 12 months
Thank you for your attention!