Stronger together - optimizing pharmacotherapy on geriatric wards?

Clinicamp FOD 27/4/2018

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Project College Geriatrie 2017-18

• Identify **quality indicators** for appropriate prescribing on geriatric wards.
  • Interventions or modifiable factors with a positive influence on prescribing
  • **National survey** to determine the presence of quality indicators on Belgian geriatric wards.
Definition KB 15.02.99

- Definition quality indicators (internal)
- External quality evaluation
  - Development of indicators
  - Computerized registration model
  - Control of registered data
  - Yearly activity-report
  - Answering questions about evaluation
  - Report about usage of financial resources
  - Feedback for hospitals and physicians
Study about function of the Colleges 2013: Geriatrics

- Specific quality projects (malnutrition, falls, delirium, ...)
- External evaluation of the quality: indicators
  + “meten is weten”
    Structure – process - results
- Complex patients
  Extra registrations
Prescriptions

• **Appropriate prescription?**
  « one prescription allowing a treatment with *efficacy* and *safe*, minimizing *costs*, and respecting the *choice* of the patient. »
  (Barber, 1996)

• **Inappropriate prescription?**
  3 categories

  « UNDER »  « MIS »  « OVER »

  « … prescribing »
Polypharmacy: STOPP&START

Screening Tool of Older Persons’ Prescriptions (ST OPP)
The following prescriptions are potentially inappropriate to use in patients aged 65 years and older.

Screening Tool to Alert to Right Treatment (START)
Unless an elderly patient’s clinical status is end-of-life and therefore requiring a more palliative focus of pharmacotherapy, the following drug therapies should be considered where omitted for no valid clinical reason(s). It is assumed that the prescriber observes all the specific contraindications to these drug therapies prior to recommending them to older patients.

<table>
<thead>
<tr>
<th>Cardiovascular system</th>
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<tbody>
<tr>
<td>Digoxin &gt; 125 μg per day with impaired renal function (digoxin toxicity)</td>
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<tr>
<td>Thiazide diuretic with history of gout</td>
</tr>
<tr>
<td>β-blocker with COPD (recurrent exacerbation of COPD)</td>
</tr>
<tr>
<td>Diltiazem or verapamil with NYHA class III or IV heart failure 1 1 (severe CCF)</td>
</tr>
<tr>
<td>Calcium channel blockers with chronic constipation</td>
</tr>
<tr>
<td>Dipyriramole as monotherapy for cardiovascular secondary prevention</td>
</tr>
<tr>
<td>Aspirin with history of PUD without histamine H2 antagonist or PPI 2 1 (PUD)</td>
</tr>
<tr>
<td>Aspirin &gt;150 mg/day</td>
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<tr>
<td>Aspirin with no history of coronary, cerebral or peripheral vascular symptoms or occlusive event</td>
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<table>
<thead>
<tr>
<th>Central nervous system</th>
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<tbody>
<tr>
<td>TCA with dementia 2 2 (delirium, fall and fractured femur)</td>
</tr>
<tr>
<td>TCA with cardiac conductive abnormalities 1 0</td>
</tr>
<tr>
<td>TCA with constipation 1 0</td>
</tr>
<tr>
<td>TCA with prostatism or history of urinary retention 1 0</td>
</tr>
<tr>
<td>Long-term, long-acting benzodiazepines</td>
</tr>
<tr>
<td>Long-term neuroleptics in those with Parkinsonism</td>
</tr>
<tr>
<td>Prolonged use of first generation antihistamines</td>
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<table>
<thead>
<tr>
<th>Gastrointestinal system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphenoxylate, loperamide or codeine phosphate for treatment of diarrhoea of unknown cause</td>
</tr>
<tr>
<td>Diphenoxylate, loperamide or codeine phosphate for severe infective gastroenteritis, i.e. bloody diarrhoea, high fever or severe systemic toxicity</td>
</tr>
<tr>
<td>PPI for peptic ulcer disease at full therapeutic dosage for &gt; 8 weeks</td>
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</table>

<table>
<thead>
<tr>
<th>Respiratory system</th>
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<tbody>
<tr>
<td>Theophylline as monotherapy for COPD 4 0</td>
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<tr>
<td>Systemic corticosteroids instead of inhaled corticosteroids for maintenance therapy in moderate–severe COPD</td>
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</table>

<table>
<thead>
<tr>
<th>Musculoskeletal system</th>
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<tbody>
<tr>
<td>NSAID with history of PUD or gastrointestinal bleeding, unless with concurrent histamine H2 receptor antagonist, PPI or misoprostol</td>
</tr>
<tr>
<td>NSAID with moderate to severe hypertension</td>
</tr>
<tr>
<td>NSAID with heart failure</td>
</tr>
<tr>
<td>Long-term NSAID for relief of mild-moderate joint pain in osteoarthritis</td>
</tr>
<tr>
<td>Warfarin and NSAID together</td>
</tr>
<tr>
<td>NSAID with chronic renal failure</td>
</tr>
<tr>
<td>Long-term corticosteroid as monotherapy for rheumatoid or osteoarthritis</td>
</tr>
<tr>
<td>Long-term NSAID or colchicine for chronic treatment of gout where there is no contraindication to allopurinol</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Urogenital system</th>
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<tbody>
<tr>
<td>Bladder antimuscarinic drugs with dementia</td>
</tr>
<tr>
<td>Antimuscarinic drugs with chronic prostatism</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Endocrine system</th>
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<tbody>
<tr>
<td>β-blockers in those with diabetes mellitus and frequent hypoglycaemia</td>
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</table>

<table>
<thead>
<tr>
<th>Drugs that adversely affect those who are prone to falls</th>
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<tbody>
<tr>
<td>Benzodiazepines</td>
</tr>
<tr>
<td>Neuroleptic drugs</td>
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<tr>
<td>Vasodilator drugs with postural hypotension</td>
</tr>
<tr>
<td>Long-term opiates in those with recurrent falls</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analgesic drugs</th>
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</thead>
<tbody>
<tr>
<td>Use of long-term powerful opiates, e.g. morphine or fentanyl as first-line therapy for mild-moderate pain</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regular opiates for more than 2 weeks in those with chronic constipation without concurrent use of laxative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term opiates in those with dementia unless indicated for palliative care or</td>
</tr>
</tbody>
</table>
Project College 2015-2016
• 10 drugs selected by the College: USE in 45,086 geriatric stays (Riziv SHA database 2013)

Potentially overuse
• Neuro-psychotropic drugs
  Benzodiazepines = 18 %
  TCAs = 1 %
  SSRIs = 7 %
  Antipsychotics = 7 %
  Any Neuro-psy drug = 26 %

• Other drugs
  NSAID = 1 %
  PPI = 21 %
  Statins = 10 %
  Anticholinergic = 7 %

Potentially underuse
Vitamin D [vs. Osteoporosis] = 50 %
Oral anticoagulant [vs. AFib] = 14 %
<table>
<thead>
<tr>
<th>Indicator</th>
<th>men</th>
<th></th>
<th></th>
<th></th>
<th>women</th>
<th></th>
<th></th>
<th></th>
<th>men</th>
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<th></th>
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<th>women</th>
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<th>total</th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>nb stays</td>
<td>2389</td>
<td>4532</td>
<td>4737</td>
<td>2941</td>
<td>14599</td>
<td>3982</td>
<td>8699</td>
<td>10272</td>
<td>7534</td>
<td>30487</td>
<td>45086</td>
<td>45086</td>
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<td></td>
</tr>
<tr>
<td>% stays with benzo at discharge</td>
<td>15%</td>
<td>15%</td>
<td>16%</td>
<td>13%</td>
<td>15%</td>
<td>19%</td>
<td>19%</td>
<td>20%</td>
<td>18%</td>
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</tbody>
</table>

10. Benzodiazepines (overuse ?)

If long-term (i.e., > 1 month) and long-acting e.g., chlordiazepoxide, flurazepam, nitrazepam and benzodiazepines with long-acting metabolites e.g., diazepam [risk of prolonged sedation, confusion, impaired balance, falls].

% of patients on benzo
% of patients on flunitrazepam
WITHIN those with benzo

At discharge

N05CD (benzo) or N05BA (benzo)
N05CD03 (flunitrazepam)

ALL patients at discharge

Benzo : 18 %
<table>
<thead>
<tr>
<th>hop id</th>
<th>nb stays</th>
<th>% stays with NSAID at discharge</th>
<th>% stays with PPI at discharge</th>
<th>% stays with TCA at discharge</th>
<th>% stays with benzodiazepines at discharge</th>
<th>% stays with antidepressants at discharge</th>
<th>% stays with anticholinergics at discharge</th>
<th>% stays with statins at discharge</th>
<th>% stays with AVK at discharge</th>
<th>% stays with vitamin D at discharge</th>
<th>% stays with psychotropic drugs at discharge</th>
<th>% stays with possible overuse at discharge</th>
<th>% stays with AB at discharge</th>
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<tr>
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<td>2,9%</td>
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<td>4,1%</td>
<td>1,5%</td>
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<td>1,1%</td>
<td>23,5%</td>
<td>48,0%</td>
<td>17,3%</td>
<td>29,1%</td>
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</tbody>
</table>
Length of stay?
Confusing factors?

- No correlation with length or number of stays, frequency of prescription, case-mix...

- Methodological decisions?
  - Inclusion: all patients aged 75+, hospitalized in G units in 2013
  - Exclusion criteria
    - patients staying at multiple units during one hospital stay
    - patients with strong opioids during all stay
    - short stays (≤ 9 days)
  - Unit of analysis: hospital stay strict in geriatric unit

- Or...facturation bias??
**Project College 2017**

**identification and communication of performance factors**

| Individual and team factors | Prescriber knowledge of medications  
Prescriber knowledge of patient comorbidities  
Responsibility for prescribing often placed on the most junior member of teams |
|-------------------------------|---------------------------------------------------------------------------------|
| Patient-related factors       | Patient’s knowledge of their medication  
Patient’s honesty regarding their medication use  
Patient’s ability to communicate their medication use  
Patient’s comorbidities      |
| Work-environment factors      | Sufficient staffing  
Sufficient time allocated for prescribing  
Comfortable workload  
Easy in-hours and out-of-hours access to pharmacist, GP and medical records |
| Task-related factors          | Prescription type required  
Legibility of prescription  
Clear explanation for pharmacist and patient |

Classification of factors that predispose to prescribing errors.
Identify **quality indicators** for appropriate prescribing on geriatric wards. Interventions or modifiable factors with a positive influence on prescribing

**National survey** to determine the presence of quality indicators on Belgian geriatric wards.
Content

- Background
- Aim
- Methods
  - Literature search
  - Delphi consensus
- Results
- Future perspectives
• Increase in life expectancy
• Multiple chronic conditions -> high number of chronic medication
• Suboptimal prescribing is highly prevalent
  • Overuse
  • Inappropriate use
  • Underuse
• Consequences of suboptimal prescribing
  • Interactions
  • Adverse drug events (hospitalizations, morbidity, mortality)
  • Decrease in functionality
  • Decrease of medication compliance

• Approaches
  • Comprehensive medication reviews
  • Educational approaches
  • Computer-based prescribing systems
  • Clinical pharmacist led interventions
  • Multifaceted interventions

Cijfers RIZIV 2012 (PHEBE study – KCE reports vol. 47A 2006)
Age and Ageing 2013 42 (3): 284-291
AIMS

- Identify **quality indicators** for appropriate prescribing on geriatric wards.
  - “quality indicator” = Interventions or modifiable factors with a positive influence on prescribing
- National survey to determine the presence of quality indicators on Belgian geriatric wards.
Methods

- Literature search:
  - PubMed and Embase
  - Inclusion criteria
    - Interventions and modifiable factors
    - a documented positive impact on prescribing
    - in patients who were admitted to geriatric wards
- Development of the national survey
  - Results literature search + expert opinion
  - Delphi consensus – 3 rounds
    - Google forms
    - 5 point likert scale (highly irrelevant (1) - highly relevant (5))
    - Consensus if >80% scored 4 or 5 on the level of agreement
• 14 articles were included
• “Quality indicators” were divided into 4 categories:
  • **Computer based** tools
    • Electronic prescribing systems
    • CDSS with alerts for inappropriate prescribing
  • **Educational** interventions
    • Education of health care professionals
    • Patient education
  • **Medication review**
    • Based on explicit and implicit criteria
  • **Pharmacist-led interventions**
    • Involved in multidisciplinary team
    • Medication reconciliation on admission and discharge
    • Patient counseling
• 3 Delphi rounds 08/2017 - 10/2017
• Experts: 8 geriatricians and 3 clinical pharmacists
• The primary questionnaire counted 67 questions.
• After the third and final round 90% of the questions reached consensus
• The final questionnaire counted 61 questions.
The final survey was edited in French and Dutch
Distributed by email to the head of the geriatric wards from all Belgian hospitals
Sent 22nd December 2017
19/3: 57% response rate (57 hospitals responded)
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>G-WARD</th>
<th>G-WARD 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td>Mean: 31/57: 80 - 84 24/57: 85 - 90</td>
<td></td>
</tr>
<tr>
<td><strong>Length of stay (days)</strong></td>
<td>Median: 15,78</td>
<td>IQR: [12 - 17,08]</td>
</tr>
<tr>
<td><strong>Number of admissions</strong></td>
<td>Median: 1427</td>
<td>IQR: [944 - 2080]</td>
</tr>
<tr>
<td><strong>Number of geriatricians (FTE/24 beds)</strong></td>
<td>Median: 1,00</td>
<td>IQR: [0,8 - 3]</td>
</tr>
<tr>
<td><strong>Number of physicians in training (FTE/24 beds)</strong></td>
<td>Median: 1</td>
<td>IQR: [0,975 - 2]</td>
</tr>
<tr>
<td><strong>Number of graduated clinical pharmacists (FTE)</strong></td>
<td>Median: 0,6</td>
<td>IQR: [0,1 - 0,9]</td>
</tr>
<tr>
<td><strong>Number of clinical pharmacists in training (FTE)</strong></td>
<td>Median: 0,4</td>
<td>IQR: [0,2 - 1]</td>
</tr>
</tbody>
</table>
Computer based tools

- 86% (48/56) • Electronic prescriptions
- 33% (16/48) • CPOE + CDSS
- 19% (3/16) • CDSS to detect PIP
Education

- Type of education
  - By e-learning platforms
  - By lectures
  - By case conferences

- Number of hospitals
  - Nurses: 14
  - Physicians: 14
  - Clinical pharmacists: 15

![Frequency of education graph]
43 hospitals provide patient education on the G-ward
  • 41 individually
  • 2 trough group sessions

Which patients?
  • Every patient: 12
  • High risk patients: 10
  • In case of drug related problems: 9
  • In case of therapy modifications: 5
  • Other: 6
Clinical pharmacist on G-ward

- Only in 37% (21/57) of the hospitals a clinical pharmacist is available for the G-wards
  - Graduated pharmacists: 13
  - Graduated + pharmacists in training: 6
  - Clinical pharmacists in training: 2

- **Availability** of graduated clinical pharmacists
  - Only Back office: 6 hospitals
    - Ad hoc contact by phone: 6
    - Ad hoc contact by mail: 2
    - Ad hoc contact through electronic patient record: 4
  - Front ± Back office: 13 hospitals
    - Present on the G-ward: 11
    - Present at multidisciplinary meetings: 3
    - Patients rounds: 6
Pharmacist interventions

Type of pharmacist-led interventions

- Predefined high risk patients
- On demand
- In case of drug related problems
- Generally every patient

- Medication reconciliation on admission
- Medication review
- Medication reconciliation at discharge
- Patient education


- **38/57** hospitals use a **systematic approach** to perform medication reviews
  - In 22 hospitals medication review is performed by a **multidisciplinary team**
    - Physicians (geriatricians ± physicians in training)
    - Clinical pharmacists
    - Nurses
  - **34 use explicit criteria**
    - Beers list: 8
    - STOPP-START: 30
    - RASP: 4
    - GheOP³S tool: 1
STRONGER TOGETHER?

• Importance of a **national strategy** to improve pharmacotherapy in older inpatients (SIMPATHY)

• Recommendation letter to increase implementation of strategies to improve optimal prescribing on the geriatric wards
  • Implementation of clinical pharmacy services in multidisciplinary teams on G-wards
  • Implementation of CDSS for potentially inappropriate prescriptions
  • ...
