PRESCRIBING POTENTIALLY INAPPROPRIATE MEDICATIONS IN THE ELDERLY RELATED TO FALL RISKS: NEED FOR A DEPRESCRIBING GUIDELINE

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DISCLOSURE STATEMENT

• IRB Status: Approved by Bozeman Health P&T Committee
• Co-investigators:
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  • Kathryn Borgenicht, MD, Internal Medicine: Hospice and Palliative Care
• Conflicts of Interest: None
• Project Sponsorship: None
LEARNING OBJECTIVES

• Describe the principles of deprescribing along with prioritizing a plan for a regimen

• Evaluate a patient’s medication list and be able to identify potential inappropriate prescribing
Background

- Falls cause 20% of all serious injuries:
  - Broken bones or head injury
  - Most common cause of traumatic brain injury
- Annually, 2.5 million older people are treated in Emergency Departments (ED) for fall injuries
- Direct medical costs for fall injuries are $34 billion annually

BACKGROUND: FALL RISK FACTORS

<table>
<thead>
<tr>
<th>Intrinsic (non-modifiable) risk factors</th>
<th>Extrinsic (modifiable) risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Age-related</td>
<td>• <strong>Medication use</strong></td>
</tr>
<tr>
<td>• Muscle weakness</td>
<td>• Poor foot care</td>
</tr>
<tr>
<td>• Comorbidities</td>
<td>• Unsafe footwear</td>
</tr>
<tr>
<td>• Impaired balance</td>
<td>• Gait deficit</td>
</tr>
<tr>
<td>• Limited mobility</td>
<td>• Impaired vision</td>
</tr>
<tr>
<td>• Impaired functional status</td>
<td>• Hearing problems</td>
</tr>
<tr>
<td>• Arthritis, stroke, diabetes,</td>
<td>• An unsafe environment</td>
</tr>
<tr>
<td>hypertension, heart disease and</td>
<td>• Depression</td>
</tr>
<tr>
<td>dementia</td>
<td>• Postural hypotension</td>
</tr>
</tbody>
</table>

DEPRESCRIBING

• Definition: The planned and supervised process of dose reduction or stopping of medications that may be causing harm or no longer providing benefit

Goals:
• Optimize medication therapy
• Managing chronic conditions
• Avoiding adverse effects
• Improving outcomes
• Enhancing or maintaining the quality of life

Deprescribing.org (2018)
PURPOSE

• Determine if a correlation exists between ED visits and hospital admissions due to falls in the elderly who were using Potentially Inappropriate Medications (PIMs) to delineate a need for a deprescribing protocol
METHODS: STUDY DESIGN

• Single-center
• Retrospective
• Quality improvement (future)
Methods: Inclusion/Exclusion Criteria

Inclusion:
• Age ≥ 75 years
• ED Visits and hospital admissions to BHDH
  • September 2018 thru November 2018
• ICD-10 diagnosis code injuries due to fall

Exclusion:
• Patients who died during hospital stay or were transferred
• Injury not due to fall
METHODS: STUDY GROUP

• Data collected:
  • Age
  • Sex
  • Admission diagnosis
  • Discharge diagnosis
  • Length of hospital stay
  • ED visits that resulted in hospital admissions
  • Polypharmacy (≥5 meds)
  • Medications meeting Beers Criteria® specifically:
    • Benzodiazepines, hypnotics, antipsychotics, opioids, and antidepressants
METHODS: PRIMARY & SECONDARY OUTCOMES

Primary
• Incidence between ED visits and hospital admissions due to falls in the elderly who were using PIMs

Secondary
• Identifying polypharmacy in relation to ED visits and hospital admissions due to falls
RESULTS: STUDY SUBJECTS

Subjects Identified
(n=174)

Exclusion
(n=7)

PIMs Prescribed
(n=134)

No PIMs
(n=33)

Exclusion:
3 Died
2 Transferred
2 Did not fall
Demographic Characteristics (n=167)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. Patients or Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>71 (43%)</td>
</tr>
<tr>
<td>Age</td>
<td>85 (75 – 101)</td>
</tr>
</tbody>
</table>

- Mean duration of hospital stay (n=29) = 5 days
## RESULTS: PRIMARY OUTCOME

<table>
<thead>
<tr>
<th>Characteristic, n (%)</th>
<th>ED Visits (n=167)</th>
<th>Hospital Admissions (n=29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIMs Prescribed</td>
<td>134 (80%)</td>
<td>28 (96%)</td>
</tr>
<tr>
<td>No PIMs</td>
<td>33 (20%)</td>
<td>1 (4%)</td>
</tr>
</tbody>
</table>
## RESULTS: SECONDARY OUTCOMES

<table>
<thead>
<tr>
<th>Characteristic, n (%)</th>
<th>ED Visits (n=167)</th>
<th>Hospital Admissions (n=29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 5 medications</td>
<td>125 (75%)</td>
<td>27 (93%)</td>
</tr>
<tr>
<td>&lt; 5 medications</td>
<td>42 (25%)</td>
<td>2 (7%)</td>
</tr>
</tbody>
</table>
Total Number of PIMs During Hospitalization

<table>
<thead>
<tr>
<th>Drug Category</th>
<th>At Admission</th>
<th>Newly Started</th>
<th>At Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>133</td>
<td>15</td>
<td>102</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>52 (39%)</td>
<td>3</td>
<td>38 (37%)</td>
</tr>
<tr>
<td>Opioids</td>
<td>29 (22%)</td>
<td>8</td>
<td>30 (29%)</td>
</tr>
<tr>
<td>Benzodiazepine</td>
<td>25 (19%)</td>
<td>2</td>
<td>18 (18%)</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>15 (11%)</td>
<td>0</td>
<td>10 (10%)</td>
</tr>
<tr>
<td>Hypnotics (non-</td>
<td>12 (9%)</td>
<td>2</td>
<td>6 (6%)</td>
</tr>
<tr>
<td>benzodiazepines)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DATA AND RESULTS

Most frequently administered PIMs

<table>
<thead>
<tr>
<th>Drug</th>
<th>No. of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>APAP/Hydrocodone</td>
<td>12</td>
</tr>
<tr>
<td>Tramadol</td>
<td>10</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>10</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>9</td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>9</td>
</tr>
<tr>
<td>Alprazolam</td>
<td>8</td>
</tr>
<tr>
<td>Quetiapine</td>
<td>8</td>
</tr>
<tr>
<td>Paroxetine</td>
<td>8</td>
</tr>
<tr>
<td>Clonazepam</td>
<td>7</td>
</tr>
<tr>
<td>Zolpidem</td>
<td>6</td>
</tr>
</tbody>
</table>
DISCUSSION: INTERPRETATION OF RESULTS

• Patients who met inclusion criteria:

<table>
<thead>
<tr>
<th>ED Admission</th>
<th>Hospital Admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>80% on a PIM</td>
<td>98% on a PIM</td>
</tr>
<tr>
<td>75% on ≥ 5 medications</td>
<td>93% ≥ 5 medications</td>
</tr>
</tbody>
</table>

• Analysis of patients on a PIM found:
  • 77% had the medication continued at discharge
# DEPRESCRIBING

## Medication Fall Risk Score

<table>
<thead>
<tr>
<th>Point Value (Risk Level)</th>
<th>Medication Therapeutic Class</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 (High)</td>
<td>Analgesics*, antipsychotics, anticonvulsants, benzodiazepines**</td>
<td>Sedation, dizziness, postural disturbances, altered gait and balance, impaired cognition</td>
</tr>
<tr>
<td>2 (Medium)</td>
<td>Antihypertensives, cardiac drugs, antiarrhythmics, antidepressants</td>
<td>Induced orthostasis, impaired cerebral perfusion, poor health status</td>
</tr>
<tr>
<td>1 (Low)</td>
<td>Diuretics</td>
<td>Increased ambulation, induced orthostasis</td>
</tr>
<tr>
<td><strong>Score ≥ 6</strong></td>
<td></td>
<td>Higher risk for fall; evaluate patient</td>
</tr>
</tbody>
</table>

*Includes opiates

**Includes non-benzodiazepine sedative-hypnotic drugs (e.g., zolpidem)

DEPRESCRIBING

• Utilize Deprescribing Screening Tools:
  • Medstpper.com
  • Deprescribing.org

• Deprescribe tailored to patient’s needs
  • Set realistic goals:
    • Goal is not always zero
    • Some patients may never reduce
    • Recognize when not clinically appropriate
DEPREScribing: Barriers

- Major determinant effectiveness, degree to which the team has control over the implementation of the intervention
- Must not occur in isolation
- Prescribing stage must integrate the processes of Prescribing and Deprescribing medications
- Transition of care

Marvin V, Pharmacy, 2018.
DISCUSSION: LIMITATIONS

- Retrospective design
  - Generate biased data
- Captured a small percentage
- Excluded patients who died or were transferred
  - Underestimate possible prevalence of PIM use
- PIM use after discharge not evaluated
- Drugs classified as PIMs are not necessarily inappropriate
NEXT STEPS/FUTURE DIRECTIONS

1. Educating providers on potentially inappropriate medications
2. Integrating a reliable, fast, electronic system for detecting potentially inappropriate prescribing in elderly people’s medications
3. Implementing a deprescribing protocol
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  • Kathryn Borgenicht, MD
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  • Rebecca Miller, PharmD
QUESTIONS?
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REFERENCES


