Impact of Pharmacist Involvement on Polypharmacy and use of Potentially Inappropriate Medications in Elderly Hip Fracture Patients

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2015-2016 Pharmacy Practice Resident
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Investigators

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- Ms. Sherry Lalli, Pharmacy Operations Coordinator, RJH
- Dr. Sean Spina, Pharmacy Clinical Coordinator, RJH
Background & Rationale

• Hip fractures in the elderly represent a significant burden to the healthcare system.
  – 30% of patients with a hip fracture will die in the year following their fracture\(^1\)
  – 50% will lose significant mobility and independence\(^1\)

• The positive correlation between polypharmacy and fall/hip fracture risk has been well studied.\(^2,3,4\)

• No trials to date have investigated the effect of intensive pharmacist intervention in recent hip fracture patients

• In-hospital medication optimization/deprescribing by a clinical pharmacist could potentially improve outcomes in new hip fracture patients
Feb 2015: Hip fracture patients admitted to Royal Jubilee Hospital (RJH) began receiving standardized intensive clinical pharmacist involvement within 48 hours of admission

Standardized to include:

- obtaining a best possible medication history (BPMH)
- performing admission medication reconciliation
- performing a medication review → polypharmacy and Potentially Inappropriate Medication (PIM)* reduction
- When the patient is discharged, producing a best possible discharge medication list (BPDMML)

*as per the “Drugs and the Risk of Falling: Guidance Document” from the BC Falls and Injury Prevention Coalition
Objective: To evaluate the potential benefits of intensive clinical pharmacist intervention in hip fracture patients within 48 hours of hospital admission

• Primary
  – # of medications prior to admission vs. at time of discharge, and at 30, 60, and 90 days post-discharge
  – # of PIMs prior to admission vs. at time of discharge, and at 30, 60 and 90 days post-discharge

• Secondary
  – Length of stay in-hospital
  – 90-day hospital readmission rate*
  – Mortality rate in-hospital
  – Proportion of patients discharged to an alternate level of care (ALC) from admission
  – Ward staff survey

* at any Island Health hospital
The Reality of Research

- Due to a variety of complications, we still do not have the pharmanet data that we need to attain our primary outcomes
- In the interim, we continued to investigate our secondary outcomes
Retrospective Review

**Pre-intervention group:** all patients who meet our inclusion/exclusion criteria who were admitted in the 6 months prior to Feb 14, 2015 (n=152)

**Post-intervention group:** all patients who meet our inclusion/exclusion criteria who were admitted in the 6 months following Feb, 14, 2015 (n=132)

**Inclusion**
- ≥65 years of age
- Admitted to RJH with a radiographically confirmed hip fracture
- Enrolled in the provincial hip fracture database

**Exclusion**
- <65 years of age
- Patients with distal femur fractures, acetabular fractures, or periprosthetic fractures

*as per the BC Hip Fracture Collaborative definition*
Retrospective Review

Pre-intervention group:
48% were seen by a clinical pharmacist

Post-intervention group:
68% were seen by a clinical pharmacist
Retrospective Review

Pre-intervention group:
48% were seen by a clinical pharmacist

Post-intervention group:
68% were seen by a clinical pharmacist
## Results of Review

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>Pre-intervention (n=152)</th>
<th>Post-intervention (n=135)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td># of medications at discharge, 30, 60 and 90 days post-discharge vs. on admission</td>
<td>/</td>
<td>/</td>
<td>Not assessed</td>
</tr>
<tr>
<td># of PIMs at discharge, 30, 60 and 90 days post-discharge vs. on admission</td>
<td>/</td>
<td>/</td>
<td>Not assessed</td>
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<tr>
<td>Mean length-of-stay in-hospital</td>
<td>19.26 days (95% CI: 17.2-22.81)</td>
<td>18.36 days (95% CI: 15.88-21.69)</td>
<td>Mean decrease of 0.9 days (NSS)</td>
</tr>
</tbody>
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NSS=not statistically significant
### Results of Review

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<td>In-hospital mortality rate</td>
<td>13/152; 9.22% (95% CI 0.04-0.14)</td>
<td>5/135; 3.85% (95% CI: 0.21-0.36)</td>
<td>RRR ~58% (NSS)</td>
</tr>
</tbody>
</table>

NSS = not statistically significant
# Results of Review

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<td>Hospital readmission rates at 90 days</td>
<td>29/139; 20.86% (95% CI: 0.14-028)</td>
<td>37/135; 28.46% (95% CI: 0.21-0.36)</td>
<td>RRI of ~71% (NSS)</td>
</tr>
</tbody>
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<td>Discharged to ALC vs admission</td>
<td>21/152; 13.2%</td>
<td>11/135; 8.8%</td>
<td>RRR ~33% (SS)</td>
</tr>
</tbody>
</table>
Results of Review

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<tr>
<td>Mortality rate at 4 month post-discharge</td>
<td>20/152; 13.2%</td>
<td>12/137; 8.0%</td>
<td>RRR ~42% (??)</td>
</tr>
</tbody>
</table>
Wardstaff Survey

- **Design:**
  - survey conducted by electronic questionnaire

- **Inclusion Criteria:**
  - All wardstaff (RNs, LPNs, clerks, allied health) and orthopedic surgeons working on the orthopedic surgery ward at RJH during 2015

- **Exclusion Criteria:**
  - Any staff unable to complete the survey in English

- **Screening and Recruitment:**
  - Every staff member on the orthopedic ward was identified using the ward’s “Microsoft Outlook” listserv and invited to participate via email
  - No incentives were offered for completing the survey
Wardstaff Survey

- 52% Response rate (44/82)
- 27 of the 44 respondents were RNs or LPNs
- 5 of the respondents were surgeons
Results of Survey

Question: Which functions or roles of a pharmacist on the orthopedic unit do you feel are of (or would be of) the most benefit to:

<table>
<thead>
<tr>
<th></th>
<th>You</th>
<th>Your Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ward Staff (39)</td>
<td>Surgeons (5)</td>
</tr>
<tr>
<td>Interdisciplinary rounds</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Med Rec</td>
<td>34</td>
<td>5</td>
</tr>
<tr>
<td>Med Reviews</td>
<td>32</td>
<td>4</td>
</tr>
<tr>
<td>Assisting with reordering home meds</td>
<td>37</td>
<td>5</td>
</tr>
<tr>
<td>Performing Consults to reduce polypharmacy</td>
<td>28</td>
<td>3</td>
</tr>
<tr>
<td>Performing Consults to reduce falls risk</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>Assisting with Optimal Drug Dosing</td>
<td>31</td>
<td>5</td>
</tr>
<tr>
<td>Monitoring Drug Therapy</td>
<td>36</td>
<td>5</td>
</tr>
</tbody>
</table>
Results of Survey

- ~59% of wardstaff and 80% of surgeons noticed the increase in the amount of pharmacist involvement.
- ~95% of wardstaff and 100% of surgeons were satisfied or very satisfied with the post-intervention level of pharmacy coverage.
Results of Survey

Do you feel that pharmacist involvement in the care of your hip fracture patients assists in reducing polypharmacy?
• Yes: 37
• No: 2
• Unsure: 5
  • Surgeons: 3 yes, 2 unsure

Do you feel that polypharmacy is a major contributing cause of hip fractures in your patient population?
• Yes: 21
• No: 2
• Unsure: 21
  • Surgeons: 3 yes, 2 unsure

Do you feel that the involvement of a pharmacist with your hip fracture patients is beneficial in the reduction of falls and/or future fracture events?
• Yes: 35
• No: 2
• Unsure: 7
  • Surgeons: 3 yes, 2 unsure
Results of Survey

100% of respondents strongly agreed with the following statement:

“going forward, would you want a pharmacist to be involved with the care of your hip fracture patients?”
Limitations

• Unable to achieve primary outcomes
• Small sample size (n=284)
• Short duration
• Single center
• Largely evaluating the work of a single pharmacist
• Retrospective
Conclusions

• Our post-intervention group had a decreased:
  – mean length of stay in-hospital
  – in-hospital mortality rate
  – mortality rate at 4 months post-discharge
  – proportion of patients going to an ALC

• Our post-intervention group had an increased:
  – rate of hospital re-admission at 90 days post-discharge

• Further studies are needed to assess clinical outcomes
Conclusions

• Orthopedic surgeons and orthopedic unit ward staff find a wide variety of pharmacist interventions to be beneficial both to themselves and their patients.

• Pharmacists may have a role to play in educating orthopedic surgery ward staff on the correlation between polypharmacy and the risks of falls/fractures.
What’s Next?

TO-DO LIST:
1. WAIT
2. WAIT
3. WAIT
References


Questions?