Impact of Long-term Opioid Use on Healthcare Resource Utilization for Cancer Patients
Overall Thesis Objectives

1. Characterize opioid therapy and the rate of long-term use for hospitalized cancer patients in the one-year post-discharge period

2. Identify potential modifiable patient, provider and healthcare system predictors of persistent prescription opioid use

3. Determine whether persistent opioid use is associated with increased patient’s healthcare utilization and decreased cancer survival
Opioid Consumption in Canada

Number of opioid prescriptions in Canada increased between 2012 and 2016

Source: Canadian Institute for Health Information

Countries Consuming the Most Opioids

Proportion of prescriptions for strong opioids increased in Canada between 2012 and 2016

Source: Canadian Institute for Health Information
Opioid Poisonings and Risk of Hospitalizations

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Objectives of Preliminary Analyses

1. To describe incidence of opioid use for all patients admitted at two tertiary care hospitals in Montreal (2014 – 2016)
2. To estimate the association between opioid use and risk of adverse health outcomes in the 90-days post discharge
Study Design

- Admission to Hospital
- Discharge from Hospital
- Hospital stay
- 3-months post discharge
- Start of follow-up
  - 18+
  - Admitted from community or long term care
  - ED visit
  - Hospital admission
  - Death

Continuous RAMQ coverage
### Characteristics of Study Population

|                              | Did not Fill an Opioid Rx  
(n = 1,593) | Filled an Opioid Rx  
(n = 1,380) |
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Age at admission</strong></td>
<td>70.9 (16.2)</td>
<td>67.0 (13.4)</td>
</tr>
<tr>
<td><strong>Hospital unit at discharge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery</td>
<td>382 (24.0)</td>
<td>1007 (73.0)</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>1211 (76.0)</td>
<td>373 (27.0)</td>
</tr>
<tr>
<td><strong>Medication Use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of benzodiazepine use</td>
<td>310 (19.5)</td>
<td>288 (20.9)</td>
</tr>
<tr>
<td>History of opioid use</td>
<td>251 (15.6)</td>
<td>472 (34.2)</td>
</tr>
<tr>
<td>Opioid Rx at discharge</td>
<td>286 (17.3)</td>
<td>1178 (85.4)</td>
</tr>
<tr>
<td>Benzodiazepine prescription at discharge</td>
<td>307 (19.3)</td>
<td>314 (22.8)</td>
</tr>
<tr>
<td><strong>Comorbidities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancer Diagnosis</td>
<td>340 (21.3)</td>
<td>576 (41.7)</td>
</tr>
<tr>
<td>History of depression and/or psychiatric disorders</td>
<td>371 (23.3)</td>
<td>329 (23.8)</td>
</tr>
<tr>
<td>History of substance and/or alcohol abuse</td>
<td>127 (7.9)</td>
<td>84 (6.1%)</td>
</tr>
</tbody>
</table>
Opioid Prescriptions and Dispensations 90 days post-discharge

2973 Patients

1464 (49.2%) Received an opioid Rx at discharge

1509 (50.8%) Did not receive an opioid Rx at discharge

963 (65.8 %) No history of opioid use

501 (34.2 %) Previous history of opioid use

1287 (85.3 %) No history of opioid use

222 (14.7 %) Previous history of opioid use

762 (79.1 %) Filled an opioid Rx

416 (83.3 %) Filled an opioid Rx

146 (11.3 %) Filled an opioid Rx

56 (25.2 %) Filled an opioid Rx

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Statistical Analyses

Comorbidities
- Cancer
- Depression/Substance/Alcohol Abuse

Medication Use
- Anti-psychotics
- Benzodiazepines
- Opioids

Health care utilization
- Hospitalizations
- ED visits
- Number of Pharmacies
- Prescribers

Time -varying opioid exposure

Current use
- Continuous duration of use
- Cumulative duration of use

Cox Hazards Model

ED visits/hospital re-admissions

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## Association between Opioid Use and ED visits

<table>
<thead>
<tr>
<th></th>
<th>Events</th>
<th>Crude HR (95% CI)</th>
<th>Adjusted HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non use</td>
<td>1287</td>
<td>[Ref]</td>
<td>[Ref]</td>
</tr>
<tr>
<td>Use</td>
<td>300</td>
<td>1.13 (0.99 – 1.28)</td>
<td>1.19 (1.03 – 1.39)</td>
</tr>
<tr>
<td><strong>Continuous Duration Use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non use</td>
<td>1287</td>
<td>[Ref]</td>
<td>[Ref]</td>
</tr>
<tr>
<td>&lt;30 days</td>
<td>269</td>
<td>1.05 (0.92 – 1.21)</td>
<td>1.15 (0.99 – 1.35)</td>
</tr>
<tr>
<td>30-60 days</td>
<td>22</td>
<td>1.82 (1.19 – 2.79)</td>
<td>1.44 (0.93 – 2.24)</td>
</tr>
<tr>
<td>&gt;60 days</td>
<td>9</td>
<td>3.52 (1.80 – 6.87)</td>
<td>2.63 (1.34 – 5.20)</td>
</tr>
<tr>
<td><strong>Cumulative Duration Use</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non use</td>
<td>951</td>
<td>[Ref]</td>
<td>[Ref]</td>
</tr>
<tr>
<td>&lt;30 days</td>
<td>577</td>
<td>0.90 (0.81 – 0.99)</td>
<td>1.15 (0.98 – 1.33)</td>
</tr>
<tr>
<td>30-60 days</td>
<td>43</td>
<td>1.66 (1.22 - 2.28)</td>
<td>1.61 (1.15 – 2.26)</td>
</tr>
<tr>
<td>&gt;60 days</td>
<td>16</td>
<td>1.88 (1.11 - 3.18)</td>
<td>1.74 (1.02 – 2.99)</td>
</tr>
</tbody>
</table>
Conclusions

• Majority of patients using opioids had a cancer diagnosis and were hospitalized for surgery

• Increased risk of ED visits or hospitalizations when comparing opioid use versus no use
  – Increased risk with longer duration of use

• Potential policy implication: re-assess duration of treatment with opioid use
  – Increase access to pain clinics
  – Access to publicly funded physiotherapy services
Future Directions

Study Population: patients with a cancer diagnosis

• Characterise opioid use patterns

• Identify provider & organizational characteristics associated with risk of long-term opioid use

• Quantify the impact of subsequent opioid-related adverse events on patient’s healthcare utilization and cancer survival.
Thank you!
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