ID Risk-HCC: Identification of Medications and Confounding Risk Factors Associated with Hospital Admission within Island Health Home and Community Care (HCC) Population

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Introduction

- Medication discrepancies increase at transitions of care.
- A best possible medication history (BPMH) decreases medication discrepancies and increases patient medication safety.
- Professionals with expertise and training to conduct an accurate and complete BPMH are a limited resource while client numbers on Vancouver Island increase.
- Identification of specific risk factors, including medications implicated in adverse drug reactions (ADRs), is needed to identify individuals likely to benefit from a BPMH. This is an Accreditation Canada standard for HCC.
- Majority of Home and Community Care (HCC) Clients take one or more medications with potentially high risk ADRs.

Uniqueness of Research

- Medication Safety research has been limited in Vancouver Island HCC providing little support for policy improvement.
- Focus on the Island Health HCC population vs. published data.
- Use of inpatient acute hospitalization admission through the emergency room (ER) as an indirect measurement of ADRs.

Study Objective

To determine if high-risk medications* or other factors can be used to identify clients most likely to benefit from a BPMH.

Primary Outcome: Proportion of clients with an inpatient acute hospital admission 90 days after an HCC referral, prescribed one or more high-risk medication.

Secondary Outcomes: 1) Incidence of high-risk medication classes taken among the group 2) Average number of medications prescribed 3) Number of clients with delegation of task (DOT) Delegation of task: Medication administration by a healthcare worker.

Methods

Design

- Retrospective Chart Review of BPMHs at HCC sites in Victoria (South Island) and Nanaimo (Center Island).
- Recorded high-risk medications* (individual and total number), total number of medications and DOT status of clients with an inpatient acute admission within 90 days after referral to HCC since January 2015.
- Inpatient admission confirmed through PowerChart.

Study population:

- HCC clients 65 years of age and older with a referral for Nursing, a Nurse Practitioner and/or Pharmacy since January 2015.
- Acute inpatient hospital admission through ER within 90 days of HCC referral.
- BPMH completed by a nurse, nurse practitioner or pharmacist following referral available in client’s chart.
- At least one study medication documented on client’s BPMH.

Data Collection

- Search HCC Services Cube in the Business Intelligence Data Warehouse for MRNs
- Matching Criteria: HCC referrals for Nursing, Nurse Practitioner and/or Pharmacy greater or equal to 65 years of age with an ER hospital admission within 90 days of HCC referral and non-hospitalized controls.

Reasons for Exclusion:

- No BPMH
- No BPMH within study time frame or missing info (date/frequency)
- BPMH after hospital admission
- No medications meeting criteria
- Chemotherapy
- Other

Results

Table 1: Baseline Demographics

<table>
<thead>
<tr>
<th></th>
<th>Hospitalized</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age</td>
<td>80.84</td>
<td>80.84</td>
</tr>
<tr>
<td>Median Age</td>
<td>85+</td>
<td>85+</td>
</tr>
<tr>
<td>Female</td>
<td>58%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Table 2: Total Number of High Risk Medications

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>Hospitalized</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.38</td>
<td>1.34</td>
<td>1.34</td>
</tr>
<tr>
<td>95% CI</td>
<td>1.26-1.38</td>
<td>1.24-1.39</td>
<td>1.24-1.39</td>
</tr>
</tbody>
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Figure 1: Total Number of High Risk Medications

Figure 2: Total Number of High Risk Medications Taken

Figure 3: Number of High Risk Medications in Victoria Population

Figure 4: Number of High Risk Medications in Nanaimo Population

Discussion

Findings

- Trend towards increasing number of medications and an increased risk hospitalization of 1.166 (p=0.007) for each additional medication taken (Figure 6).
- No significant correlation between the number of high risk medications* and increased hospitalization observed (Figure 2 and Table 2).
- A trend suggesting inter-site variability observed and regional differences (Figure 3 and 4).
- Diuretics, hypoglycemics and opioids appeared to correlate with hospitalization at both sites although a larger sample size is required (data not shown).
- Subgroup analysis suggests inter-site variability in the correlation of certain high-risk medications and hospitalization. This may limit pooling of Island-wide data.
- The incidence of DOT was higher in patients with a higher number of total medications and a hospitalization.

Limitations

- Insufficient power to show a statistically significant difference.
- Confounding factors including disease states (i.e. congestive heart failure and diuretic use) may have resulted in hospital admission vs. ADRs.
- Data quality was dependent on the thoroughness of the BPMH.
- HCC Clients often had prior referrals, thus unnecessary or inappropriate medications may have been eliminated earlier in care.

Conclusion

- Given the sample size, conclusive data cannot be drawn from this pilot study. Further studies are needed to determine if high-risk medications or DOT may be used to identify Island Health HCC clients most likely to benefit most from a BPMH.
- There was a statistically significant increase in hospitalization and the number of medications taken. This could be a focus for future studies.
- Regional differences between certain high-risk medications was observed. Data pooling between geographic island wide locations should be approached with caution in future studies.

References available on request