DEVELOPMENT OF A PHARMACIST DRIVEN MEDICATION REVIEW PROCESS TO ADDRESS POLYPHARMACY WITHIN A NEUROLOGY CLINIC

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April 30, 2016

DISCLOSURES

- IRB Status: Exempt
- Co-investigators:
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  - Betsy Biggerstaff, PharmD
  - Natalie Cooper, PharmD
  - Jennifer Schultz, PharmD, FASHP
  - Amanda Woloszyn, PharmD, BCPS
- Conflicts of interest: None
- Project Sponsorship: None

OBJECTIVES

1. Identify patients at risk for polypharmacy mediated adverse effects
2. Integrate medication review into the daily process and employ different methods of communication with other healthcare providers

BACKGROUND

Polypharmacy is generally defined as a high number of medications, but more specifically can mean greater than a threshold number of medications or unnecessary use of medications.
Examples:
- Five or more medications regardless of necessity
- Greater than 9 medications or any unnecessary medications
- Any incidence of unnecessary medications, regardless of number

BACKGROUND

Polypharmacy affects all stages of healthcare and has significant consequences:
- Healthcare costs
- Adverse drug reactions
- Drug interactions
- Medication non-adherence
- Functional decline, including cognitive impairment and falls
- Prescribing cycle

<table>
<thead>
<tr>
<th>Setting</th>
<th>Definition of polypharmacy</th>
<th>Prevalence of polypharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulatory care</td>
<td>Greater than 5 medications</td>
<td>27%</td>
</tr>
<tr>
<td>Hospital discharge</td>
<td>Greater than 9 medications</td>
<td>27%</td>
</tr>
<tr>
<td>Long-term care facilities</td>
<td>10 or more medications</td>
<td>10.43%</td>
</tr>
</tbody>
</table>
BACKGROUND AND OBJECTIVE

Interdisciplinary teams have addressed polypharmacy in various settings. Neurology clinic is an ideal setting for review as side effects can have a significant impact on this patient population.

Objective: Develop a process for identifying high risk polypharmacy patients and communicating potential interventions to providers.

METHODS - CHART REVIEW PHASE

1. 50 randomly selected patients of Bozeman Health Neuroscience Center
2. Diagnosis of Parkinson’s disease, Alzheimer’s disease, dementia or other memory loss
3. The data gathered included:
   - Age
   - Sex
   - Primary diagnosis
   - Number of comorbidities
   - Creatinine clearance
   - Potential interventions


METHODS - ACTIVE INTERVENTION PHASE

- Identified patients with extensive drug lists, high risk medications, and certain high risk disease states for further review.
- Emailed provider with recommendations or clarifications as appropriate based on review.
- Data was collected similar to the chart review, with an emphasis on intervention outcomes.

Data and Results - Chart Review

<table>
<thead>
<tr>
<th>Table 2. Patient characteristics</th>
<th>Medication Regimen Data</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 65 years of age</td>
<td>40 (80%)</td>
<td>1.6</td>
<td>0-5</td>
</tr>
<tr>
<td>Parkinson’s Diagnosis</td>
<td>27 (54%)</td>
<td>1.4</td>
<td>0-5</td>
</tr>
<tr>
<td>Alzheimer’s or Dementia Diagnosis</td>
<td>20 (40%)</td>
<td>0.3</td>
<td>0-2</td>
</tr>
<tr>
<td>Greater than 5 medications</td>
<td>31 (62%)</td>
<td>1.8</td>
<td>0-8</td>
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</tbody>
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Graph 1. Data By Age Group

Table 3. Chart review results

<table>
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### DATA AND RESULTS - ACTIVE INTERVENTION PHASE

#### Table 4: Patient characteristics during intervention phase

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1 (38%)</td>
</tr>
<tr>
<td>Over 65 years of age</td>
<td>16 (55%)</td>
</tr>
<tr>
<td>Parkinson’s, Alzheimer’s, or Dementia Diagnoses</td>
<td>13 (45%)</td>
</tr>
<tr>
<td>Greater than 9 medications</td>
<td>28 (97%)</td>
</tr>
</tbody>
</table>

#### Table 5: Results of intervention phase

<table>
<thead>
<tr>
<th>Medication Category</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medications</td>
<td>15.3</td>
<td>8-27</td>
</tr>
<tr>
<td>Vitamins or Herbals</td>
<td>2.8</td>
<td>0-6</td>
</tr>
<tr>
<td>Drug interactions</td>
<td>5.4</td>
<td>0-10</td>
</tr>
<tr>
<td>Potential Interventions</td>
<td>3.3</td>
<td>0-6</td>
</tr>
<tr>
<td>Interventions Attempted</td>
<td>2.0</td>
<td>0-6</td>
</tr>
<tr>
<td>Successful Interventions</td>
<td>1.3</td>
<td>0-3</td>
</tr>
</tbody>
</table>

39 interventions on a total of 29 patients - average of 1.3 accepted interventions per patient.

41% success rate.

### DISCUSSION

- Polypharmacy was clearly present in patients of the neurology clinic
- Rates were higher than that generally reported in literature - 62% in chart review phase had nine or more medications
- Could be attributed to higher risk population
- The mean number of potential interventions increased from 1.9 to 3.2 when population was selected based on high number of medications
- There was a 42% success rate on attempted interventions
DISCUSSION
On further review, only 18 of the 29 patients had successful interventions—providing an average rate of 2.1 interventions per patient if any were accepted.

Communication is KEY!!

DISCUSSION
On patients where the provider was able to address the interventions, interventions were more likely to be successfully made.

Why wouldn’t the provider be able to make the interventions?
1. Certain visit types do not allow time for medication discussion
   Example: Procedure visits for Botox injections or electromyography (EMG)

2. Provider forgets to bring the printed medication list and interventions
   Especially common if notification was sent too many days before the appointment and was lost in an email inbox or if provider was seeing multiple patients without returning to his office in between.

LIMITATIONS
- Methods changed between phases
- Communication with neurologist
- Time consuming work up of patients
- Primary care versus specialty care
CONCLUSION

- There is a need for pharmacist intervention with polypharmacy
- Pharmacists can have a direct impact on patient care
- Identification of patients and work up take time
- Efficient and effective communication with busy providers is key
- Primary care is the setting where a majority of interventions need to be made

FUTURE DIRECTIONS

- Work within the EMR to communicate with providers
- Work within the primary care clinic to make interventions
- Use polypharmacy as a trigger for comprehensive medication reviews
- Continue to track interventions and follow patients

QUESTIONS?

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REFERENCES