Primary Care Provider’s Perceptions of Standardized Medication Monitoring Plans

Ben Wou
NH Pharmacist
Conflicts of Interest

- None to declare
Outline

- Background
- Methodology
- Results
- Discussion
- Questions
Background – Adverse Drug Reactions

- Adverse drug reactions (ADRs) account for 6 to 12% of hospital admissions – of which 70% are preventable.

- Inadequate monitoring of medications in ambulatory patients accounts for 45% of hospital admitting ADRs.

- 1000 admissions = 120 ADRs = 54 due to monitoring
Background – Electronic Medical Record

- Primary care providers in Prince George use MOIS™ EMR
- Highly customizable – can create care plans
- Health Maintenance Review – provides snapshot of coded medical conditions.
Health Maintenance Review

Patient: MICKEY D MOUSE  
DOB: 1958.01.01  
Insurence BC: 1111111111111

Age = 60  SEX = MALE

GENERAL AND AGE/SEX SPECIFIC SCREENING
SCREENING CHOLESTEROL Not Found
SCREENING CHOL/HDL RATIO Not Found
SCREENING FASTING GLUCOSE Not Found
SCREENING PEOCAL COLON BLOOD Not Found

PHYSICAL ACTIVITY MINUTES PER WEEK - 2016.06.29 - 2 L
[150 TO 1500]

ALCOHOL DRINKS PER WEEK - 2014.06.29 - 10
[0 TO 14]

CIGARETTES SMOKED CURRENT (PACK/DAY) - 2014.06.29 - 1
[0 TO 0.1]

WAIST CIRCUMFERENCE - 2014.06.29 - 79
[10 TO 101]

BMI INDEX
2016.01.19 - [18.4 TO 24.9]

TETANUS VACCINE - 2015.09.25

BLOOD PRESSURE (SYSTOLIC/DIASTOLIC) - 2017.01.24 - 110/77
[N/A] GOAL: BETWEEN 110 AND 130

NOT IDENTIFIED AS A SMOKER IN HEALTH ISSUES LIST
RFV Screening Not Found

INCENTIVE CLAIM HISTORY
14000 INCENTIVE FOR FULL SERVICE GP - NOT COMPLETED

FRAIL ELDERLY
FRAILTY INDEX - CSHA - 2014.06.25 - 6
[0 TO 3]

ADVANCE DIRECTIVE DOCUMENTED - 2016.10.31

MAJOR DEPRESSION - ANXIETY/DEPRESSION
MOST RECENT ENCOUNTER - 2016.04.16
[ N/A ]

PAQ-9 TOTAL SCORE - 2016.01.04 - 16 H

DIABETES, TYPE 2, - UNCOMPLICATED
LDL Not Found
HDL Not Found
CHOLESTEROL Not Found
CHOL/HDL RATIO Not Found
TRIGLYCERIDES Not Found
URINE MICROALBUMIN/CREAT RATIO Not Found
Calculated GFR Not Found
HOMOCYSTEINE Not Found
FASTING GLUCOSE Not Found

BLOOD PRESSURE (SYSTOLIC/DIASTOLIC) - 2017.01.24 - 110/77
[N/A] GOAL: BETWEEN 110 AND 130

PHARMACOLOGICAL VACCINE - 2015.12.13
NOT DESIRED FURTHER MEDICATION as of 2014.11.06
INFLUENZA VACCINE - 2017.10.31
NOT DESIRED FURTHER MEDICATION as of 2015.09.16
OPTIMIZATION ASSESSMENT Not Found
DIABETES EDUCATION ASSESSMENT Not Found

HYPERTENSION - ESSENTIAL
Creatinine Not Found
FASTING BLOOD GLUCOSE Not Found
Background – Existing Literature

- Mixed results regarding EMR interventions on improving monitoring adherence

- Caveats:
  - Baseline adherence rate was >90%
  - Parameters included were commonly ordered for medical condition
  - Passive intervention system
  - Paper based reminders
<table>
<thead>
<tr>
<th>Question</th>
<th>Objective</th>
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<tbody>
<tr>
<td>Will medication monitoring plans be well received by care providers?</td>
<td>Determine overall provider satisfaction with monitoring plans.</td>
</tr>
<tr>
<td>What are barriers to monitoring medications?</td>
<td>Identify perceived barriers to monitoring medications.</td>
</tr>
<tr>
<td>What medications are challenging to monitoring in primary care?</td>
<td>Identify medications perceived to be difficult to monitor.</td>
</tr>
<tr>
<td>How often do patients get monitoring lab work according to recommended parameters?</td>
<td>Determine the baseline adherence rate to a subset of recommended monitoring parameters.</td>
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Methodology

- 5-month prospective pilot project
- 3 primary clinics in Prince George
- Ethics approval by NH and UBC
Methodology – Creation of Monitoring Plans

- Built plans for lithium, amiodarone, and antipsychotics
- Literature review of product monographs, and clinical guidelines
- Designed in MOIS™ using pre-existing architecture
### GOALS [1]

**HEALTH ISSUES [5]**

**LONG TERM MEDS [4]**

#### ANTI DIABETIC AGENTS MONITORING [2]

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<td></td>
<td>Ref. Range: 0 to 150</td>
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<tr>
<td></td>
<td>CBC, PLATELETS + DIFF BLD</td>
<td>NOT DOCUMENTED</td>
</tr>
<tr>
<td></td>
<td>VIT B12</td>
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#### ANTIPSYCHOTICS MONITORING [10]

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#### AMIODARONE MONITORING [9]

#### LITHIUM MONITORING [8]

### Care Plan

**Current Care Plan**

**的目标**

**健康问题**

**长期用药**

#### 反糖尿病药物监测 [2]

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#### 阿米洛普雷监测 [9]

#### 氯化锂监测 [8]
**Design Monitoring Plans**  
June - September 2017

**Orientation**  
November/December 2017

**Pre-Upload Survey**  
November/December 2017

**Upload Plans + Run Clinical Reports**  
November/December 2017

**Post-Upload Survey**  
March 2018

**Exit Interview**  
April 2018

**Content:**
- Location of plans
- How to use plans
- Signs/Symptoms to monitor
- Monitoring frequency

**Plans Uploaded:**
- Lithium \( n = 24 \)
- Amiodarone \( n = 7 \)
- Antipsychotic \( n = 265 \)
Methodology - Analysis

- Surveys
  - Descriptive Statistics

- Interviews
  - Open semantic coding using NVivo
Results – Overall Impressions

N = 5

- Satisfied with the plans: 100% Agree, 0% Neutral, 0% Disagree, 0% Completely Disagree
- Made it easier to order labs: 100% Agree, 0% Neutral, 0% Disagree, 0% Completely Disagree
- Decreased number of labs ordered: 60% Agree, 30% Neutral, 10% Disagree, 0% Completely Disagree
- Decreased time looking for labs: 70% Agree, 20% Neutral, 10% Disagree, 0% Completely Disagree
Results – Positives

- Reduced recall burden
- Useful communication tool
Results - Suggested Improvements

- Add an alert system
- Improve visibility of relevant lab work
- Add recommended frequencies into plans
Results - Barriers and Medications

- Recall burden

- Poor communication between prescribers

- Medications infrequently prescribed are difficult to monitor
  - Amiodarone
  - Lithium
  - Testosterone
  - Isotretinoin
Results – Baseline Adherence
Discussion - Limitations

- Small sample size
- Short duration
- “Recommended monitoring parameters” often expert opinion
- No specialist input into monitoring plans
- Resource allocation
Discussion - Additional Context

- Ideally, any monitoring plan should be patient specific.
- Time is required to create and upload plans.
- Standardized plans should be used in context of patient status.
Conclusions

- There is demand for clinical tools to help care providers monitor chronic medications.

- Standardized medication monitoring plans may be a useful tool.

- EMR designers should be encouraged to look into building medication monitoring plans into their systems.
References


- Budnitz DS, Pollock DA, Weidenbach KN, Mendelsohn AB, Schroeder TJ, Annest JL. National surveillance of emergency department visits for outpatient adverse drug events.


Acknowledgements

- Co-Investigator: Rob Pammett

- Research Steering committee:
  - Aleisha Enemark
  - Megan Hunter
  - Katie Bellefeuille.