Evaluation of Pharmacist-Provided Diabetes Care in a Hospital Re-admission Reduction Clinic

Meagan A. Williams, PharmD
PGY-1 Ambulatory Care Pharmacy Practice Resident
Virginia Commonwealth University Medical Center

Objectives

Primary
• To evaluate the impact of pharmacist interventions on DM-related clinical markers in patients seen by CCT Pharmacy

Secondary
• To characterize the type of DM-related pharmacist interventions made by CCT Pharmacy
• To evaluate DM-related ED visits and hospitalizations in patients seen by CCT Pharmacy
Methods

- A retrospective case-control study
- This study has been approved by VCU IRB

### Patient Selection Process

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults ≥ 18 years of age</td>
</tr>
<tr>
<td>Enrollment in CCT Clinic ≥ 12 months</td>
</tr>
<tr>
<td>Documented diagnosis of diabetes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incarcerated and pregnant patients</td>
</tr>
</tbody>
</table>

Data Collection

**VCUHS Visit and Physician Data**
- Health system cost and utilization data

**VCC Enrollment Data**
- VCC enrollment and baseline patient information

**Scheduling Data**
- Arrived CCT Pharmacy visits

**Clinical Data**
- EHR review for diabetes history, HbA1C, blood pressure, lipid panels and other clinical data
Patient Inclusion

≥ 3 CCT Pharmacy Visits within 12 months 38 Patients

DM Management 27 Patients

Other Disease State Management 11 Patients

Matched Cases by Age and Sex 2 Patients Not matched

Pharmacist Intervention 25 Patients

CCT Standard of Care 25 Patients

Baseline Characteristics: Demographics

<table>
<thead>
<tr>
<th></th>
<th>Pharmacist Intervention</th>
<th>CCT Standard of Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>53 (±7.01)</td>
<td></td>
</tr>
<tr>
<td>Male n(%)</td>
<td>16 (64)</td>
<td></td>
</tr>
<tr>
<td>Female n(%)</td>
<td>9 (36)</td>
<td></td>
</tr>
<tr>
<td>African American n(%)</td>
<td>17 (68)</td>
<td>16 (64)</td>
</tr>
<tr>
<td>Caucasian n(%)</td>
<td>8 (32)</td>
<td>9 (36)</td>
</tr>
</tbody>
</table>
## Baseline Characteristics: Clinical Data

<table>
<thead>
<tr>
<th></th>
<th>Pharmacist Intervention n( std. dev)</th>
<th>CCT Standard of Care n( std. dev)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMI (kg/m²)</strong></td>
<td>36 (9.6)</td>
<td>32 (6.3)</td>
</tr>
<tr>
<td><strong>SBP (mmHg)</strong></td>
<td>138 (18.6)</td>
<td>135 (18.2)</td>
</tr>
<tr>
<td><strong>DBP (mmHg)</strong></td>
<td>80 (9.3)</td>
<td>81 (8.5)</td>
</tr>
<tr>
<td><strong>LDL (mmol/L)</strong></td>
<td>112 (48.3)</td>
<td>104 (53.4)</td>
</tr>
<tr>
<td><strong>HDL (mmol/L)</strong></td>
<td>45 (13.3)</td>
<td>39 (9.7)</td>
</tr>
<tr>
<td><strong>TG (mmol/L)</strong></td>
<td>224 (190.4)</td>
<td>146 (91.4)</td>
</tr>
</tbody>
</table>

## Baseline Characteristics: Average Baseline HbA1C

- **Pharmacist Intervention:** 9.4, p=0.003
- **CCT Standard of Care:** 7.5

*Graph showing HbA1C levels with p-value.*
Baseline Characteristics: DM Therapy

Pharmacist Intervention

- Insulin: 8%
- Oral: 92%

CCT Standard of Care

- Insulin: 72%
- Oral: 28%

A1C Reduction

Pharmacist Intervention

- Reduction: -1.25%
- p: 0.2

CCT Standard of Care

- Reduction: -0.5%

VCU Medical Center
Pharmacy Interventions

- 116 CCT Pharmacy visits identified
- Pharmacists provided at least one intervention at every CCT Pharmacy visit
- 320 CCT Pharmacy interventions identified
- On average CCT pharmacists provided 2.75 interventions per visit

Classification of Interventions

- 39% Regimen Change
- 43% Therapeutic Monitoring
- 18% Patient Education
DM Related ED Visits

Average Number of ED Visits per Patient

Pharmacist Intervention: 0.08
CCT Standard of Care: 0.16

p = 0.3

DM Related Hospitalizations

Average Number of Hospitalizations per Patient

Pharmacist Intervention: 0.16
CCT Standard of Care: 0.28

p = 0.7
Limitations

- Retrospective, medical record review may lead to incomplete or inaccurate documentation
- Patient specific outcomes may not be directly related to CCT Pharmacy interventions
- High-risk patient population

Summary of Interprofessional Interventions

<table>
<thead>
<tr>
<th></th>
<th>Dr. Grady</th>
<th>S. Jones</th>
<th>Dr. Bohannon</th>
<th>In-house Pts</th>
<th>CCT Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td># visits</td>
<td>7</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Med Errors</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>DRPs</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Interventions</td>
<td>19</td>
<td>20</td>
<td>4</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>Education</td>
<td>4</td>
<td>8</td>
<td>3</td>
<td>2</td>
<td>15</td>
</tr>
</tbody>
</table>
Conclusions

• Patients seen by CCT Pharmacy had a reduction in A1C over 12 months
• CCT Pharmacy is an integral part of the CCT Team, providing on average 2.75 interventions per visit
• There was no difference in the amount of DM-related ED visits or hospitalizations between the two groups identified