Use of Interactive Voice Response Technology (IVR) to Improve Compliance with Diabetes Best Practice Guidelines

Kimberly Twyman RN BScN CDE
Advanced Practice Nurse - Diabetes
Recognition

Heather Sherrard, Vice President Clinical Services, UOHI

Dr. Amel Arnaout, Medical Director Cardiac Diabetes, UOHI

Christine Struthers, Advanced Practice Nurse - Ehealth, UOHI

Bonnie Quinlan, Advanced Practice Nurse – Cardiology, UOHI

Sandhya Goge, Diabetes Nurse, UOHI
Outline

• Dysglycemia burden
• Interactive Voice Response
• IVR and Diabetes
• Preliminary findings
# The Glucose Tsunami in Canada

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Diabetes Prevalence</td>
<td>9.3%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Estimated Prediabetes</td>
<td>22.1%</td>
<td>23.2%</td>
</tr>
<tr>
<td>Estimated Cost</td>
<td>14 billion</td>
<td>17.4 billion</td>
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</table>

Estimated diabetes statistics in Canada are generated by the Canadian Diabetes Cost Model.
## Dysglycemia Burden at UOHI

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>Patients/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Admissions</td>
<td>~ 6000</td>
<td></td>
</tr>
<tr>
<td>Prediabetes</td>
<td>23%</td>
<td>~ 1380</td>
</tr>
<tr>
<td>Newly Diagnosed Diabetes</td>
<td>10%</td>
<td>~ 600</td>
</tr>
<tr>
<td>Pre-existing Diabetes</td>
<td>30%</td>
<td>~ 1800</td>
</tr>
</tbody>
</table>
HbA1c in Patients Admitted with Known Diabetes

60.5% not at guideline
Interactive Voice Response (IVR)

- Automated calling system
- Uses regular or cellular phone
- Delivers preset questions & information to patients
- Responses are captured in database
- Abnormal responses are flagged
- Diabetes nurse educator contacts the patient
Why IVR & Diabetes?

• Chronic disease

• Requires life long self-management & support

• Assesses patient adherence

• Incorporates patient education into messaging

• Assists with transition home

• Inexpensive technology

• Allows contact with large volume in timely fashion
<table>
<thead>
<tr>
<th>Program</th>
<th>Call Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS</td>
<td>Day 2</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>Day 2</td>
</tr>
<tr>
<td>Surgical</td>
<td>Day 3</td>
</tr>
</tbody>
</table>
Patient Demographics

- Male: 73%
- Female: 27%

n = 739

Mean Age = 65
Do outcomes matter?

Brilliant surgery! Well done! Shame the patient died.
Diabetes Medication Adherence
Self Monitoring of Blood Glucose

Day 2-3: 79%, 83%, 85%
Month 1: 83%, 90%, 89%
Month 3: 85%, 88%, 92%
Month 12: 94%, 90%

Bars represent:
- ACS
- Heart Failure
- Cardiac Surgery
Dietary Adherence – 3 Meals/day

- Day 2-3: 93% ACS, 91% Heart Failure
- Month 1: 90% ACS, 83% Heart Failure
- Month 3: 94% ACS, 71% Heart Failure
- Month 12: 94% ACS

ACS: Acute Coronary Syndrome
Heart Failure
Cardiac Surgery
Physical Activity

Day 2-3
- ACS: 48%
- Heart Failure: 46%
- Cardiac Surgery: 48%

Month 1
- ACS: 63%
- Heart Failure: 48%
- Cardiac Surgery: 74%

Month 3
- ACS: 70%
- Heart Failure: 46%
- Cardiac Surgery: 73%

Month 12
- ACS: 63%
- Heart Failure: 48%
- Cardiac Surgery: 48%
Hypoglycemia

Day 2-3
- ACS: 25%
- Heart Failure: 23%
- Cardiac Surgery: 23%

Month 1
- ACS: 37%
- Heart Failure: 21%
- Cardiac Surgery: 20%

Month 3
- ACS: 22%
- Heart Failure: 12%
- Cardiac Surgery: 17%

Month 12
- ACS: 19%
- Heart Failure: 19%
- Cardiac Surgery: 23%
Hypoglycemia Handout

Day 2-3: 42%
Month 1: 31%
Month 1: 34%
Month 3: 28%
Month 3: 26%
Month 12: 26%

ACS
Heart Failure
Cardiac Surgery
Attendance at Community Diabetes Education

<table>
<thead>
<tr>
<th></th>
<th>Day 2-3</th>
<th>Month 1</th>
<th>Month 3</th>
<th>Month 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS</td>
<td>17%</td>
<td>40%</td>
<td>61%</td>
<td>75%</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>12%</td>
<td>28%</td>
<td>39%</td>
<td>38%</td>
</tr>
<tr>
<td>Cardiac Surgery</td>
<td>22%</td>
<td>22%</td>
<td>38%</td>
<td>48%</td>
</tr>
</tbody>
</table>

Chart shows attendance percentages for ACS, Heart Failure, and Cardiac Surgery over different time periods (Day 2-3, Month 1, Month 3, Month 12).
Endocrinologist Visit

- ACS
- Heart Failure
- Cardiac Surgery

Day 2-3: 9%, 12%
Month 1: 38%, 28%, 12%
Month 3: 62%, 35%, 28%
Month 12: 94%, 35%, 35%
Annual Foot Screening

<table>
<thead>
<tr>
<th>Time</th>
<th>ACS</th>
<th>Heart Failure</th>
<th>Cardiac Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 2-3</td>
<td>71%</td>
<td>73%</td>
<td>71%</td>
</tr>
<tr>
<td>Month 1</td>
<td>64%</td>
<td>82%</td>
<td>72%</td>
</tr>
<tr>
<td>Month 3</td>
<td>77%</td>
<td>91%</td>
<td>71%</td>
</tr>
<tr>
<td>Month 12</td>
<td>100%</td>
<td>77%</td>
<td>77%</td>
</tr>
</tbody>
</table>

- ACS
- Heart Failure
- Cardiac Surgery
Foot Care Handout

Day 2-3
- ACS: 53%
- Heart Failure: 39%

Month 1
- ACS: 44%
- Heart Failure: 32%
- Cardiac Surgery: 40%

Month 3
- ACS: 31%
- Heart Failure: 18%
- Cardiac Surgery: 30%

Month 12
- ACS: 44%
- Cardiac Surgery: 35%
Annual Retinal Screening

Day 2-3: 52% (ACS), 52% (Heart Failure)
Month 1: 59% (ACS), 61% (Heart Failure), 51% (Cardiac Surgery)
Month 3: 72% (ACS), 68% (Heart Failure), 63% (Cardiac Surgery)
Month 12: 75% (ACS), 35% (Cardiac Surgery)
Evaluation: Automated Calls Helpful?

Day 2-3: 68% (ACS), 74% (Heart Failure)
Month 1: 75% (ACS), 79% (Heart Failure), 83% (Cardiac Surgery)
Month 3: 80% (ACS), 82% (Heart Failure), 84% (Cardiac Surgery)
Month 12: 94% (ACS), 77% (Cardiac Surgery)
Conclusions

- HgbA1c measured 1 yr out in clinic, mean 7.3%

- Data inputted correctly

- Burden of getting all of the flagged calls answered in a timely fashion

- Need to look at some of the wording of our questions

- Given the number of prediabetes, plan to add questions for that population group and track prevention of diabetes
Thank you

For more information, please contact
Kimberly Twyman
613-798-5555 Ext 17111
ktwyman@ottawaheart.ca