Releasing Time to Care

A journey towards evidence informed practice in the monitoring of blood glucose in the frail elderly in Long Term Care.
Objectives

• Describe the use of evidence to inform and support a quality improvement initiative in Long Term Care across two Regional Health Authorities in partnership with CADTH.
• Share outcomes and lessons learned
• Discuss broader policy implications.
Project leaders:

– Kelli O’Bien, VP-Long Term Care and Rural Health
  Western Newfoundland Regional Health Authority

– Heather Brown, VP-Rural Health, Long Term Care
  and Community Supports
  Central Newfoundland Regional Health Authority

• Project teams at Western Health and Central Health
• CADTH Liaison Sheila Tucker, Newfoundland and Labrador
Rationale for this Initiative

• Aging population ↑, Diabetes Prevalence ↑

• Evidence of sub-optimal use of test strips in diabetes management

• New guidelines

• Role of blood glucose testing in diabetes management being reconsidered
Opportunity Cost

• Represents the value of benefits foregone as the result of making a decision.

• Opportunity cost of funding test strips at current levels is substantial.

• In a health care system with finite resources, the resources spent on test strips are no longer available to fund other potentially beneficial interventions or services.
From Here to There

• Introduction of Best Practice Guidelines
• Recognizing the Issue
• Opportunity for Improvement
• Contextualizing the Evidence
• Program Development and Implementation
• International Diabetes Federation Clinical Guidelines
• Cochrane Review
• CDA 2013 Clinical Practice Guidelines
• CADTH Recommendations
LTC Improvement Opportunity
Releasing Time to Care

Goal:
• To support the achievement of best practice in the care of people with type 2 diabetes residing in long-term care facilities at Western Health and Central Health.

Anticipated Benefits:
• Supports resident and family-centred care
• Improved assessment skills for care providers
• Less stress and pain for residents
• Improved utilization of resources
• More time and resources for improving the resident experience
  – Monitoring foot, dental, and vision health, and A1C.
  – Individualized care.
  – Well-being, Quality of life
Evidence & Information Used in the Projects

• Baseline utilization data (Central Health, Western Health)
• Informal cross-country scans (CADTH)
• CADTH Rapid Response Reports
  – Glucose Replacement Agents in Frail Elderly Patients with Type II Diabetes in Long-Term Care: Clinical and Cost-Effectiveness, Harms, and Guidelines (2015)
• Clinical experts - accredited webinar through CCHL-NL
• Canadian Diabetes Association Guidelines
Practice Change Strategies:

- Policy change-collaborative development
- Presentation & educational interventions for stakeholders
- Clinical practice tools to support EB practice.
- Evaluation – process and outcome.
Local Policy Change

- Blood Glucose Monitoring
- Glycemic Control in the Frail Elderly
Education of Stakeholders

Local Initiatives
• Regional Steering Committee
• Outreach to Physicians
• Provincial Diabetes Retreat
• In-service session
• eLearning module

Provincial and National Initiatives:
• CCHL Webinar – June 2014- 7 provinces
• PULSE Newsletter Fall 2015 (College of Licensed Practical Nurses
Education of Stakeholders

In-service Sessions Spring 2015

• Jointly across both RHAs
  – 60% of nursing staff participated
• Pre and post test of knowledge
• Evaluation of sessions

Monthly Audit and Feedback Process

  – April 2015-March 2016
Clinical Practice Tools

Developed/customized in consultation with project teams:

• Resident/family pamphlets
  – Adopted from WRHA, BC Ministry of Health, Regina Qu’Appelle

• Hypoglycemia standard kits

• “Stop Hypoglycemia” (new tool)
  – Clinical practice guidance card
  – Poster
  – Pocket card
About CADTH

The Canadian Agency for Drugs and Technologies in Health (CADTH) is an independent, not-for-profit agency funded by Canada’s federal, provincial, and territorial governments. For more than 25 years, CADTH has been providing information and advice on drugs and other health technologies, based on the best available research. This information allows Canadians to make informed decisions about how to best use drugs and other health technologies, including blood glucose test strips.

For more information

More information about CADTH’s research on blood sugar testing in type 2 diabetes is available online at www.cadth.ca/smbg.

This document is intended for information only. It does not take the place of advice from a physician or other qualified health care professional. The Government of Newfoundland and Labrador and the Canadian Agency for Drugs and Technologies in Health do not accept any responsibility or liability for any loss, damage, cost or expense that might occur as a result of use of or reliance upon the information in this document.
Stop Hypoglycemia

Recognize the signs

- Headache
- Unclear thinking
- Cold sweats
- Feeling cranky or nervous
- Impaired vision
- Feeling shaky or weak
- Tingling skin or numbness
- Hunger or nausea
- Pounding heartbeat
- Passing out
TREATMENT

If the resident is conscious:
- Give 16 g to 20 g of glucose (depending on whether hypoglycemia is mild to moderate or is severe).
- Wait 15 minutes and do a fingerstick glucose test.
- If the blood glucose level is okay (higher than 4.0 mmol/L), give a recovery snack or the next planned meal if it’s less than an hour away.
- If the blood glucose level is still not okay (lower than 4.0 mmol/L), give another 16 g to 20 g of glucose and repeat the steps in the two bullets above.

If the resident is unconscious:
- Inject glucagon (an emergency hormone) or give glucagon intravenously if the resident already has IV access.
- Call for additional medical help.
- Do not give insulin.

Look for the cause, so you can prevent hypoglycemia from happening again! Residents with a history of hypoglycemia may benefit from more frequent fingerstick glucose testing.

<table>
<thead>
<tr>
<th>Examples of 16 g of glucose</th>
<th>Examples of 20 g of glucose</th>
<th>Examples of good recovery snacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 “Dex 4” glucose tablets</td>
<td>5 “Dex 4” glucose tablets</td>
<td>7 soda crackers with 2 tbsp. of Cheez Whiz or 1 tbsp. to 2 tbsp. of peanut butter</td>
</tr>
<tr>
<td>3 packets (or 3 tsp.) of table sugar dissolved in water</td>
<td>4 packages (or 4 tsp.) of table sugar dissolved in water</td>
<td>3 arrowroot biscuits with 2 tbsp. of Cheez Whiz or 1 tbsp. to 2 tbsp. of peanut butter</td>
</tr>
<tr>
<td>175 mL (3/4 c.) of juice or a junior juice box</td>
<td>250 mL (1 c.) of juice or a regular tetra juice box</td>
<td>1 slice of toast with 2 tbsp. of Cheez Whiz or 1 tbsp. to 2 tbsp. of peanut butter</td>
</tr>
</tbody>
</table>

Note: Glucose or sucrose tablets or solution work faster and therefore are preferable to orange juice and glucose gels. Avoid foods high in fat, such as brownies, because fat slows down sugar absorption.

Note: The snack should contain complex carbohydrates and protein. Including some fat is fine too.
STOP HYPOGLYCEMIA: RECOGNIZE THE SIGNS

Hypoglycemia, or low blood sugar, is a serious symptom in type 1 and type 2 diabetes. It is important to prevent, recognize, and treat hypoglycemia right away to avoid injury and to relieve symptoms quickly. If not treated properly, severe hypoglycemia can lead to coma and death.

The resident might have some, or none, of these symptoms. Confirm hypoglycemia using a fingerstick glucose test. A reading below 4 mmol/L means the person is experiencing hypoglycemia.

If testing is not immediately possible, treat first then test.

### Hyperglycemia:
- A blood sugar level that is too high
### Hypoglycemia:
- A blood sugar level that is too low

### TREATMENT

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<td>4 “Dixie” glucose tablets</td>
<td>5 “Dixie” glucose tablets</td>
<td>7 whole grain crackers with 2 tsp. of Chex Whiz or 1 tbsp. to 2 tbsp. of peanut butter</td>
</tr>
<tr>
<td>5 packets (or 3 tbsp.) of-table sugar dissolved in water</td>
<td>4 packets (or 4 tsp.) of-table sugar dissolved in water</td>
<td>1 arrowroot biscuit with 2 tsp. of Chex Whiz or 1 tbsp. to 2 tbsp. of peanut butter</td>
</tr>
<tr>
<td>176 mL (3/4 c.) of juice or a junior juice box</td>
<td>265 mL (1 c.) of juice or a regular size juice box</td>
<td>1 slice of toast with 2 tsp. of Chex Whiz or 1 tbsp. to 2 tbsp. of peanut butter</td>
</tr>
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REFERENCES
### Evaluation

#### QUALITY DOMAINS

<table>
<thead>
<tr>
<th>Person-Centred</th>
<th>Efficiency of the Healthcare System</th>
</tr>
</thead>
<tbody>
<tr>
<td>The frequency of blood-glucose testing among persons living with non-insulin dependent diabetes in LTC is done as needed rather than routinely tested and is guided by the resident and/or family. Effective partnerships are demonstrated to achieve this goal.</td>
<td>A reduction in the cost of supplies for blood glucose testing and time spent performing blood glucose testing among persons living with non-insulin dependent diabetes in LTC.</td>
</tr>
</tbody>
</table>

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<tr>
<th>Appropriateness of Care (Effectiveness)</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge is enhanced for use of best practices by care providers regarding the appropriate frequency of blood-glucose testing among persons living with non-insulin dependent diabetes in LTC.</td>
<td>Adverse outcomes are monitored relating to frequency of episodes of hypoglycemia among persons living with non-insulin dependent diabetes in LTC.</td>
</tr>
</tbody>
</table>
### Overview

Table 1: Demographics

<table>
<thead>
<tr>
<th></th>
<th>Central Health</th>
<th>Western Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of LTC Beds</td>
<td>519</td>
<td>474</td>
</tr>
<tr>
<td>Number of Residents Diabetes diet or oral agent controlled</td>
<td>90 (17%)</td>
<td>98 (21%)</td>
</tr>
<tr>
<td>Average age</td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td>Frailty score between 6-8</td>
<td>94%</td>
<td>89%</td>
</tr>
</tbody>
</table>
## Table 2: Blood Glucose Ordering Pre and Post Implementation-RHAs combined

<table>
<thead>
<tr>
<th>Frequency BGM orders</th>
<th>Pre (%)</th>
<th>Post (%)</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRN</td>
<td>31 (17%)</td>
<td>81 (74%)</td>
<td>58% ↑</td>
</tr>
<tr>
<td>Monthly</td>
<td>17 (9%)</td>
<td>7 (6%)</td>
<td>3% ↓</td>
</tr>
<tr>
<td>Weekly</td>
<td>11 (6%)</td>
<td>8 (7%)</td>
<td>1% ↓</td>
</tr>
<tr>
<td>2-4 times per week</td>
<td>106 (57%)</td>
<td>9 (8%)</td>
<td>49% ↓</td>
</tr>
<tr>
<td>Daily</td>
<td>12 (7%)</td>
<td>3 (3%)</td>
<td>4% ↓</td>
</tr>
<tr>
<td>Twice daily</td>
<td>8 (4%)</td>
<td>1 (1%)</td>
<td>3% ↓</td>
</tr>
<tr>
<td>Diabetes diet or oral</td>
<td>N=185</td>
<td>N=109</td>
<td></td>
</tr>
<tr>
<td>agent only</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Person Centred Care

- Family and Resident Perspective
  - No formal compliments or complaints from the cohort
  - N= 14 participants in focus groups
  - Focus group questions
    - Strengths of this approach to monitoring blood sugars?
    - Challenges of this approach to monitoring blood sugars?
    - Suggestions/recommendations
Person Centred Care

• Family and Resident Perspectives
  – Key findings:
    • Improved Quality of life
      – comfort for resident –”last stop”
      – “enjoy food”-”much better than the old way”
      – Less interference with daily life-less pain, less worry
      – “more control”-let staff know when feeling unwell
    • Mixed findings re Safety
      – Confidence in staff
      – Some residents/families expressed concerns “symptoms and should have sugar checked more often”, worried about low blood sugar-
      – Others-”mom looks healthy and she feels well”
Efficiency

• Improvement Aims
  – Reduce time spent in performing unnecessary testing –”release time to care”
    • Completed internal time study
    • One BGM 5.5 minutes nursing time
  – Reduce supply cost associated with testing
    • Test strip, alcohol swab and needle finger lancet cost per test=0.54
Releasing Time to Care: Efficiency
Examining cohort of residents pre and post implementation (n=57)

Spotlight on Western Health

362 BGM pre implementation
207 BGM post implementation

Time redirected by not inappropriately testing these residents:
~853 nursing minutes per month

Pre implementation: 6 BGM per resident
Post implementation: 4 BGM per resident

Saving projected over 12 months:
• ~171 nursing hours redirected
• ~$1004 supply savings

Supply cost:
↓83.70/month

Wow! That’s 43% reduction for the cohort
Time redirected by not inappropriately testing these residents: ~946 nursing minutes per month

Pre implementation: 5 BGM per resident
Nov 2015: 2 BGM per resident

Monthly supply cost reduction by improving appropriateness of testing: ~$92

281 BGM pre implementation
109 BGM post implementation

61% reduction in blood glucose testing

Projections for yearly savings:
• 174 nursing hours redirected
• $1014 supply savings
• Knowledge of Providers:
  – Pre and post questionnaire as part of in-service education
    • Increase in percentage of correct answers for all but one question
  – Evaluation of education program-provider feedback
    • 96% met stated objectives
    • 94% rated session as excellent, or very good to good.
Appropriate

• Focus Group of Providers:
  • impact on appropriateness of care
  • impact on safety
  • impact on resident/family experience
  • impact on efficiency of care
Focus Group of Providers:
- 34 providers across both organizations
- Five main themes
  - Improved efficiency
    - Less time consumed with unnecessary tasks
  - Improved resident comfort
    - Less pain and discomfort
  - Increased knowledge and assessment skills
    - Improved assessment skills
    - “Treat the resident not the machine”
    - Staff noted necessary to know resident in order to detect highs and lows
    - Some concerns re not receiving education
    - Lack of awareness re tools
  - Importance of communication
    - Within team and with families- “take time to educate families”
    - Policy dissemination concerns
  - Compliance
    - Mixed- some noted good buy in, others noted poor
Table 3: Compliance with Policy/BPG Routine Monitoring

<table>
<thead>
<tr>
<th></th>
<th>BGM PRN</th>
<th>AIC Q6 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre implementation (n=185)</td>
<td>17%</td>
<td>27%</td>
</tr>
<tr>
<td>Post implementation (n=109)</td>
<td>74%</td>
<td>53%</td>
</tr>
</tbody>
</table>
Safety

• Occurrences
  • No admissions to acute care

• Concerns
  • No complaints registered during pilot

• Hypoglycemic event
  • 9% 12 month period prior to implementation
  • 0% 12 month period post implementation
Lessons Learned

• Collaborative Approach
• Physician Engagement
• Local champions
• Audit and feedback
• Keep the Ball Rolling
• Policy change-time and effort
Sustainability

• Clinical Order Sets
  – LTC Admission and Routine Order Set for Residents with Diabetes not on insulin
  – LTC Diabetes Order Set for Hypoglycemia

• Orientation and e-learning Education

• Follow-up Huddles Spring 2016
  – Learning areas based on audits and focus groups
  – Share overall evaluation results
Further Policy Implications

Residents using Insulin in LTC (Basal and Bolus) – 2016-17

Implementation with Frail Elderly who are ALC – 2016-17

Primary Care

If patients who don’t use insulin tested less often, more than $260 million could be freed up each year for spending on other health technologies.
Thank-you