Glucose Management Mpage: An ACI, LHD and eHealth NSW collaboration in eMeds

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Overview of eMeds Insulin Design Approach

Lead Site LHDs

SYD

SES

SCHN

eMeds Insulin Design Focus Group
Vendor agnostic business requirements developed in consultation with:
- ACI representatives
- LHD clinicians and project teams

Consolidated eMeds Design
Insulin design from 3 lead sites consolidated and:
- Reconciled against business requirements
- Unmet requirements identified
- Prioritisation of required enhancements for unmet requirements

ACI® Endocrine Working Group Review
- Presented requirements for endorsement and sign off
- Ongoing oversight of enhancements and endorsement of solution design

Design Assurance Process

2Sydney Local Health District  3Local Health Districts  4South Eastern Sydney Local Health District
5Sydney Children’s Hospitals Network  6Agency for Clinical Innovation

Smarter Safer Better
The Challenge

- To ensure the safety requirements underpinning the paper Adult Subcutaneous Insulin Prescribing Chart are not only preserved, but enhanced in the eMeds diabetes management.

- This includes promoting shared situational awareness of a patient’s diabetes management as well as consistent documentation to assist with the accurate monitoring and management of diabetes over time.

- Include relevant demographic data (Diabetes Type, HbA1C, weight)
- Review clinical results together with insulin regime (72 hours)
- Ability to view insulin and relevant blood levels graphically and tabulated
- Ability to review and record a meal status to BGLs
Design Principles

- User Centred
- Consistency & Simplicity
- Iterative Development
- Usability Testing
- Evaluate & Feedback Early
Design Methodology

Gather Requirements
- Identify users
- Analyse user needs and scenarios
- Develop business & functional requirements

Prioritise Scope
- Identify Business Objective
- Initial Concept

Feedback
- Suggestion for changes
- Project planning based on the outcome

Evaluate
- Evaluate early and continuously
- Measure usability, business & effects

Design for Usability
- Conceptual design
- Detailed design

Build & Deploy
- Iterative development
- Continuous focus on users and usability
- Usability testing & monitoring
## Insulin Paper Chart

### Temporal Relationship Between Insulin and Blood Levels
## Available Functionality

<table>
<thead>
<tr>
<th>Navigator</th>
<th>Indication</th>
<th>Monitor</th>
<th>Date/Time</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulin</td>
<td>Blood Glucose Level Bedside</td>
<td>*C In Error</td>
<td>14/12/2015 11:57</td>
<td>10.1 mmol/L</td>
<td>22 units</td>
</tr>
<tr>
<td>Warfarin</td>
<td></td>
<td></td>
<td>14/12/2015 12:00</td>
<td>10.2 mmol/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30/11/2015 16:04</td>
<td>5.7 mmol/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30/11/2015 09:30</td>
<td>9.4 mmol/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>29/11/2015 21:49</td>
<td>7.2 mmol/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>29/11/2015 17:00</td>
<td>10.0 mmol/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>29/11/2015 12:10</td>
<td>4.1 mmol/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>29/11/2015 09:30</td>
<td>9.4 mmol/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>29/11/2015 07:10</td>
<td>4.5 mmol/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28/11/2015 21:49</td>
<td>6.3 mmol/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28/11/2015 21:00</td>
<td>6.3 mmol/L</td>
<td></td>
</tr>
</tbody>
</table>
Iterative Prototyping

Early Concepts

![Image of Insulin Management Summary Table and Graph]

- **Title**: INSULIN MANAGEMENT SUMMARY
- **Patient Details**
  - Diabetic type, HT+WT+BMI
  - Date/Time of last Weight
- **BG/L Recording Frequency**: QID

**Graph of BG/L**

- **Lab BG/L**
- **Bedside BG/L**
- **Blood ketones**
- **Cont Inf rate change**
- **Toggle of view**

**Tabs for**: BGL and Blood Ketone Recording

- **Buttons to link to order**
  - Other Diabetic medications

**Tabulated BGL results**
Iterative Prototyping

Final design (July 2016)
Clinical Care Impact

Patient Safety

- Safer management of a high risk medication throughout hospital admission.
- Overall improved management of patient outcomes

A major improvement compared to the Adult Subcutaneous Insulin Paper Chart

- View displaying temporal relationships between BGLs and ketone levels with glucose-related medications
- Dynamically displaying clinically significant data in a user-focused format
- Enhances trend interpretation and insulin prescribing/administration decision support
- Additional decision support to integrate principles within wider eMR system
  - ‘Between The Flag’ - Calling Criteria for glucose management
Knowledge Café

Demonstrations of the Glucose Management Mpage

- 2 sessions
- Short demonstration followed by questions