P1752.2 Metabolic Subgroup Meeting

Working Group Sponsored by IEEE Engineering in Medicine & Biology (EMB) Standards Committee

5 April 2022
Teleconference
Agenda

1. Attendance
2. Review of action items
3. Review of tasks
4. Other business
Summary of work done so far

• Focus on Blood Glucose measures
• Are there gaps in what we have considered so far?
• https://docs.google.com/document/d/1SevoVr9WGjZYvfk92fZvzCAKOPhuk7Eb gHTyBRbUXfg/edit#
• Devices
• Data Aggregators
• Other models, e.g., FHIR
  http://hl7.org/fhir/observation-example-f001-glucose.html
Data elements to model (I)

- Glucose (mg/dL)
- Time in range (%) [TIR] [http://www.agpreport.org/agp/agpreports](http://www.agpreport.org/agp/agpreports)
- Time above range [TAR]
- Time below range [TBR]
- Mean glucose (average) ± standard deviation
Data elements to model (II)

• Percentage coefficient of variation for glucose (%CV = [(SD of glucose)/(mean glucose)]

• Glucose Management Indicator (GMI) tells you the approximate A1C level based on the average glucose level from CGM readings for 14 or more days (eA1C → GMI)
  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6196826/

• Number of hypo/hyper events / Timestamps of alarms [to be defined more precisely]

• Reference ranges (for hypo/hyperglycemia)
Additional measures (?)

- Average daily carbs (g)
- Mean amplitude of glycemic excursions (MAGE): the arithmetic mean of differences between consecutive peaks and nadirs of differences greater than one SD of mean glycemia
- Mean of daily differences (MODD): the mean of absolute differences between glucose values at corresponding time points of consecutive days
Additional measures (metadata)

• Sensor usage (%)
• Calibration
• mean absolute relative difference (MARD) to characterise the accuracy of the
“Different studies reported MARD values of 9.5% to 19% for different CGM
sensors, which are close to the values reported for glucometers (5.6% and
20.8%).”  https://www.nature.com/articles/s41598-019-56927-5

• CGMS can be intermittently scanned (isCGMS) or intermittently viewed,
(ivCGMS) or real time (rtCGMS)

• Suggestion: add “calculated” to modality
Temporal relationships

• Temporal relationship to meal*
• Temporal relationship to sleep*
• Temporal relationship to physical activity
  • e.g., before exercise, after exercise (see related OMH schema)
• Temporal relationship to doses of antihyperglycemic medications (?)

*These elements are present in the Open mHealth blood glucose schema

Suggestion: temporal relationship to event
Looking ahead

• Focus on Body Weight measures

• https://docs.google.com/document/d/1NTLUe7TaVnUkJoFGt1_Xy-tE-c_JFt3fHXA8-xUJXZE/edit

• Use cases?
Review of Tasks
Summary of Action Items
Next Meeting
Upcoming Meeting

• Metabolic subgroup:
  • Tuesday, May 10 at 8 am Pacific