**Requirement Gathering 1st Prototype**

**Group:** Proyecto de Programacia

* **Data Collection**

*(1) As a [User/Administrator], I want to collect [Basic Baby Information] so that [these could be used as valuable research resources in the future.]*

*(2) As a [User/Administrator], I want to collect [Glucose Concentration Data with Timestamp] so that [it could be used for real-time monitoring of baby’s health status.]*

*(3) As a [User/Administrator], I want to collect [Skin Glucose Concentration Data with Timestamp] so that [it could also be used for real-time monitoring as well as a reference of the concentration.]*

*(4) As a [User/Administrator], I want to collect [Calibration Factor Information] so that [the calibration curve could be adjusted and predict a more accurate result.]*

*(5) As a [User/Administrator], I want to collect [Lag Time] so that [plots could be correctly plotted and presented accurately.]*

Note:

(1) Basic Baby Information: Name, Age, Gender (…)

(2) Glucose Concentration Data: descrete values entered by the nursing staff (eg once per hour) – the value comes from a blood analysis instrument., requires calibration later – no calibration for blood glucose data it is already calibrated

(3) Skin Glucose Concentration Data: discrete signal value, requires calibration later – suggesthaving a place where you enter the calibration parameters (eg slope and intercept of [conc] = m (current) +c plot) so that saved current bvalues can be converted to concentration. If the calibration values are saved with thdata set it is possible to change them later, or recover the current values.

(4) Timestamp: date, hour, minute, second

(5) Event: Free text comment which illustrate the action performed at certain time point - do time stamp these

(6) Calibration Factor Information: factors that could affect the calibration curve, for example temperature... – not needed – the calibration is actually done in situ – so the parameters take into account the local conditions.

(7) Lag Time: the time between the measurement done and the value received by the App – more the lag between the sample leaving the skin and being analysed by the microfluidic device. This could be 10 or 20 mins as the flow rate is so slow. Imaging a blood sample is taken. You want to know what was the skin surface rading at the point in time. The liquid from the skin will arrive at the microfluidic detector somre10 mins later. Have a default for this value (as the probes will be indentical) – but n ability to change it of needed.

* **Data Processing**

*(1) As a [User/Administrator], I want to [calibrate the signal data] so that [signals in the current/voltage form could be transformed into concentration, which makes it easily to be understood and could be used for clinical analysis directly.] -yes*

*(2) As a [User/Administrator], I want to [match the timestamp and the concentration/event] so that [correct monitoring result could lead to the accurate clinical solution.] - yes*

*(3) As a [User/Administrator], I want to [smooth the concentration data] so that [the graph could be plotted more clearly and the hidden trend within the time series could be found more easily.] – good naybe have the option of choosing difernt soothing methods.*

*(4) As a [User/Administrator], I want to [perform post processing] so that […] Yes good idea – so that blood glucose and skin glucose values can be compared – aginst time including the events, and against each other (x-y plot) and eg Bland-Altmann plot.*

Note:

(1) post-signal processing: whether we need this, or it has been done before the data transmission

There might be some - but not much you do not need to worry about it. Do have some signal processing in your app. Things to consider spike removal, smoothing

* **Data Plotting**

*(1) As a [User/Administrator], I want to plot [Glucose Concentration with respect to Time] so that [the long-term trend of the glucose concentration could be presented, and any unusual variation could be detected with the matching time information.] - yes*

*(2) As a [User/Administrator], I want to plot [Skin Glucose Concentration with respect to Time] so that [the long-term trend of the skin glucose concentration could be presented, and any unusual variation could be detected with the matching time information.] - yes*

*(3) As a [User/Administrator], I want to plot [Event with respect to Time] so that [it shares the same time axis with the concentration plots and all of them could be used together and the trend in the plot might be explained more reasonably.] true – but only with plots 1 and 2 – ie we do not need to see 3 on its own.*

*(4) As a [User/Administrator], I want to plot [Glucose Concentration with respect to Skin Glucose Concentration] so that [the correlation between these 2 concentrations could be evaluated for more accurate clinical diagnosis.] - yes*

*(5) As a [User/Administrator], I want to plot [Bland-Altman Plot for Glucose Concentration and Skin Glucose Concentration] so that [the agreement between these paired measurements could be determined and used in clinical diagnosis.] - yes*

* **Permission Control**

*(1) As a [User/Administrator], I could [log in using a unique ID and a matched password] so that [only users given permission could use this app.]*

*(2) As a [User/Administrator], I could [change my password] so that [I could have more safety protection for my account.]*

*(3) As a [Administrator], I could [change other User’s password (User only)] so that [I could manage the organization and help User in case they forget the password.]*

*(4) As a [User/Administrator], I could [add Event Information with Timestamp and User ID] – yes but userID stored (for data transparency) but not displayed so that [it could be analyzed with concentration data and might be able to explain some unusual trends in the plot.]*

*(5) As a [User/Administrator], I could [correct the input data made by my ID within a certain time interval(5min) ] so that [any errors could be corrected while the database is under protected.] – yes include changing the timestamp for concentration data. they might have taken a sample 5 mins before they enter it. It should timestampt when they enter, but allow the, to ad acrrection factor (eg 5 mins ago) with a default of 0 (so they do not have to enter zero each time.*

*(6) As a [User/Administrator], I could [check the detailed description of event or concentration at certain time point] by [typing in a specific time or clicking on the time graph] so that [I could understand more details with higher accuracy.] – good you can see the full text by clicking or hovering over the comment marker.*

*(7) As a [Administrator], I could [correct any input data made by any User ID with no time limit] so that [the data stored in the database is well organized and remains accurate.] – yes. Perhaps log that the change was made with User id. – ie a change log for data quality purposes.*

*(8) As a [Administrator], I could [change the Calibration Setting] so that [a more accurate prediction could be get from the modified calibration curve.] - yes*

*(9) As a [Administrator], I could [add/delete other User’s account] so that [I could manage the organization.] - yes*