SGH Meeting Minutes

Date:	12-2-2015
Time:	2:30PM – 3:30PM
Location:	226 Outram Road
Purpose:	Update Dr Lam (SGH) on updated scope and objective

Attendees:

Name	✓	Role	Reasons for Absent
Faris	✓	Project Member	
Marcus	✓	Project Member	
Jinq-Yi	✓	Project Member	
Dr Lam	✓	SGH Industry Supervisor	

Agenda:

1. Update on the scope discussed with Karway
2. Discuss on the limitations identified during meeting with Dr Kam
3. Discuss on moving forward approach

Discussion:

1. Introduced the various topics that we have discussed with Kar Way the previous meeting. This included topics such as:
    a. LoS against test results
    b. Combination of tests against LoS
    c. Relationship of re-entrant and LoS

2. Dr Lam suggested that exploratory research is to be done before the various multivariate analyses are carried out to ensure that noise does not obscure the insights into the data. He also mentioned that finding the test results and matching them to whether it is normal or not may prove challenging due to the wide scope and the lack of information on the imaging tests.

3. He raised the issue that the model must be interpretable, and raised the differences between a predictive model against the classification of the various tests.
    a. In a predictive model, it would involve predicting a specific LoS value with the inputs provided, and this would most probably not be reliable due to the variability within the factors, and the nature of the LoS too.
    b. On the other hand, a classification of the various tests would be an option, where the various tests are classified into various categories, so that a red flag may be raised with regards to LoS when such a test is ordered. This allows either the potential LoS or the type of tests to be classified and red-flagged, should it be known

to significantly affect the LoS. However, a classification model would not be able to identify the effects of the various tests.

4. Dr Lam told us to understand Karway's motiviation of finding the number of test and its effect on LoS. Dr Lam mentioned that SGH has confidence that there is a relation between no. of Orders and LOS.
   a. One factor that we can we can consider in our model is finding out whether the number of test and the number of repeated test. Dr Lam mentioned that it should be correlated.

5. Dr Lam highlighted that there are many variables to get LOS. For example LoS = f(Tn,Vn, Date, Age, Reentry etc.) therefore making it very difficult to get a prediction. Therefore what we can do is to work towards a classification model. He highlighted a few issues when dealing with the data
   a. Problem: Cleaning of data. It is a real problem and SGH is interested in this. In the data, we have negative values for time and some rubbish value that can't be used. We need to clean all that up.
   b. Dr Lam recommended that data that are hazy needs robust estimation method needs to be treated with robust estimation method that are robust against outliers. Currently we are using 3 standard deviation. You will get a lot of data that generally won't be accepted by practitioners
   c. .
6. Dr Lam also indicated that the value of test results has too much noise. Results of radiology, imaging etc are not included. However, we can still use this data in our exploratory analysis. If we were to include test results, we need demographics like age etc, which we cannot do because there is so much bias an noise

7. Dr Lam concluded that we don't need to push ourselves to build a predictive model. At the moment data cleansing and exploring the data is the most important

Action Items:

Item No	Description	Assigned To
1	Data Cleansing - Dirty data – remove negative difference that does not make sense - Since we have narrowed our scope to just looking at the P3 data. Ensure that AccountID in P1, P2 and P3 are all unique – check duplicate	
2	Explore Data a. No. of orders affects LOS	