Report on design issues and version Control

# Choice of entities:

In my first version of the database I thought that four entities (Patient, surgeon, Referral and Booking) would be enough but when I looked more closely at the reporting that was needed I chose to add an extra table for Department. There is more than one query grouped by department therefore having a unique identifier for each department would ensure integrity of the data. This database does not contain any recursive, composite or supertype/subtype entities.

# Choice of attributes:

Early on in my design I chose to put the Health Target Eligible, Patient age at Referral in the booking table. I later realised they would be better suited to the referral table for query purposes. I also chose to subdivide the composite attributes for the surgeon and patient names into first and last names. There are two derived attributes, patient age at referral and days waiting from referral. I included an update statement to calculate these columns. I left the Year-Month attribute out of the database as it is a duplication of referral date in a different format.

# Choice of keys:

I wanted to include an auto incremented integer for all the tables but I realised that it was going to be challenging to update the foreign key values for all the records in the tables. I opted to create the primary key for the department table in excel by using a formula to extract the first four characters. This made importing the data quicker and reduced the risk of data entry error. In the future unique codes for the departments can be generated manually or the database may be updated to generate them automatically to randomise the department characters.

# Connectivity/relationships:

The referral table is the hub of the database with each table having a relationship with it except the department table. I chose to keep the relationships between the tables limited to improve the time it takes to extract data from the database.

* Each patient can have many referrals but a patient can have only one referral. The patient is mandatory to a referral.
* Each surgeon can have many referrals but a referral can have only on surgeon. The surgeon is mandatory to a referral.
* Each referral can have many bookings but a booking can have only one referral. The referral is mandatory to a booking.
* Each department can have many surgeons but a surgeon can have only one department. The department is mandatory to a surgeon.

# Extent of normalisation:

The normalisation of the database was to the third normal form.

# Importing data:

When I started to insert the data, I realised it was going to be a time consuming and error prone task to add the auto generated primary keys as foreign keys in other tables. I first decided to insert the NHI number into the Referral and Booking tables to assist in importing the data. I dropped the columns once I had updated the tables. This method still left me with the problem of matching the referral table with the booking table. I created the referral table with the additional columns surgeon last name and FSADate. This allowed me to use an update statement to match the patientNo and surgeonId to the referral table (after the database generated the primary keys) and then create the booking table from the referral table. This allowed me to match the referralId and FSA date.