**BUSINESS REQUIREMENT DOCUMENT**

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# Introduction

* 1. Overview***:***

The Grey-Sloane Memorial Hospital has a need to provide its patients with an online patient intake form to support the patient’s information and to make it easily accessible and understandable. This system is to be a replacement for the older paper systems that have been produced in the past.

* 1. Audience***:***

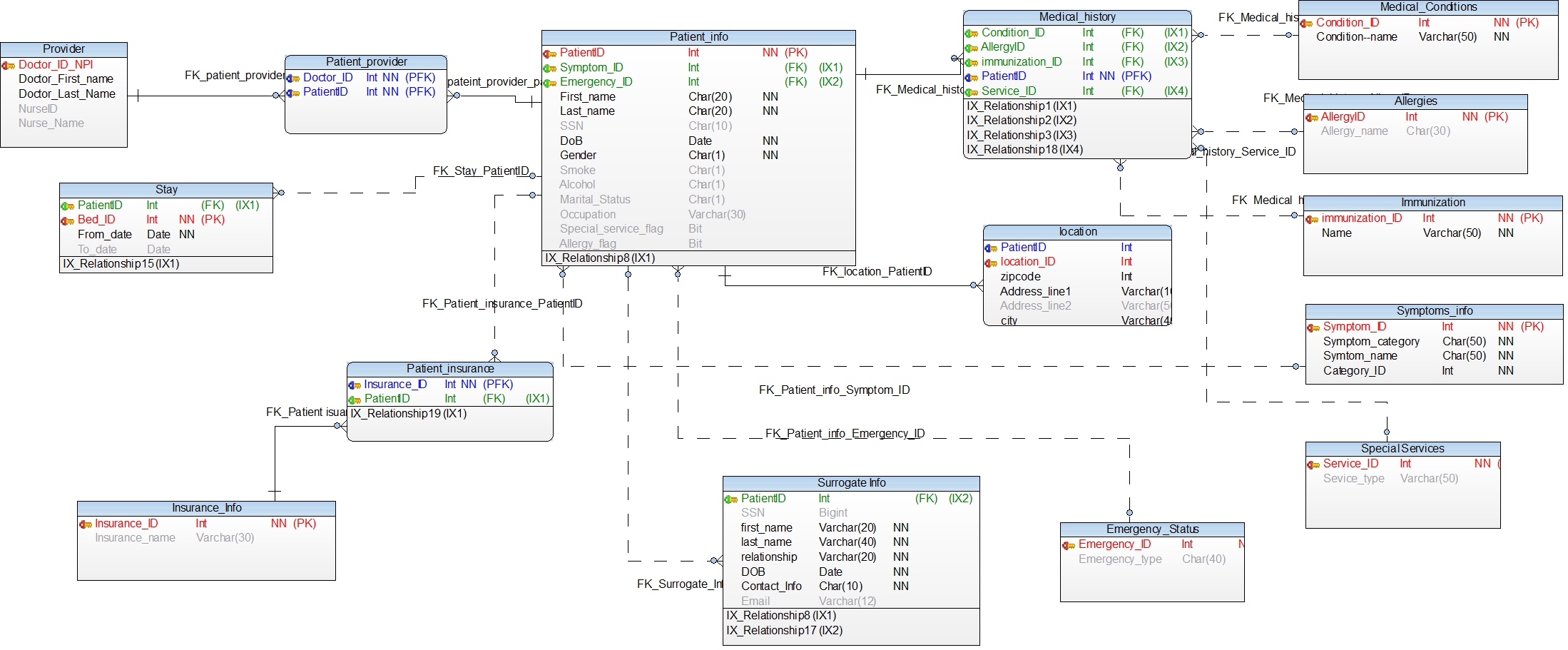
This document is targeted at the patients who visit the hospital for the first time which makes it easy for the hospital to store details about its patients, like medical history and other personal details etc.

* 1. Modification/Revision Control:

|  |  |  |
| --- | --- | --- |
| Date | Description | Author |
| 3/7/2016 | Original Document | Anita Mohandas |
| 3/27/2016 | Changes made | Anita, Mrudula, Prapti, Sindhuri |
| 01/04/2016 | Final Draft | Anita, Mrudula, Prapti, Sindhuri |

# System Overview and Diagram

* The database can be mainly categorized into providers and patient information.
* The accessibility of data for the Hospital/Provider becomes easier as the form is now filled online and the patient himself fills it and acknowledges what he has filled.
  1. High Level Diagram:

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* 1. System Configuration:

It can work on 32/64 bit windows operating system from Microsoft.

* 1. System Security:

Data can be updated only by Hospital administrative department

# Scope Definitions

* 1. In-Scope:

|  |  |
| --- | --- |
| Requirement | Description |
| IS0001 | The medical history of the patient’s closest of kin is a part of the records |
| IS0002 | Information about patient vitals is to be entered separately |
| IS0003 | Intake form will be part of the design |
| IS0004 | Information pertaining to certain allergic conditions of the patient |
| IS0005 | Medical history of the patient be recorded chronologically |
| IS0006 | Information about an existing disability of the patient to be included |
| IS0007 | Details regarding the ward that the patient is staying in to be included |
| IS0008 | All the pertinent information about the insurance coverage of the patient |
| IS0009 | Doctor’s notes are to be made part of the patient current medical records |
| IS0010 | Emergency contact information is part of the records. |
| IS0011 | All the to results to the tests administered to the patient to be recorded separately |
| IS0012 | Residential address of the patient to be part of the patient records |

* 1. Out-Scope:

|  |  |
| --- | --- |
| Requirements | Description |
| OS001 | Rate cards based on medical history is excluded from the draft |
| OS002 | Logs of food provided in the hospital is not included in the design of the database |
| OS003 | Claim history of a patient’s insurance is not a part of the design |
| OS004 | Any and all information pertaining to levels of patient care are not considered |
| OS005 | Priority scheduling of the patients based on age is not included |
| OS006 | Appointment log to be excluded from the design |
| OS007 | Income details of a patient is out of scope |
| OS008 | Billing the patient is not part of the records. |

# Entities and Data Dictionary:

* 1. Provider:

Entity which contains information about all the provider. A provider is the professional individual that a member can choose to obtain care. A provider will have direct interaction with the patient. He/she is responsible for the patient. It will also have an indicator/s for the ease of knowing some general things.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Data Type | Value | Key | Description |
| Doctor\_ID\_NPI | Integer | 10 | Primary | A unique ID given to the doctor in the database. |
| Doctor\_First\_Name | Varchar | 20 | - | First name of the provider. Cannot be null |
| Doctor\_Last\_Name | varchar | 40 | - | Last name of the provider |
| NurseID | varchar | 10 | - | A unique ID given to the nurse in the database. |
| Nurse\_Name | Varchar | 40 | - | Name of the Nurse |

* Sample Date:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Doctor\_ID | Doctor\_First\_Name | Doctor\_Last\_Name | NurseID | Nurse\_Name |
| 1 | Bruce | Wayne | 001 | Math Louis |
| 2 | Oliver | Queen | 002 | Lara Carson |
| 3 | Barry | Allen | 003 | Kara Mary |
| 4 | Thea | Queen | 004 | Louis Litt |
| 5 | Iris | West | 005 | Mike Donald |
| 6 | Selena | Kyle | 006 | Rita Ora |

4.2 Patient\_Info

This entity gives the information of the patient. All the details regarding his health conditions, Name, Occupation, SSN, Date of birth are all recorded.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute Name | Data Type | Null | Key | Description |
| Patient\_id | int | Nn | PK | Unique id to identify patients |
| Symptoms\_id | Int |  | FK | Unique id for each symptoms |
| Emergency\_id | Int |  | FK | Unique id for each emergency |
| Fname | Char(20) | Nn |  | First name of patients |
|  |  |  |  |  |
| Lname | Char(20) | Nn |  | Last name of patients |
| SSN | Char(10) |  |  | Social security number |
| Dob | Date | Nn |  | Date of birth |
| gender | Char(1) | Nn |  | Male or female |
| Smoke | Char(1) |  |  | Indicator giving yes or no |
| Alcohol | Char(1) |  |  | Indicator giving yes or no |
| Marital status | Char(1) |  |  | Indicator giving yes or no |
| occupation | Varchar(30) |  |  | Occupation of patient |
| Special\_service\_flag | Bit |  |  | Any additional service needed by the patient |
| Allergy\_flag | Bit |  |  | Indicating the allergy information |

Sample Data

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Patient\_id | Fname | Lname | SSN | Dob | gender | Smoke |  | Alcohol | Marital status |  | occupation |
| 1 | Bruce | Queen | 001 | 7/23/2014 | M | Yes |  | Yes | Yes |  | Teacher |
| 2 | Oliver | Wayne | 002 | 3/23/1967 | F | No |  | Yes | No |  | Engineer |
| 3 | Moses | Allen | 003 | 6/28/1989 | M | No |  | Yes | No |  | Technician |
| 4 | Theon | Folis | 004 | 8/23/1994 | M | Yes |  | Yes | No |  | Nurse |
| 5 | Lisa | West | 005 | 12/23/2010 | F | No |  | No | Yes |  | Teacher |

4.3 Medical History

This entity tells the medical history of the patient. The Emergency status for example when the patient comes in based on the severity of the injury the emergency status is noted down.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Data type | Null | Key | Description |
| Condition\_id | Int |  | FK | Any medical conditions |
| Allergy\_id | Int |  | FK | Unique id to differentiate allergy |
| Id | Int |  | FK |  |
| Patient\_id | Int | Nn | PFK | Unique patient id |
| Service\_id | Int |  | FK | Unique id to differentiate service |

Sample Data

|  |  |  |  |
| --- | --- | --- | --- |
| Service\_id | Condition\_id | Allergy\_id | Id |
| 005 | 1(Cholestrol) | 225 | 001 |
| 009 | 25(High BP) | 336 | 002 |
| 007 | 23(Low BP) | 100 | 003 |
| 006 | 4 (Diabetes) | 110 | 004 |
| 003 | 9 (Hypertension) | 115 | 005 |
| 001 | 15 (ADHD) | 250 | 006 |

4.4 Stay

This enables the billing as it is calculated based on Stay.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Data type | Null | Key | Desc |
| Patient\_id | Int |  | FK | Unique patient id |
| Bed\_id | Int | Nn | Pk | Each bed provided to patients |
| Frm\_date | Date | Nn |  | Starting stay date |
| To\_date |  |  |  | Ending stay date |

Sample data

|  |  |  |  |
| --- | --- | --- | --- |
| Bed\_id | Frm\_date | To\_date | Patient\_id |
| 2A | 2/26/2016 | 2/28/2016 | 0010 |
| 3B | 3/2/2016 | 3/2/2016 | 0020 |
| 1A | 12/6/2016 | 12/26/2016 | 0030 |
| 2C | 2/9/2016 | 2/10/2016 | 0040 |
| 6B | 2/2/2016 | 2/2/2016 | 0050 |
| 5H | 4/25/2016 | 4/26/2016 | 0060 |

4.5 Location

Patient’s Current location of residence is captured.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Data Type | Null | Key | Desc |
| zipcode | Int | Not null |  | Zip code of the patient’ address. |
| Address\_line\_1 | Varchar(100) | Not null |  | Residing address of patient |
| Address\_line\_2 | Varchar(100) |  |  | Extension of the residing address of patient if any |
| city | Varchar(40) | Not Null |  | City the patient resides in |
| state | Char(2) | Not Null |  | State of residence by patient |
| Location\_Id | Int | Not Null | PK | Uniquely identifies each patient’s location |
| Email-address | Varchar(100) | Not Null |  |  |
| Contact | Varchar(11) | Not Null |  | Contact number |
| Emergency Contact | Varchar(11) | Not Null |  | Emergency contact number |
| Patient\_ID | Int | Not Null | PFK | Uniquely identifies each patient. |

Sample Data

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Location\_Id | Address\_line\_1 | Address\_line\_2 | city | state | zip code | Email\_address | Contact | Emergency Contact | Patient\_Id |
| LN001 | 75 Saint Alphonsus Street | Roxbury Crossing | Boston | MA | 02120 | tom@gmail.com | 678-918-7890 | 789-123-3456 | 0040 |
| LN020 | 55 Peterborough |  | Boston | MA | 02115 | jim@gmail.com | 567-234-1234 | 908-123-2345 | 0060 |
| LN010 | 1 Westland |  | NewYork | NY | 78901 | cathey@hotmail.com | 456-234-1278 | 567-234-1235 | 0089 |
| LN022 | 10 Pulte Homes | Hopkinton | Boston | MA | 89012 | chand@hotmail.com | 678-456-8902 | 678-456-9065 | 0077 |
| LN002 | 45 Woodside | Hopkinton | Boston | MA | 89034 | sati@yahho.com | 372-802-1298 | 234-456-8901 | 0033 |

4.6  Insurance\_info:

The insurance information of the patient to be recorded the claim name the carrier name and type of insurance

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute Name | Data Type | Null | Key | Definition |
| Insurance\_id | Char(11) | NN | PK | The unique identifier for the table |
| Insurance\_name | Char(11) | NN |  | The policy name the patient has taken |
|  |  |  |  |  |

Sample Data:

|  |  |
| --- | --- |
| Insurance\_id | Insurance\_name |
| I00#1 | Student life |
| I002#3 | Life save |
| I004#4 | Travel plan |

4.7 Surrogate Info

The Surrogate’s information like the name and contact information and also the relationship with the patient.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute Name | Data Type | Null | Key | Definition |
| Patient\_id | Char(10) | NN | FK | A composite key that connects the patient to its surrogate info |
| first\_name | Varchar(20) | NN |  | The surrogate first name |
| last\_name | Varchar(40) | NN |  | The last name of the surrogate |
| SSN | Bigint | Null |  | The social security number of the surrogate |
| relationship | Varchar(20) | NN |  | The relationship to the patient |
| DOB | Date | NN |  | The date of birth of the surrogate |
| Phone\_nos | Char(10) | NN |  | The phone number of the owner |
| Email | Varchar(12) | null |  | The email address. |
|  |  |  |  |  |

Sample Data:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Patient\_id | First\_name | Last\_name | SSN | relationship |
| P001 | Laurna | Joseph | 45056 | Mother |
| P002 | Austin | Dsouza | 56893 | Father |
| P003 | Neha | Ghate | 45863 | Sister |

|  |  |  |
| --- | --- | --- |
| DOB | Phone\_nos | email |
| 05/03/2000 | [617-569-4556](tel:617-569-4556) | [ahj@gmail.com](mailto:ahj@gmail.com) |
| 06/08/1963 | [647-556-5562](tel:647-556-5562) | [ahh@gmail.com](mailto:ahh@gmail.com) |
| 03/09/2006 | [617-563-5525](tel:617-563-5525) | [hhh@gmail.com](mailto:hhh@gmail.com) |

4.8 Immunization

This entity tells us if the patient had any history of immunization courses or during his stay at the hospital was he given any immunization dose. This is a look up table wherein there is a Y/N indicator and it can be null. This look up table makes it easier to record the details.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Data type | Null | Key | Description |
| ID | Int | NN | PK | Unique id given to each vaccine |
| Name | Varchar(50) | NN |  | The name of each vaccine |

Sample Data:

|  |  |
| --- | --- |
| ID | Name |
| 20009 | Tetanus |
| 20366 | Rubella |
| 20555 | TB 2 |

4.9 Symptoms\_info

This entity tells us if the patient had any chronic symptoms or any unusual symptoms when he arrived at the hospital or developed any during his stay at the hospital. This is a look up table wherein there is a Y/N indicator and it can be null. This look up table makes it easier to record the details.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Data type | Null | Key | Description |
| Symptom\_ID | Int | NN | PK | Unique id given to each symptom |
| Symptom\_category | char(50) | NN |  | The name of each category |
| Symptom\_name | char(50) | NN |  | The name of the symptom |
| Category\_ID | Int | NN |  | The symptom category id |

Sample Data:

|  |  |  |  |
| --- | --- | --- | --- |
| Symptom\_ID | Symptom\_category | Symptom\_name | Category\_ID |
| 15222 |  |  |  |
| 15988 | Rubella |  |  |
| 15888 | TB 2 |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attributes** | **Data Type** | **Null** | **Key** | **Description** |
| Condition\_id | Int | NN | PK | It’s a unique id given to each medical conditions |
| Condition\_name | Varchar(50) | NN |  | It refers to medical condition of the patient |

4.10 Medical Conditions

Medical conditions of the patient are noted in order to keep a check and make sure he has recovered completely before getting discharged.

Sample Data

|  |  |
| --- | --- |
| Condition \_id | Condition\_name |
| 001 | Blood Sugar |
| 103 | High Blood Pressure |
| 104 | Low Blood Pressure |

4.11 Allergies

Allergies related to the patient are noted down so that the medicines can be recommended on the basis of any allergies.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attributes** | **Data Type** | **Null** | **Key** | **Description** |
| Allergy\_id | Int | NN | PK | Unique id given to particular Allergy |
| Allergy\_name | Char(30) |  |  | It refers to present allergies of the patient |

Sample Data

|  |  |
| --- | --- |
| Allergy\_id | Allergy\_name |
| 001 | Pollen |
| 002 | Dust |
| 100 | Food - Milk |
| 101 | Food – Tree Nuts |
| 201 | Medicines – Benadryl Oral |

4.12 Special Services

This entity tells us if the patient needs any kind of special assistance due to some disability. This is a look up table wherein there is a Y/N indicator and it can be null. This look up table makes it easier to record the details.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Attribute | Data type | Null | Key | Description |
| Service\_ID | Int | NN | PK | Unique id given to each Service |
| Service\_type | Varchar(50) | NN |  | The name of each service |

Sample Data:

|  |  |
| --- | --- |
| ID | Name |
| 10222 | Hearing disability |
| 10233 | Blind |
| 10233 | Wheelchair assistance |

4.13 Emergency\_Status

This entity tells us if the patient needs any kind of assistance due to the severity of the injury. This way the patients can be prioritized for the check-up or any other necessary assistance from the doctors. This is a look up table wherein there is a Y/N indicator and it can be null. This look up table makes it easier to record the details.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attributes** | **Data Type** | **Null** | **Key** | **Description** |
| Emergency\_id | Int | NN | PK | Unique ID given to the emergency |
| Emergency\_Type | Char(40) | NN |  | Type of emergency |

Sample Data

|  |  |
| --- | --- |
| **Emergency\_id** | **Emergency\_Type** |
| 001 | Accident |
| 100 | Heart attack |
| 201 | Suicide Case |

1. **Relationships:**

Patient\_Info & Medical History

It is a one to many relationship where a patient can access multiple parts of his/her medical history for reference.

Medical History & Medical Conditions

It is a non-identifying relationship where medical condition will be a look up table to see the conditions for the patient.

Medical History & Allergies

It is a non-identifying relationship where Allergies will be a look up table for the patient.

Medical History & Immunization

It is a non-identifying relationship where immunization of a patient can be seen through the reference table for the patient.

Medical History & Symptoms\_info

It is a non-identifying relationship to check the symptoms in a look up table to see the condition for the patient.

Patient\_Info & location

It is an identifying relationship between patient and its address as a look up table which can accessed multiple time by patient.

Patient\_Info & Patient\_insurance

It is many to many relationship between Insurance and patient through which we can access multiple insurance for the patient as well as multiple patient with same insurance.

Patient\_insurance & Insurance\_Info

It is many to many relationship between Insurance and patient through which we can access multiple insurance for the patient as well as multiple patient with same insurance.

Patient\_Info & patient provider

It is a many to many relationship between patient and provider where a provider can access multiple patients and a patient can have multiple provider for their treatment.

Patient provider

It is a many to many relationship between patient and provider where a provider can access multiple patients and a patient can have multiple provider for their treatment.

Patient\_Info & Stay

It is a one to many relationship where stay can access multiple patient information at the same time for reference.