

## **Problem Statement**

The hospital focused database would be created to allow for a network of hospital data. A localized database with information on hospitals, doctors, patients, emergency contacts, other hospital personnel, and departments. This database will be used by hospital personnel's, the patient and EMS within a state to find information on a patient or anyone working within the hospital network. The problem that we are trying to solve is that hospitals do not have a way to gather all the information to send to someone in a timely manner. Our database will solve that problem by collecting all the data for hospitals into one central location so that they do not need to pull information out of different databases. Not only will this save time and money, but maybe even a person's life.

The EMS will use the database to find what hospital to go to. Let's say a person gets into a car crash, while the EMS are on the way, they can go on the database to find the hospital with an open bed that also has an operation room open so that when they arrive, they can be taken straight to it after the doctors have completed their examination.

The doctor will use the database to see the patient's basic information before seeing the patient. If the patient needs a blood transfer, the doctor would be able to find the hospital that has it. If surgery is needed, they can use the patient's information, outside of the database, to calculate what type of anesthesia to use and how much of it.

A patient can go on the database and gather information about their stay and medical information. All they would have to do is put in their patient id number and they will be able to view the date they checked in/out of a hospital at some location and which doctor and nurse they

saw. Once the patient arrives, they can add the admission details into the database like which doctor has been assigned to them.

The hospital table would consist of a hospital name , address, city, total available beds, and total available operation rooms, A+, A-, B+, B-, AB+, AB-, O+, O- blood type.

The doctors table would include a doctor id, first name, last name, department, current hospital and start date.

The hospital personnel (anyone other than the doctor like nurses, residents, maintenance workers, etc...) would include employee id, job type, first name, last name, department, hospital, start date.

The patients table would include a social patient id, doctor id, nurse id, first name, last name, hospitals that they have been to, admission date, discharge date, current hospital, important medical conditions, blood type, age, and sex.

The departments table would contain columns such as department name.

## **Tables**

The entity sets (tables) for the database are:

- Hospitals
- Doctors
- Patients
- Hospital Personnel
- Departments
- Emergency Contacts

### **Queries of the Database:**

1. List all hospitals in Richmond VA, that have at least 3 open operating rooms
2. What is the address of the St. Marys hospital in Richmond VA
3. List all the hospitals and their address that has a blood supply of O neg
4. List the previous hospital and address that patient 16971221180 was at
5. List the emergency contact name and phone number of patient 16750213451
6. What is the medical record of patient 16120407539
7. List all the doctors and the number of patients they have in the Emergency Department at Mary Washington Hospital
8. What is the emergency contact info for the 16350305127 nurse ids patient
9. How long did patient 16140913963 stay in the hospital
10. List the name, care team and hospitals of all patients over the age of 65 in ascending order by age
11. How long has doctor X been working in department Y at Hospital Z
12. What doctor did person 16191205791 see at VCU Medical Center
13. How many patients are currently in the ICU at Sentara Norfolk General Hospital
14. List all patients and dates that have been seen by doctor 48376903992
15. How is person 16850326681 related to the patient
16. What is the average age of all patients over the weight of 200 pounds at Hospital Mary Washington Hospital
17. What is the discharge date of the most recent patient at Chippenham Hospital
18. How many patients have stayed at Centra Lynchburg General Hospital
19. How many nurses work in city Richmond?

### **Views, Procedures, and Triggers of the Database:**

1. Show the patient information after being checked out
2. Show the new patient information after being checked in
3. Discharge a patient

4. Admit a new patient
5. Show the information on all working Doctors
6. Check to see if the relation is friend or family
7. Test for error message when relation is not friend or family

### **Functional Dependencies**

doctors -> hospitals, departments, patients

departments -> hospitalPersonnel, hospitals

patients -> emergencyContacts

### **Sample Data (included in separate file)**

Departments

Emergency|Cardiology|ICU|Neurology|Oncology|Maternity Ward|Surgery|

Hospitals

University of Virginia Medical Center|Sentara Norfolk General Hospital|Carilion Roanoke

Memorial Hospital|Inova Fairfax Hospital|VCU Medical Center|Bon Secours St. Mary's

Hospital|Virginia Hospital Center|Centra Lynchburg General Hospital|Inova Alexandria

Hospital|Mary Washington Hospital|Chippenham Hospital

## Entity-Relationship Diagram

