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 personnels, 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. All they would have to do is put in their social security number and they will be able to view the date they checked in/out of a hospital at some location and which doctor they saw.

The hospital table would consist of a hospital id, address, city, total available beds, and total available operation rooms.

The doctors table would include a doctor id, first name, last name, department, specialty, hospital,start date, end date, and length at hospital.

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, end date.

The patients table would include a social security number, doctor 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 and number of beds.

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 in Richmond VA
4. List the previous hospital that person X was at
5. List the emergency contact name and phone number of patient X
6. What is the age, height, weight, sex, past medical conditions, and blood type of person X
7. List all the doctors in the Emergency Department at Hospital X
8. What hospital does the employee 2343 belong to
9. List the departments that hospital X has
10. When did person X get admitted hospital Y
11. What hospitals are the patients over the age of 65 at
12. How long has doctor X been working in department Y at Hospital Z
13. What doctor did person X see at Hospital Y
14. How many patients are currently in the ICU at hospital X
15. List all patients and dates that have been seen by doctor X
16. How is person X related to the patient
17. What is the age of all patients over the weight of 200 pounds at Hospital X
18. What is the discharge date of the most recent patient in department X at Hospital Y
19. How many doctors have specialty X with more than 3 patients
20. How many nurses work in city X

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|

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