IST 659 Spring 2025

Project Proposal: Hospital Emergency Transportation System

1. Business Description

The primary objective of this project is to establish an efficient emergency transportation system for hospitals to streamline the tracking of patient inflow and outflow across various regions. This system will enable hospital administration to monitor patient pickup and admittance times, ensuring patients are quickly directed to the nearest facility based on their location. Emergency rooms often face chaos and disorder, and this solution aims to boost efficiency by automatically assigning a driver, EMT, and vehicle as soon as a 911 call is received, linking them to the patient and their location. After the patient is promptly picked up and delivered to the nearest hospital, a doctor with expertise relevant to the patient's injury is assigned. This system will be beneficial in the following ways:

- It will make it easier for patients to access timely emergency care at hospitals.
- It will simplify the process for administration to track patient movements and optimize resource allocation.
- The system will maintain records of assigned drivers, EMTs, vehicles, patient pickup locations, delivery times, and the doctors assigned to each case.
- It will enhance operational security and data integrity.

We have assumed the following:

- All emergency vehicles are fully equipped and readily available for dispatch at any time.
- Each region has sufficient hospital facilities to handle incoming emergency patients.

2. Problem Statement

Assignment and records of individuals within an ER room are perhaps one of the most necessary environments for organization. With these rooms having an extremely spontaneous and demanding nature, it is inefficient and much more mistake prone to use a paper based system than utilizing a database management system. Furthermore, with the repercussions of mistakes in the ER being extremely high in regard to an individual's well-being, organization is pertinent. The need for staff members to work hastily is

inefficient with a paper based record system. It is difficult to assign an ambulance, driver, and EMT to drive to a call and determining which hospital should be assigned the patient through an unorganized call and paper system. In addition, it is difficult to find a doctor in the hospital to treat the patient in such short notice. The need to do this as quick as possible and having so many moving and changing components make it necessary to be organized. A database management system would allow for more accuracy, precision, and overall efficiency within the ER.

3. Proposed Solution

This emergency services database will provide an efficient system to handle emergency transportation and also ensure that patients receive medical care as fast as possible. Additionally, this database should optimize the allocations of hospital resources, such as the assignments of ambulances and doctors. The system will aid coordination between users, such as patients, drivers, and hospitals workers in a centralized system. Additionally, this database will provide users to monitor the status of others in the system; for example, doctors can easily access a patient's previous medical records. Overall, the system will be able to improve care efficiency and gap bridges between patients and the doctors/EMTs who aid them.

4. Users

The primary end user are the hospital staff do see how efficient their response time is when a patient requests an ambulance. The hospital staff will be aware of the patients' pickup, drop-off, driver, EMTs, and doctor that they are assigned to when they were requesting the pick-up. This could then be used to see where changes need to be made to ensure greater efficiency for patients, could also be used as evidence to hire more drivers or doctors.

5. Potential Entities and Attributes

Drivers

- Driver ID
- Driver Name
- Driver Phone Number
- Driver Email
- Driver Hire Date

Doctors

- Doctor ID
- Doctor Name
- Doctor Phone Number
- Doctor EmailE
- Doctor Department

EMTS

- EMT ID
- EMT Names
- EMT Phone Number
- EMT Email
- EMT Hire Date

Locations (dropoff and pickup)

- Location ID
- Location Street
- Location City
- Location State
- Location Zip

Patients

- Patient ID
- Name
- Phone Number
- Injuries (M)vh

Hospitals

- Hospital ID
- Street Name
- State
- City
- Zip Code

Vehicles

- VIN

- Make
- Model