COVID-19 VACCINE MANAGEMENT SYSTEM

Background:

To bring Covid-19 pandemic to an end, vaccine rollouts have become more than just a necessity. COVID-19 VACCINE MANAGEMENT SYSTEM provides a centralized database system to administrate vaccination drives. The database maintains a large dataset related to the total number of doses administered, first dose, second dose, patients, hospitals, vendors, suppliers, vaccine availability, and more. These metrics will help different organizations to keep track of the vaccination rate. The database is updated timely to provide accurate information.

Purpose

1. To maintain a record of every single vaccine shot
2. Easy access to root causes in case of disruptions in the vaccination system
3. Forecasting demand and meeting supplies
4. To provide an overview of vaccine appointment scheduling
5. To provide data support for the decision-making of vaccine management
6. To provide platform of data collection and information sharing on vaccine administration

Scope

A database record of COVID 19 vaccine of vendors, suppliers, manufacturing companies, designated destinations, hospitals, patients, slots timings. Database records to track down details of every dose administered.

GitHub - mayavatkrishna/neu_damg6210_dmdd_projectgroup12

Business Problems

- To maintain a record of every single vaccine shot
- Easy access to root causes in case of disruptions in the vaccination system
- Forecasting demand and meeting supplies
- To provide an overview of vaccine appointment scheduling
- To provide data support for the decision-making of vaccine management
- To provide platform of data collection and information sharing on vaccine administration

Key Database Decisions:

- ## Patient

  Definition: Patient is the person that make appointment of vaccines and get vaccinated.
  Attributes: Name, Age, Sex, Patient ID, DOB, SSN, Vaccine, Phone, Email, Insurance Details, Dose No., Address, Doctor/Nurse, Vaccination Center details
  Relations: Patient is related to Vaccine Table: Vaccine, Dose No.
  Patient is related to Insurance Table: Insurance Details
  Patient is related to Doctor/Nurse: Doctor/Nurse

Patient is related to Vaccination Center/Hospital: Vaccination Center details

- **Vaccination Center/Hospital**
  Definition: Vaccination center/Hospital is the place where vaccination takes place.
  Attributes: Name, Center ID, Address, Contact, Email, Vaccine type, Units Available, Employees Available, Capacity to provide vaccine/day
  Relations: Vaccination center/Hospital is related to Vaccine: Vaccine type
  Vaccination center/Hospital is related to Inventory Table: Units Available
  Vaccination center/Hospital is related to Vaccine Center Employees: Employees Available

- **Vaccine provider**
  Definition: Vaccine provider provides vaccines.
  Attributes: Name, Address, ID, Date of manufacture, Quantity, Production/day, Phone, Email, Batch No.
  Relations: Vaccine provider is related to Vaccine table: Batch No.
  Vaccination center/Hospital is related to Inventory: Quantity

- **Transport**
  Definition: The function of Transport is to distribute vaccines.
  Attributes: Company name, Company ID, Address, Email, Phone, Shipment Date, Order placed date, Driver, Transport mode, Quantity transported
  Relation: Transport is related to Driver: Driver

- **Driver**
  Definition: Driver is responsible for delivering vaccines.
  Attributes: Name, ID, Phone, Email, Address, License No., Vehicle associated to

- **Insurance database**
  Definition: Insurance database stores the data of insurance details.
  Attributes: Company Name, Company ID, Patient Name, Patient ID, Type of insurance, Insurance ID, Duration, Is insurance valid?, Amount
  Relations: Insurance database is related to Patient: Patient Name, Patient ID

- **Doctor/Nurse**
  Definition: Doctor/Nurse is responsible for injecting vaccines for patients.
  Attributes: Name, Doctor/Nurse ID, Hospital Associated to, Age, Gender, DOB, Experience in years, License No., Years associated with the hospital, Work days
  Relations: Doctor/ Nurse is related to Vaccine Center/Hospital: Hospital Associated to, Years associated with the hospital

- **Vaccine table**

Definition: Vaccine tables stores the data of vaccines.
Attributes: Vaccine type, Patient Name, Patient ID, Batch No., Time vaccinated, 1st,2nd or 3rd dose?, Doctor Name, Doctor ID, Date Administered, Place Administered – Vaccination Center/Hospital
Relations: Vaccine Table is related to Patient: Patient Name, Patient ID
Vaccine Table is related to Vaccine Provider: Batch No.
Vaccine Table is related to Doctor: Doctor ID, Doctor Name
Vaccine Table is related to Vaccination Center/Hospital: Place Administered-Vaccination Center/Hospital

- ## Inventory table

Definition: Inventory table stores the data on inventory of vaccines available.
Attributes: Address, Phone, Email, Quantity threshold, Inventory ID, Type of vaccines available
Relations: Inventory Table is related to Vaccine Table: Type of vaccines available
Inventory Table is related to Vaccine Provider: Quantity threshold

- ## Vaccine Center Employees

Definition: Vaccine center employees are those who facilitate the smooth operation of the vaccination process.
Attributes: Name, ID, Age, Sex, DOB, Phone, Email, Work duration, Days available, Doctor/Nurse – employee type
Relations: Vaccination Center Employees is related to Doctor/Nurse: Doctor/Nurse -employee type

Our Vaccine management system consists of a database with 10 entities.

Primarily, we have a "PATIENT" entity that will store all the details related to a patient. The Patient entity has insuranceID and VaccinationCenterID as foreign keys. The Patient table fetches the InsuranceID of that specific patient from the Insurance Table.

The Insurance Table contains details such as InsuranceID, Amount, Duration, etc. The Patient entity is then connected with the Vaccine Record table with one mandatory to many mandatory relations. All the patients need to have at least one vaccine record associated with it.

The Vaccine Record entity has PatientID, DoctorID, and VaccinationID as foreign keys to store data related to a specific patient.

Does the Vaccine Center entity contain details such as Type of vaccine, vaccine availability, employees-Doctor/nurse? Which would help us identify which type of vaccine is administered at that specific center and its availability. Every Vaccine center will be managed by one more employee, either a Doctor or a Nurse/Helper.

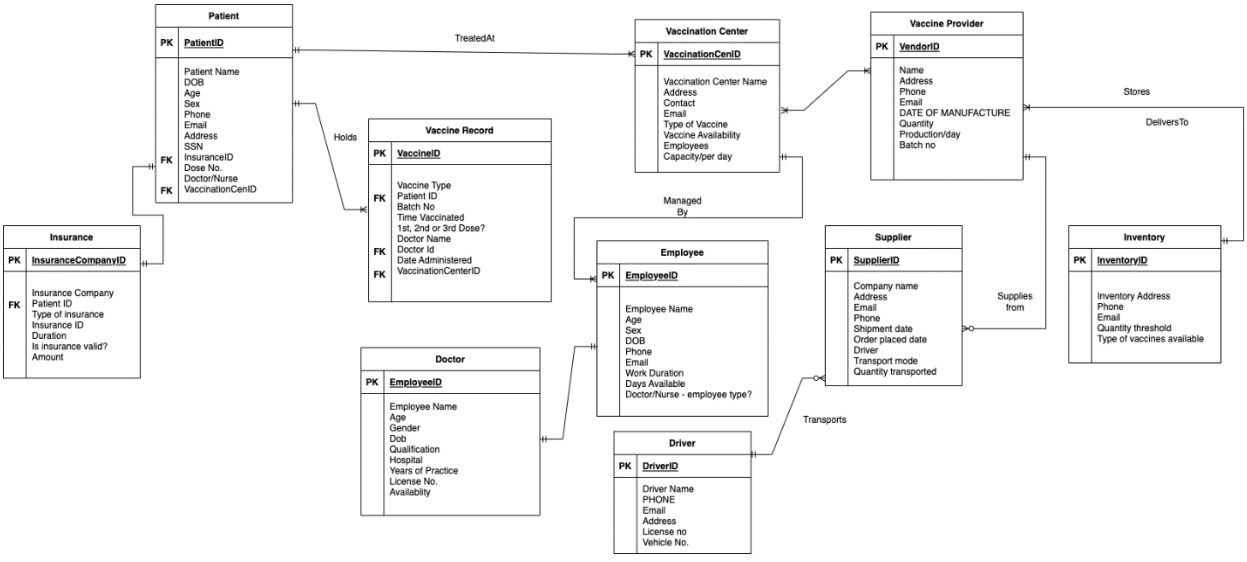
Vaccine Centers are connected to the Vaccine Provider/Vendor entity by many to many mandatory relationships since vendors can provide vaccines to more than just one center. The Vaccine Provider stores VendorID, Date of Manf, Quantity, Batch no. of vaccine, etc.

The Vaccine Provider/Vendor will need an Inventory or a warehouse for storage. Hence, we have an Inventory table connected to the Vaccine Provider table with a mandatory one too compulsory many relations. Some of the attributes of the inventory table are Quantity Threshold types of vaccine available.

Every Vaccine Provider/Vendor needs a Supplier to supply its vaccines to the center. Our database has a Supplier Table which contains attributes such as Supplier ID , Transport mode, Order details, Shipment dates, etc.

The Vaccine Provider is connected to the Supplier table by a mandatory one too many optional relations since a provider may choose not to associate with a supplier for its delivery. We have a Driver entity associated with the Supplier entity to deliver the vaccine to the center. Some of its attributes are Driver's Name, License No. And Vehicle No.

ER DIAGRAM:



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