

PATIENT RECORD MANAGEMENT SYSTEM

DESIGN DOCUMENT

Mission Objective

To develop an efficient database system for managing patient medical records in healthcare institutions. This system aims to streamline the process of recording, storing, and retrieving patient health information ensuring data accuracy and accessibility and hence help in improving the quality of healthcare services.

Entities of ER Diagram

Below mentioned entities have been included in our patient record management system to address various critical business problems within healthcare management such as improving patient care, data accuracy, legal compliance, and financial efficiency. A thorough and effective management of patient medical records is ensured by the system's inclusion of these entities.

A description on why each entity was included is as below:-

- ❖ **Patient:**
The central entity of the system is which represents individuals seeking healthcare services. It is included to track patient personal information to manage medical history and treatment plans efficiently.
- ❖ **Consent Form:**
Address legal and ethical concerns, ensuring that patients provide informed consent for medical procedures and data sharing.
- ❖ **Emergency Contact:**
Ensures quick communication with a patient's designated emergency contact in case of critical health events.
- ❖ **Appointment:**
Schedule and manage patient appointments effectively, reducing wait times and ensuring optimal resource allocation.
- ❖ **Physician:**
Manage healthcare professionals, their specialty and schedules for effective healthcare delivery.
- ❖ **Specialty:**
Stores information about medical specialties, providing a way to categorize and identify the various specialties that physicians may have.

- ❖ **Physician Specialty:**
Defines relationship between physicians and specialties, indicating which physicians specialize in which medical specialties.
- ❖ **Insurance Policy:**
Handles insurance policies information held by patients, aiding in billing, claims processing and ensures that healthcare services are covered.
- ❖ **Insurance Benefits:**
Contains information about various insurance policy benefits.
- ❖ **Policy Benefits:**
Defines relationship between insurance policies and benefits, indicating which insurance policy has which benefit.
- ❖ **Medical Records:**
Stores comprehensive patient health histories and enables healthcare providers to make informed decisions and track patient progress.
- ❖ **Immunizations:**
Records and manages a patient's immunization history, which is crucial for preventive care and public health reporting.
- ❖ **Prescriptions:**
Addresses the need for efficient management of prescription records and helps healthcare providers accurately document as well as track which physicians prescribe medications to specific patients, ensuring that patients receive the appropriate treatments.
- ❖ **Medication**
Addresses the need to manage the specific details of each prescribed medication. It includes essential information about the medication itself, such as its name, dosage, instructions and refills. This level of specificity makes sure that medical personnel have access to all the data they need to treat patients effectively and oversee medical schedules.
- ❖ **Treatment:**
Document and manage medical procedures, surgeries, and treatments performed on patients.
- ❖ **Diagnosis:**
To store and track patient diagnoses made by the physician aiding in treatment planning and medical research.

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- ❖ **Lab Test:**
Manages the tracking of various laboratory tests ordered by the physician.
- ❖ **Lab Results:**
Records and access laboratory test results, facilitating prompt diagnosis and treatment decisions.
- ❖ **Billing:**
Generates and manage patient bills, simplifying the financial aspect of healthcare services.
- ❖ **Feedback:**
To collect patient feedback and improve the quality of healthcare services by addressing concerns and enhancing patient satisfaction.

Entity Relations:

- ❖ **Medical Records-Lab Tests:**
 - One Medical Record may include many Lab tests
 - Each Lab Test must be included in one medical record
- ❖ **Medical Records–Billings:**
 - One Medical Record is Associated with one billing
 - One Billing must contain one or more Medical Records
- ❖ **Medical Record–Immunization:**
 - Each Medical Record may involve one or more immunizations
 - Each Immunization is involved with only one medical record
- ❖ **Medical Record– Prescriptions:**
 - Each medical record must include one or more prescriptions
 - Each prescription must include only 1 medical record
- ❖ **Medical Record– Patients:**
 - Each Medical Record must belong to only one patient
 - Each Patient may have many medical records
- ❖ **Test Result–Diagnosis:**
 - Each Test Result is for only one diagnosis
 - Each Diagnosis must be for one or more Test results
- ❖ **Lab Test– Test results:**
 - Each Lab Test is associated with one or more test results
 - Each Test Result must be associated with one Lab test

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- ❖ Lab Test– Physician:
 - One lab test must be ordered by one physician
 - One physician may order one or more lab tests.
- ❖ Billing–Treatment:
 - One billing may include many treatments
 - One treatment must be included in only one billing
- ❖ Treatment–Patient:
 - One patient may be associated with many Treatments
 - One treatment must be associated with only one Patient
- ❖ Prescriptions–Medications:
 - A prescription must have one medication
 - A medication must be included in one or more prescriptions
- ❖ Prescription– Physician:
 - One prescription must be provided by one physician
 - One physician may give zero or one prescription.
- ❖ Patient–Consent Form:
 - One Patient may sign many Consent Forms
 - Consent form must belong to one Patient
- ❖ Patient- Patient Feedback
 - Patient must provide one Patient Feedback
 - Patient Feedback may be received by many Patient
- ❖ Patient- Emergency Contact
 - Patient must have one or many Emergency Contacts
 - Emergency Contact must belong to one Patient
- ❖ Patient - Insurance Policy
 - Patient may have many Insurance Policy
 - Insurance Policy must belong to one Patient
- ❖ Patient- Appointment
 - Patient may have many Appointments
 - Appointment must belong to one Patient.
- ❖ Insurance Policy - Policy Benefits
 - One insurance must have one or more policy Benefits
 - One Policy Benefit must be included in one insurance policy

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- ❖ Insurance Benefits - Policy Benefits
 - One policy Benefits must have one insurance benefit
 - One insurance Benefit must be included in one or more policy benefits
- ❖ Appointment - Physician
 - Appointment must be scheduled by one Physician
 - Physician must schedule one or more Appointments
- ❖ Medical Records - Treatment
 - Treatment must be contained in one Medical Record
 - Medical Record may contain many Treatments
- ❖ Diagnosis - Treatment
 - Diagnosis may be the basis of many Treatments
 - Treatment is based on one Diagnosis
- ❖ Prescription - Physician
 - Prescription must be prescribed by one Physician
 - Physician must prescribe one or more Prescriptions
- ❖ Physician - Physician Speciality
 - A physician can have multiple specialties
 - Each specialty is associated with only one physician
- ❖ Physician Speciality- Speciality
 - One specialty can be associated with multiple physicians
 - Each physician can have only one specialty
- ❖ Treatment - Physician
 - Treatment must be given by one Physician
 - Physician may give many Treatments
- ❖ Physician-Lab Test
 - Lab Test must be prescribed by a Physician
 - A Physician may prescribe many Lab tests.

