

# Patient Database Management System Documentation

## Database Schema Overview

This document outlines the structure and sample data for a Patient Database Management System (DBMS). The following tables represent the core components of the database:

### 1. Patients

Field Name	Data Type	Description
PatientID	INT (PRIMARY KEY)	Unique identifier for each patient
FirstName	VARCHAR(50)	Patient's first name
LastName	VARCHAR(50)	Patient's last name
DateOfBirth	DATE	Patient's date of birth
Gender	VARCHAR(10)	Patient's gender identity
Address	VARCHAR(255)	Patient's street address
City	VARCHAR(50)	Patient's city of residence
State	VARCHAR(2)	Patient's state (2-letter code)
ZipCode	VARCHAR(10)	Patient's postal code
PhoneNumber	VARCHAR(15)	Patient's primary contact number
Email	VARCHAR(100)	Patient's email address
InsuranceID	INT (FOREIGN KEY)	Reference to insurance information
EmergencyContactID	INT (FOREIGN KEY)	Reference to emergency contact
CreatedDate	DATETIME	Date patient record was created
LastUpdated	DATETIME	Date patient record was last modified

### 2. Medical\_History

Field Name	Data Type	Description
HistoryID	INT (PRIMARY KEY)	Unique identifier for each history entry
PatientID	INT (FOREIGN KEY)	Reference to patient
Condition	VARCHAR(100)	Name of medical condition
DiagnosisDate	DATE	Date condition was diagnosed
Notes	TEXT	Additional information about condition
Status	VARCHAR(20)	Current status (Active, Resolved, etc.)

### 3. Medications

Field Name	Data Type	Description
MedicationID	INT (PRIMARY KEY)	Unique identifier for medication record
PatientID	INT (FOREIGN KEY)	Reference to patient
MedicationName	VARCHAR(100)	Name of medication
Dosage	VARCHAR(50)	Dosage information
Frequency	VARCHAR(50)	How often medication is taken
StartDate	DATE	Date medication was started
EndDate	DATE	Date medication was discontinued (if applicable)
PrescribedBy	INT (FOREIGN KEY)	Reference to provider who prescribed
Notes	TEXT	Additional instructions or notes

#### 4. Appointments

Field Name	Data Type	Description
AppointmentID	INT (PRIMARY KEY)	Unique identifier for appointment
PatientID	INT (FOREIGN KEY)	Reference to patient
ProviderID	INT (FOREIGN KEY)	Reference to healthcare provider
AppointmentDate	DATETIME	Date and time of appointment
Purpose	VARCHAR(255)	Reason for visit
Status	VARCHAR(20)	Status (Scheduled, Completed, Cancelled, etc.)
Notes	TEXT	Additional notes about appointment

#### 5. Providers

Field Name	Data Type	Description
ProviderID	INT (PRIMARY KEY)	Unique identifier for provider
FirstName	VARCHAR(50)	Provider's first name
LastName	VARCHAR(50)	Provider's last name
Specialty	VARCHAR(100)	Provider's medical specialty
LicenseNumber	VARCHAR(50)	Professional license number
PhoneNumber	VARCHAR(15)	Provider's contact number
Email	VARCHAR(100)	Provider's email address

#### 6. Insurance

Field Name	Data Type	Description
InsuranceID	INT (PRIMARY KEY)	Unique identifier for insurance record
Provider	VARCHAR(100)	Name of insurance company
PolicyNumber	VARCHAR(50)	Patient's policy number
GroupNumber	VARCHAR(50)	Group insurance number
CoverageStartDate	DATE	When coverage began
CoverageEndDate	DATE	When coverage ends (if applicable)
PrimaryHolder	VARCHAR(100)	Name of primary policy holder

7. Emergency\_Contacts

Field Name	Data Type	Description
ContactID	INT (PRIMARY KEY)	Unique identifier for contact
PatientID	INT (FOREIGN KEY)	Reference to patient
FirstName	VARCHAR(50)	Contact's first name
LastName	VARCHAR(50)	Contact's last name
Relationship	VARCHAR(50)	Relationship to patient
PhoneNumber	VARCHAR(15)	Contact's phone number
Address	VARCHAR(255)	Contact's address

Sample Data

Patients Table

PatientID	FirstName	LastName	DateOfBirth	Gender	Address	City	State	ZipCode	PhoneNumber
1001	John	Smith	1978-05-12	Male	123 Main St	Springfield	IL	62704	217-555-1234
1002	Sarah	Johnson	1985-11-23	Female	456 Oak Ave	Chicago	IL	60611	312-555-5678
1003	Michael	Williams	1962-07-08	Male	789 Pine Rd	Peoria	IL	61614	309-555-9012
1004	Emily	Davis	1990-03-17	Female	321 Maple Dr	Urbana	IL	61801	219-555-3456
1005	Robert	Brown	1973-09-29	Male	654 Elm St	Rockford	IL	61101	815-555-7890

Medical\_History Table

HistoryID	PatientID	Condition	DiagnosisDate	Notes	Status
2001	1001	Hypertension	2018-06-20	Well-controlled with medication	Active
2002	1001	Type 2 Diabetes	2019-10-15	Diet-controlled, A1C stable at 6.7	Active
2003	1002	Asthma	2010-03-12	Seasonal flare-ups, prescribed rescue inhaler	Active
2004	1003	Coronary Artery Disease	2015-11-08	Stent placed 2016, annual cardiology check-ups	Active
2005	1004	Migraine	2017-01-25	Triggered by stress and bright lights	Active
2006	1005	Appendicitis	2005-07-14	Appendectomy performed 7/15/2005	Resolved

Medications Table

MedicationID	PatientID	MedicationName	Dosage	Frequency	StartDate	EndDate	PrescribedBy
3001	1001	Lisinopril	20mg	Once daily	2018-06-22	NULL	6001
3002	1001	Metformin	500mg	Twice daily	2019-10-18	NULL	6001
3003	1002	Albuterol	90mcg	As needed	2010-03-15	NULL	6003
3004	1003	Atorvastatin	40mg	Once daily	2015-11-12	NULL	6002
3005	1004	Sumatriptan	50mg	As needed	2017-02-03	NULL	6001
3006	1005	Amoxicillin	500mg	Three times daily	2023-09-15	2023-09-25	6004

Appointments Table

AppointmentID	PatientID	ProviderID	AppointmentDate	Purpose	Status	Notes
4001	1001	6001	2024-04-15 14:30:00	Annual physical	Scheduled	Fasting bloodwork required
4002	1002	6003	2024-03-22 10:15:00	Asthma follow-up	Completed	Discussed medication adjustments for spring season
4003	1003	6002	2024-05-05 09:00:00	Cardiology check-up	Scheduled	EKG scheduled
4004	1004	6001	2024-03-10 15:45:00	Migraine consultation	Completed	Prescribed preventative medication
4005	1005	6004	2024-04-28 11:30:00	Post-op follow-up	Scheduled	Review recent lab results

Providers Table

ProviderID	FirstName	LastName	Specialty	LicenseNumber	PhoneNumber	Email
6001	David	Wilson	Family Medicine	IL12345	217-555-2000	<a href="mailto:dwilson@clinic.com">dwilson@clinic.co</a>
6002	Lisa	Garcia	Cardiology	IL23456	312-555-3000	<a href="mailto:lgarcia@clinic.com">lgarcia@clinic.com</a>
6003	Thomas	Martinez	Pulmonology	IL34567	217-555-4000	<a href="mailto:tmartinez@clinic.com">tmartinez@clinic.c</a>
6004	Jennifer	Anderson	Surgery	IL45678	309-555-5000	<a href="mailto:janderson@clinic.com">janderson@clinic.</a>
6005	Richard	Taylor	Endocrinology	IL56789	217-555-6000	<a href="mailto:rtaylor@clinic.com">rtaylor@clinic.com</a>

Insurance Table

InsuranceID	Provider	PolicyNumber	GroupNumber	CoverageStartDate	CoverageEndDate
5001	BlueCross	BC123456789	GRPIL1234	2023-01-01	2024-12-31
5002	Aetna	AET987654321	AETN5678	2024-01-01	2024-12-31
5003	Medicare	MED12345678	N/A	2022-07-01	NULL
5004	UnitedHealthcare	UHC564738291	UHCIL9012	2023-09-01	2024-08-31
5005	Humana	HUM837465921	HUM4567	2024-01-01	2024-12-31

Emergency\_Contacts Table

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ContactID	PatientID	FirstName	LastName	Relationship	PhoneNumber	Address
7001	1001	Mary	Smith	Spouse	217-555-7891	123 Main St, Springfield, IL 62704
7002	1002	Daniel	Johnson	Husband	312-555-1235	456 Oak Ave, Chicago, IL 60611
7003	1003	Elizabeth	Williams	Daughter	847-555-8765	432 Cedar Ln, Evanston, IL 60201
7004	1004	James	Davis	Brother	217-555-4568	567 Walnut St, Champaign, IL 61820
7005	1005	Patricia	Brown	Wife	815-555-7655	654 Elm St, Rockford, IL 61101

Database Relationships

1. One-to-One Relationships:
- Each patient has one insurance record
2. One-to-Many Relationships:
- One patient can have many medical history entries
  - One patient can have many medication records
  - One patient can have many appointments
  - One patient can have many emergency contacts
  - One provider can have many appointments

Data Security & Compliance Notes

This database schema is designed with HIPAA compliance in mind. Implementation should include:

- Encryption of all PHI (Protected Health Information)
- Access controls with role-based permissions
- Comprehensive audit logging
- Secure backup procedures
- Data retention policies in accordance with legal requirements
- Data minimization principles to collect only necessary information

Reporting Capabilities

The DBMS supports generation of the following standard reports:

1. Patient Demographics Report
2. Appointment Scheduling Report

3. Provider Activity Report
4. Medication Compliance Report
5. Insurance Coverage Analysis
6. Clinical Outcomes Tracking

For custom reporting needs, the system supports SQL query access with appropriate security controls.