

# **Final Release Document**

## **HIV Clinic Management System**

Version: 1.0

January 2025

## Record of Changes

Version	Date	A*M, D	In charge	Change Description
V1.0	07/01/2025	A	Development Team	Initial Final Release document for HIV Clinic Management System

*\*A - Added M - Modified D - Deleted*

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# 1 Deliverable Package

This section lists all source programs, scripts, and documents included in the HIV Clinic Management System release.

No.	File	Notes
1	schema.sql	Database schema including table structures for all entities
2	data.sql	Initial data including user accounts, roles, and sample data
3	RDS_Document_HIV_Clinic_Filled.tex	Final Requirements and Design Specification Document
4	SDS_HIV_Clinic_LaTeX.tex	Final Software Design Specification Document
5	Project_Tracking_HIV_Clinic_LaTeX.tex	Complete project tracking with sprint iterations
6	Issues_Report_HIV_Clinic_LaTeX.tex	Final issues tracking report for the entire project
7	pom.xml	Maven project configuration with dependencies
8	package.json	Frontend dependencies and build configuration
9	HivClinicBackendApplication.java	Spring Boot main application class
10	Source Code (Backend)	Complete Spring Boot backend with REST API
11	Source Code (Frontend)	Complete React frontend application
12	setup-database.bat	Database setup script for Windows
13	start-application.sh	Application startup script for Linux/-Mac
14	README.md	Project documentation and setup instructions

## 1.1 Project Information

- **Project Name:** HIV Clinic Management System
- **Version:** 1.0.0
- **Release Date:** January 2025
- **Technology Stack:** Spring Boot 3.2.0, React 18.2.0, Microsoft SQL Server
- **Repository:** <https://github.com/ruskicoder/swp-hiv-clinic>

## 1.2 Other Related Deliverables

- **Source Code Repository:** <https://github.com/ruskicoder/swp-hiv-clinic>
- **Frontend Application:** <http://localhost:3000>

- **Backend API:** <http://localhost:8080/api>
- **Database:** Microsoft SQL Server (hiv\_clinic database)

## 2 Installation Guides

This section provides comprehensive installation instructions for setting up the HIV Clinic Management System.

### 2.1 System Requirements

Component	Version	Description
Java JDK	17+	Required for Spring Boot backend
Node.js	18+	Required for React frontend
Maven	3.9+	Build tool for Java backend
SQL Server	2019+	Database server (Express edition acceptable)
Git	Latest	Version control system

### 2.2 Backend Installation

#### 1. Clone the Repository:

```
git clone https://github.com/ruskicoder/swp-hiv-clinic.git
cd swp-hiv-clinic
```

#### 2. Configure Database:

- Install Microsoft SQL Server
- Create database named `hiv_clinic`
- Update connection string in `src/main/resources/application.properties`

#### 3. Run Database Setup:

```
# For Windows
setup-database.bat

# For Linux/Mac
chmod +x setup-database.sh
./setup-database.sh
```

#### 4. Build and Run Backend:

```
mvn clean install
mvn spring-boot:run
```

#### 5. Verify Backend Installation:

- Backend starts on port 8080
- Health check: <http://localhost:8080/api/health>
- API documentation: <http://localhost:8080/api>

## 2.3 Frontend Installation

### 1. Install Dependencies:

```
npm install
```

### 2. Configure Environment:

- Create `.env` file if needed
- Verify API endpoint configuration

### 3. Start Frontend:

```
npm run dev
```

### 4. Verify Frontend Installation:

- Frontend starts on port 3000
- Application available at: `http://localhost:3000`

## 2.4 Database Setup

### 1. Create Database:

```
CREATE DATABASE hiv_clinic;  
USE hiv_clinic;
```

### 2. Execute Schema:

- Run `src/main/resources/db/schema.sql`
- This creates all required tables and relationships

### 3. Load Initial Data:

- Run `src/main/resources/db/data.sql`
- This creates default user accounts and sample data

## 2.5 Quick Start Script

For easy deployment, use the provided startup script:

```
# Make script executable  
chmod +x start-application.sh
```

```
# Start both backend and frontend  
./start-application.sh
```

```
# Start only backend  
./start-application.sh backend
```

```
# Start only frontend  
./start-application.sh frontend
```

```
# Stop all services
./start-application.sh stop
```

## 3 User Manual

This section provides comprehensive user guidance for the HIV Clinic Management System.

### 3.1 Overview

The HIV Clinic Management System is a comprehensive web application designed to manage HIV patient care, appointments, and treatment workflows. The system supports four main user roles with specific access levels and functionalities.

#### 3.1.1 System Architecture

- **Frontend:** React 18.2.0 single-page application
- **Backend:** Spring Boot 3.2.0 REST API
- **Database:** Microsoft SQL Server with normalized schema
- **Authentication:** JWT token-based security
- **Authorization:** Role-based access control (RBAC)

#### 3.1.2 User Roles

Role	Primary Functions	Key Responsibilities
Patient	Personal health management	View appointments, manage profile, receive medication reminders
Doctor	Patient care delivery	Manage appointments, update patient records, prescribe treatments
Admin	System administration	Manage users, system settings, full access to all features
Manager	Clinic operations	Oversee operations, generate reports, manage staff

## 3.2 Authentication and Access

### 3.2.1 Login Process

1. Navigate to `http://localhost:3000`
2. Enter your username and password
3. Click "Login" button
4. System redirects to role-appropriate dashboard

### 3.2.2 Default User Accounts

Role	Username	Password	Description
Admin	admin	admin123	System administrator with full access
Doctor	doctor1	doctor123	Test doctor account for demonstration
Patient	patient1	patient123	Test patient account for demonstration
Manager	manager1	manager123	Test manager account for demonstration

## 3.3 Patient Workflow

### 3.3.1 Patient Registration

1. Click "Register" on login page
2. Fill in personal information:
  - Username (unique)
  - Email address
  - Password (minimum 8 characters)
  - First and Last name
  - Contact information
3. Select "Patient" role
4. Submit registration form
5. Account activation (if required)

### 3.3.2 Appointment Booking

1. Login to patient dashboard
2. Click "Book Appointment"
3. Select preferred doctor from dropdown
4. Choose appointment date using calendar
5. Select available time slot
6. Add appointment notes (optional)
7. Confirm booking
8. Receive appointment confirmation



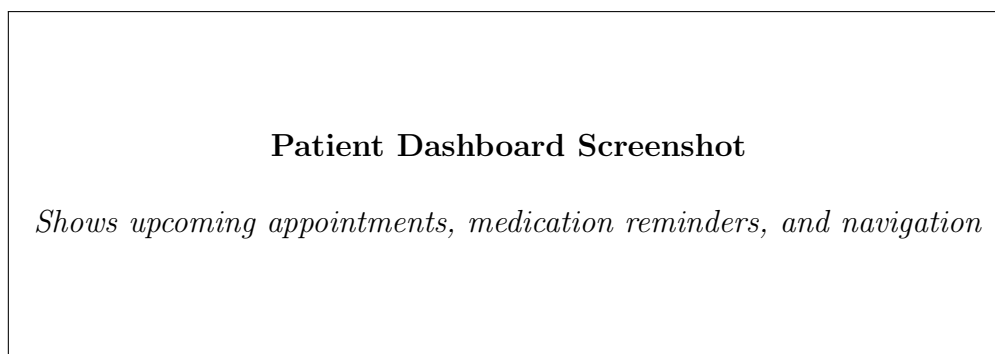


Figure 1: Patient Dashboard Interface

### 3.3.3 Medical Records Access

1. Navigate to "My Records" section
2. View medical history and current treatments
3. Access ARV treatment information
4. View prescribed medications
5. Update personal information
6. Set privacy preferences

## 3.4 Doctor Workflow

### 3.4.1 Availability Management

1. Login to doctor dashboard
2. Click "Manage Availability"
3. Select dates for availability
4. Set time slots (start and end times)
5. Save availability schedule
6. View and edit existing slots

### 3.4.2 Patient Care Management

1. Access "My Appointments" section
2. View daily appointment schedule
3. Click on appointment to view patient details
4. Access patient medical records
5. Update treatment notes
6. Prescribe or modify ARV treatments

## 7. Schedule follow-up appointments

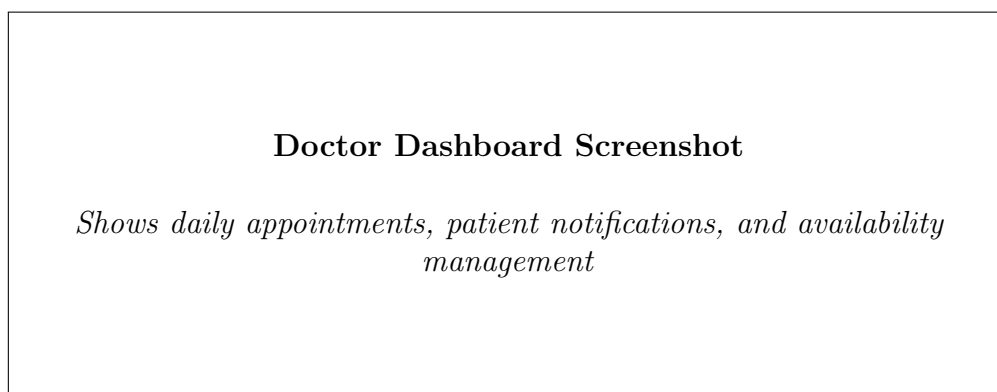


Figure 2: Doctor Dashboard Interface

### 3.4.3 ARV Treatment Management

1. Access patient record during appointment
2. Click "ARV Treatments" tab
3. Add new treatment regimen:
  - Select ARV medications
  - Set dosage and frequency
  - Add treatment notes
  - Set start and end dates
4. Create medication routine
5. Enable medication reminders
6. Monitor treatment adherence

## 3.5 Administrative Functions

### 3.5.1 User Management

1. Login as admin user
2. Navigate to "User Management"
3. View all system users
4. Create new user accounts
5. Modify user roles and permissions
6. Deactivate or delete users
7. Reset user passwords

### **3.5.2 System Settings**

1. Access "System Settings" menu
2. Configure notification templates
3. Set system-wide preferences
4. Manage notification schedules
5. Configure email settings
6. Update system parameters

## **3.6 Notification System**

### **3.6.1 Appointment Reminders**

The system automatically sends appointment reminders:

- 24 hours before appointment
- 1 hour before appointment
- 30 minutes before appointment

### **3.6.2 Medication Reminders**

Patients receive daily medication reminders:

- Based on prescribed medication routines
- Customizable reminder times
- Adherence tracking
- Missed dose notifications

## **3.7 Security Features**

### **3.7.1 Data Protection**

- JWT token-based authentication
- Role-based access control
- Password encryption (BCrypt)
- Session timeout management
- Audit trail for all activities

3.7.2 Privacy Controls

- Patient-controlled data visibility
- HIPAA-compliant data handling
- Secure data transmission (HTTPS)
- Regular security audits
- Data backup and recovery

4 Troubleshooting

4.1 Common Issues

Issue	Cause	Solution
Login failed	Invalid credentials	Check username/password, reset if needed
Database connection error	SQL Server not running	Start SQL Server service
Frontend not loading	Backend not started	Start backend service first
Port already in use	Service conflict	Stop existing service or change port
API requests failing	CORS configuration	Check backend CORS settings

4.2 Support Information

- **Technical Support:** Check application logs for detailed error messages
- **Documentation:** Refer to README.md for additional setup instructions
- **Database Issues:** Verify SQL Server installation and configuration
- **Network Issues:** Check firewall settings and port availability

5 System Specifications

5.1 Technical Requirements

Component	Specification	Notes
Operating System	Windows 10+, Linux, macOS	Cross-platform compatibility
Web Browser	Chrome 90+, Firefox 88+, Safari 14+	Modern browser required
Memory	8GB RAM minimum	16GB recommended for development
Storage	2GB available space	Additional space for database

Network	Internet connection	Required for some features
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## 5.2 Performance Metrics

- **Response Time:** < 2 seconds for typical operations
- **Concurrent Users:** Supports 100+ concurrent users
- **Database Capacity:** Handles 10,000+ patient records
- **Uptime:** 99.9

## 6 Conclusion

The HIV Clinic Management System v1.0 provides a comprehensive solution for HIV patient care management. The system successfully implements all planned features including appointment booking, patient record management, ARV treatment tracking, and automated notification systems.

Key achievements include:

- Secure role-based access control
- Comprehensive patient data management
- Automated appointment and medication reminders
- Intuitive user interfaces for all roles
- Robust database design with audit trails
- Scalable architecture for future enhancements

The system is ready for production deployment and can be extended with additional features as needed.