

Health & Wellness Backend System

Tech Stack: Node.js (Express)

A robust, scalable backend for a health-focused platform offering supplement tracking, vaccine scheduling, telemedicine, user management, and interactive health assessments.

Overview

This system powers a comprehensive digital health application that enables users to manage their health routines, appointments, vaccinations, and more—while giving admins and healthcare providers the tools to manage data, users, and services efficiently.

From OTP-based email verification to managing supplement inventories, from telemedicine appointment scheduling to 2FA security, this backend offers a full ecosystem to support health-conscious users, doctors, caregivers, and administrators.

Role-Based Access Control (RBAC)

The system employs robust role-based access management, ensuring that each API and module is securely accessed based on defined user roles. The five primary roles are:

User – Standard platform user with access to personal health tools, schedules, and services.

Doctor – Healthcare professional with privileges to manage appointments, patient notes, and availability.

Caregiver – Assigned support role with access to specific patient-related modules such as notes and relationships.

Admin – Manages user data, approvals, content, and reports across the platform.

Superadmin – Full access to all platform features, including control over admin accounts and high-level settings.

Every API is protected and scoped according to these roles using middleware-level authorization, ensuring strict control over data visibility and operations across the platform.

Features at a Glance

Secure Authentication – Email OTP, Google login, and 2FA.

Comprehensive User Management – Profile management, admin controls, role-based access.

Supplement & Vaccine Tracking – Log, schedule, and manage health products.

Telemedicine Support – Virtual consultation scheduling & communication.

Doctor & Caregiver Tools – Schedule management, notes, roles, and availability.

Interactive Health Tools – Quizzes, feedback, health scores, and goals.

Admin & Superadmin Dashboards – Control over users, usage analytics, approvals, and more.

Modules Summary

Auth Module

Handles user registration, secure login, OTP verification, and Google OAuth. Also includes Google reCAPTCHA for bot protection and token verification for secure sessions.

User Module

Profile Management

- View/update personal details
- Upload profile pictures
- Manage FCM tokens for push notifications
- Set/change/delete password
- Delete account

Admin Tools

- View all users
- Activate/deactivate accounts
- Assign/revoke admin roles
- Permanently delete users and related data

Two-Factor Authentication (2FA)

- Enable/disable 2FA
- Verify login via OTP
- Regenerate recovery codes

Notification Preferences

- View and update how users receive alerts

Supplement Module

Manage a database of supplements with stock tracking.

- CRUD operations for supplements

Bulk upload via CSV/JSON

Stock adjustments

Admin-controlled bulk deletion

Supplement Schedule Module

Enable users to schedule supplement intake with smart tracking.

Create/edit/delete supplement schedules

Track daily and historical dose intake

Update status as taken/missed

Add quantities per schedule

Vaccine Module

A full registry for vaccines offered.

Add/update/delete vaccines

Bulk import from CSV/JSON

Manage inventory

Admin bulk deletion support

Vaccine Schedule Module

Users can schedule vaccines for themselves or dependents.

Schedule/view/update/delete vaccinations

Check daily logs and schedules by date

Activate/deactivate vaccine plans

Telemedicine Module

Support virtual consultations between users and doctors.

Schedule and manage appointments

Doctor availability management

Users/Doctors can update/cancel appointments

Status control for active/inactive appointments

Support Module

User support with attachment capabilities.

Submit support tickets

Admins can view and update ticket statuses

? Question Module

Admin-controlled quiz questions system.

Add, update, and delete questions

Fetch all questions for users

Quiz Module

Interactive health assessments for users.

Create/update/delete quizzes

List quizzes available for users

Admin panel to manage quizzes

✓ **Result Module**

Submit and retrieve quiz results.

Users can submit answers

View submitted answers and scores

📊 **Health Score Module**

Track personal health improvements.

Submit and view personal health scores

🎯 **Health Goal Module**

Record short-term and long-term health objectives.

Save goals (admin/user)

Retrieve saved goals

💬 **Feedback Module**

Gather insights directly from users.

Users can submit feedback

Admins can view/delete feedback

Doctor Module

Comprehensive doctor management system.

Add/edit doctor profiles with photo support

View doctor details and appointments

Admin and doctor roles supported

Content Hub Module

Share educational content with users.

Admins can upload documents/media

Users can view content

CRUD operations for content

Caregiver Module

Track caregiving relationships.

View who cares for the user and vice versa

Caregiver Notes Module

Communication and documentation between caregivers and patients.

Write/view notes for caregivers and patients

Call Module

Telephony integration using Twilio & WebRTC.

Handle incoming and forwarded Twilio calls

Set up WebRTC calls for secure real-time communication

Availability Module

Manage time slots for doctor availability.

View and update availability (Admin only)

Admin User Management Routes

Admin tools for user moderation and role control.

View all user profiles

Assign/remove admin roles

Block/unblock users

Admin - Schedule & Usage Routes

Admins can monitor platform-wide health engagement.

View all medicine/vaccine schedules

View appointment bookings

View usage statistics

Super Admin Routes

Control panel for platform ownership and oversight.

Approve/reject new admin accounts

View all admins

Block/unblock administrators

Bot Assistant Module

A powerful AI-driven assistant integrated into the platform to enhance user experience by automating tasks like managing medicine and vaccine schedules. This module interacts via both **API** and **WebSocket (socket.io)** and supports contextual understanding to assist users in managing their health activities.

Base API Route:

POST localhost:8002/api/v1/bot/chat

Bot Capabilities

Create new **medicine** or **vaccine schedules** for users using natural input

Retrieve existing medicine or vaccine schedule information

Assist users through chat-like interaction

Provide contextual support via conversations

🔗 Socket Events (Real-time Communication)

📡 **request:send**

Send a caregiver request to another user.

```
json
CopyEdit
{
  "receiverId": "6826cf6e99b632c7e1199414"
}
```

Emits:

`request:send:success`

`request:send:error`

`request:incoming`

✂️ **request:updateStatus**

Update the status of a caregiver request (accept or reject).

```
json
CopyEdit
{
  "requestId": "6826db46e6bb27d7d2dde91b",
  "status": "accepted" // or "rejected"
}
```

Emits:

`request:updateStatus:success`

`request:updateStatus:error`

`request:accepted:notify`

request:getAllPending

Fetch all pending caregiver requests.

```
json
CopyEdit
{} // no body required
```

Emits:

`request:getAllPending:success`

`request:getAllPending:error`

user:getSuggestedUsers

Search and fetch users that can be suggested as caregivers.

```
json
CopyEdit
{
  "search": ""
}
```

Emits:

`user:getSuggestedUsers:success`

`user:getSuggestedUsers:error`

request:removeCaregiver

Remove a caregiver relationship.

```
json
CopyEdit
{
  "caregiverId": "6826db46e6bb27d7d2dde91b"
}
```

Emits:

`request:removeCaregiver:success`

`request:removeCaregiver:error`

`request:removedByUser`

Related API Endpoints

GET `/api/v1/caregiver/my-caregivers`

→ Get users who are currently caregivers for you

GET `/api/v1/caregiver/i-care-for`

→ Get users for whom you are a caregiver

Both routes require Authorization header (JWT Bearer token)

Pending Integration

The majority of backend modules and APIs have been implemented successfully. However, certain dashboard components and features are still under development and will be integrated in upcoming phases.

Dashboard Modules (Pending)

Health Score Dashboard

→ **Visualizations and trend analysis for submitted health scores per user**

Vaccine Dashboard

→ **Comprehensive overview of vaccine inventory, usage statistics, and related insights**

Vaccine Schedule Dashboard

→ Calendar view and timeline display of scheduled and completed vaccinations

Supplement Dashboard

→ Insights into supplement stock levels, user consumption patterns, and automated alerts

Medicine Schedule Dashboard

→ Daily and weekly schedule monitoring, dose tracking, and completion statistics

Note: All other functionality-related dashboards are currently pending and will be added progressively.

💬 Video Call Chat (Pending)

Chat Feature for Video Calls

→ The real-time chat system for video consultations is pending integration

→ This module is directly dependent on the finalization of the video call system (WebRTC)

→ Once stabilized, chat will be embedded in the video call flow to support seamless communication between doctors and users