DenTech v2 User Manual

1. Introduction

1.1. What is Dentech?

DenTech is a web-based platform for **oral cancer (OC) diagnosis**, built on advanced **deep learning (DL) models**. The platform is designed to classify **sixteen types of OC lesions** in their benign stages and **segment lesion areas** from photographic images and streaming videos of patients' mouths.

DenTech provides a **user-friendly interface** that facilitates the real-time diagnostic workflow while supporting the retraining of machine learning models to improve accuracy over time. It's not just a diagnostic assistant—it also acts as a collaborative ecosystem for clinical decision-making and model enhancement.

1.2. Purpose of the platform

The primary purpose of the DenTech platform is to:

- **Capture and analyze oral images and videos** using real-time AI-driven classification and segmentation.
- **Support early detection of oral cancer lesions** to reduce the diagnostic burden on general practitioners.
- **Facilitate retraining and continuous improvement** of deep learning models using real-world corrections and specialist feedback.
- **Provide an educational environment** for students and trainees in the dental and medical fields.

1.3. Target Users & Roles

DenTech supports a group of users, each with defined roles and access levels that align with their responsibilities:

Role	Description
Admin	Full access to all modules, including users, roles, clinics and audit logs.
Doctor	Can view and annotate assigned patient images and access patient information.
Nurse	Supports patient uploads, editing information and assisting doctors.

Each user role is assigned specific permissions which control their ability to view, edit, upload, assign, or annotate data across the system.

1.4. How to Use This Manual

This user manual is structured to guide you through every part of the Dentech web application. Use the navigation bar or table of contents to jump to the relevant section based on your needs:

- New user? Start with **Getting Started** and **Navigating the Platform**.
- Managing patients or doctors? Refer to **Managing Patients**, **Patient Page** and **Managing Users**.
- Handling permissions or system settings? See **Roles**, **Clinics**, and **Audit Logs**.
- Encountering issues? Check **FAQs & Troubleshooting**.

Each section includes step-by-step instructions, feature overviews, and tips to help you make the most of the platform.

2. Getting Started

2.1. System Requirements

To ensure optimal performance and compatibility, use the platform on the following:

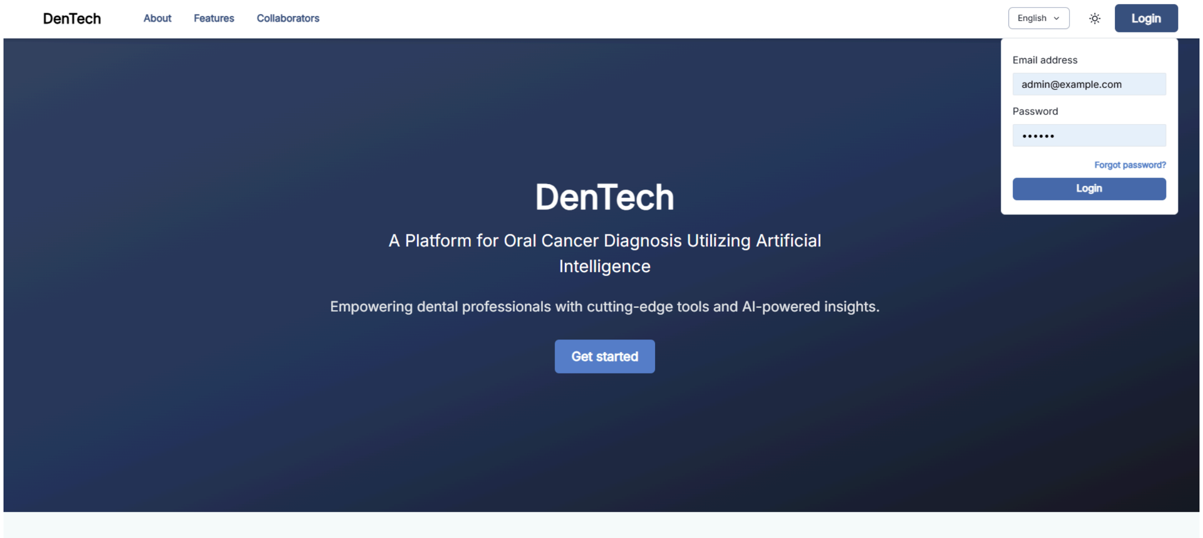
- **Web Browser**: Latest versions of Chrome, Firefox, Edge, or Safari
- **Internet Connection**: Stable broadband connection
- **Device**: Desktop or laptop preferred

2.2. Accessing the Platform

- Open your preferred browser.
- Go to the official DenTech platform URL provided by your system administrator or institution.
- If you're a new user, your admin will provide a link to set your password.

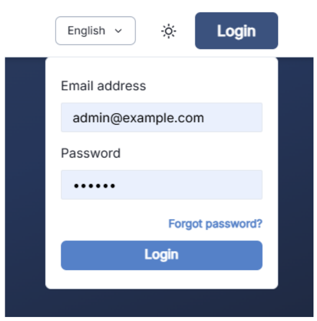
2.3. Logging In

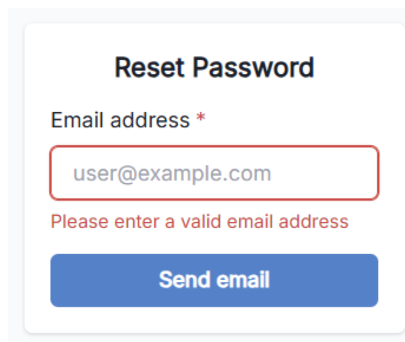
- On the home page, click the **"Login"** button located on the top-right corner.
- Enter your **email** and **password** in the dropdown..
- Click **"Login"** to proceed.



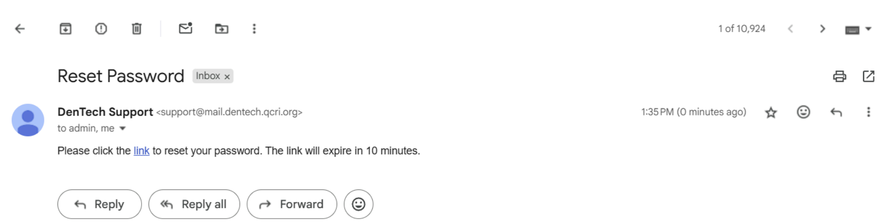
2.4. Reset Password

- On the login form, click the **"Forgot Password?"** link.
- Enter the email address associated with your account.

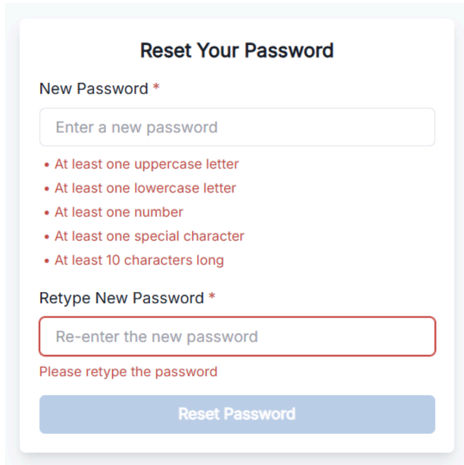




- You will receive a password reset link via email. Click it to set a new password.



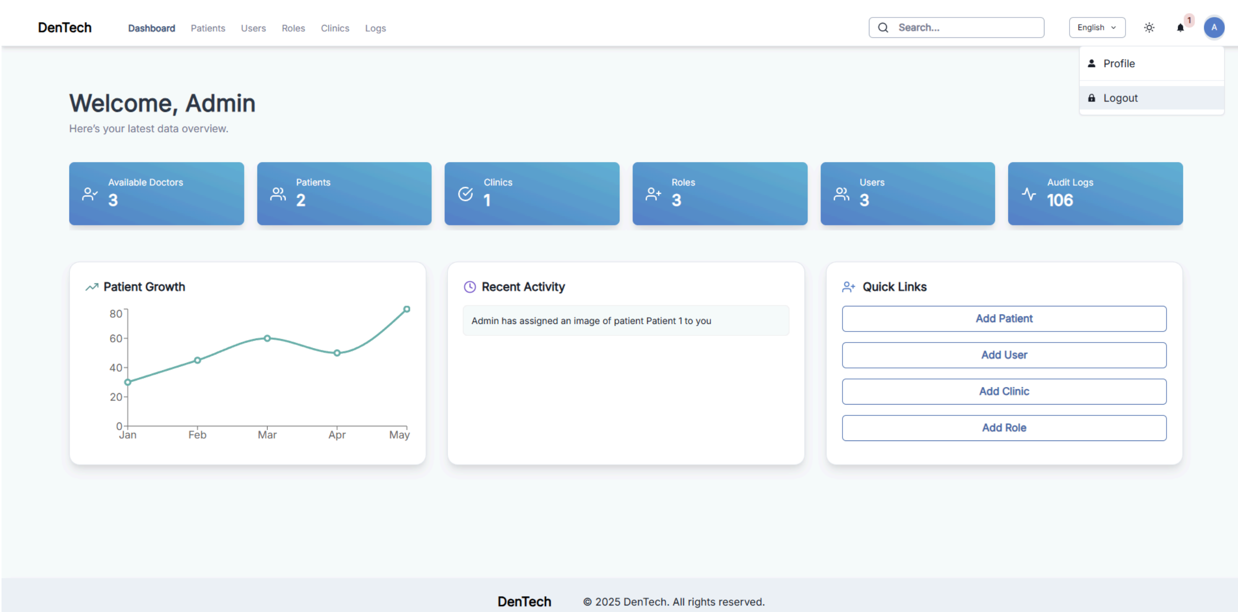
- After resetting, return to the login page and sign in with your new credentials.



2.5. Logging Out

To securely log out of the platform:

- Click your **Profile** icon in the top-right corner of the navigation bar.
- Select “Logout” from the dropdown menu.
- You’ll be logged out and redirected to the homepage.



3. Navigating the platform

3.1. Navigation Bar

The navigation bar is the primary way users interact with the platform. It adapts dynamically based on the user's authentication status and permission level. The navigation bar includes links that provide quick access to key areas of the application. These links vary depending on the user's role and permissions.

Links for Logged-In Users (Role-Based Access):

Dashboard:
- Always visible to any logged-in user.
- Serves as the main landing page after login.

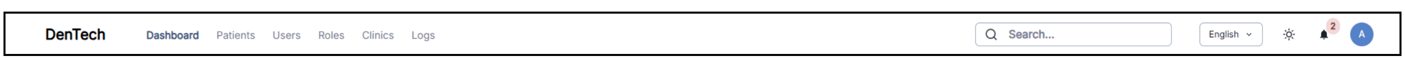
Patients:
- Visible only if the user has the view-patients permission.
- Links to the patient management area.

Users:
- Shown if the user has the appropriate permission.
- Allows access to the user table where a user can be added, modified or deleted.

Roles:
- Displayed based on permission.
- Allows access to the roles table where a role can be added, modified by adding/removing permissions for that role or deleted.

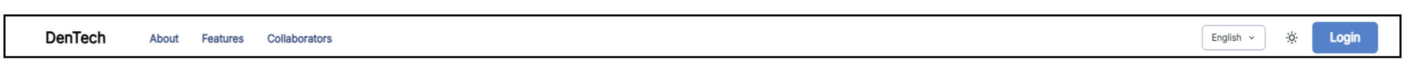
Clinics:
- Displayed based on permission.
- Allows access to the clinics table where a clinic can be added, modified or deleted.

Audit Logs:
- Displayed based on permission.
- Allows access to the logs table which displays all the actions happening in the database through user actions.



Links for Logged-out Users (Role-Based Access):

- **About:** navigates the user to the about section in the home page.
- **Features:** navigates the user to the features section in the home page.
- **Collaborators:** navigates the user to the collaborators section in the home page.



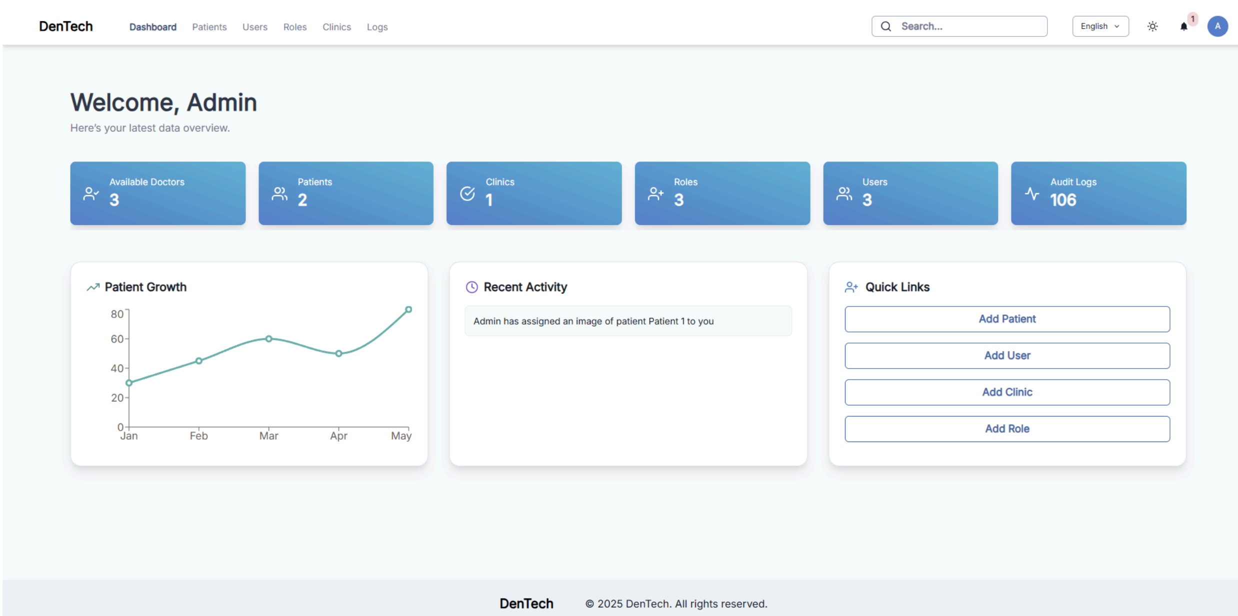
3.2. Profile and Account Controls

Located on the top-right corner of the navigation bar for logged-in users:

3.2.1. Profile Icon

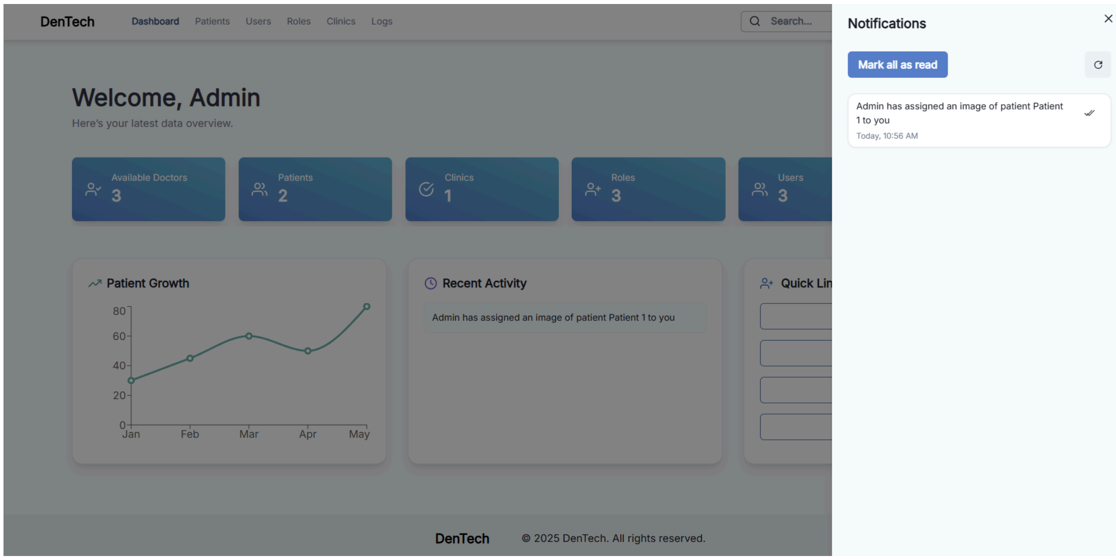
Clicking reveals a dropdown with:

- **Profile**: Takes the user to the profile page that displays user properties like email, name and properties and allows changing the current user password.
- **Logout**: Logs the user out of the application.



3.2.2. Notifications Button

- Displays a badge indicating the number of unread notifications.
- On click, opens a notification drawer panel:
  - Lists all notifications.
  - Each notification has a "tick" button to mark it as read. (Once marked, the tick button is greyed out and disabled).
  - A "Mark All as Read" button is present at the top to clear all notifications.



3.2.3. User Preferences

Positioned on the left side of the profile area in the navigation bar:

Theme Toggler

- Allows users to switch between light and dark mode.
- Available to both logged-in and logged-out users.

Language Switcher

- Lets users toggle between English, Spanish, and French.
- Also visible to both authenticated and guest users.

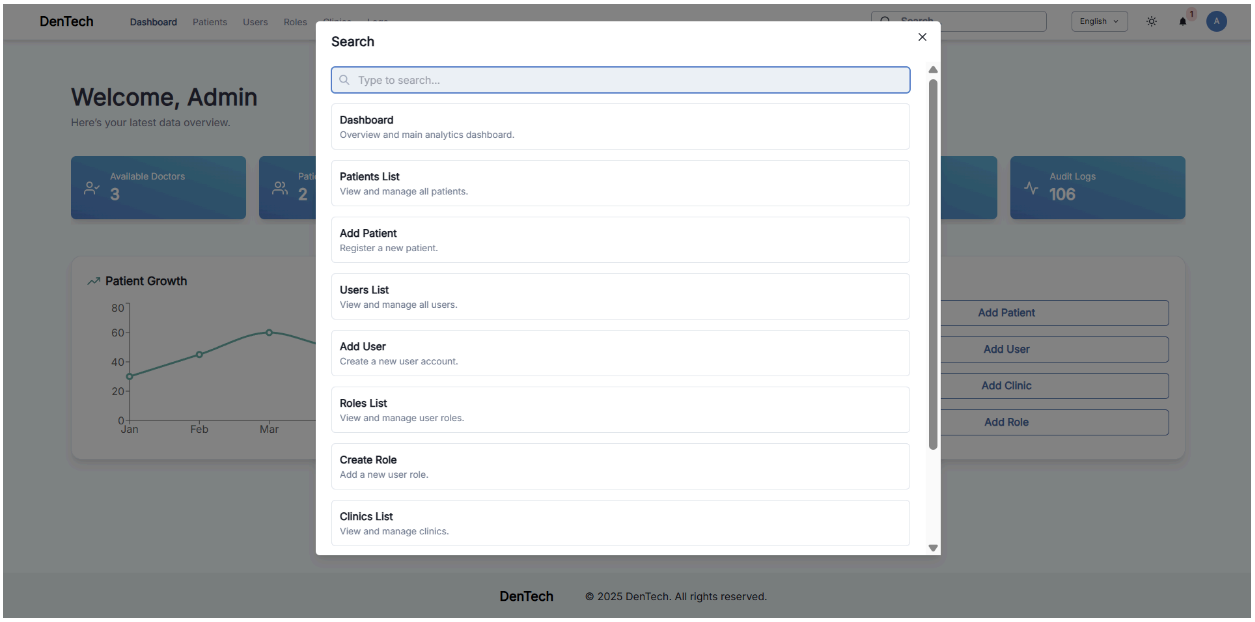
Login Button

- Shown only to logged-out users, and on clicking it opens a login card where the user can log in with their credentials.

3.2.4. Universal Search Bar

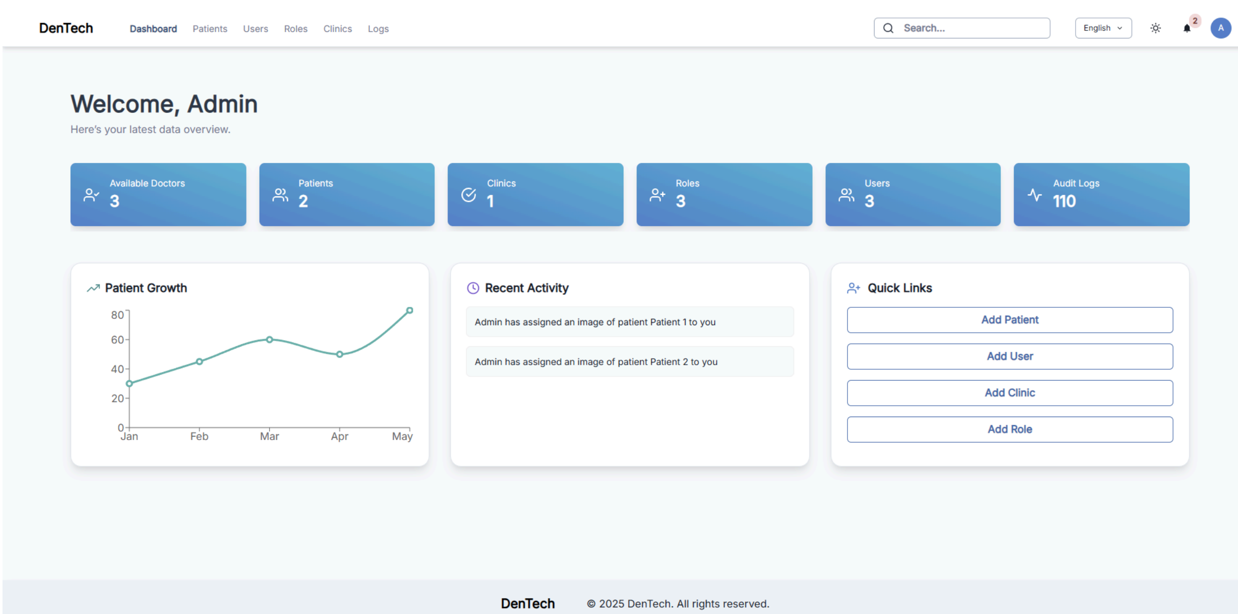
Located within the navigation interface (or header), this search bar allows comprehensive search capabilities:

- **Page-Level Search:** Navigate to any page within the application using keywords.
- **Backend Search Integration:**Allows real-time search for:
  - Patients
  - Users
  - Roles
  - Clinics



4. Dashboard Overview

The **Dashboard** serves as the central landing page for all authenticated users on the DenTech platform. It is designed to provide at-a-glance access to relevant data, real-time statistics, and shortcuts to core modules based on the user's role.



5. Managing Patients

The **Patients** section is a core module in the DenTech platform, allowing users to view, add, and manage patient records along with associated images, diagnostic data, and statistics. It is accessible to users such as nurses, dentists, specialists, and admins depending on their role-based permissions.

5.1. Accessing Patient Page

To access the Patients section:

- Navigate to the top header menu.
- Click on the **"Patients"** tab.

This opens a tabbed interface consisting of two main sections:

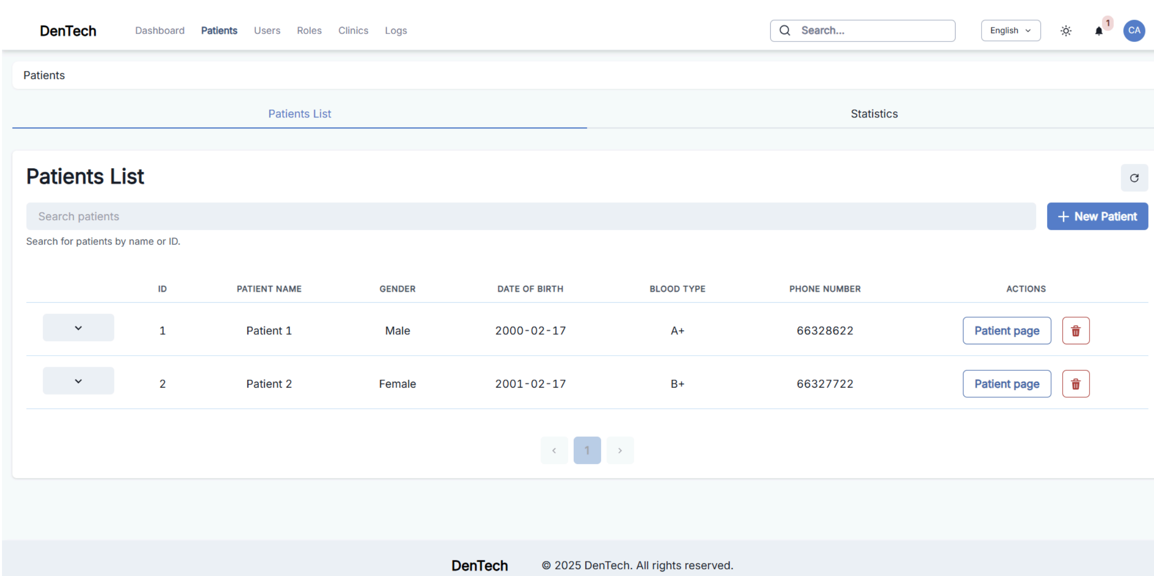
- **Patient List** (default tab)
- **Patient Statistics**

5.2. Searching Patient by Name of ID

The Patient List tab displays all registered patients in a table format. To quickly find a specific patient:

- Use the search bar located in the middle on top of the table.
- Enter either the patient's full name or unique patient ID.
- The list updates in real time to display matching results.

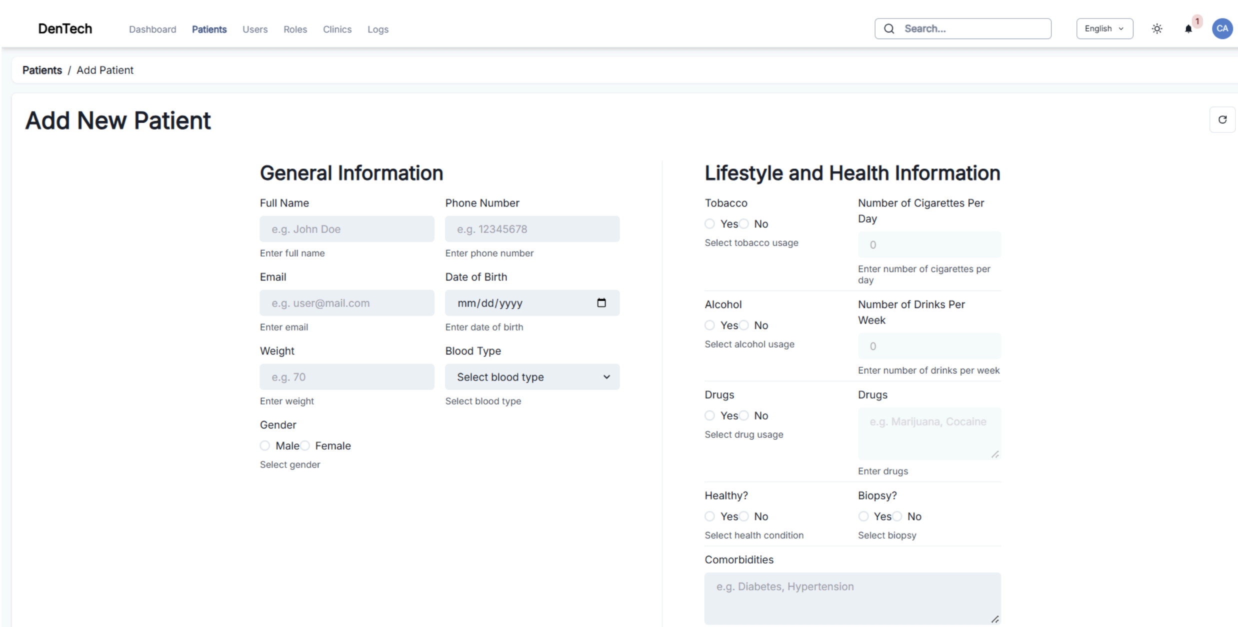
This feature helps users efficiently locate and manage individual cases, especially in large datasets.



5.3. Adding a New Patient

Users with the appropriate permissions (e.g., Admins, Nurses) can add new patients by:

1. Clicking the **“Add Patient”** button at the top right of the Patient List.
2. Filling out the required fields in the pop-up form:
    - Full Name
    - Gender
    - Date of Birth
    - Phone Number
    - Short Health Questionnaire
3. Submitting the form to create the patient record.



Once added, the patient will appear in the main list and can be edited or assigned images.

5.4. Viewing Individual Patient Pages

Each patient in the list includes a **“Patient Page”** button. Clicking it opens a detailed view containing:

- Patient demographics and editable profile fields

- A timeline of uploaded dental images and videos
- Annotation progress and diagnosis history
- Assigned users (e.g., dentist, specialist)
- Action buttons to **edit**, **upload media**, or **assign reviewers**

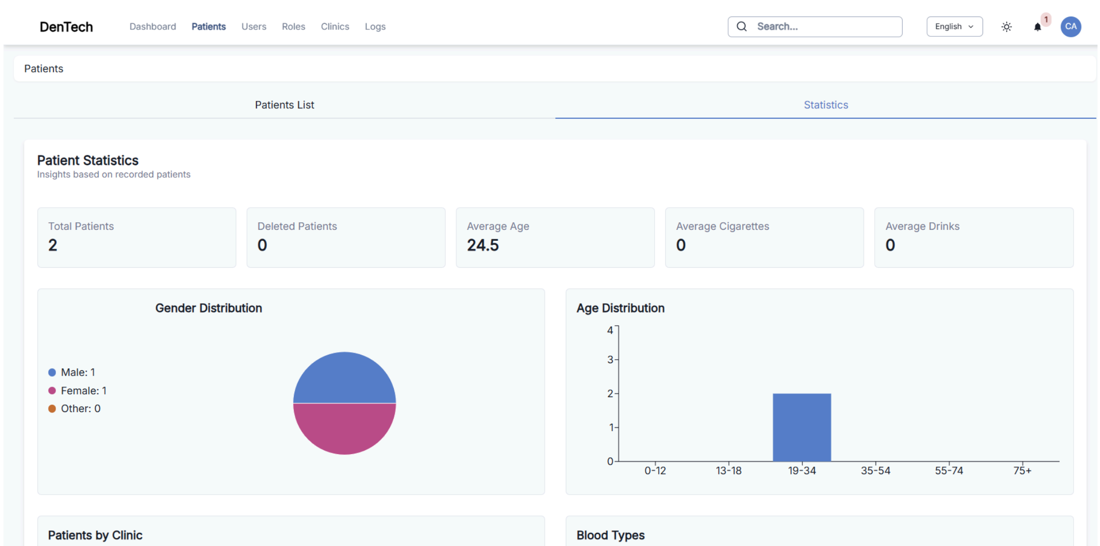
The patient page serves as the central workspace for managing each individual's diagnostic process.

5.5. Patient Statistics Tab

The second tab within the Patients section is **Statistics**, which provides visual insights into patient data using:

- **Bar charts**: Distribution of cases by diagnosis category, image type, or progress status
- **Pie charts**: Gender ratios, confirmed vs pending cases, or lesion type frequencies
- **Counts and summaries**: Total patients, annotated cases, videos vs images uploaded

These analytics help clinicians and admins monitor trends, manage workload, and assess AI impact over time.



6. Patient Page

The **Patient Page** provides a detailed view of an individual patient's medical and diagnostic data, including images, segmentation results, classification predictions, final diagnosis input, and collaborative tools like discussions. This section is primarily used by nurses, dentists, and specialists to **review, annotate, diagnose, and manage patient media**.

6.1. Overview of Patient Information

Located on the left sidebar, the **Patient Information** panel displays editable personal and clinical attributes, including:

- **Patient ID**
- **Name**
- **Gender**
- **Date of Birth**
- **Phone Number**

Below this section, additional attributes such as:

- **Blood Type**
- **Drinks per Week**
- **Cigarettes per Day**
- **Drug Use**
- **Comorbidities**

These values are editable by clicking the edit icon next to each field.

At the top right of the page, you can also view and edit:

- **Patient Condition** (e.g., “Sick”)
- **Biopsy Results** (e.g., “Healthy”)

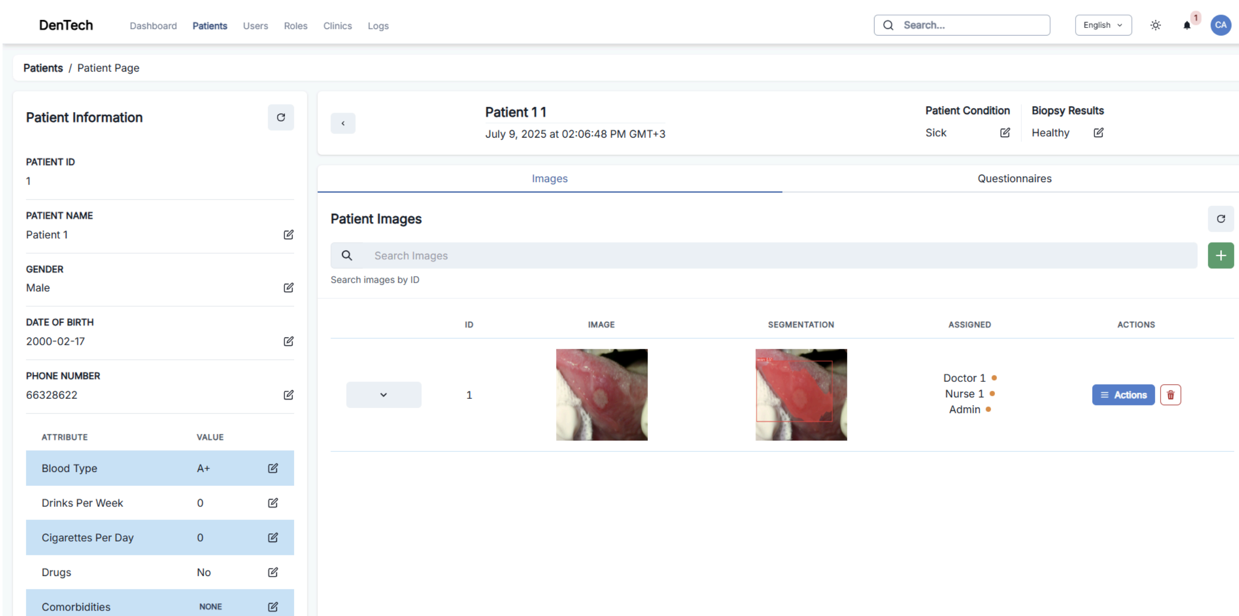
6.2. Viewing Dental Images

The **Images** tab displays all media uploaded for the patient. Each entry includes:

- **Image Thumbnail**

- **Segmentation Preview** (overlayed lesion area)
- **Date/Time Created**
- **Assigned Users**
- **Classification Predictions**
- **Final Diagnosis**
- **Actions Dropdown**

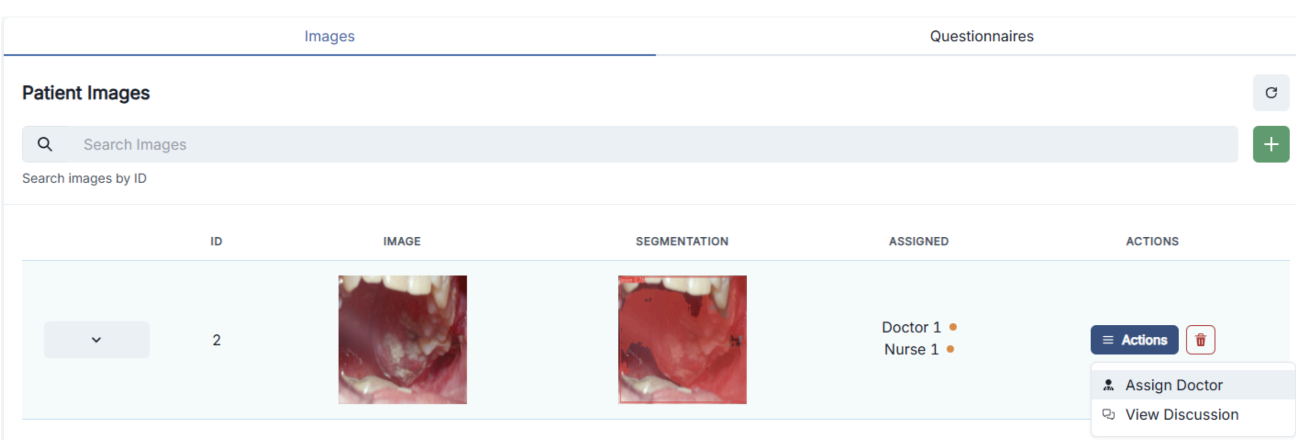
You can use the search bar to filter images by ID.

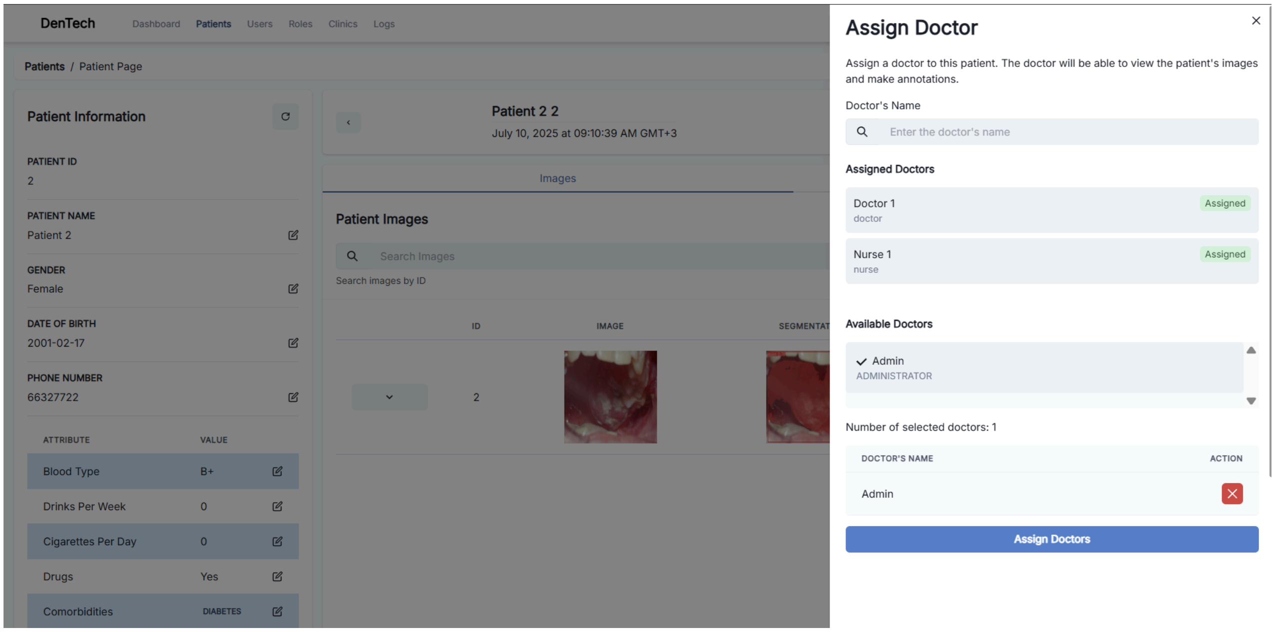


6.3. Assigning Images to Doctors

From the Actions dropdown , choose **"Assign Doctor"**. This allows you to assign the image to any available user (e.g., dentist, specialist, nurse), who will then see the image in their assigned images list.

The **Assigned** column displays all users currently linked to the image, with status indicators.

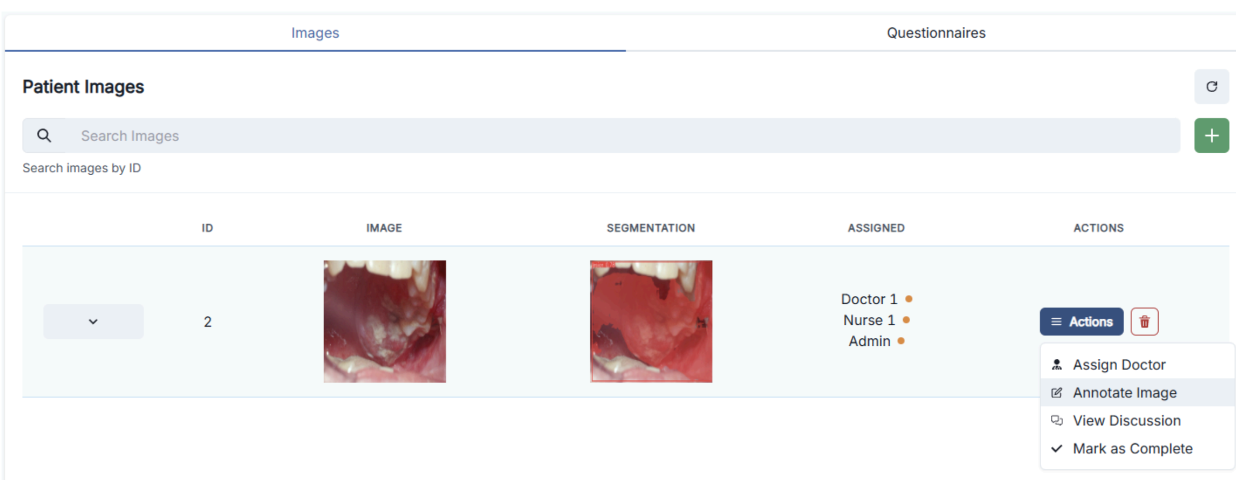


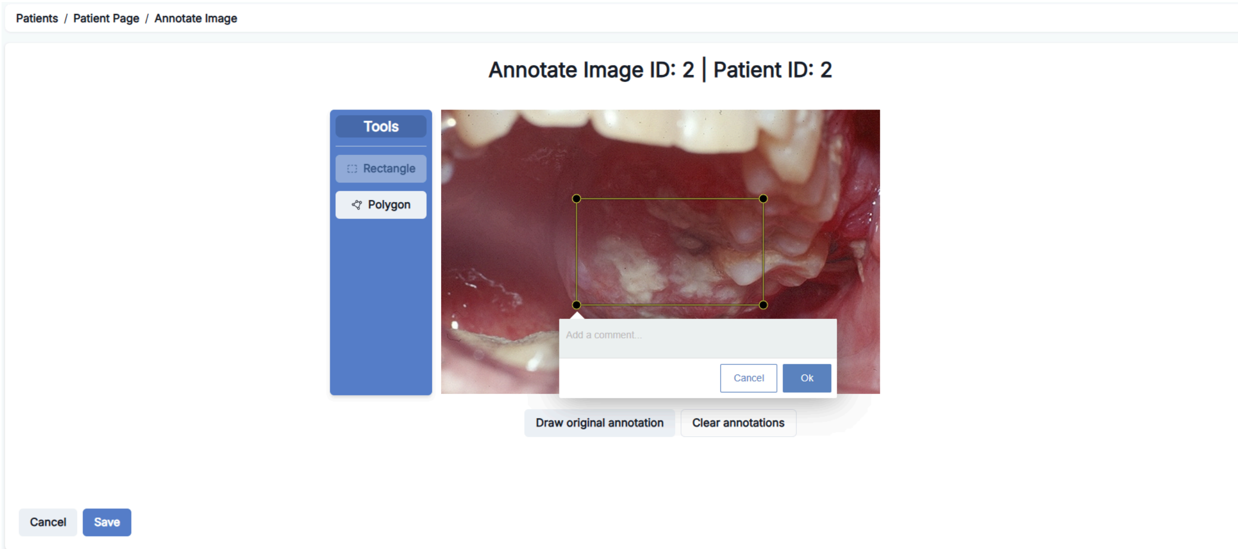


6.4. Annotating Images

Select **"Annotate Image"** from the Actions menu to launch the annotation interface.

- **Rectangle** and **Polygon** tools are available for outlining lesion areas.
- Users can draw directly on the image.
- Annotations are saved under the assigned user's ID and can be edited later.

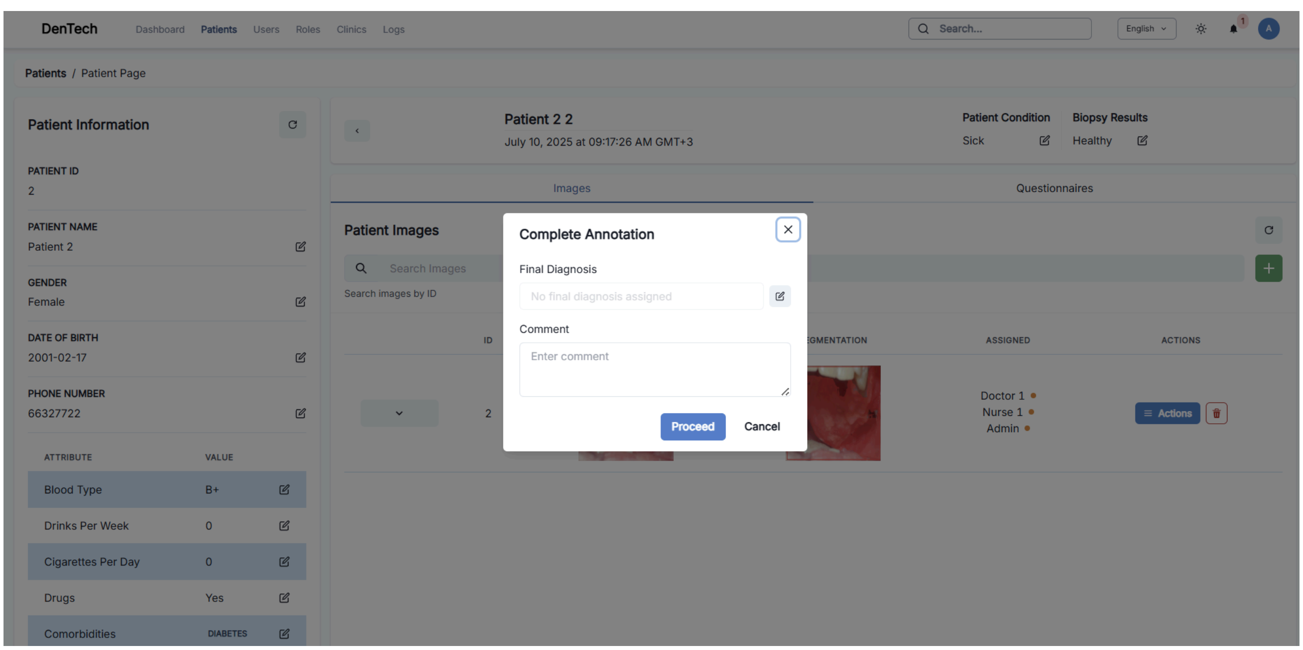




6.5. Marking Image as Complete

Once review and annotation are finished, click **"Mark as Complete"** from the Actions dropdown.

- Where you can write a final diagnosis and a comment.
- This flags the image as finalized.
- Completed images would show as "Complete"



6.6. Editing Patient Information

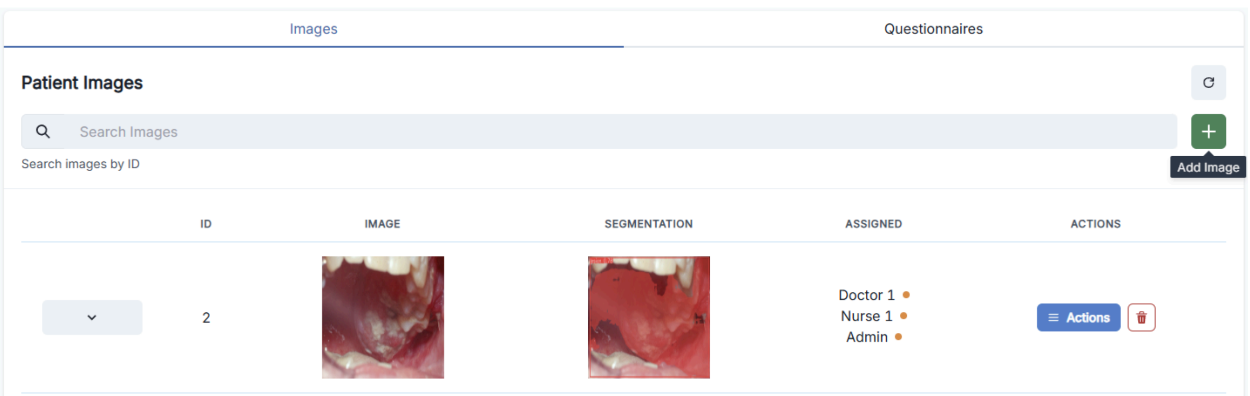
All patient info fields are directly editable from the left panel and top-right boxes. Click the edit icon next to any field to:

- Update demographics
- Change medical or lifestyle attributes
- Modify patient condition or biopsy result

6.7. Uploading Image

To add a new image:

- Click the green ➕ button in the **Patient Images** section.
- Upload a JPG/PNG image file.
- The image will appear instantly in the list with the prediction ready for annotation.



6.8. Uploading Video

Video uploads follow a similar process to image uploads:

- Click the green ➕ button in the **Patient Images** section.
- Select and upload a video file (e.g., MP4 format).
- Once uploaded, the video is automatically processed into **image frames**.
- The user can then **select the relevant frames** for analysis.

- After selection, **classification predictions** will be generated, and **annotation tools** (e.g., segmentation) become available for each selected frame.

This feature allows clinicians to extract meaningful diagnostic data from video recordings, enabling more flexible and detailed examination of lesion areas.

6.9. Reading Classification Predictions

Under the **Classification Results** column, DenTech displays model predictions with:

- **Top 5 predicted lesion types**
- **Probability scores (%)**

For example:

Name	Probability
Aphthous ulcer	91.61%
Pyogenic granuloma	3.16%

This helps clinicians evaluate and compare AI results with human judgment.

6.10. Editing Final Diagnosis

Click the edit icon under **Final Diagnosis** to enter your human-assessed result. You may:

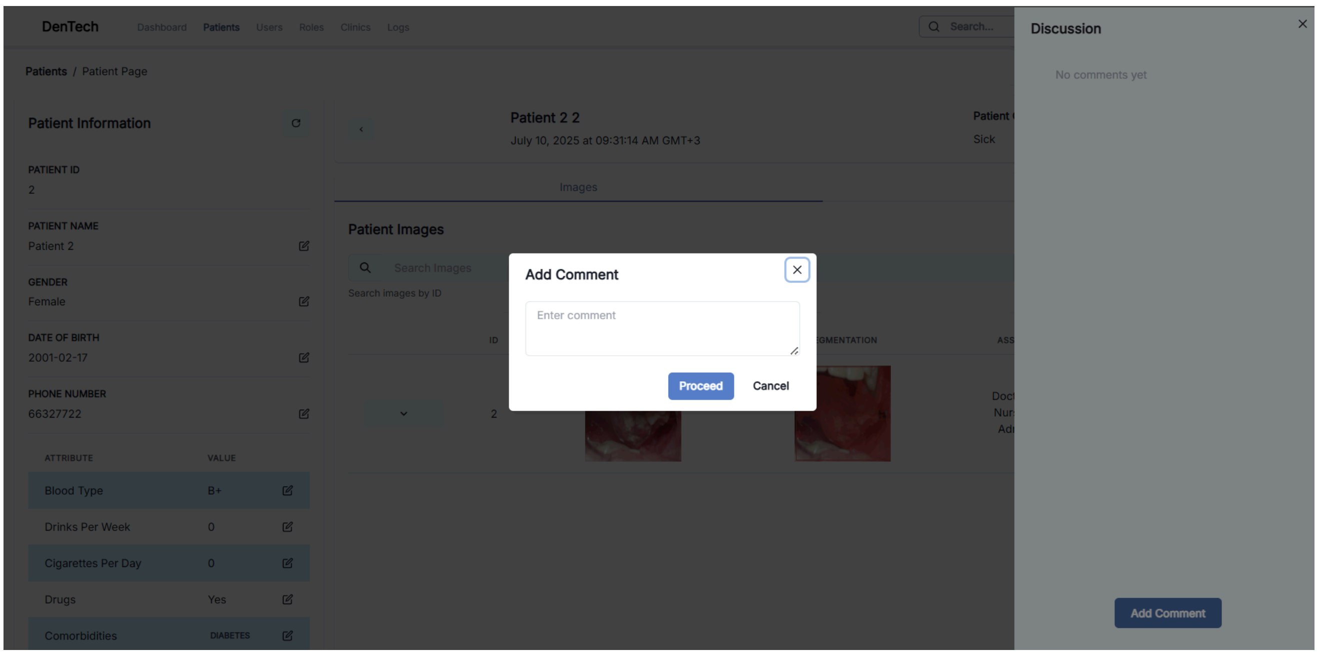
- Confirm the AI prediction
- Override it with your diagnosis
- Leave additional notes

6.11. Discussions Tab

From the **Actions** button next to any image in the Patient Images list, users can select **“View Discussion”**. This action opens a **slide-in panel on the right side** of the screen, displaying the full comment history related to that specific image.

In the Discussions panel, users can:

- **Read previous comments** posted by nurses, doctors, or specialists.
- **Write new comments** to ask questions, clarify diagnoses, or flag issues.
- Scroll through the full threaded conversation related to that image.



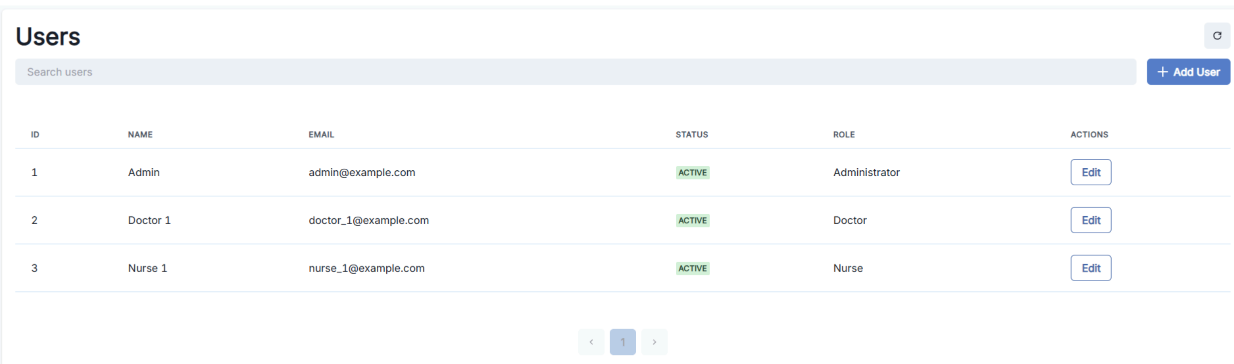
This tool encourages asynchronous collaboration and communication around specific diagnostic cases, especially when multiple users are involved in review and annotation.

7. Managing Users

The **User Management** section allows administrators to view, create, and manage all users on the DenTech platform. This includes assigning roles, updating user information, resetting passwords, and monitoring activity.

7.1. Viewing the List of Users

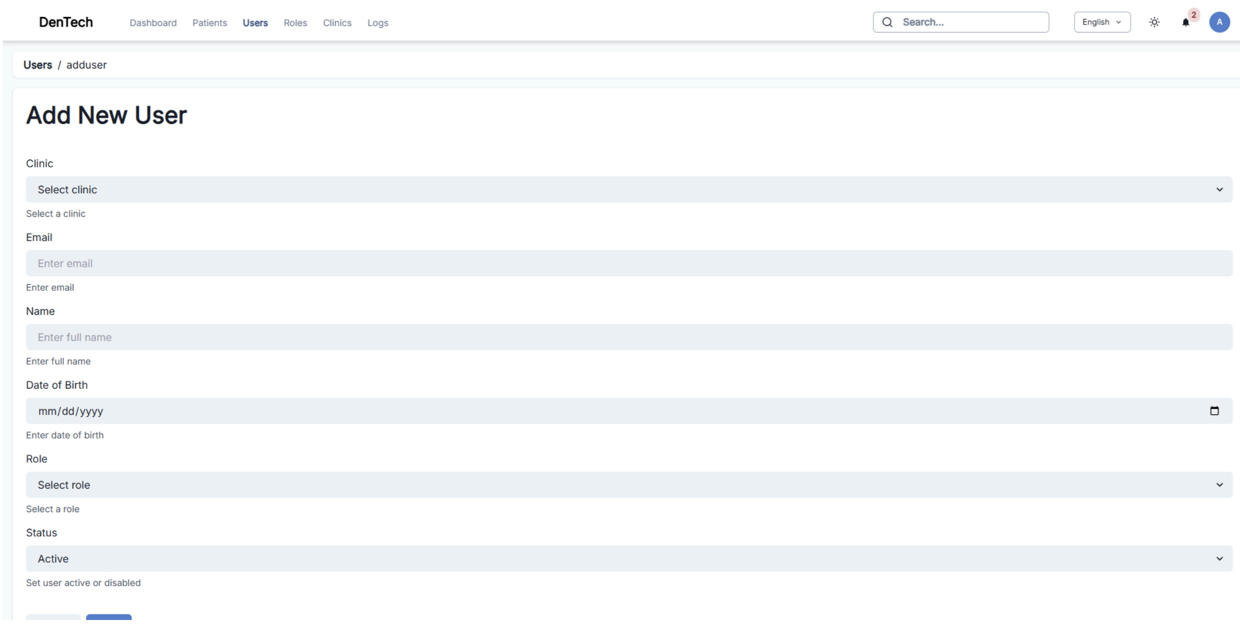
- Navigate to the **Users** tab via the navigation bar.
- The users table displays all registered users in the system, including:
  - **Name**
  - **Email Address**
  - **Role**
  - **Status**
- Use the **Search Bar** at the top of the table to filter users by name or email.
- Click the **Refresh** button to reload the table and view the latest user data.



7.2. Adding a New User

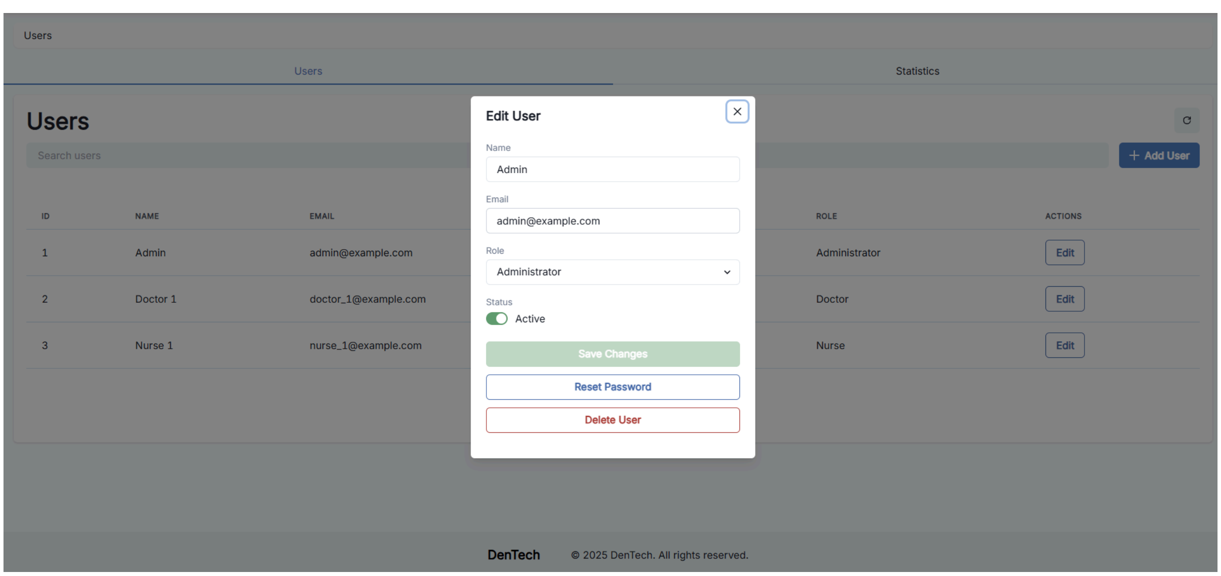
To onboard a new user:

- Click the **"Add User"** button in the top-right corner of the users page.
- Fill in the required user details in the form:
  - **Clinic**
  - **Full Name**
  - **Email Address**
  - **Assigned Role** (e.g., Doctor, Nurse, Admin)
  - **Date of Birth**
  - **Status**
- Click **"Create User"** to finalize the account.
- The new user will receive an email with login instructions and link to set their password.



7.3. Editing User Information

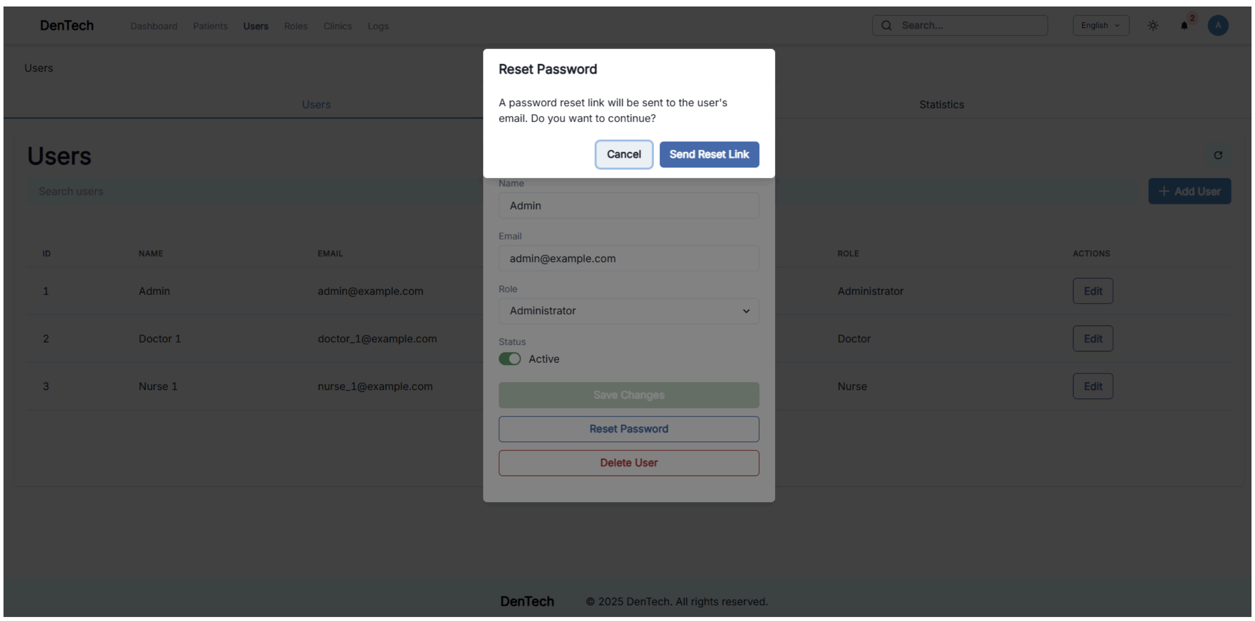
- In the users table, locate the user you want to edit.
- Click the **Edit** button in the Actions column.
- You'll be shown a modal where you can update:
  - **Name**
  - **Email**
  - **Assigned Role**
  - **Status**
- After making changes, click **"Save Changes"**.
- Changes take effect immediately and are logged in the audit system.



7.4. Resetting User Passwords

If a user is unable to log in or forgets the password:

- From the users table, click the **Edit** icon for the user.
- Click the **"Reset Password"** button.
- A new temporary password is generated, and (if email is enabled) sent to the user.
- Alternatively, you may copy the temporary password and share it manually.



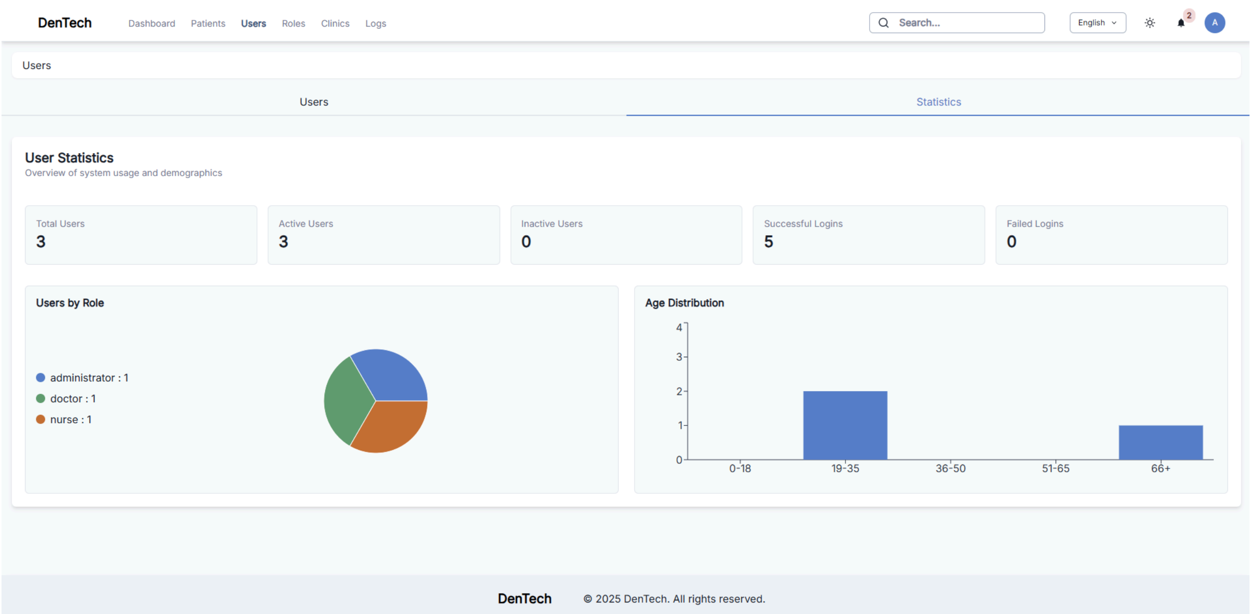
7.5. User Statistics Tab

A secondary tab labeled **"Statistics"** is available within the User Management section.

This dashboard includes:

- **Total number of users** by role (e.g., 10 Doctors, 4 Nurses)
- **Last login activity** distribution (e.g., Active within 24h, Inactive > 7 days)
- **Role assignment chart** for visualizing platform access levels

These insights help administrators monitor usage, detect inactive accounts, and assess user engagement with the system.



8. Role Management

The Role Management section allows administrators to manage user roles within the platform. This includes viewing all roles, searching for specific roles, creating new roles, editing existing ones, and deleting roles if necessary. The role management interface is accessible from the '/roles' route.

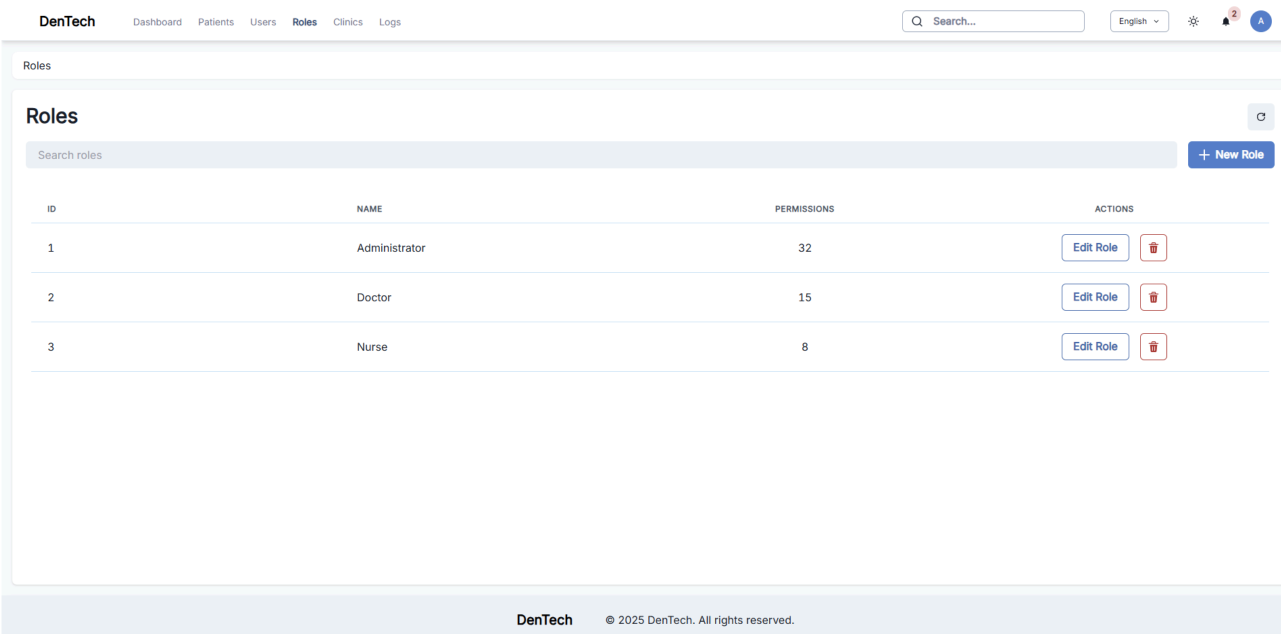
8.1. Roles Overview

At the /roles route, you will find a table listing all the existing roles in the system. The table includes the following columns:

- **ID:** Unique identifier for the role.
- **Name:** The name of the role.
- **Permissions:** The number of permissions assigned to the role.
- **Actions:** Two buttons:
    - **Edit Role:** Navigates to the edit page for modifying the role.
    - **Delete Role:** A red outlined button with a bin icon used to delete the role.

Above the table, you will find:

- A search field to look up roles by ID or name.
- A "New Role" button that directs to the /role/add-role route to create a new role.
- A refresh button (gray with a rotation/refresh icon) to reload the table with the latest role data.



8.2. Creating a New Role

To create a new role:

1. Click the "New Role" button.

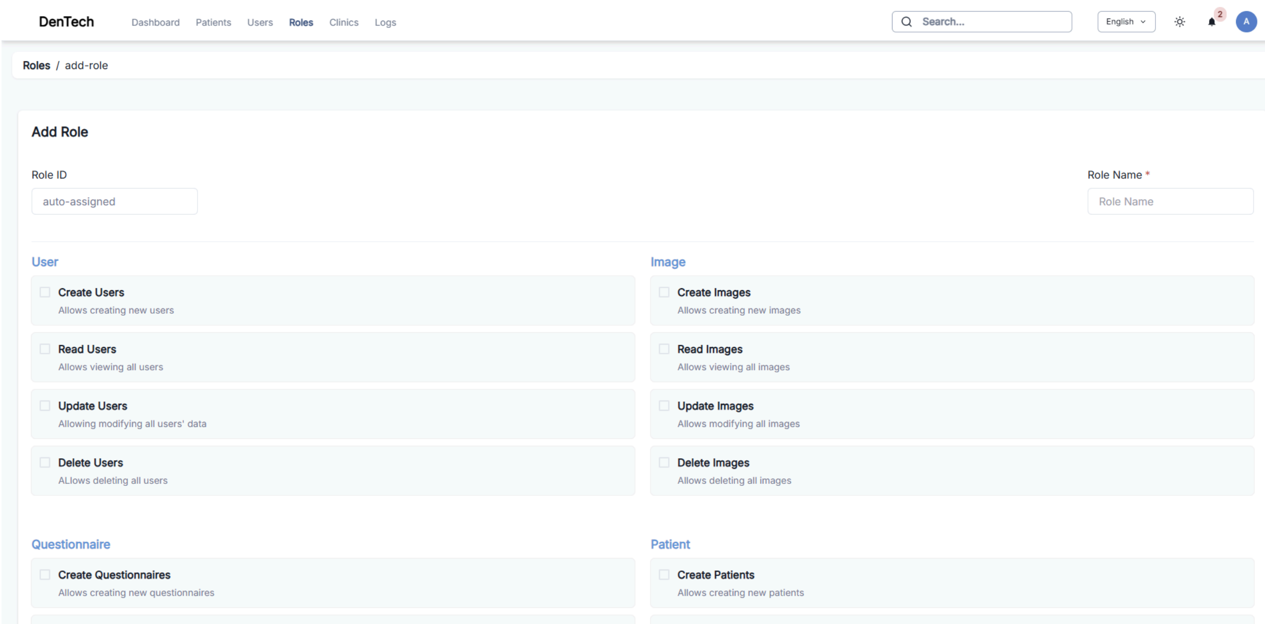
2. You will be taken to the Add Role page (/role/add-role).

3. On this page:
   - Enter the desired Role Name.
   - Select the appropriate permissions from six groups:
     - User Permissions
     - Image Permissions
     - Permission
     - Clinic
     - Annotations
     - Others
   - Each permission is displayed inside a box showing its name and a brief description, with a checkbox on the left to enable/disable it.

4. At the top, you will see:
   - A non-editable Role ID field.
   - A Role Name field (editable).

5. Use the Revert button above the permission boxes to undo unsaved changes (disabled when no changes have been made).

6. At the bottom, you'll find:
    - Cancel button
    - Save Changes button (disabled until a change is made)



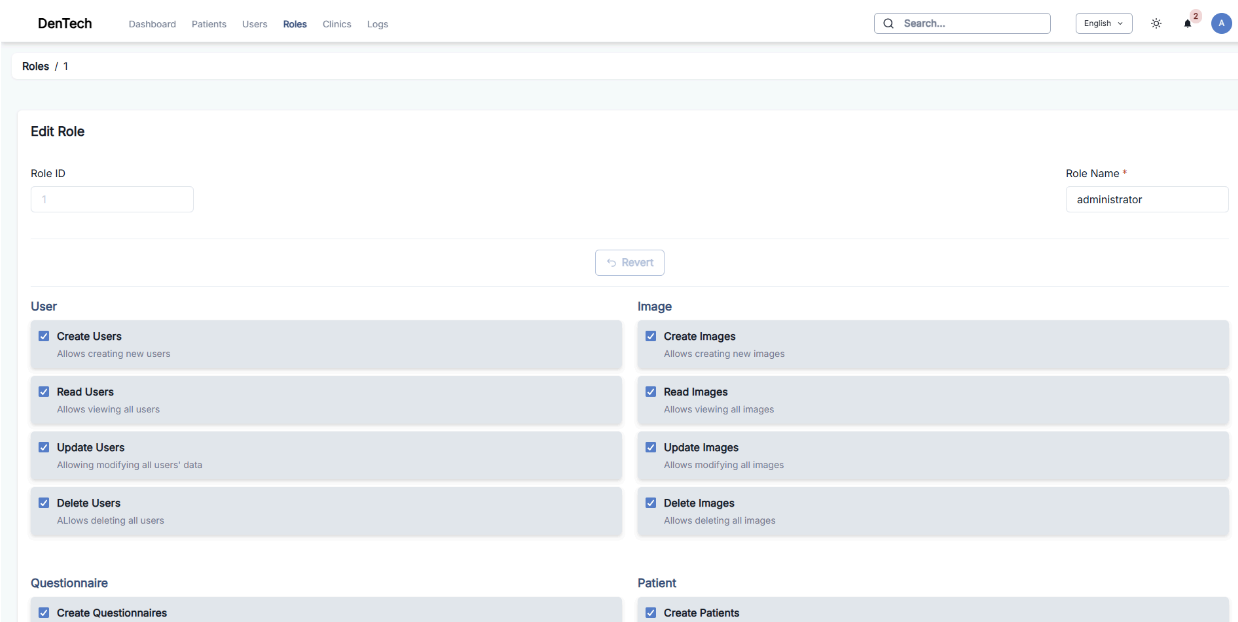
8.3. Editing an Existing Role

To edit a role:

1. Click the "Edit Role" button from the Actions column in the roles table.

2. You will be redirected to the Edit Role page.

3. The page layout and functionality are similar to the Add Role page with the following features:
    - Role ID is visible but not editable.
    - Role Name can be updated.
    - Permissions are grouped and selectable as described in section 8.2.
    - Revert button to undo unsaved changes.
    - A Delete Role button in red on the left side of the footer.
    - Cancel and Save Changes buttons on the right.
    - The Save Changes button remains disabled until modifications are made.

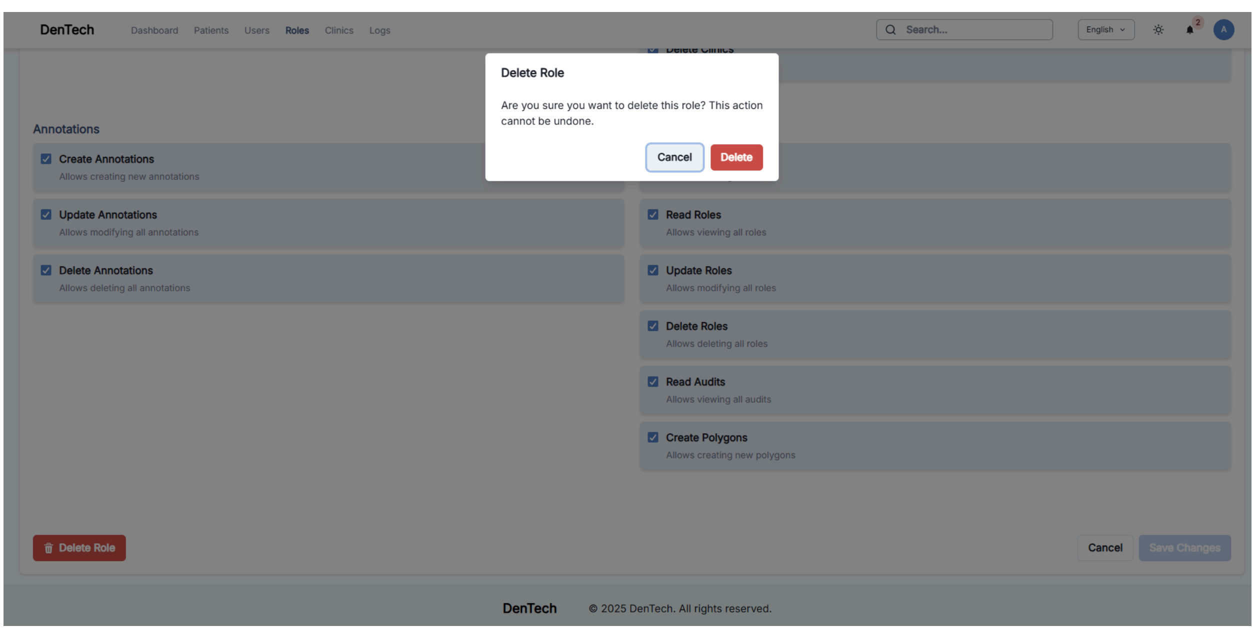


8.4. Deleting a Role

To delete a role:

1. From the roles table, click the red Delete Role button in the Actions column.
2. A confirmation modal will appear asking if you are sure about deleting the role.
3. In the modal:
   - Click Delete to confirm and permanently remove the role.
   - Click Cancel to close the modal without deleting.

A role can also be deleted from within the Edit Role page using the red Delete Role button found in the footer



9. Clinic Management

The Clinic Management module allows administrators to manage clinic records in the system. It provides functionality for listing, searching, adding, editing, and deleting clinics through an intuitive user interface. This section is accessible at the /clinics route.

9.1. Clinics Overview

At the /clinics route, you will find a table displaying all registered clinics with the following columns:

- Clinic Details: Shows the clinic's name as the main heading, and the description as muted text beneath it.
- Address: Displays the full physical address of the clinic.
- Contact: Contains the phone number in subtitle text and the email address as a blue clickable link below.
- Website: The clinic's official website, if provided.
- Actions: Contains a single Manage button to edit clinic details.

Above the table, the interface includes:

- A search field to filter clinics by name or ID.
- An "Add Clinic" button, which redirects to the /clinics/add-clinic route for creating a new clinic.
- A refresh button (gray with a rotation/refresh icon) to manually update the table with the latest clinic data.

9.2. Adding a New Clinic

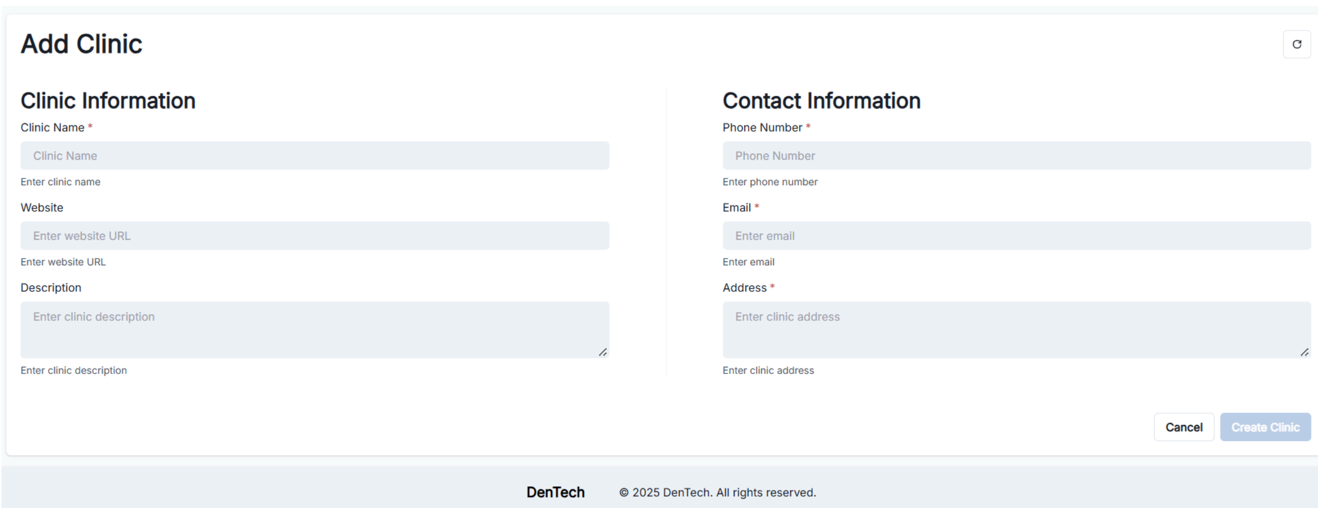
To add a new clinic:

1. Click the "Add Clinic" button.
2. You will be redirected to the Add Clinic page (/clinics/add-clinic).
3. On this page, you can input the following clinic details:
    - Clinic Name (required)
    - Website (optional)
    - Description (optional)
    - Phone Number (required)
    - Email (required)

- Address (required)

4. A Revert button is located at the top-right of the form card. It resets any unsaved changes (disabled by default until a change is made).

5. At the bottom of the form:
   - Cancel button to discard changes and return.
   - Add Clinic (or similar) button to save the new clinic record (disabled until changes are made).



9.3. Editing an Existing Clinic

To edit a clinic:

1. Click the Manage button in the Actions column of the clinics table.

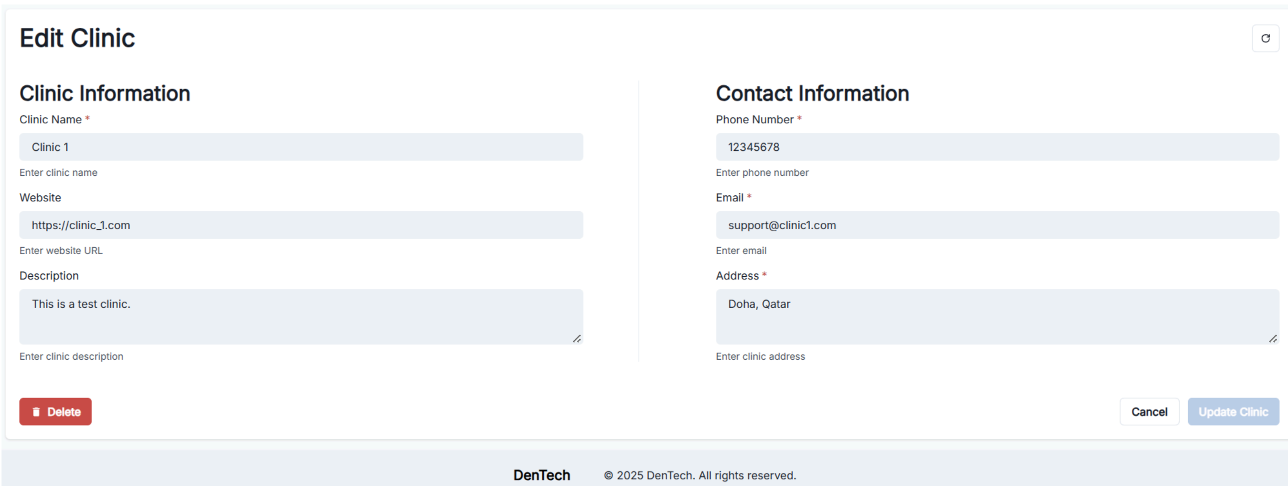
2. This navigates to the Edit Clinic page for the selected clinic.

3. You will be able to modify the following details:
   - Clinic Name
   - Website
   - Description
   - Phone Number
   - Email

- Address

4. At the top-right corner of the form card, there is a Revert button to undo unsaved changes (disabled unless changes have been made).

5. In the footer of the form:
    - On the left side, a red Delete button opens a confirmation modal.
    - On the right side, you'll find:
        - Cancel button
        - Update Clinic button (disabled until at least one field is changed)



9.4. Delete an Existing Clinic

Clinics can be deleted from the Edit Clinic page:

1. Click the red Delete button at the bottom-left of the form.

2. A confirmation modal will appear asking for final confirmation.

3. The modal contains two buttons:
    - Delete to confirm and permanently remove the clinic.
    - Cancel to abort the deletion.

10. Audit Logs

The **Audit Logs** page provides a transparent and detailed record of all system activity, allowing admins and authorized users to monitor changes across the platform. Every log entry captures the **event type**, **affected data table**, **timestamp**, **user responsible**, and (if applicable) the **specific field change** along with its **old and new values**.

This feature is essential for **accountability, security audits, and regulatory compliance** in clinical and technical workflows.

10.1. Accessing Audit Logs

- Navigate to the top header menu.
- Click on the **“Logs”** tab.
- The Audit Logs table will load, displaying entries in reverse chronological order.

10.2. Viewing Audit Entries

Each log entry includes the following columns:

Column	Description
ID	Unique ID for the log entry
Event	Action performed – e.g., \`CREATED\`, \`UPDATED\`, \`DELETED\`
User ID	ID of the user who performed the action
Time and Date	Timestamp of the action (in system time zone, e.g., GMT+3)
Table	The database table affected (e.g., \`refresh\`, \`clinic\`, \`role permission\`)
Row ID	Specific row/record that was changed or created
Field	Field/column that was modified (if applicable)
Old Value	Previous value before the change (if applicable)
New Value	New value after the change (if applicable)

Note: Some actions (like `CREATED` events) may show "N/A" for Field, Old Value, and New Value if no direct field was modified.

10.3. Searching and Filtering Logs

At the top of the page, users can filter log entries using:

- **Search bar**: Search by keywords like table name or user ID.
- **Start Date / End Date**: Select a date range to view logs from a specific period.
- **Filter button**: Applies the selected filters and updates the table.

This makes it easy to trace recent changes or investigate specific user activity.