**1. Introduction**

This test plan outlines the approach for testing the **MENAH System**, covering all user flows including registration, login, user role behaviors (Admin, Nurse, Parent), biometric data input, QR code validation, milk delivery, verification, and usage. The goal is to ensure functional correctness, data consistency, and system reliability.

**2. Test Scope**

**In-Scope Functional Areas**:

* User Registration & Login
* Baby Profile & Biometric Data Entry
* QR Code Generation & Printing
* Milk Delivery Logging
* Milk Verification (by Baby, by Mother)
* Milk Usage Tracking
* Role-based access (Admin, Nurse, Parent)
* Internal Messaging System
* Navigation UI & Help Sections

**Out-of-Scope**:

* Integration with third-party Like Deployment on Microsoft Azure.

**3. Test Approach**

* **Manual Testing** for UI workflows and business rules.
* **Black-Box Testing** to validate functional requirements.
* **Positive & Negative Test Cases** covering edge cases.
* **Automation** optional via Selenium (for repetitive UI actions).
* **Performance Testing** for QR generation & search features (JMeter).

**4. Test Environment**

|  |  |
| --- | --- |
| **Component** | **Description** |
| **Platform** | Web-based hospital system |
| **Browsers** | Google Chrome, Edge, Fire Fox |
| **OS** | Windows 10, 11 |
| **Tools** | Postman, Selenium, JMeter, Google Sheets, Excel |
| **Database** | PostgreSQL |

**5. Test Scenarios & Coverage**

**US1: User Registration & Login**

**As a user**, I want to register and log in so I can use the system securely.

**Test Coverage**:

* Register Nurse/Parent with valid data.
* Admin approval is required before login.
* Login with valid/invalid credentials.
* Password recovery option.
* Role-based redirection after login.

**US2: Baby Information Management**

**As a nurse**, I want to create baby records to store all personal and biometric info.

**Test Coverage**:

* Add baby with valid MRN, DOB, names, ID, birth cert.
* Dropdown validation (GA, CGA, gender).
* Date validation (DOB <= current date).
* Calculate DOL and CGA correctly.
* Save, Search, and Update baby profile.

**US3: Baby Biometric Entry (Face, Footprint, Retina)**

**As a nurse**, I want to capture or upload biometric photos for verification.

**Test Coverage**:

* Capture/upload photo.
* Ensure image saves with correct filename.
* Link images with MRN and baby name.
* Validation: Face must be baby only, no adults.
* Footprint and retina saved via scan or camera.

**US4: Mother Information & ID**

**As a nurse**, I want to link mother data for backup verification.

**Test Coverage**:

* Save mother name, MRN, ID, delivery type.
* Age validation (12–70).
* Gravida validation (0-20)
* Para validation (0-20)
* Abortion validation (0-10)
* Save scanned ID correctly.
* Link to corresponding baby.

**US5: QR Code Generation for Bottles & Bands**

**As a nurse**, I want to generate QR codes for bottles and baby bands.

**Test Coverage**:

* Generate code with correct data: name, DOB, MRN, bottle number.
* Bottle number must be unique (check duplicates).
* Save QR with expected filename format.
* Print code for 1–100 bottles.
* Allow select/deselect before printing.

**US6: EBM Milk Delivery Logging**

**As a nurse**, I want to record milk delivery info accurately.

**Test Coverage**:

* Input expression date, delivery date, bottle count, volume.
* Validate dates.
* Bottle number uniqueness.
* Link each bottle to baby via MRN.

**US7: Milk Verification Process**

**As a nurse**, I want to verify milk against the baby/mother before feeding.

**Test Coverage**:

* Scan bottle QR → match with baby face/retina/foot/QR band.
* If match, Nurse 2 must approve.
* If mismatch:
  + Check mother ID/fingerprint.
  + If mother matches, reprint QR and retry.
  + If all fail, display error: “Do not give milk”.
* Verification logs saved with nurse IDs.

**US8: Milk Usage Tracking**

**As a nurse**, I want to log milk usage and discarded amounts.

**Test Coverage**:

* Select bottle, enter used volume.
* Discard = Bottle Volume - Used Volume.
* Save and log usage history.

**US9: Milk Totals Summary**

**As a nurse/parent**, I want to see milk stats per baby.

**Test Coverage**:

* Show total milk delivered, used, discarded.
* Parent view restricted to own child.
* Admin and nurse see all children.

**US10: Internal Messaging**

**As all users**, I want to send/receive messages for support.

**Test Coverage**:

* Send message to nurse/admin/parent.
* View message history.
* Admin can send announcements.

**US11: Admin Functions**

**As an admin**, I want to manage users and monitor the system.

**Test Coverage**:

* Approve/reject nurses and parents.
* View verification logs and failures.
* Delete/search baby records.
* View/edit all user profiles.
* Flag nurses with 3 failed verifications for retraining.

**6. Bug Reporting Format**

|  |  |
| --- | --- |
| **Field** | **Description** |
| **Bug ID** | BUG-EBM-001 |
| **Title** | Example: QR code doesn't save with correct filename |
| **Steps to Reproduce** | Detailed step list |
| **Expected Result** | QR should save with baby name and MRN |
| **Actual Result** | File saved as 'undefined.jpg' |
| **Severity** | Critical / Major / Minor |
| **Status** | Open / In Progress / Resolved |

**7. Exit Criteria**

* All test cases executed (Manual & Automated).
* All critical and major bugs reported.
* Regression testing completed.
* Test documentation finalized (plan, cases, reports).
* Final test summary report prepared for stakeholders.