



Haimoura Smart — HMS / CMS Edition

User Manual

Workflow-Based Guide for Every Role in Your Facility

Version 2.0 — Complete Reference

HMS = Hospital Management System | CMS = Clinic Management System

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Table of Contents

Chapter 0	Introduction & System Overview	
Chapter 1	Nurse — Vitals, MAR, Pre-Visit Preparation	
Chapter 2	Chief Nurse / Ward Nurse — Assessments, Ward Mgmt	HMS
Chapter 3	Doctor / Physician — Consultations, Prescriptions, Clinical Notes	
Chapter 4	Medical Director — Protocols, Oversight, Quality Assurance	
Chapter 5	Receptionist / Front Desk — Appointments, Check-In, Billing	
Chapter 6	Laboratory Technician — Orders, Results, POS Terminal	
Chapter 7	Radiology Technician — Imaging, DICOM, PACS	
Chapter 8	Pharmacist — Dispensing, Inventory, Drug Interactions	
Chapter 9	Accountant / Billing Staff — Invoices, Payments, Reports	
Chapter 10	HR Manager — Staff, Payroll, Documents, Roster	
Chapter 11	Emergency Staff — Triage, Acute Care	HMS
Chapter 12	Operating Room Staff — Surgical Checklists, Bookings	HMS
Chapter 13	System Administrator — Setup, Security, Users, Backups	
Appendix A	Keyboard Shortcuts & Quick Reference	
Appendix B	Glossary of Terms	
Appendix C	Troubleshooting Guide	

Legend

HMS = Hospital-only feature (not available in CMS/Clinic edition)
✓ = Permission granted ✕ = Not available for this role ★ = Dedicated / restricted permission (admin can grant)

CHAPTER 0

Introduction & System Overview

What Haimoura Smart is, how it works, and how to use this manual

0.1 What is Haimoura Smart?

Haimoura Smart is a **LAN-first, bilingual (Arabic/English)** Hospital and Clinic Management System designed for healthcare facilities in Sudan, Egypt, Gulf states, and similar markets. It runs entirely on your local network — no internet connection required for daily operations.

CMS (Clinic Edition)

- 20 modules
- Outpatient-focused workflows
- Single or multi-room clinics
- No ward/bed management
- No operating room module
- No emergency module
- No ambulance tracking
- No mortuary records

HMS (Hospital Edition) **HMS**

- 26 modules — everything in CMS plus:
- Inpatient ward management
- Operating room scheduling
- Emergency department
- Ambulance tracking
- Mortuary records
- Dietary management
- Assets management

0.2 How to Use This Manual

Each chapter covers one user role. Inside each chapter you will find:

- **Role Overview** — what this role can and cannot do
- **Dashboard** — what the user sees when they log in
- **Core Workflows** — step-by-step guides for daily tasks
- **Common Scenarios** — real-world situations and how to handle them
- **Troubleshooting** — what to do when something goes wrong
- **Permissions Matrix** — exact permission keys and what they unlock
- **Tips, Notes & Cautions** — colored boxes with important information



Tip

Items marked with **HMS** are available only in the Hospital Edition. If you are using the Clinic Edition, you can upgrade at any time to unlock these features.

0.3 Logging In

Login Workflow

- 1 Open your web browser**
Chrome, Firefox, Edge, or Safari — any modern browser works
- 2 Navigate to the application**
[http://\[server-ip\]/hms-clinic/public/](http://[server-ip]/hms-clinic/public/) (clinic) or [http://\[server-ip\]/hms-sudan/public/](http://[server-ip]/hms-sudan/public/) (hospital)
- 3 Enter your credentials**
Username and password provided by your administrator
- 4 Two-Factor Authentication (if enabled)**
Enter the 6-digit code from your authenticator app (Google Authenticator, Authy, etc.)
- 5 You're in!**
Your dashboard loads based on your role permissions. The sidebar shows only the modules you can access.

Account Lockout

If you enter the wrong password **5 times**, your account will be locked for **15 minutes**. Contact your administrator to unlock it immediately. After 3 failed attempts, consider using the "Forgot Password" link if available.

0.4 Switching Language

Click the language toggle (**EN / عربي**) in the top navigation bar. The entire interface — menus, forms, reports, and printouts — switches instantly. Your preference is saved for your next login. All printouts and PDFs also respect the language setting.

0.5 Understanding the Navigation

The interface is organized as follows:

- **Top Bar** — language toggle, notifications bell, user profile menu, logout
- **Left Sidebar** — module navigation (only shows modules you have permission to access)
- **Main Content** — the active page with forms, tables, and actions
- **Breadcrumbs** — show your current location in the app (Module → Page → Sub-page)

Module Visibility

The sidebar automatically hides modules you don't have permission for. If a colleague can see a module you can't, it means your role doesn't have the required permission. Ask your administrator to grant it.

0.6 System Architecture (Non-Technical)

Haimoura Smart uses a standard web architecture:

- **Server:** One computer on your network runs the application (Apache/Nginx + PHP + MySQL/MariaDB)
- **Clients:** Any device with a web browser (desktop, laptop, tablet) accesses it via the local network
- **No cloud dependency:** All data stays on your server. No data leaves your facility unless you configure external integrations (FHIR API, SMS, etc.)
- **Multi-user:** Multiple staff can work simultaneously from different computers

CHAPTER 1

Nurse

Vitals recording, Medication Administration (MAR), pre-visit preparation, patient observations, allergy management

1.1 Role Overview

The Nurse role handles **direct patient care tasks**: recording vital signs, preparing patients before doctor visits, administering medications, and documenting observations. Nurses work primarily in the outpatient clinic or at the nursing station.

Scope of Practice

Nurses **cannot** prescribe medications, order lab tests, create diagnoses, or access financial/billing modules. These are restricted to doctors and administrative staff. However, nurses **CAN** view prescriptions, lab results, and radiology reports to stay informed about patient care.

1.2 Dashboard Walkthrough

When a Nurse logs in, the dashboard shows:

- **Today's Appointments** — patients scheduled for today who need pre-visit preparation
- **Pending Vitals** — patients checked in but vitals not yet recorded
- **MAR Schedule** — medications due for administration **HMS**
- **Recent Activity** — your last 10 actions in the system for quick reference
- **Quick Search** — find patients by name, MRN, phone, or national ID

1.3 Core Workflow: Recording Vitals

Step-by-Step: Record Patient Vitals

1 Find the patient

Sidebar → Reception → Patients → Search by name, MRN, or phone

Or use the quick search bar in the top navigation.

2 Open today's visit

Patient profile → Visits tab → Click today's visit

If no visit exists, the patient hasn't been checked in yet — ask reception.

3 Record vitals

Visit detail → "Record Vitals" button

Fill in the following fields:

- **Temperature** — in °C (normal: 36.1–37.2°C)
- **Blood Pressure** — systolic/diastolic in mmHg (normal: <120/80)
- **Heart Rate** — beats per minute (normal: 60–100 bpm)
- **Respiratory Rate** — breaths per minute (normal: 12–20)
- **SpO₂** — oxygen saturation % (normal: 95–100%)
- **Weight** — in kg
- **Height** — in cm
- **BMI** — auto-calculated from weight and height

4 Add nurse notes (optional)

Document any observations: patient complaints, mobility issues, skin condition, level of consciousness, pain score (0–10).

5 Save

Click "Save Vitals" — the doctor can now see these in the patient's chart. A timestamp and your user ID are recorded automatically.

Tip: NEWS2 Score

The system automatically calculates the **NEWS2 (National Early Warning Score)** from the vitals you enter. The score ranges from 0 to 20:

- **0–4:** Low risk — continue routine monitoring
- **5–6:** Medium risk — increase monitoring frequency, inform doctor
- **7+:** High risk — urgent medical review required

A score of 5+ triggers a **clinical alert** on the doctor's dashboard.

1.4 Core Workflow: Pre-Visit Preparation

Step-by-Step: Prepare Patient for Doctor Visit

1

Check the appointment list

Sidebar → Outpatient → Appointments → Today

2

For each patient, verify:

- ✓ Patient identity (name, MRN, date of birth) — match with ID
- ✓ Reason for visit matches appointment
- ✓ Any known allergies are flagged in the system
- ✓ Insurance/pre-authorization status
- ✓ Previous visit notes are accessible

3

Record vitals (see workflow 1.3 above)

4

Update allergy list if needed

Patient profile → Allergies tab → "Add Allergy"

Record: allergen, reaction type, severity (mild/moderate/severe), and notes.

5

Mark as "Ready for Doctor"

The patient appears on the doctor's queue with a green indicator.

1.5 Core Workflow: Medication Administration (MAR) HMS

★ HMS Only

The Medication Administration Record (MAR) is available in the Hospital Edition for inpatient medication tracking. Clinic Edition users can record prescriptions but not track administration schedules.

Step-by-Step: Administer Medication

1 Open the MAR

Sidebar → Ward → MAR → Select patient

2 Check the medication schedule

Review drug name, dose, route (oral, IV, IM, SC, topical), frequency, and any special instructions from the doctor.

3 Verify the 5 Rights of Medication Administration:

- ✓ **Right Patient** — confirm identity with wristband or ID
- ✓ **Right Drug** — match prescription to medication label
- ✓ **Right Dose** — verify amount matches prescription
- ✓ **Right Route** — oral, IV, IM, SC, topical, etc.
- ✓ **Right Time** — check schedule (QD, BID, TID, QID, PRN, etc.)

4 Administer and document

Click "Administer" → Enter actual time given → Add notes if needed (e.g., "patient tolerated well", "nausea after dose") → Save

Drug Interaction Alerts

Always check for **drug interaction alerts** before administering. The system flags known interactions (100+ pairs):

- **Red alert** — Serious interaction. Do NOT administer without doctor approval.
- **Yellow alert** — Moderate interaction. Proceed with caution, monitor patient.

1.6 Core Workflow: Managing Patient Allergies

Step-by-Step: Record a New Allergy

1 Open patient profile

Search patient → Patient profile → Allergies tab

2 Add new allergy

Enter: allergen name (drug, food, environmental), reaction type (rash, anaphylaxis, GI upset, etc.), severity level

3 Save

The allergy will be flagged automatically whenever a doctor tries to prescribe the allergen.

Common Scenarios

Q: A patient says they're allergic to penicillin but it's not in the system. What do I do?

A: Add the allergy immediately via Patient Profile → Allergies → Add. This will alert any doctor who tries to prescribe penicillin or related antibiotics.

Q: A patient's vitals show a NEWS2 score of 7. What should I do?

A: Immediately notify the attending doctor. Increase monitoring to every 30 minutes. Document the notification in your nursing notes with the time and doctor's name.

Q: I need to give a PRN medication but the patient says the pain is already gone.

A: PRN (as needed) medications should only be given when the patient has the indication. Document in your notes: "Patient declined PRN medication — pain resolved." Do NOT mark it as administered.

Troubleshooting

I can't find the patient in the system

Try searching by MRN, phone number, or national ID instead of name. Arabic and English names may differ. If still not found, the patient may not be registered — ask reception.

The "Record Vitals" button is missing

The patient needs a visit for today. If they have an appointment but haven't been checked in, ask reception to check them in first.

I accidentally saved wrong vitals

You can edit the last vitals entry within the same visit. Go to the visit → Vitals → Click the entry → Edit. Previous values are kept in the audit log.

1.7 Permissions Matrix

Permission Key	Description	Nurse
outpatient.view_patients	View patient list and profiles	✓
outpatient.record_vitals	Record vital signs for a visit	✓
outpatient.view_vitals	View vital signs history	✓
outpatient.view_appointments	View appointment schedule	✓
outpatient.clinical_notes	Write nursing notes	✓
outpatient.view_prescriptions	View (not create) prescriptions	✓
outpatient.view_allergies	View and manage patient allergies	✓

Permission Key	Description	Nurse
lab.view_results	View lab results	✓
radiology.view_results	View radiology reports	✓
ward.nursing_assessment HMS	Record nursing assessments	✓
ward.view_nursing_assessment HMS	View nursing assessments	✓
outpatient.create_prescription	Create prescriptions	✗
outpatient.create_diagnosis	Create diagnoses	✗
lab.create_order	Order lab tests	✗
billing.manage_invoices	Access billing	✗

CHAPTER 2

Chief Nurse / Ward Nurse HMS

Ward management, nursing assessments, intake/output tracking, shift handover, bed management

★ HMS Only Chapter

Ward management, nursing assessments, and inpatient workflows are available exclusively in the Hospital Edition. Clinic Edition users refer to Chapter 1 (Nurse) for outpatient workflows.

2.1 Role Overview

The Chief Nurse has **all Nurse permissions** plus ward-level management: creating nursing assessments, managing bed assignments, tracking intake/output, coordinating shift handovers, and supervising ward nurses.

2.2 Dashboard

The Chief Nurse dashboard adds:

- **Ward Overview** — bed occupancy map (occupied, available, cleaning, reserved)
- **Nursing Assessments Due** — patients needing initial or shift assessments
- **MAR Pending** — medications overdue for administration
- **Shift Summary** — pending handover notes from previous shift
- **Patient Acuity** — color-coded patient severity levels

2.3 Core Workflow: Nursing Assessment

Step-by-Step: Initial Nursing Assessment

1 Select the admitted patient

Sidebar → Ward → Admitted Patients → Click patient name

2 Start new assessment

Patient ward view → "New Assessment" button

Select assessment type:

- **Initial** — first assessment after admission
- **Shift** — routine assessment at shift change
- **Focused** — specific system assessment (cardiac, respiratory, neuro, etc.)
- **Pre-Op** — before surgery
- **Post-Op** — after surgery
- **Discharge** — before patient leaves
- **Fall Risk** — fall risk evaluation (Morse Fall Scale)
- **Pain** — pain assessment (numeric rating scale 0–10)
- **Skin** — skin integrity assessment (Braden Scale)
- **Nutrition** — nutritional status screening
- **Wound** — wound assessment and documentation
- **Intake/Output** — fluid balance tracking

3 Complete the assessment form

Each assessment type has a structured form. Fill all required fields. The form auto-saves as you type.

4 Add clinical notes

Document observations, interventions, and patient response.

5 Save and sign

The assessment is timestamped with your user ID.

2.4 Core Workflow: Shift Handover

Step-by-Step: Prepare Shift Handover

- 1 Open ward overview**
Sidebar → Ward → Ward Dashboard
- 2 Review each patient:**
Current diagnosis, treatment plan, pending orders, vital trends, medication schedule, any incidents or changes.
- 3 Document handover notes**
Patient → Clinical Notes → New Note → Type: "Shift Handover"
Include: current status, medications given, pending tasks, concerns.
- 4 Flag critical items**
Use the priority flag for patients requiring immediate attention from the next shift.

2.5 Core Workflow: Bed Management

Step-by-Step: Assign a Bed

- 1 Open bed management**
Sidebar → Ward → Beds
- 2 Find an available bed**
The bed map shows: Green = available, Red = occupied, Yellow = cleaning, Grey = reserved/maintenance.
- 3 Assign patient to bed**
Click available bed → Select patient → Confirm assignment.
- 4 On discharge**
Mark bed as "Cleaning" → Housekeeping cleans → Mark as "Available".

Common Scenarios

Q: A patient's family is asking about the treatment plan. Can I share it?

A: You can share general information (diet, mobility, visiting hours) but clinical details (diagnosis, medications, prognosis) should only be shared by the doctor. Direct the family to the attending physician.

Q: I notice a medication error on the previous shift's MAR. What do I do?

A: Do NOT modify the previous entry. Document the discrepancy in your nursing notes, notify the charge nurse and doctor immediately, and follow your facility's incident reporting procedure.

2.6 Permissions Matrix

Permission Key	Description	Chief Nurse	Ward Nurse
Inherits all Nurse permissions (Chapter 1)			
ward.nursing_assessment	Create nursing assessments	✓	✓
ward.view_nursing_assessment	View all nursing assessments	✓	✓
ward.manage_admissions	Admit and discharge patients	✓	✗
ward.manage_beds	Assign and manage beds	✓	✗
ward.view_all_assessments	View assessments from all shifts	✓	★

CHAPTER 3

Doctor / Physician

Consultations, clinical notes, prescriptions, diagnoses, lab/radiology orders, care plans, specialty exams

3.1 Role Overview

The Doctor role is the **clinical core** of the system. Doctors conduct consultations, create diagnoses, prescribe medications, order investigations, write clinical notes, and manage care plans. This role has access to the full patient chart including allergies, problem list, medication history, and immunization records.

3.2 Dashboard

- **My Patient Queue** — patients ready for consultation (vitals recorded by nurse)
- **Today's Appointments** — scheduled patients with time, reason, and status
- **Pending Results** — lab and radiology results awaiting your review
- **Clinical Alerts** — drug interactions, allergy warnings, critical lab values
- **Preventive Care Reminders** — overdue screenings based on patient age/gender/conditions
- **Quick Actions** — new prescription, new diagnosis, new clinical note

3.3 Core Workflow: Patient Consultation

Step-by-Step: Conduct a Full Consultation

1 Select patient from queue

Dashboard → My Queue → Click patient name

2 Review patient chart

Check all available information before starting:

- **Vitals** — recorded by nurse (with NEWS2 score)
- **Allergies** — any known drug/food/environmental allergies
- **Current Medications** — active prescriptions
- **Problem List** — active and resolved medical problems
- **Past Visits** — previous consultation notes
- **Lab Results** — recent and historical results
- **Radiology** — imaging reports
- **Immunizations** — vaccination history

3 Record clinical notes (SOAP format)

Visit → Clinical Notes → New Note → Type: SOAP

Subjective: Patient's chief complaint, history of present illness, review of systems

Objective: Physical examination findings, vital signs

Assessment: Diagnosis (with ICD-10 code)

Plan: Treatment plan, investigations, prescriptions, follow-up

4 Add diagnosis

Visit → Diagnoses → Add → Search ICD-10 code

The system includes 100+ ICD-10 codes with autocomplete. Type in English or Arabic to search.

5 Order investigations

Visit → Orders → Lab Order / Radiology Order → Select tests

Multiple tests can be ordered in a single order. Add clinical notes for the technician.

6 Prescribe medications

Visit → Prescriptions → New Prescription → Add drugs

For each drug, specify:

- **Drug name** — autocomplete from formulary
- **Dose** — amount and unit (e.g., 500mg)
- **Frequency** — QD, BID, TID, QID, PRN, etc.
- **Route** — oral, IV, IM, SC, topical, inhaled, etc.
- **Duration** — number of days or "ongoing"
- **Special instructions** — e.g., "take with food", "avoid sunlight"

7

Complete visit

Set follow-up date if needed → Add referrals if needed → Mark visit as completed.

**Tip: Specialty Exam Templates**

For ENT, Vision, or Dental exams, use the **Specialty Templates** under the Examinations tab. These provide structured forms with all relevant fields pre-built:

- **ENT:** Otoscopy, rhinoscopy, laryngoscopy findings
- **Vision:** Visual acuity, refraction, fundoscopy
- **Dental:** Tooth chart, periodontal assessment, treatment plan

3.4 Core Workflow: Managing the Problem List

Step-by-Step: Add a Problem to the Problem List

1

Patient profile → Problems tab → "Add Problem"

2

Search for the condition (ICD-10 code or description). Set status: Active, Resolved, or Inactive.

3

Add onset date and notes. Save.

3.5 Core Workflow: Clinical Notes Types

Note Type	When to Use	Template
SOAP Note	Every outpatient consultation	Subjective → Objective → Assessment → Plan
Progress Note	Inpatient daily rounds	Interval history, exam, assessment, plan
Discharge Summary	When patient is discharged	Diagnosis, treatment given, medications at discharge, follow-up plan
Procedure Note	After any procedure	Indication, technique, findings, complications
Referral Note	Referring to another doctor/facility	Reason, relevant history, current treatment, urgency
Emergency Note	ER presentations	Chief complaint, triage level, rapid assessment, disposition

Drug Interaction Alerts

When prescribing, the system checks **100+ drug interaction pairs** in real-time:

- **Red alerts** — Serious interactions (e.g., Warfarin + Aspirin = bleeding risk). Review before confirming.
- **Yellow alerts** — Moderate interactions. Use clinical judgment.
- Allergy matches are also flagged if the prescribed drug matches a known allergy.

Common Scenarios

Q: The patient has a fever but I'm not sure of the diagnosis yet. Can I save a partial note?

A: Yes. Save the SOAP note with your current findings. You can edit it later to add the final diagnosis. The system keeps a full edit history.

Q: I want to order a test that's not in the catalog.

A: Ask your administrator to add the test to the lab catalog. In the meantime, use the "Other/Custom" option and type the test name manually.

Q: How do I prescribe a medication for a specific duration (e.g., 5 days of antibiotics)?

A: When adding the drug to the prescription, set the Duration field to "5" and select "days". The system will show the end date and the pharmacist will see the duration on the dispensing screen.

3.6 Permissions Matrix

Permission Key	Description	Doctor
outpatient.view_patients	View patient profiles	✓
outpatient.create_diagnosis	Create diagnoses (ICD-10)	✓
outpatient.create_prescription	Prescribe medications	✓
outpatient.clinical_notes	Write clinical notes	✓
outpatient.manage_care_plans	Create and manage care plans	✓
outpatient.view_allergies	View and manage allergies	✓
outpatient.view_problems	Manage problem list	✓
lab.create_order	Order laboratory tests	✓
radiology.create_order	Order radiology studies	✓
clinical.view_protocols	View clinical protocols	✓
clinical.view_preventive	View preventive care reminders	✓

Permission Key	Description	Doctor
billing.manage_invoices	Access billing	✕
admin.manage_users	Manage user accounts	✕

CHAPTER 4

Medical Director

Clinical oversight, protocol management, quality assurance, approvals, MoH compliance

4.1 Role Overview

The Medical Director has **all Doctor permissions** plus clinical governance capabilities: managing clinical protocols, overseeing quality metrics, approving clinical decisions, and accessing the MoH compliance dashboard.

4.2 Additional Capabilities

- **Clinical Protocol Management** — Create, edit, and activate clinical protocols with step-by-step actions
- **Preventive Care Rules** — Define screening schedules based on age, gender, and conditions
- **Clinical Audit Log** — Review all clinical actions across the facility
- **MoH Compliance Dashboard** — View notifiable disease reports, birth/death registrations
- **Disease Surveillance** — Monitor 20 notifiable diseases per MoH requirements

4.3 Pre-Loaded Clinical Protocols

Protocol	Condition	Source	Evidence
DM_MGMT	Diabetes Management	ADA Standards of Care 2024	Level A
HTN_MGMT	Hypertension Management	ACC/AHA 2017 Guidelines	Level A
PNEUMONIA	Community-Acquired Pneumonia	IDSA/ATS 2019	Level A
ASTHMA_ACUTE	Acute Asthma Exacerbation	GINA 2023	Level A
SEPSIS	Sepsis Management	Surviving Sepsis Campaign 2021	Level A

4.4 Permissions Matrix

Permission Key	Description	Med. Director	Doctor
Inherits all Doctor permissions (Chapter 3)			
admin.manage_protocols	Create/edit clinical protocols	✓	✗
admin.manage_preventive	Manage preventive care rules	✓	✗

Permission Key	Description	Med. Director	Doctor
reports.clinical_audit	View clinical audit log	✓	✗
reports.moh_compliance	MoH compliance dashboard	✓	✗
reports.disease_surveillance	Notifiable disease tracking	✓	✗

Receptionist / Front Desk

Patient registration, appointments, check-in, insurance verification, initial billing

5.1 Role Overview

The Receptionist is the **first point of contact**. This role manages patient registration, appointment scheduling, check-in/check-out, insurance verification, and initiates the billing process.

5.2 Core Workflow: Patient Registration

Step-by-Step: Register a New Patient

1 Open new patient form

Sidebar → Reception → Patients → "Add New Patient"

2 Fill demographics

Required: Full name (Arabic + English), Date of Birth, Gender, Phone

Optional: National ID, Address, Blood Group, Emergency Contact (name + phone + relationship)

3 Add identifiers

National ID, Insurance Number, Passport, etc. — each with type and expiry date.

4 Set category and insurance

Patient category (self-pay, insured, corporate, government, charity) and insurance company with policy number.

5 Save — MRN auto-generated

The system generates a unique Medical Record Number (configurable format: prefix + year + sequential number).

5.3 Core Workflow: Appointment Scheduling

Step-by-Step: Book an Appointment

- 1 *Sidebar → Outpatient → Appointments → "New Appointment"*
- 2 **Select patient** (search or register new inline)
- 3 **Choose doctor, date, and time**
Available slots shown. Set: service type, specialty, priority (routine/urgent/asap/stat), duration.
- 4 **Add reason for visit → Confirm and save**

5.4 Core Workflow: Patient Check-In

Step-by-Step: Check In a Patient

- 1 *Today's Appointments → Find patient → Click "Check In"*
- 2 **Verify identity** (name, MRN, DOB) → **Verify insurance**
- 3 **Confirm** — Patient moves to "Waiting" → Nurse can now prepare them

Common Scenarios

Q: A walk-in patient doesn't have an appointment. What do I do?

A: Register the patient (if new) or find their record (if existing), then create a same-day appointment with an available doctor. Set priority to "Urgent" if needed.

Q: The patient's insurance has expired. Can they still see the doctor?

A: Yes, but change their category to "Self-Pay" temporarily. Create the invoice at full price. The patient can submit for reimbursement later. Note the expired policy in the visit notes.

Q: A patient wants to reschedule. How do I handle this?

A: Open the appointment → Click "Reschedule" → Select new date/time → Confirm. The system sends a notification to the doctor if the appointment was already confirmed.

5.5 Permissions Matrix

Permission Key	Description	Receptionist
reception.manage_patients	Register and edit patient demographics	✓
reception.manage_appointments	Schedule, reschedule, cancel appointments	✓

Permission Key	Description	Receptionist
reception.check_in	Check patients in/out	✓
reception.view_schedule	View doctor schedules	✓
billing.create_invoice	Create invoices for visits	✓
billing.collect_payment	Record payments	✓
outpatient.create_prescription	Create prescriptions	✗
outpatient.create_diagnosis	Create diagnoses	✗

CHAPTER 6

Laboratory Technician

Lab orders, sample processing, result entry, quality control, POS terminal, LOINC codes

6.1 Core Workflow: Processing a Lab Order

Step-by-Step: Process Lab Order

1 View pending orders

Sidebar → Lab → Pending Orders

2 Accept the order — confirms sample received

3 Enter results

Fill values for each test. System flags: Normal, High (H), Low (L), Critical High (HH), Critical Low (LL), Abnormal (A).

4 Add notes (optional) — sample quality, unusual findings

5 Release results — visible to doctor immediately

6.2 POS Terminal

Walk-in patients can get tests without a prior doctor visit via the Lab POS:

- Quick patient lookup or new registration
- Select tests from catalog → Generate invoice → Collect payment
- Print receipt with QR code

Common Scenarios

Q: A doctor ordered a CBC but the patient's sample is hemolyzed. What do I do?

A: Do NOT enter results from a hemolyzed sample. Document the issue in the order notes ("Sample hemolyzed — recollection needed"), change order status to "Recollection Required", and notify the nursing station to redraw.

Q: A critical lab value came back. What's the protocol?

A: Enter the result immediately, mark it as "Critical", and notify the ordering doctor directly (phone or in person). Document the notification time and doctor's name in the order notes. This is a patient safety requirement.

6.3 Permissions Matrix

Permission Key	Description	Lab Tech
lab.view_orders	View lab orders	✓
lab.process_orders	Accept, process, release results	✓
lab.enter_results	Enter test results	✓
lab.pos_terminal	Access lab POS	✓
lab.manage_catalog	Manage test catalog	★
lab.create_order	Create orders (doctor only)	✗

CHAPTER 7

Radiology Technician

Imaging orders, DICOM integration, PACS viewer, report generation

7.1 Core Workflow: Processing a Radiology Order

Step-by-Step

- 1 *Sidebar → Radiology → Pending Orders* → Accept order
- 2 Perform imaging → Enter DICOM metadata (Study Instance UID, Accession Number, Series Count, endpoint)
- 3 Write findings and impression → Release report

7.2 Permissions Matrix

Permission Key	Description	Rad Tech
radiology.view_orders	View radiology orders	✓
radiology.process_orders	Accept and process	✓
radiology.enter_results	Enter findings	✓
radiology.pacs_viewer	Access PACS viewer	✓
radiology.create_order	Create orders (doctor only)	✗

CHAPTER 8

Pharmacist

Prescription dispensing, drug inventory, interaction checking, POS terminal

8.1 Core Workflow: Dispensing a Prescription

Step-by-Step

- 1 *Sidebar → Pharmacy → Pending Prescriptions* → Select prescription
- 2 Check drug interactions (auto-checked) → Verify stock availability
- 3 Dispense → Stock auto-decrements → Generate invoice → Print label

8.2 Drug Interaction Database

The system includes **100+ drug interaction pairs** covering:

- Anticoagulants + NSAIDs (bleeding risk)
- ACE inhibitors + Potassium supplements (hyperkalemia)
- Metformin + Contrast dye (lactic acidosis)
- Warfarin + Antibiotics (increased INR)
- SSRIs + MAOIs (serotonin syndrome)
- And 95+ more pairs...

Common Scenarios

Q: A prescription shows a drug interaction alert. The doctor insists on dispensing. What do I do?

A: Document your concern, ask the doctor to override the alert with a clinical justification (which they can do in the system), and note the override reason. Never dispense without the doctor's explicit override.

Q: Stock is insufficient for the full prescription. Can I dispense partial?

A: Yes. Dispense what's available, mark the prescription as "Partially Dispensed", and note the remaining quantity. The patient can collect the rest when stock is replenished.

8.3 Permissions Matrix

Permission Key	Description	Pharmacist
pharmacy.view_prescriptions	View prescriptions	✓
pharmacy.dispense	Dispense medications	✓
pharmacy.manage_stock	Manage drug inventory	✓
pharmacy.pos_terminal	Access pharmacy POS	✓
pharmacy.view_interactions	View interaction alerts	✓

CHAPTER 9

Accountant / Billing Staff

Invoices, payments, insurance claims, financial reports, journal entries, digital payments

9.1 Core Workflow: Invoice and Payment

Step-by-Step

- 1 *Sidebar → Billing → Invoices → "New Invoice"*
- 2 Select patient → Add line items (consultation, lab, radiology, pharmacy, procedures)
- 3 Apply insurance (auto-calculates patient responsibility) → Collect payment
- 4 Select payment method → Print receipt with QR code

9.2 Supported Payment Methods

Provider	Type	Region
Cash	Cash	Universal
Visa / Mastercard	Card	Global
Bankak	Mobile Banking	Sudan
OCash	Mobile Wallet	Sudan
Fawry	Payment Gateway	Egypt
Custom Provider	Configurable	Any

9.3 Permissions Matrix

Permission Key	Description	Accountant
billing.manage_invoices	Create, edit, void invoices	✓
billing.collect_payment	Record payments	✓
billing.manage_insurance	Process insurance claims	✓
accounting.journal_entries	Create journal entries	✓

Permission Key	Description	Accountant
accounting.reports	Financial reports	✓

CHAPTER 10

HR Manager

Staff management, payroll, attendance, documents, loans, roster

10.1 Core Workflows

Employee Management

- Add/edit employee profiles with personal details, qualifications, contract info
- Track employment history and document expiry dates
- Manage departments and designations

Payroll Processing

- Define salary structures (basic, allowances, deductions)
- Run monthly payroll with automatic calculations
- Generate pay slips and payroll reports
- Manage loans and advances with automatic deduction from salary

Roster Management

- Create weekly/monthly duty rosters
- Assign shifts to staff members
- Print roster schedules for posting

10.2 Permissions Matrix

Permission Key	Description	HR Manager
hr.manage_employees	Add/edit employee records	✓
hr.manage_payroll	Process payroll	✓
hr.manage_attendance	Track attendance	✓
hr.manage_documents	Manage employee documents	✓
hr.manage_loans	Manage loans and advances	✓
roster.manage	Create/manage duty roster	✓

CHAPTER 11

Emergency Staff HMS

Emergency triage, acute care, fast-track workflows

★ HMS Only

The Emergency module is available exclusively in the Hospital Edition.

11.1 Triage Levels

Level	Color	Wait Time	Examples
P1 — Resuscitation	Red	Immediate	Cardiac arrest, severe hemorrhage, airway obstruction
P2 — Emergent	Orange	< 15 min	Chest pain, stroke symptoms, severe asthma, major trauma
P3 — Urgent	Yellow	< 30 min	Fractures, moderate asthma, abdominal pain, high fever
P4 — Semi-Urgent	Green	< 60 min	Minor injuries, earache, mild allergic reactions
P5 — Non-Urgent	Blue	< 120 min	Prescription refills, minor complaints, follow-up

11.2 Permissions Matrix

Permission Key	Description	ER Doctor	ER Nurse
emergency.view_patients	View ER patient list	✓	✓
emergency.triage	Perform triage	✓	✓
emergency.treat	Treat patients	✓	✗
emergency.discharge	Discharge from ER	✓	✗
emergency.admit	Admit to ward	✓	✗

CHAPTER 12

Operating Room Staff HMS

Surgical bookings, WHO checklist, operative notes, scheduling

★ HMS Only

The Operating Room module is available exclusively in the Hospital Edition.

12.1 WHO Surgical Safety Checklist

Phase	When	Key Checks
Sign In	Before anesthesia	Patient identity, site marked, consent, allergies, anesthesia check
Time Out	Before incision	Team introduced, procedure confirmed, antibiotics given, imaging displayed
Sign Out	Before leaving OR	Procedure recorded, instrument counts correct, specimens labeled

12.2 Permissions Matrix

Permission Key	Description	Surgeon	OR Nurse
or.view_bookings	View OR schedule	✓	✓
or.manage_bookings	Create/edit bookings	✓	✗
or.surgical_checklist	Complete WHO checklist	✓	✓
or.record_operative_note	Record operative notes	✓	✗

CHAPTER 13

System Administrator

Full system access — users, security, settings, backups, integrations, reports

13.1 Initial Setup Checklist

Post-Installation Configuration (7 Steps)

- 1 **Change admin password** → Enable 2FA
- 2 **Configure facility info** — name (AR+EN), address, phone, logo, currency, MRN format
- 3 **Create user accounts** — one per staff member, assign role
- 4 **Configure security** — password policy, lockout settings, IP whitelist
- 5 **Set up backups** — daily automatic with configurable retention
- 6 **Configure integrations** — SMS gateway, FHIR API, payment providers
- 7 **Load seed data** — ICD-10 codes, drug interactions, LOINC codes, growth charts

13.2 Security Features

Feature	Description	Configuration
Two-Factor Authentication	TOTP with backup codes	Per-user
Password Policy	Min length, complexity, expiry	Admin → Security
Login Lockout	Lock after N failed attempts	Configurable
IP Whitelist	Restrict to specific IPs	Admin → Security
Audit Log	Track all user actions	Admin → Reports
Automatic Backups	Scheduled DB backups	Admin → Backups

13.3 MoH Compliance

Ministry of Health Reporting

- **DHIS2 Reports** — aggregate health indicators
- **Disease Surveillance** — 20 notifiable diseases tracked automatically
- **Birth/Death Registration** — structured forms for vital events
- **MoH API Adapter** — ready for when MoH provides API specifications

13.4 Permissions

The Administrator has **ALL 320+ permissions** across all modules. No permission matrix needed — full access.

APPENDIX A

Keyboard Shortcuts & Quick Reference

Common navigation shortcuts and quick reference card

A.1 Quick Navigation

Action	How
Quick patient search	Use the search bar in the top navigation (searches name, MRN, phone, national ID)
Switch language	Click EN / عربي in the top bar
View notifications	Click the bell icon in the top bar
Access profile	Click your name in the top-right corner
Logout	Profile menu → Logout
Go to dashboard	Click the Haimoura logo in the top-left

A.2 Common Abbreviations

Abbreviation	Meaning
MRN	Medical Record Number
SOAP	Subjective, Objective, Assessment, Plan
NEWS2	National Early Warning Score 2
MAR	Medication Administration Record
ICD-10	International Classification of Diseases, 10th Revision
LOINC	Logical Observation Identifiers Names and Codes
FHIR	Fast Healthcare Interoperability Resources
DICOM	Digital Imaging and Communications in Medicine
PACS	Picture Archiving and Communication System
DHIS2	District Health Information Software 2
PRN	Pro Re Nata (as needed)
QD/BID/TID/QID	Once/ Twice/ Three/ Four times daily

APPENDIX B

Glossary of Terms

Definitions of technical terms used in this manual

B.1 Clinical Terms

Allergy Intolerance

A record of a patient's allergic reactions to substances (drugs, foods, environmental factors).

Care Plan

A structured plan outlining the patient's treatment goals, interventions, and expected outcomes.

Clinical Decision Support (CDS)

Automated alerts and reminders that help clinicians make better decisions (e.g., drug interaction warnings).

Clinical Note

A structured document recording the clinical encounter (SOAP, Progress, Discharge, etc.).

Diagnosis (ICD-10)

A coded medical diagnosis using the International Classification of Diseases, 10th Revision.

Discharge Summary

A comprehensive document created when a patient leaves the facility, summarizing their stay.

Immunization Record

A record of vaccines given to the patient, including date, vaccine type, and lot number.

MAR (Medication Administration Record)

A record of medications actually given to a patient, including time, dose, and route.

NEWS2

National Early Warning Score 2 — a scoring system to detect clinical deterioration.

Problem List

A running list of a patient's active and resolved medical conditions.

Progress Note

A daily note written during inpatient stays documenting the patient's progress.

B.2 Technical Terms

API (Application Programming Interface)

A way for different software systems to communicate with each other.

CSRF (Cross-Site Request Forgery)

A security attack that tricks users into performing unwanted actions. Prevented by CSRF tokens.

DICOM

The standard for handling medical imaging data.

FHIR R4

Fast Healthcare Interoperability Resources — a modern standard for exchanging healthcare data.

LAN (Local Area Network)

A network that connects devices within a limited area (your facility).

LOINC

Standardized codes for lab tests and clinical observations.

PACS

System for storing, retrieving, and distributing medical images.

TOTP (Time-based One-Time Password)

A temporary code generated by an authenticator app for 2FA.

Two-Factor Authentication (2FA)

An extra layer of security requiring both a password and a temporary code.

Troubleshooting Guide

Common problems and their solutions

C.1 Login Issues

"Account locked" message

Too many failed login attempts. Wait 15 minutes or ask your administrator to unlock your account.

"Invalid CSRF token" error

Your session expired. Refresh the page and try again. If it persists, clear your browser cache.

Page shows "Database connection failed"

The database server is not running. Contact your administrator to restart MySQL/MariaDB.

2FA code not accepted

Check that your phone's clock is synchronized (TOTP codes are time-based). If you lost your authenticator app, use a backup code or ask your administrator to reset 2FA.

C.2 Clinical Issues

"Duplicate entry" error when saving

You're trying to create a record that already exists. Check if the patient/visit/record already exists before creating a new one.

Drug interaction alert won't dismiss

Serious interactions require a clinical justification to override. The doctor must provide a reason in the override dialog.

Can't find a medication in the formulary

Ask your administrator to add it to the drug catalog. In the meantime, use "Other" and type the name manually.

Lab results show "Pending" but the test is done

The lab technician may not have released the results yet. Contact the lab to release them.

C.3 Printing Issues

Printout is cut off or misaligned

Check your browser print settings: set margins to "Default" or "None", disable "Headers and Footers", and ensure "Background graphics" is enabled.

Arabic text prints backwards

Ensure your browser supports RTL printing. Chrome and Firefox handle this correctly. Check that the page direction is set to RTL.

PDF generation fails

Check that the server has wkhtmltopdf or a similar PDF engine installed. Contact your administrator.

C.4 Performance Issues

System is slow

Check your network connection to the server. If multiple users report slowness, the server may need more resources (RAM/CPU). Check if a backup is running.

Page doesn't load at all

Verify the server IP address in your browser. Check if the server is powered on. Try accessing from a different device to rule out client issues.



Haimoura Smart

HMS / CMS Version 2.0

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