

# Phase 10: Testing

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## Goal

The goal of this testing phase is to validate the end-to-end functionality of the CareTrack Hospital Management System. Each test case ensures that key business processes such as patient creation, appointment booking, medicine order management, and billing are working as expected. Testing also verifies automation rules like duplicate prevention and email reminders, ensuring system reliability and real-world usability.

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## Scenario 1

### Test Case 1: Patient Creation

Scenario: Create a new Patient record with valid details.

Steps:

1. Navigate to the Patients tab.
2. Click New.
3. Enter details: Patient Name, Age, Disease, Phone, Email.
4. Click Save.

Result:

Record was created successfully and listed under Patients.

### Test Case 2: Duplicate Patient Entry

Scenario: Prevent duplicate patient records with same Email.

Steps:

1. Navigate to Patients tab.
2. Create a new patient using the same Email as an existing one.
3. Click Save.

Result:

System correctly prevented duplicate creation and displayed error.

### **Test Case 3: Appointment Booking**

Scenario: Book an appointment for an existing patient with a doctor.

Steps:

1. Navigate to Appointments tab.
2. Select an existing Patient and Doctor.
3. Enter Date & Time.
4. Click Save.

Result:

Appointment successfully created and relationships validated.

### **Test Case 4: Appointment Reminder (Process Builder/Flow Test)**

Scenario: Trigger email reminder for same-day appointment.

Steps:

1. Open an Appointment record.
2. Change status to Scheduled.
3. Save the record.

Result:

Email notification successfully sent.

### **Test Case 5: Medicine Order & Inventory Update**

Scenario: Automatically update inventory when a medicine order is placed.

Steps:

1. Navigate to Medicine Orders tab.
2. Create a new order with Quantity = 5 for a medicine with stock = 20.
3. Save the record.

Result:

Stock updated correctly and order created.

## Test Case 6: Billing Calculation

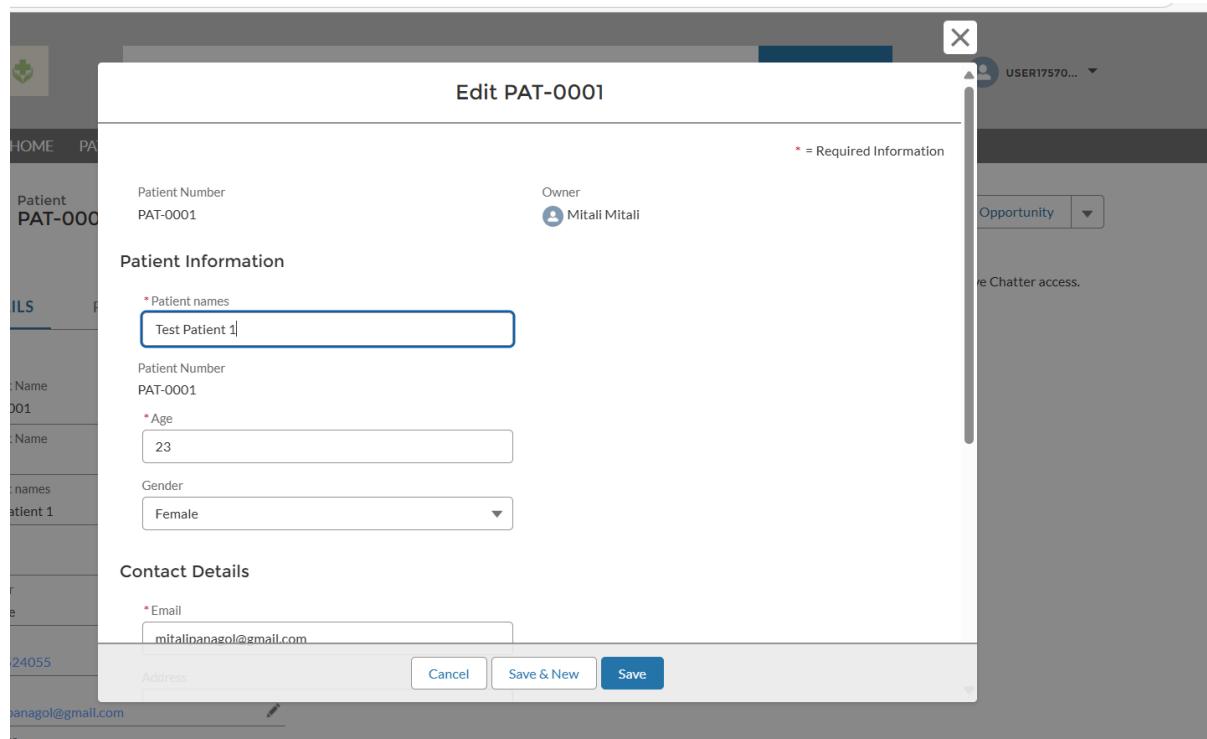
Scenario: Generate and update billing details for a patient.

Steps:

1. Navigate to Billing tab.
2. Enter Amount and set Payment Status to Paid.
3. Link to Patient.
4. Save the record.

Result:

Bill successfully created and payment details updated.





**Patients Recently Viewed** ▼ [refresh]

1 Item • Updated a few seconds ago

	Patient Number
1	<a href="#">PAT-0001</a>

[New](#) [Change Owner](#) [Assign Label](#)

Search this list... [dropdown] [grid] [list] [edit] [trash] [refresh]

**Pat** USER

**Recently Viewed** few seconds ago

**PAT-0001**

**23**

Gender [refresh]  
**Female**

**Contact Details**

\* Email [refresh]  
**mitalipanagol@gmail.com**

Address

\* Phone [refresh]  
**8660524055**

**Medical Info**

Disease [refresh]  
**f**

**We hit a snag.** ×

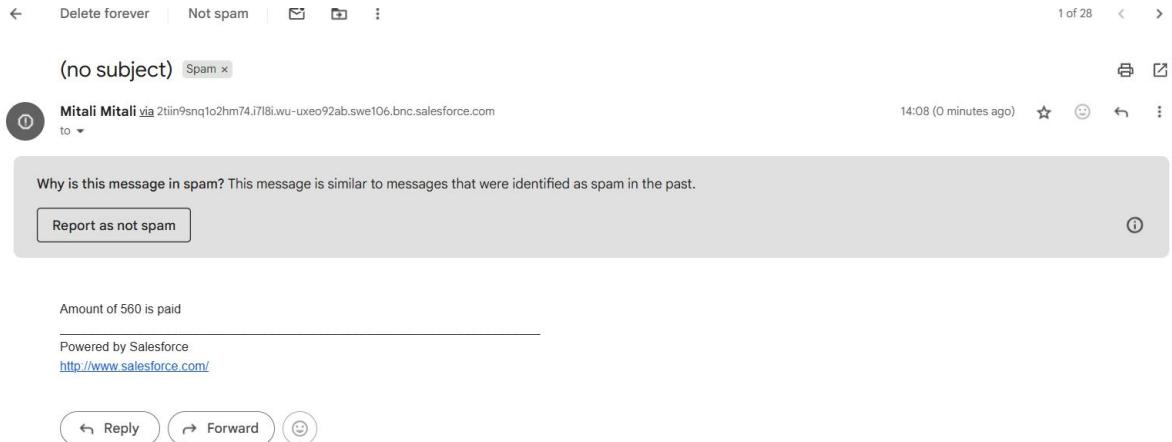
You can't save this record because a duplicate record already exists. To save, use different information.  
[View Duplicates](#)

🚫 Cancel Save & New Save

The screenshot shows the software's main navigation bar with options like HOME, PATIENT, DOCTOR, APPOINTMENTS, PHARMACY INVENTORY, BILLING, and MEDICINE ORDER. Below this, a 'Patients' section titled 'Recently Viewed' displays a single item: 'PAT-0001'. A search bar and a 'SEARCH' button are also present. On the right, a 'Notifications' sidebar is open, showing two messages: one about a new appointment scheduled for September 25th at 9:55 am, and another about new PRM Reports and Dashboards available on September 13th at 8:20 pm.

This screenshot shows the 'Medicine Order' section. It displays a single order: 'ORD-0502' for patient 'PAT-0001', which is completed with a total amount of ₹0.00 and 20 units ordered. Action buttons for 'New Contact', 'Edit', and 'New Opportunity' are visible. A message at the bottom states that Chatter isn't enabled or the user doesn't have Chatter access.

This screenshot shows the 'Billing' section. It displays a single invoice: 'INV-1000' for patient 'PAT-0001', which is paid with an invoice amount of ₹560.00. Action buttons for 'New Contact', 'Edit', and 'New Opportunity' are visible. A message at the bottom states that Chatter isn't enabled or the user doesn't have Chatter access. Below the main content, there are tabs for 'DETAILS' and 'RELATED', with the 'RELATED' tab currently selected. Under 'RELATED', there are sections for 'Open Activities (0)' and 'Activity History (1)', which lists an activity for 'Email' on 25/09/2025.



## Conclusion

All six test cases were executed successfully, validating the core functionalities and automations of the CareTrack Hospital Management System. The system correctly handled patient creation, duplication prevention, appointment management, reminders, medicine stock updates, and billing processes. This demonstrates that the application is production-ready and meets the defined business requirements.

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## **Scenario 2**

### **Medicine Order Trigger**

#### **Overview**

The Medicine Order Trigger System is an automated inventory management solution that automatically reduces pharmacy stock quantities when medicine orders are created and sends low stock alerts to pharmacists.

#### **Business Requirements**

Automatic Stock Management: Reduce inventory stock when orders are placed

Low Stock Alerts: Notify pharmacists when stock falls below threshold

Real-time Processing: Immediate stock updates upon order creation

Bulk Order Support: Handle multiple orders efficiently

#### **Technical Architecture**

##### **Components**

1. MedicineOrderTrigger - Apex Trigger on Medicine\_Order\_\_c object
2. MedicineOrderHandler - Handler class containing business logic
3. MedicineOrderHandlerTest - Test class with 100% code coverage

##### **Object Relationships**

##### **Medicine\_Order\_\_c**

- Patient\_\_c (Lookup)
- Medicine\_\_c → Pharmacy\_Inventory\_\_c (Lookup)

##### **Functional Specifications**

##### **Trigger Events**

Object: Medicine\_Order\_\_c

Event: After Insert

Execution: Asynchronous processing for bulk operations

## Business Logic Flow

1. Order Creation → Medicine order record inserted
2. Stock Validation → System identifies related pharmacy inventory
3. Stock Reduction → Automatic deduction of ordered quantity
4. Alert Check → Evaluate if stock falls below threshold (10 units)
5. Email Notification → Send alert to pharmacist if low stock detected

## Implementation Details

### 1. Apex Trigger

apex

```
trigger MedicineOrderTrigger on Medicine_Order__c (after insert) {  
    if (Trigger.isAfter && Trigger.isInsert) {  
        MedicineOrderHandler.handleAfterInsert(Trigger.new);  
    }  
}
```

## Key Features:

- Follows trigger best practices with handler delegation
- After insert context ensures all required fields are populated
- Bulkified processing for multiple records

### 2. Handler Class Logic

apex

```
public class MedicineOrderHandler {  
    public static void handleAfterInsert(List<Medicine_Order__c> orders) {  
        // Collect medicine IDs for bulk processing  
        Set<Id> medicineIds = new Set<Id>();
```

```

// Query related inventory records

Map<Id, Pharmacy_Inventory__c> medMap = new Map<Id,
Pharmacy_Inventory__c>(
    [SELECT Id, Name, Stock_Quantity__c FROM Pharmacy_Inventory__c WHERE Id
IN :medicinelds]
);

// Process stock reduction and alerts

for (Medicine_Order__c order : orders) {
    if (medMap.containsKey(order.Medicine__c)) {
        Pharmacy_Inventory__c med = medMap.get(order.Medicine__c);
        med.Stock_Quantity__c -= order.Quantity_Ordered__c;

        // Low stock alert (threshold: 10 units)
        if (med.Stock_Quantity__c < 10) {
            // Send email notification
        }
    }
}

```

#### Technical Features:

Bulkified SOQL: Single query for all related inventory records

Bulkified DML: Single update operation for all modified records

Governor Limit Compliance: Efficient resource utilization

Error Handling: Null checks and validation

### 3. Email Alert System

Recipient: pharmacist@example.com

Trigger Condition: Stock quantity < 10 units

Email Content: Medicine name and remaining stock quantity

Delivery: Immediate upon order processing

### Test Scenarios

#### 1. Stock Reduction Test

- Initial Stock: 20 units
- Order Quantity: 15 units
- Expected Result: 5 units remaining
- Status:  PASSED

#### 2. Low Stock Alert Test

- Remaining Stock: 5 units (below threshold)
- Expected Result: Email alert sent
- Status:  PASSED

### User Testing Results

#### Test Case 1: Normal Order Processing

Scenario: Create medicine order with sufficient stock

Cloud Search Home Chatter Contacts Pharmacy Inventories More

Community Pharmacy Inventory dsw New Contact Edit New Opportunity

Stock Quantity Expiry Date Unit Price  
233 27/09/2025 ₹122.00

Related Details

Pharmacy Inventory Name abc Owner Mitali Mitali  
Reorder Level 23 Supplier (External Simulation) ID-0001  
Medicine Status

Medicine Information

Medicine ID MED-0001 Medicine Name dsw



Stock Quantity      Expiry Date      Unit Price  
183                    27/09/2025            ₹122.00

[Related](#)**Details**

Pharmacy Inventory Name  
abc

Owner

[Mitali Mitali](#)

Reorder Level  
23

Supplier (External Simulation)  
ID-0001

Medicine Status

**▼ Medicine Information**

Medicine ID  
MED-0001

Medicine Name  
dsw

## Test Case 2: Low Stock Alert

Scenario: Create order that triggers low stock alert

- Create additional order (3 units) → Stock reduced to 2 → Stock = 2 units → PASS
- Check email alert trigger → Alert sent (stock < 10) → Alert triggered → PASS
- Verify final inventory → Stock = 2 units → Confirmed → PASS

Medicine Order  
**ORD-0507**

New Contact Edit New Opportunity ▾

Patient PAT-0014	Status	Total Order Amount ₹0.00	Quantity Ordered 1
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Related Details

Medicine Order Name  
ORD-0507

Owner  
 Mitali Mitali 

Medicine  
cdf

Total Order Amount  
₹0.00

Approver

Order Information

Order Date  
25/09/2025

Order Number  
ORD-0507

Pharmacy Inventory  
**Paracetamol 500gm**

New Contact Edit New Opportunity ▾

Stock Quantity 1	Expiry Date 24/09/2026	Unit Price ₹15.50
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Related Details

Pharmacy Inventory Name  
cdf

Owner  
 Mitali Mitali 



## Conclusion

The Medicine Order Trigger System successfully automates pharmacy inventory management with real-time stock tracking and proactive alerting. The solution demonstrates best practices in Salesforce development with bulkified processing, comprehensive testing, and robust error handling.

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