

# Counterfeit Medication and Tracking System

**Problem Overview:** A medication which is produced and sold with the intent to deceptively represent its origin, authenticity or effectiveness are generally referred to as counterfeit medications. They are manufactured using incorrect and harmful ingredients and then packaged and labeled to look like real brand name and generic drugs. Counterfeit medications may lead to unexpected side effects, allergic reactions, regressive medical conditions or even deaths.

Medication Counterfeit System is designed to maintain the authenticity of the medications and ensuring that the users from every level would be able to report a problem in case they encounter illegitimate drugs.

**Basic Approach:** The medications are shipped from Manufacturer via distributors which is then sent to hospitals and finally reaches the patient. The main intent is to track the package movement from Manufacturer to patient through Transaction history which can be accessed by the FDA to validate the authenticity of the medication. We are using the lot system to determine the shipment of medications.

**Key Players:** Food & Drug Administration (FDA), Manufacturers, Distributors, Supply Chain, Hospital, Pharmacy, Patients

## Application Key Functionalities:

### 1. Supply networks (Order Processing):

- **Manufacturer -> Distributer:**  
Medications are created by the manufacturer which is then requested by the distributor. The request is received by the manufacturer and the medications are shipped to the distributor warehouse through Supply Chain management
  - **Distributor -> Hospital:**  
Hospital orders medications from the distributor when is then shipped to the hospital. Based on the quantity available in the distributor warehouse, the manager places additional requests to the manufacturer.
  - **Hospital -> Patient:**  
Patient requests for the medications which is supplied to them from the hospital and pharmacy and this cycle continues based on the demand and supply.
2. **Counterfeit Medication Reports:** A problem could be reported on counterfeit medications by the pharmacy, hospital or the patient; if they suspect that the medication is illegitimate which is then sent to the FDA. This complaint is handled by the law enforcement officer who sends a notification to pharmacy, hospital or the patient and the manufacturer who produced the drug.

All the medications distributed in that lot will be deemed as counterfeit and they can no longer be sold to the pharmacy, hospital or patient.

3. **Transaction History:** All the medication orders from the manufacturer till it reaches the patient is tracked through transaction history. Transaction history will provide the details throughout the shipment (details of the manufacturer, distributor, third party shipment, hospital) which will help track the counterfeit medications. This is handled at the hospital enterprise.
4. **Product Returns:** The medications which have been identified as illegitimate cannot be sold to the patients. To discard these drugs, an option is provided to ship the medications from the warehouses to the FDA who will dispose them safely.

#### Eco System Diagram:

