

Computer System in Hospital Pharmacy

Patient Record Database Management

Definition:

- Patient record database management involves the electronic storage, retrieval, and updating of patient-related information in a centralized digital system.
- It is typically a part of the hospital's electronic health record (EHR) or pharmacy information system (PIS).

Components:

- **Demographic Details:** Name, age, gender, contact information.
- **Medical History:** Past illnesses, surgeries, allergies.
- **Medication History:** Prescribed drugs, dosages, frequency.
- **Diagnostic Results:** Lab test reports, imaging results.
- **Treatment Plans:** Physician's notes and ongoing interventions.

Functionality in Hospital Pharmacy:

- **Prescription Validation:** Pharmacists access the patient's history to ensure that new prescriptions don't conflict with existing medications or allergies.
- **Adherence Monitoring:** Tracks if patients are following the medication regimen.
- **Communication:** Facilitates smooth information exchange between pharmacists and other healthcare professionals (doctors, nurses).

Benefits:

- **Minimizes Medication Errors:** Reduces risks of contraindications and duplications.
- **Improves Workflow:** Fast access to real-time patient data.
- **Enhances Patient Safety:** Through better clinical decision-making.

Medication Order Entry

Definition:

- Medication Order Entry refers to the digital process of inputting drug prescriptions into a hospital's information system, often through Computerized Physician Order Entry (CPOE) systems.

How it Works:

- A doctor prescribes a drug electronically.
- The order is sent directly to the pharmacy system.

- The pharmacist verifies and processes the medication order.
- The medication is prepared and delivered/administered.

Workflow:

1. **Physician Entry:** Doctor enters the medication order into the system.
2. **Pharmacist Review:** Order is reviewed for appropriateness, dosage, interactions.
3. **Dispensing:** Once verified, the medication is prepared for administration.
4. **Documentation:** All orders and changes are logged in the patient's medication profile.

Key Features:

- **Decision Support Integration:** Alerts for allergies, drug-drug interactions, and dosing errors.
- **Order Templates:** Standardized formats for common prescriptions.
- **Audit Trails:** Tracks who entered and modified the order.

Importance in Pharmacy:

- **Real-Time Access:** Pharmacists instantly receive orders, reducing delays.
- **Error Reduction:** Eliminates issues due to illegible handwriting.
- **Improved Compliance:** Ensures that prescriptions meet regulatory and hospital guidelines.

Example Use:

- A physician orders insulin for a diabetic patient through the system.
- The order is cross-checked for the patient's blood glucose levels and allergy status, then sent to the pharmacy for preparation.

Drug Labels and List

Definition:

- This refers to the automated generation and management of labels for medications, along with a digitally maintained drug list or formulary used by the pharmacy.

Drug Labels:

- **Content:** Includes patient name, drug name, dosage, route of administration, frequency, and warnings.
- **Printing:** Labels are printed using integrated printers linked to the pharmacy system.
- **Customization:** Labels may be color-coded or symbol-marked for special instructions (e.g., refrigerated drugs).

Drug Lists (Formulary):

- **Database:** Contains all drugs approved for use within the hospital.

- **Classification:** Organized by therapeutic class, generic name, brand name, and manufacturer.
- **Access Control:** Only authorized drugs can be prescribed and dispensed.

Benefits:

- **Reduces Labeling Errors:** Automated label printing ensures consistency and accuracy.
- **Saves Time:** Pharmacists don't need to manually write labels.
- **Formulary Control:** Ensures adherence to hospital-approved medications.

Intravenous (IV) Solution and Admixture

Definition:

- This refers to the **computer-assisted preparation, labeling, and documentation** of intravenous (IV) solutions and **admixtures**, which are mixtures of one or more drugs into a fluid (usually saline or glucose) for intravenous administration.

Role of Computer Systems:

A. Formulation Management

- Systems store standard IV admixture formulas including base fluids, additives, and their concentrations.
- Helps calculate the correct volume and dosage for individual patient needs.

B. Preparation Instructions

- Provides step-by-step mixing instructions to pharmacy staff, ensuring aseptic and accurate preparation.
- Includes safety warnings for incompatible mixtures.

C. Label Generation

- Automatically prints detailed IV labels with patient name, drug name, concentration, expiry time, route, rate of administration, and storage conditions.

D. Barcode Integration

- Ensures verification of drug and patient identity using barcoding during admixture and administration.

Technologies Used:

- **IV Workflow Management Systems:** Specialized software modules that guide pharmacists through the preparation process.
- **Barcoding and Scanning:** Scanning of vials and syringes to verify correct drug selection before mixing.
- **Robotic IV Compounding Systems:** In advanced settings, robots assist in aseptic preparation under sterile conditions.

Benefits:

- **Reduces human error** in compounding complex IV preparations.
- **Supports pharmacist validation** before mixing.
- **Tracks lot numbers and expiry dates** of components for quality control.

Patient Medication Profiles

Definition:

- A patient medication profile is a **computerized record** of all medications prescribed, dispensed, and administered to a specific patient, **compiled over time**.

Key Components of Medication Profiles:

- **Current Medications:** Includes drugs currently prescribed, with dosage, frequency, and route of administration.
- **Medication History:** Records past prescriptions, including discontinued drugs and their reasons (e.g., adverse reactions, therapy completed).
- **Allergies and Sensitivities:** Clearly lists any known allergies or adverse drug reactions (ADRs) to prevent future occurrences.
- **Drug Administration Logs:** Shows time and quantity of each dose administered, often integrated with nurse documentation.
- **Therapeutic Indications:** The condition or disease for which each medication is prescribed.
- **Clinical Notes:** Annotations from pharmacists or physicians about special considerations, changes in therapy, or patient responses.

Functions of the Computer System:

A. Monitoring Therapy

- Identifies drug duplications, omissions, or interactions.
- Tracks patient response to medication over time.

B. Dosing Adjustments

- Automatically suggests **dose modifications** based on renal/hepatic function or age (e.g., pediatric or geriatric patients).

C. Compliance Tracking

- Tracks if the patient **refilled prescriptions** on time.

D. Clinical Auditing

- Helps in reviewing and auditing **medication use patterns**.

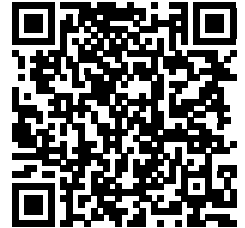


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