

CASE STUDY BASED PUZZLE

ER20-25T:HOSPITAL AND CLINICAL PHARMACY

UNIT 3: COMPOUNDING IN HOSPITALS. BULK COMPOUNDING,
IV ADMIXTURE

SERVICES AND INCOMPATIBILITIES, TOTAL PARENTERAL NUTRITION

CASE STUDY PUZZLES – HOSPITAL PHARMACY
PRACTICE

PUZZLE 1: Compounding in Hospitals

(Bulk Compounding, IV Admixture, Incompatibilities, TPN)

Case Scenario

A 500-bedded multispecialty hospital pharmacy prepares bulk compounded oral suspensions, IV admixtures, and Total Parenteral Nutrition (TPN) for ICU patients.

One day, a neonate in NICU developed precipitation in IV line after administration of calcium gluconate and ceftriaxone. Another adult ICU patient receiving TPN showed signs of electrolyte imbalance.

Puzzle Tasks

◆ Identify the Error

Match the following causes with the outcomes:

Cause	Outcome
A. Improper IV admixture technique	1. Microbial contamination
B. Calcium + Ceftriaxone	2. IV precipitation
C. Incorrect TPN electrolyte ratio	3. Metabolic imbalance

➡ Correct Matching: _____

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◆ Fill the Missing Step (TPN Process Puzzle)

Correct sequence of TPN preparation (Arrange in order):

- ☐ Addition of electrolytes
- ☐ Final filtration
- ☐ Aseptic compounding
- ☐ Physician prescription review

◆ Critical Thinking Question

☞ Name two common IV incompatibilities and how hospital pharmacists prevent them.

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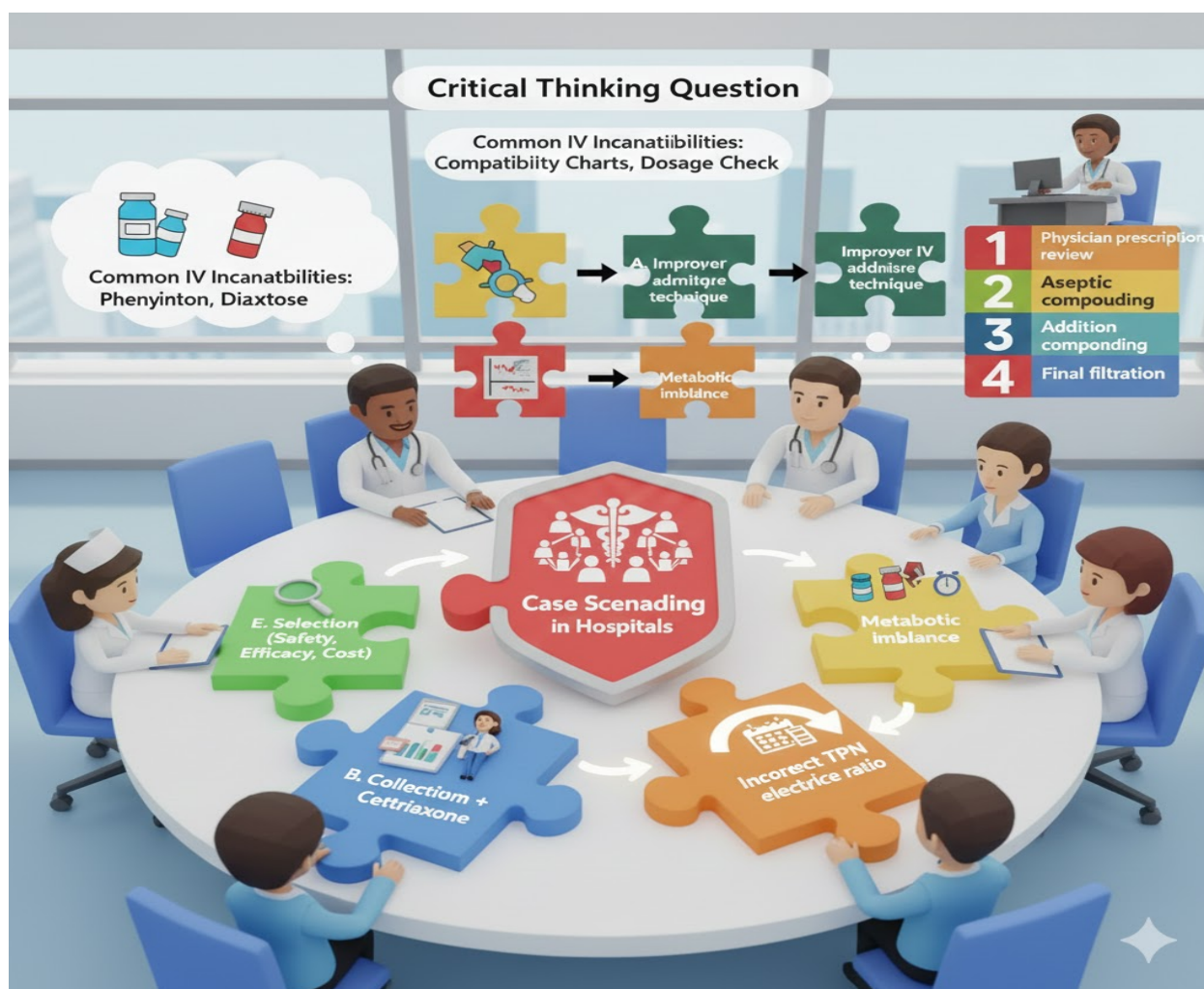
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PUZZLE 2: Radiopharmaceuticals

(Storage, Dispensing & Disposal)

Case Scenario

The Nuclear Medicine Department receives Technetium-99m daily for diagnostic imaging. A newly appointed pharmacist mistakenly stored it with routine injectables.

Later, radiation monitoring showed higher exposure levels in the pharmacy.

Puzzle Tasks

◆ Spot the Mistake (Circle correct answer):

Radiopharmaceuticals should be stored in:

- a) Refrigerator (2–8°C)
- b) Lead-lined container
- c) Narcotic cabinet
- d) Open shelf

◆ Radiation Safety Puzzle

Fill in the blanks using correct terms:

The three principles of radiation safety are _____, _____ and _____.

◆ Disposal Match Puzzle

Waste Type	Disposal Method
A. Short half-life	1. Return to supplier

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isotopes

B. Contaminated
syringes

C. Unused sealed sources 3. Shielded radioactive
bin

PUZZLE 2: Radisphormamatncals (Storage, Dispensing & Disposal)

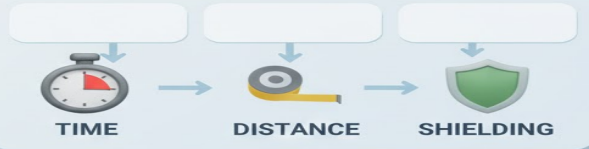
Case Scenario



◆ Radispharmacincals should be stored in:
b) Lead-lined container

Radiation Safety Puzzle

◆ The three principles of radiation safety are _____, and _____.



Disposal Match Puzzle

Waste Type	Disposal Method
A. Short half-life isotopes	1. Decay in storage
B. Contaminated syringes	2. Decay in to supplier
C. Unused sealed sources	3. Shielded radioactive bin

PUZZLE 3: Computers in Hospital Pharmacy

(EHR, Software, Automation)

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Case Scenario

A hospital implemented an Electronic Health Record (EHR) system integrated with pharmacy software and automated drug dispensing cabinets (ADCs).

After implementation, medication errors reduced, but a narcotic mismatch was reported.

Puzzle Tasks

◆ Identify the System Role

System	Function
A. EHR	1. Drug inventory tracking
B. Pharmacy software	2. Patient medication history
C. ADC	3. Secure drug dispensing

➡ Correct Match: _____

◆ Automation Puzzle

List two advantages of automated drug dispensing systems in hospitals.

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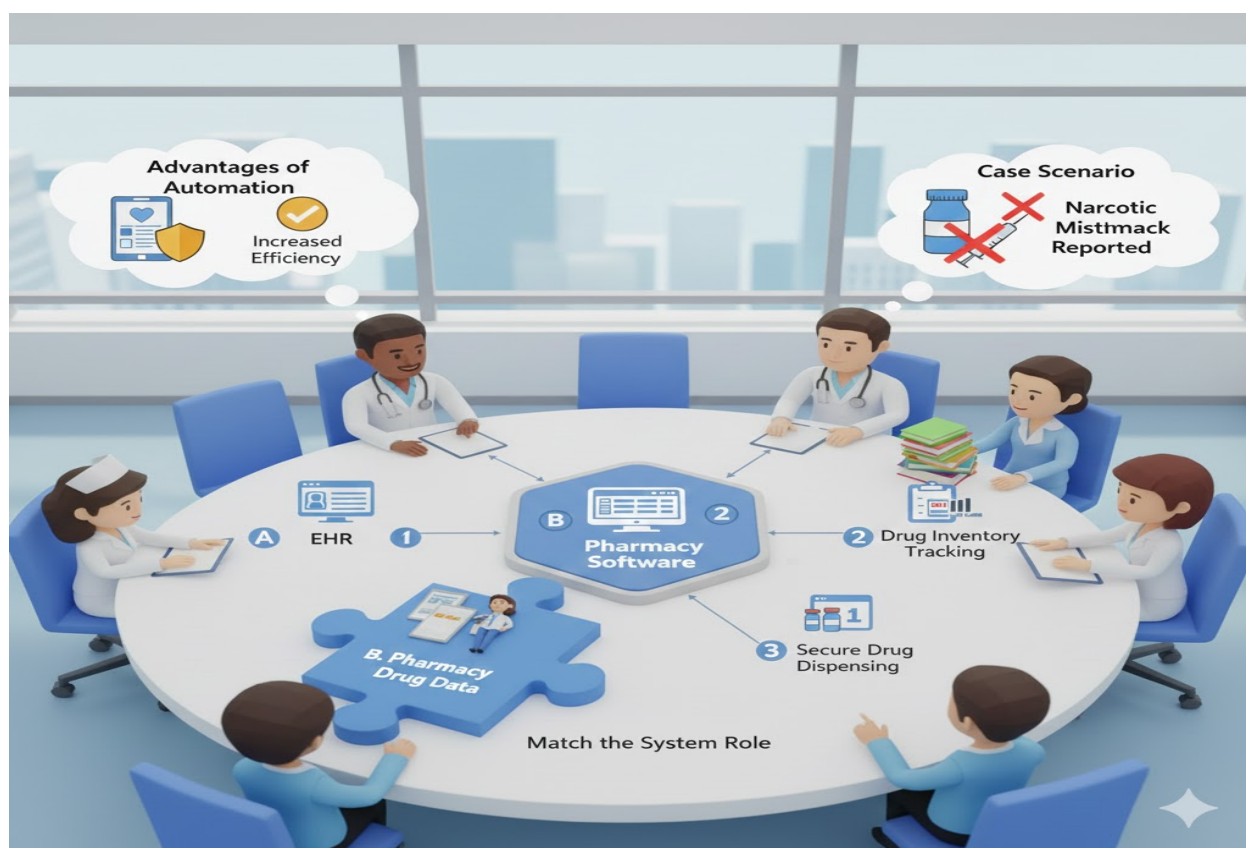
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