Pharm.D - Year 4

Hospital Pharmacy

Complete subject manual: 11 practicals and activities. Each chapter includes a student observation or work record.

Use the PDF bookmarks to navigate. The table gives each practical's content-page count; the combined manual has continuous page numbers.

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Drug-interaction Assessment

Experiment 1 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To prioritise an interaction in a coded medicine list.

Principle

A potential interaction must be evaluated for evidence, exposure, patient risk and clinical relevance; an alert alone does not define the needed action.

Requirements

- Allocated clinical notes or fictional case, current approved medicine information and local clinical policy.
- Case-record form, calculator where needed and supervising pharmacist.

Procedure

1. Prepare the case

Use the allocated clinical record or a fictional teaching case. Record a case code, setting and date; exclude names and personal identifiers.

2. Assess the required information

Confirm complete medicine list including non-prescription products; indication, route and treatment timing; organ function and relevant monitoring; authorised interaction information. Note missing information explicitly.

3. Develop the pharmacy assessment

For each flagged pair, state the proposed pharmacokinetic or pharmacodynamic basis, likely consequence, evidence strength and patient-specific risk. Consider monitoring, an authorised administration adjustment or a different treatment for discussion with the team. Record what was accepted and followed up.

4. Discuss and document

Present the assessment to the supervising pharmacist or treating team. Record the accepted action, responsible person and intended follow-up.

5. Evaluate the outcome

Review the agreed clinical or process endpoint. Record what changed, what remained unresolved and the next step.

Observations and Record

Record component	Student entry
Case / medicine pair	_____
Interaction mechanism and evidence	_____
Patient-specific risk	_____
Proposed management	_____
Accepted action / monitoring	_____

Result

Assessment: ____. Proposed action: ____. Supervisor decision: ____. Follow-up outcome: ____.

Precautions

- Use the treating team and current patient-specific information for all actual medicine decisions.
- Maintain confidentiality and confirm allergy, medicine and timing information.
- Do not invent patient observations, acceptance of an intervention or follow-up outcomes.

Viva Questions and Answers

1. Does an interaction alert mean the combination must always stop?

No. Relevance and management depend on the evidence and individual context.

2. What makes a recommendation reviewable?

A named issue, supporting facts, a feasible action and the monitoring plan.

Parenteral and Powder Manufacturing Record

Experiment 2 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To complete the parenteral and powder manufacturing record activity and document a justified outcome.

Principle

Hospital manufacturing requires an approved formula, controlled processing, traceable materials and product-specific quality review.

Requirements

- Institution-assigned hospital scenario, approved policy documents or coded records.
- Activity form, calculator where required and supervising pharmacist.

Procedure

1. Identify the product

Choose the assigned powder or parenteral demonstration and record its formula and process version.

2. Check materials

Read lot, grade, status and quantity reconciliation; distinguish final quantity from vehicle added.

3. Trace processing

For powders, follow mixing and uniformity checks. For parenterals, review the validated sterile-process and container controls in the supplied record.

4. Assess quality

Review the required identity/content, physical and product-specific microbiological records. Training products are not administered.

5. Record disposition

State whether the record meets the assigned release requirements or needs investigation by the authorised personnel.

Observations and Record

Record component	Entry
Product / formula	_____
Material and quantity reconciliation	_____
Critical process checks	_____
Quality results	_____
Authorised disposition	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Yield (%) = actual recovered quantity / theoretical quantity × 100.
- Example: 95 g from a 100 g powder batch basis gives 95% mass yield; uniformity still needs its own evidence.

Result

Activity / case code: ____. Finding: ____. Proposed action: ____. Review outcome: ____.

Precautions

- Use supplied records or the authorised local workflow; do not invent approvals or completed work.
- Protect patient and institutional confidential information.
- Keep a proposed student action distinct from an approved operational decision.

Viva Questions and Answers

1. Why document the basis of a decision?

It permits review of the evidence, responsibility and outcome.

2. What does the supervisor review?

The suitability of the proposed action and whether the record supports the conclusion.

Drug-information Query Handling

Experiment 3 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To complete the drug-information query handling activity and document a justified outcome.

Principle

A useful answer responds to the actual question, considers the patient context and communicates uncertainty and urgency.

Requirements

- Institution-assigned hospital scenario, approved policy documents or coded records.
- Activity form, calculator where required and supervising pharmacist.

Procedure

1. Receive and clarify

Record requester, deadline, question and intended use; establish the relevant patient or product context.

2. Classify

Identify whether the query concerns administration, interaction, safety, compatibility, quality or another issue.

3. Search systematically

Use authorised medicine information and relevant primary evidence where needed; record the information date and applicability.

4. Appraise

Compare evidence quality and resolve conflicts or state uncertainty.

5. Answer and follow up

Provide a concise supported response, specific limits and any action requiring clinician review; confirm that the requester received a useful answer.

Observations and Record

Record component	Entry
Question / requester role / urgency	_____
Relevant context	_____
Information consulted and dates	_____
Answer / uncertainty	_____
Follow-up result	_____

Result

Activity / case code: ____. Finding: ____. Proposed action: ____. Review outcome: ____.

Precautions

- Use supplied records or the authorised local workflow; do not invent approvals or completed work.
- Protect patient and institutional confidential information.
- Keep a proposed student action distinct from an approved operational decision.

Viva Questions and Answers

1. Why document the basis of a decision?

It permits review of the evidence, responsibility and outcome.

2. What does the supervisor review?

The suitability of the proposed action and whether the record supports the conclusion.

Hospital Drug Inventory Control

Experiment 4 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To complete the hospital drug inventory control activity and document a justified outcome.

Principle

Inventory control balances availability, cost, expiry risk and traceability. Reorder decisions use defined demand and lead-time assumptions.

Requirements

- Institution-assigned hospital scenario, approved policy documents or coded records.
- Activity form, calculator where required and supervising pharmacist.

Procedure

1. Read stock data

Record opening stock, receipts, issues, adjustments and closing stock by item and lot.

2. Reconcile

Calculate expected closing quantity and investigate a mismatch without silently altering the record.

3. Assess replenishment

Use the assigned demand, lead time and safety-stock method; review expiry and supply constraints.

4. Apply storage rotation

Explain first-expiry-first-out and the separate handling of quarantined or recalled items.

5. Document

Record the justified replenishment or investigation proposal and supervisor decision.

Observations and Record

Record component	Entry
Item / lot / expiry	_____
Opening + receipts − issues ± adjustments	_____
Recorded closing stock	_____
Reorder calculation	_____
Proposed action	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Expected closing stock = opening + receipts − issues ± authorised adjustments.
- Reorder point = expected demand during lead time + defined safety stock.
- Example: demand 20 units/day, lead time 5 days and safety stock 30 units give a reorder point of 130 units.

Result

Activity / case code: ____. Finding: ____. Proposed action: ____. Review outcome: ____.

Precautions

- Use supplied records or the authorised local workflow; do not invent approvals or completed work.
- Protect patient and institutional confidential information.
- Keep a proposed student action distinct from an approved operational decision.

Viva Questions and Answers

1. Why document the basis of a decision?

It permits review of the evidence, responsibility and outcome.

2. What does the supervisor review?

The suitability of the proposed action and whether the record supports the conclusion.

Pharmacy Department Design for a 300-bed Hospital

Experiment 5 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To complete the pharmacy department design for a 300-bed hospital activity and document a justified outcome.

Principle

The size of the hospital is a scenario input. Pharmacy planning depends on services, workload, safe flows, storage and staffing rather than bed count alone.

Requirements

- Institution-assigned hospital scenario, approved policy documents or coded records.
- Activity form, calculator where required and supervising pharmacist.

Procedure

1. Define scope

List inpatient/outpatient service, operating hours, dispensing model, clinical services and any approved manufacturing scope.

2. Draw zones

Sketch receiving/quarantine, approved storage, dispensing, counselling, offices, information service and controlled preparation areas where included.

3. Map movement

Show medicine, staff, waste and patient flows; avoid crossing clean preparation and contaminated return flows.

4. Plan controls

Specify secure access, cold-chain monitoring, stock rotation, emergency supplies and responsibility.

5. Justify

Explain each adjacency and identify the workload information needed before assigning actual areas or staffing.

Observations and Record

Record component	Entry
Scenario and services	_____
Zones / adjacency sketch	_____
Medicine and patient flow	_____
Storage and access controls	_____
Workload / staffing assumptions	_____

Result

Activity / case code: ____. Finding: ____. Proposed action: ____. Review outcome: ____.

Precautions

- Use supplied records or the authorised local workflow; do not invent approvals or completed work.
- Protect patient and institutional confidential information.
- Keep a proposed student action distinct from an approved operational decision.

Viva Questions and Answers

1. Why document the basis of a decision?

It permits review of the evidence, responsibility and outcome.

2. What does the supervisor review?

The suitability of the proposed action and whether the record supports the conclusion.

Suggested Zone Checklist

Zone	Planning purpose
Receiving and quarantine	Inspect deliveries and hold unreleased materials separately.
Approved storage	Organise by product requirements, expiry and access control.
Dispensing and final check	Support order processing, preparation, checking and handover.
Patient counselling	Provide a suitable private conversation space.
Preparation areas, if approved	Separate required controlled environments from routine traffic.
Clinical / information work	Provide access to records and communication with care teams.

Pharmacy and Therapeutics Committee Organisation

Experiment 6 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To complete the pharmacy and therapeutics committee organisation activity and document a justified outcome.

Principle

A multidisciplinary committee supports evidence-informed medicine policy and formulary governance. Its local authority and membership are established by the institution.

Requirements

- Institution-assigned hospital scenario, approved policy documents or coded records.
- Activity form, calculator where required and supervising pharmacist.

Procedure

1. Draft purpose

State medicine-selection, safe-use and monitoring responsibilities within the assigned hospital.

2. Define membership

Propose appropriate medical, pharmacy, nursing and other stakeholder roles, with accountable chair/secretariat functions.

3. Plan a meeting

Create an agenda, submission requirements and a documented conflict-of-interest process.

4. Evaluate a proposal

Compare clinical benefit, safety, practical use and economic implications; price alone is insufficient.

5. Record decisions

Write minutes with the decision, rationale, action owner, implementation and review plan.

Observations and Record

Record component	Entry
Committee purpose / authority	_____
Proposed roles	_____
Agenda and disclosure process	_____
Decision rationale	_____
Implementation / review owner	_____

Result

Activity / case code: ____. Finding: ____. Proposed action: ____. Review outcome: ____.

Precautions

- Use supplied records or the authorised local workflow; do not invent approvals or completed work.
- Protect patient and institutional confidential information.
- Keep a proposed student action distinct from an approved operational decision.

Viva Questions and Answers

1. Why document the basis of a decision?

It permits review of the evidence, responsibility and outcome.

2. What does the supervisor review?

The suitability of the proposed action and whether the record supports the conclusion.

Hospital Formulary for a 300-bed Hospital

Experiment 7 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To complete the hospital formulary for a 300-bed hospital activity and document a justified outcome.

Principle

A formulary is an actively managed medicine system, not simply a product list. It links approved products with relevant use, safety and review policies.

Requirements

- Institution-assigned hospital scenario, approved policy documents or coded records.
- Activity form, calculator where required and supervising pharmacist.

Procedure

1. Define scope

Enter hospital services and the process for approval, restriction and review.

2. Draft an entry

Record generic name, formulation/strength, indications in scope, important restrictions, monitoring and available alternatives using approved information.

3. Compare candidates

Evaluate clinical and operational suitability and documented cost assumptions.

4. Plan updates

Define the route for additions, deletions, shortage substitutions and periodic review.

5. Present

Submit a proposed format and several assigned entries for committee review; do not present the student draft as an approved formulary.

Observations and Record

Record component	Entry
Medicine entry / formulation	_____
Use and restriction	_____
Safety / monitoring	_____
Alternative and practical issue	_____
Approval / revision status	_____

Result

Activity / case code: ____. Finding: ____. Proposed action: ____. Review outcome: ____.

Precautions

- Use supplied records or the authorised local workflow; do not invent approvals or completed work.
- Protect patient and institutional confidential information.
- Keep a proposed student action distinct from an approved operational decision.

Viva Questions and Answers

1. Why document the basis of a decision?

It permits review of the evidence, responsibility and outcome.

2. What does the supervisor review?

The suitability of the proposed action and whether the record supports the conclusion.

ABC Analysis of Monthly Medicine Expenditure

Experiment 8 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To complete the abc analysis of monthly medicine expenditure activity and document a justified outcome.

Principle

ABC analysis classifies items by their cumulative expenditure contribution. It supports financial control but does not measure clinical importance by itself.

Requirements

- Institution-assigned hospital scenario, approved policy documents or coded records.
- Activity form, calculator where required and supervising pharmacist.

Procedure

1. Prepare data

Use the supplied monthly quantities and unit costs on the same costing basis.

2. Calculate value

Multiply quantity by unit cost for each item and calculate the total expenditure.

3. Rank

Sort items from highest to lowest expenditure and compute individual and cumulative percentages.

4. Classify

Apply the explicitly assigned A/B/C boundaries; do not treat illustrative boundaries as mandatory.

5. Interpret

Combine cost priority with clinical criticality, shortage and expiry information before proposing action.

Observations and Record

Record component	Entry
Item / quantity / unit cost	_____
Item expenditure	_____
Percent of total	_____
Cumulative percent / category	_____
Control proposal	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- Item value = quantity × unit cost; percentage = item value / total value × 100.
- Illustration: values 8000, 1500 and 500 total 10,000. Shares are 80%, 15% and 5%; cumulative shares are 80%, 95% and 100%. Category boundaries must be stated.

Result

Activity / case code: ____. Finding: ____. Proposed action: ____. Review outcome: ____.

Precautions

- Use supplied records or the authorised local workflow; do not invent approvals or completed work.
- Protect patient and institutional confidential information.
- Keep a proposed student action distinct from an approved operational decision.

Viva Questions and Answers

1. Why document the basis of a decision?

It permits review of the evidence, responsibility and outcome.

2. What does the supervisor review?

The suitability of the proposed action and whether the record supports the conclusion.

Clinical-trial Phases - Assignment

Experiment 9 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To complete the clinical-trial phases - assignment activity and document a justified outcome.

Principle

Clinical development phases have different primary objectives. A study phase does not by itself establish that a result is reliable or applicable.

Requirements

- Institution-assigned hospital scenario, approved policy documents or coded records.
- Activity form, calculator where required and supervising pharmacist.

Procedure

1. Classify supplied studies

Identify the study objective and phase from the assigned synopsis.

2. Compare objectives

Describe early safety/pharmacology, exploratory efficacy, confirmatory benefit-risk and post-approval questions.

3. Inspect design

Record population, comparator, endpoint, duration and major eligibility considerations.

4. Review oversight

Identify the documented protocol, ethical review, consent, monitoring and reporting requirements in the assigned setting.

5. Conclude

Explain what each supplied study can support and what remains uncertain.

Observations and Record

Record component	Entry
Study / phase	_____
Main objective	_____
Population / comparator	_____
Endpoint and limitations	_____
Oversight / reporting record	_____

Result

Activity / case code: ____. Finding: ____. Proposed action: ____. Review outcome: ____.

Precautions

- Use supplied records or the authorised local workflow; do not invent approvals or completed work.
- Protect patient and institutional confidential information.
- Keep a proposed student action distinct from an approved operational decision.

Viva Questions and Answers

1. Why document the basis of a decision?

It permits review of the evidence, responsibility and outcome.

2. What does the supervisor review?

The suitability of the proposed action and whether the record supports the conclusion.

Phase Comparison

Phase	Typical emphasis
I	Initial human safety, tolerability and pharmacology; the population depends on the product.
II	Exploratory efficacy and dose-related benefit-risk in the target condition.
III	Confirmatory evidence of benefit-risk for the intended use.
IV	Post-approval questions and longer-term or broader-use evidence.

Unbiased Drug-information Assignment

Experiment 10 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To complete the unbiased drug-information assignment activity and document a justified outcome.

Principle

An unbiased answer distinguishes evidence quality, applicability and uncertainty instead of promoting a product or selecting only favourable findings.

Requirements

- Institution-assigned hospital scenario, approved policy documents or coded records.
- Activity form, calculator where required and supervising pharmacist.

Procedure

1. Choose the question

Define a patient/product-focused question and the intended user of the answer.

2. Map information levels

Compare authorised compendia, indexing databases and original studies; note currency and purpose.

3. Evaluate a claim

Identify design, comparator, outcomes, limitations and conflicts relevant to the claim.

4. Draft the answer

State the supported conclusion, evidence strength and practical limits in plain language.

5. Review

Check whether adverse evidence or uncertainty was omitted and obtain supervisor feedback.

Observations and Record

Record component	Entry
Question	_____
Search and information dates	_____
Evidence quality / limitations	_____
Balanced conclusion	_____
Supervisor feedback	_____

Result

Activity / case code: ____. Finding: ____. Proposed action: ____. Review outcome: ____.

Precautions

- Use supplied records or the authorised local workflow; do not invent approvals or completed work.
- Protect patient and institutional confidential information.
- Keep a proposed student action distinct from an approved operational decision.

Viva Questions and Answers

1. Why document the basis of a decision?

It permits review of the evidence, responsibility and outcome.

2. What does the supervisor review?

The suitability of the proposed action and whether the record supports the conclusion.

Drug-interaction Management Assignment

Experiment 11 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To prepare a documented interaction-management discussion.

Principle

A management plan must balance the identified interaction risk against the need for treatment and the feasibility of alternatives.

Requirements

- Allocated clinical notes or fictional case, current approved medicine information and local clinical policy.
- Case-record form, calculator where needed and supervising pharmacist.

Procedure

1. Prepare the case

Use the allocated clinical record or a fictional teaching case. Record a case code, setting and date; exclude names and personal identifiers.

2. Assess the required information

Confirm complete pair/regimen; clinical indication and treatment alternatives; interaction evidence and patient-specific factors; monitoring feasibility. Note missing information explicitly.

3. Develop the pharmacy assessment

Prepare a mechanism-to-management table. For each assigned case, describe whether avoidance, an authorised timing adjustment, an alternative or specific monitoring is proposed. Include urgency, the treating-team decision route and a documented follow-up endpoint.

4. Discuss and document

Present the assessment to the supervising pharmacist or treating team. Record the accepted action, responsible person and intended follow-up.

5. Evaluate the outcome

Review the agreed clinical or process endpoint. Record what changed, what remained unresolved and the next step.

Observations and Record

Record component	Student entry
Assigned interaction case	_____
Evidence and clinical consequence	_____
Options and trade-offs	_____
Proposed monitoring	_____
Supervisor decision and outcome	_____

Result

Assessment: ____. Proposed action: ____. Supervisor decision: ____. Follow-up outcome: ____.

Precautions

- Use the treating team and current patient-specific information for all actual medicine decisions.
- Maintain confidentiality and confirm allergy, medicine and timing information.
- Do not invent patient observations, acceptance of an intervention or follow-up outcomes.

Viva Questions and Answers

1. Why collect patient-specific information?

Medicine decisions depend on the individual indication, risks, current treatment and monitoring needs.

2. What makes a pharmacy intervention useful?

A specific identified problem, a justified action, a clear communication route and a documented outcome.

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