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Heart Failure Examination and Murmur Assessment

Practical 01 / Supervised clinical examination

Aim

Measure jugular venous pressure and describe the findings of a cardiovascular examination.

Principle

The internal jugular venous waveform reflects right atrial pressure. Murmur timing and radiation, considered with the pulse and other signs, help localise a valve lesion.

Materials and Requirements

- Examination couch, pillow, two rulers and stethoscope
- Supervised patient or volunteer and recorded heart sounds

Procedure

1. Ask about exertional dyspnoea, orthopnoea, ankle swelling and symptom duration. Record vital signs.
2. Obtain permission, record chest pain, exercise tolerance and symptoms at rest, and select a comfortable degree of back support. Observe breathing and peripheral temperature before optional manoeuvres.
3. Support the head and start with the trunk raised about 30–45 degrees. Use tangential light and adjust the angle until the right internal jugular venous pulsation is visible.
4. Look for a soft non-palpable neck waveform that changes with position or breathing. Adjust trunk angle and light until the top is visible. Recheck when a pulsation seems arterial.

Continue with step 5 on the next page.

Procedure Continued

Heart Failure Examination and Murmur Assessment

5. Measure the vertical height of its highest point above the sternal angle with two rulers. Record the trunk angle and whether the waveform was confidently identified.
6. Set one ruler vertically at the sternal angle and level the other from the top of the venous pulsation. Read vertical height in centimetres and note when it cannot be measured confidently.
7. Assess pulse and perfusion, palpate the apex and auscultate the valve areas. Time each murmur using the pulse or the heart sounds. Record site, grade, pitch, quality and radiation.
8. Locate the apex by interspace and landmark, check for a heave or thrill when appropriate and listen at each focus. Describe when the murmur begins and ends relative to S1 and S2.
9. Compare sounds at rest and with a suitable position or respiratory manoeuvre under supervision. Examine the lung bases and legs for congestion.
10. Assess whether a safe position changes the sound and note its radiation. Present the pulse, JVP, apex, murmur and accompanying congestion signs together and report significant distress promptly.

Precautions

- Keep breathless patients in a comfortable position. Stop optional manoeuvres if symptoms increase.
- Palpate only one carotid artery at a time when needed for timing.

Observations and Interpretation

Heart Failure Examination and Murmur Assessment

Observations and Record

Item	What to record	What it tells you
Jugular venous pressure	Height above sternal angle and trunk angle	Evidence of raised venous pressure
Murmur	Timing, focus, grade and radiation	Possible valve lesion
Congestion	Basal sounds, oedema and functional symptoms	Clinical context for heart failure

Worked Example

At 45 degrees the venous pulsation is 5 cm above the sternal angle. There are bilateral basal crackles and pitting ankle oedema. An apical pansystolic murmur radiates toward the axilla.

Result and Interpretation

The findings support congestion. The murmur pattern raises suspicion of mitral regurgitation, which requires correlation with echocardiography.

Viva Questions and Answers

How does the venous waveform differ from the carotid pulse?

It is usually non-palpable and changes with posture and respiration.

What replaces a measurement if the upper level is unclear?

Record that the JVP could not be assessed reliably.

Acute Chest Pain ECG and Initial Investigations

Practical 02 / Skills laboratory simulation

Aim

Record and interpret a 12-lead ECG and integrate it with a chest radiograph and serial cardiac markers.

Principle

The ECG detects electrical changes that may require time-critical action. Troponin reflects myocardial injury and must be interpreted by its trend and the clinical and ECG findings.

Materials and Requirements

- ECG simulator with electrode diagram and printouts
- Serial high-sensitivity troponin reports with assay-specific limits and chest radiograph

Procedure

1. Ask the onset and character of pain, check vital signs and call for senior help if the scenario is unstable.
2. Establish the exact time of onset and whether pain persists. Record blood pressure, pulse, saturation and associated symptoms and initiate the supervised chest-pain pathway as indicated.
3. Confirm identity, explain the tracing and provide privacy. Prepare electrode contact sites and verify the labelled limb cables before placing the chest electrodes.
4. Place V1 and V2 in the fourth intercostal space at the right and left sternal borders, respectively. Place V4 in the fifth left intercostal space at the midclavicular line and V3 halfway between V2 and V4.
5. At the horizontal level of V4, place V5 on the left anterior axillary line and V6 on the left midaxillary line. Ask the patient to stay still where safe. Time-stamp the tracing and record any departure from standard placement.

Continue with step 6 on the next page.

Procedure Continued

Acute Chest Pain ECG and Initial Investigations

6. Check calibration and artefact. Read rate, rhythm, axis, PR and QRS duration and changes in the ST segment and T wave by lead territory.
7. Confirm speed and gain, trace the R waves and measure intervals at matching calibration. Compare groups of contiguous leads for concerning ST or T changes and review a prior tracing when available.
8. Compare previous or serial ECGs. Review the troponin timing relative to symptom onset and local assay algorithm. Use the chest radiograph to assess selected thoracic alternatives or complications when indicated.
9. Place serial tracings and marker samples in time order against symptom onset. Note the assay's reporting threshold and any rising or falling pattern and keep urgent ECG findings visible.
10. State the immediate escalation decision and the time at which it was communicated.
11. Give the current symptoms, stability, timing and key ECG findings to the responsible team. Document the receiver and any repeat test requested without waiting for the marker if urgent action is indicated.

Precautions

- Abnormal or evolving ECG findings require escalation without waiting for additional results.
- Confirm chest-lead positions before accepting unexpected tracing changes.

Observations and Interpretation

Acute Chest Pain ECG and Initial Investigations

Observations and Record

Item	What to record	What it tells you
ECG	Time, paper speed, nearby lead changes	Recognises dynamic or regional abnormalities
Troponin	Serial values and collection times	Identifies a rise or fall in injury markers
Chest radiograph	Technique and focused findings	May identify an alternative or complication

Worked Example

At 25 mm/s there are four large squares between regular R waves, giving a rate of about 75/min. A repeat tracing during pain has new inferior ST changes. The first marker result is still pending.

Result and Interpretation

Escalate immediately for possible acute coronary syndrome. Obtain repeat investigations through the chest-pain pathway and document ECG changes and symptom times.

Viva Questions and Answers

Does an isolated troponin rise prove infarction?

Myocardial infarction also requires evidence of acute ischaemia.

Which leads view the inferior territory?

Leads II, III and aVF.

Adult Basic Life Support and AED

Practical 03 / Skills laboratory simulation

Aim

Demonstrate adult healthcare-provider CPR and safe automated external defibrillator use.

Principle

Good compressions provide limited circulation during arrest. Early use of an AED may restore a perfusing rhythm in a shockable arrest.

Materials and Requirements

- Feedback manikin, training AED and pads
- Barrier device or bag-mask with a trained partner and timing sheet

Procedure

1. Check scene safety, test responsiveness, shout for help and assign someone to activate the emergency response and bring the AED.
2. Ask one responder to call and bring the AED using closed-loop instructions. Assign another learner to time events and position the manikin on an appropriate firm surface.
3. Look for normal breathing and check a central pulse together for no more than 10 seconds. Start compressions if breathing is absent or only gasping and no definite pulse is felt.
4. If a pulse is present but breathing is absent or inadequate, support ventilation on the trainer with one breath every six seconds. Confirm visible chest rise. Recheck the pulse every two minutes and follow the arrest pathway if the pulse is lost.

Continue with step 5 on the next page.

Procedure Continued

Adult Basic Life Support and AED

5. Compress the lower half of the sternum at 100–120/min. Aim for a depth of at least 5 cm and avoid going deeper than 6 cm. Allow full recoil. Use 30 compressions to 2 breaths before an advanced airway.
6. Stack hands with shoulders over the contact point and arms straight. Use trainer feedback to correct leaning, excessive depth or an out-of-range rate, and practise breaths to visible chest rise.
7. Expose and prepare the chest as directed. Apply training pads, clear the patient during analysis and before a shock and follow the device prompts.
8. Continue compressions while a second responder readies pads if practical. Place training pads as pictured, then give a clear verbal and visual safety check before the device analyses or shocks.
9. Resume compressions immediately after a shock or no-shock instruction. Coordinate the next check and compressor change with minimal pauses.
10. After the cycle record first compression, AED attachment, any shock and resumption. Review the longest pause and assign a measurable improvement for the repeat run.

Precautions

• Use a training AED and manikin for practice.

• Check visually that nobody touches the patient during analysis or shock delivery.

Observations and Interpretation

Adult Basic Life Support and AED

Observations and Record

Item	What to record	What it tells you
Recognition	Response, breathing and pulse check duration	Time to CPR
Compressions	Rate, depth, recoil and interruptions	Quality of perfusion support
AED	Pad placement, clear call and resumption	Safety and rapid re-start

Worked Example

The first two cycles average 112 compressions/min with good recoil. The AED pause lasts 18 seconds because the team stops while unopened pads are being prepared.

Result and Interpretation

Compression rate is in range. Prepare pads during ongoing CPR when feasible and use a clear team call to minimise the necessary interruption.

Viva Questions and Answers

What does occasional gasping suggest in an unresponsive pulseless adult?

It can be agonal breathing during cardiac arrest.

What follows delivery of a shock?

Resume CPR immediately and follow the device prompts.

Intramuscular Injection and Patient Communication

Practical 04 / Skills laboratory simulation

Aim

Demonstrate an ordered intramuscular injection on a task trainer with identity, communication and sharps checks.

Principle

Safe administration begins with a complete order and ends with immediate disposal, recording and appropriate follow-up.

Materials and Requirements

- Injection pad, dummy prescription and simulated drug label
- Safety syringe, gloves, skin preparation material and sharps container

Procedure

1. Match two identifiers and verify medicine, prescribed dose, route, time, expiry and allergy status. Clear any discrepancy before proceeding.
2. Read back the dummy order against the label and case identifiers. Check the authorised preparation and product details with the instructor if concentration, route or packaging differs.
3. Explain the indication, expected sensations and follow-up. Confirm understanding and consent.
4. Ask about previous reactions and explain what the student will do on the model and what symptoms the patient would report. Use teach-back and record agreement before proceeding.

Continue with step 5 on the next page.

Procedure Continued

Intramuscular Injection and Patient Communication

5. Use the product instructions and station guide to choose an appropriate site and equipment. Identify landmarks on the training pad and prepare the area using the taught aseptic technique.
6. Place the sterile training equipment within reach, select the instructor-approved model landmark and check its suitability for the case. Prepare the simulated skin and preserve the clean key parts.
7. Demonstrate the injection on the trainer using the model checklist. Activate the safety device and dispose of the needle immediately in the sharps container.
8. Position the model and demonstrate the method and needle angle specified on the checklist. Point out safe withdrawal, activation of the safety cover and where the sharps container stands.
9. Record medicine, dose, route, site and time. State what observation and escalation would be needed for a reaction.
10. Compare the record with what was demonstrated and document the case medicine, dose, route, site and time. In a reaction prompt, give a brief account of signs and request immediate review.

Precautions

- Use simulated preparations and injection trainers only in this station.
- Do not recap a used needle.

Observations and Interpretation

Intramuscular Injection and Patient Communication

Observations and Record

Item	What to record	What it tells you
Order and label	Identity, allergy and expiry checks	Prevents a mismatch
Demonstration	Site, landmarks and asepsis	Confirms route-related competencies
Documentation	Site, time and response	Enables follow-up and review

Worked Example

The dummy order specifies the left side. The tray label carries a different drug concentration. The student holds administration and requests independent confirmation.

Result and Interpretation

Complete the station after the prescription and product match. Document any near miss through the training exercise.

Viva Questions and Answers

What determines site and needle selection?

Age and body habitus, the product, the approved technique and site anatomy.

Why record the exact site?

It supports later assessment of reactions and helps plan repeated doses.

Respiratory Examination and Spirometry

Practical 05 / Supervised clinical examination

Aim

Perform a structured respiratory examination and interpret a quality-checked spirometry report.

Principle

Clinical signs localise abnormalities in ventilation or lung tissue. A reduced FEV1 to FVC ratio relative to the lower limit of normal supports airflow obstruction.

Materials and Requirements

- Stethoscope, oximeter and spirometry reports with flow–volume curves
- Supervised patient or simulated audio and examination findings

Procedure

1. Establish symptom course, sputum, exposures, smoking history and functional limitation. Assess work of breathing and general condition first.
2. Ask about effort tolerance, painful breathing, nocturnal symptoms and relevant exposures, then consider whether breathlessness warrants immediate review before a full examination.
3. Record respiratory rate, oxygen saturation and oxygen device if present. Inspect the chest and assess expansion.
4. Sit the patient upright when comfortable, compare movement in matching areas and make oxygen device and setting explicit. Record pulse and respiratory observations with the measurement time.

Continue with step 5 on the next page.

Procedure Continued

Respiratory Examination and Spirometry

5. Check tracheal position when appropriate, then compare percussion and breath sounds side to side. Describe added sounds by site and phase.
6. Use paired anterior and posterior sites for percussion and auscultation. For abnormalities, illustrate the level and side on the record, and compare air entry and the timing of added sounds.
7. Evaluate spirometry acceptability and repeatability before reading FEV1, FVC and the ratio. Compare with the reported lower limit of normal.
8. Check for leak, poor start, cough or early termination on the supplied curves and confirm repeatability from acceptable manoeuvres. Record FEV1 and FVC with units and calculate the ratio.
9. Discuss whether further lung volumes, bronchodilator results or imaging would clarify the findings.
10. Explain what a low ratio or a low FVC suggests and which next test would clarify the pattern. Report examination signs separately from technical limitations.

Precautions

- Stop the examination if there is significant respiratory distress and alert the supervisor.
- Use the patient-specific reference and follow spirometry infection-control requirements.

Observations and Interpretation

Respiratory Examination and Spirometry

Observations and Record

Item	What to record	What it tells you
Clinical examination	Expansion, percussion and sounds by side	Helps localise the abnormal area
Spirometry quality	Artefact and agreement across trials	Determines reliability
Spirometry pattern	FEV1, FVC and ratio against reference	Distinguishes obstruction from possible restriction

Worked Example

There is widespread expiratory wheeze. The acceptable test shows FEV1 1.8 L, FVC 3.0 L and a ratio of 0.60. The report gives 0.71 as the lower limit.

Result and Interpretation

The calculated ratio is 60% and supports airflow obstruction. Discuss clinical context and bronchodilator findings. Restriction requires confirmation by lung volume measurement.

Viva Questions and Answers

What does FEV1 measure?

The volume forcibly exhaled in the first second.

Why consider effort and repeatability first?

Poor effort, leaks or early termination can change the reported pattern.

Arterial Blood Gas and Pleural Fluid Interpretation

Practical 06 / Report and data interpretation

Aim

Classify a basic acid–base abnormality and interpret paired serum and pleural fluid findings.

Principle

pH, carbon dioxide and bicarbonate establish the primary acid–base pattern. Pleural fluid protein and LDH interpreted with serum results help classify an effusion.

Materials and Requirements

- Arterial blood gas report with oxygen/device details and collection time
- Pleural fluid, serum protein and LDH reports with reference limits

Procedure

1. Confirm the sample type, units and oxygen support. Read pH, then PaCO2 and bicarbonate. Identify the primary pattern before assessing compensation or mixed disorders.
2. Line up collection time, arterial source and oxygen settings with the observation chart. Note any sampling or analysis issue. Identify which measured variable best explains the pH direction.
3. Consider PaO2 in relation to the oxygen delivered and integrate the blood gas with vital signs.
4. Compare observed carbon dioxide or bicarbonate with expected compensation using the supplied teaching table. Report whether an additional process is possible and check oxygenation in the documented context.

Continue with step 5 on the next page.

Procedure Continued

Arterial Blood Gas and Pleural Fluid Interpretation

5. For effusion, use paired serum and fluid results. Apply Light criteria. A pleural/serum protein ratio above 0.5, LDH ratio above 0.6 or pleural LDH above two-thirds of the serum upper reference limit supports an exudate.
6. Calculate both ratios with matched units and compare fluid LDH with the laboratory's serum upper reference limit. Mark which criterion is met and keep each raw measurement visible.
7. Select case-specific fluid tests such as cell count, pH, microbiology or cytology when indicated. Discuss which findings require urgent review.
8. Note fluid appearance, cell differential and collection limitations on the teaching sheet. Review results such as pleural pH or microbiology and decide which result needs prompt team review in the scenario.
9. Report the pattern, limitations and one appropriate next investigation.
10. Give separate brief gas and fluid summaries, each with the measured pattern, context and uncertainty. Document critical-value communication and the planned review.

Precautions

- Discuss severe acidaemia or compromised ventilation promptly with the team.
- Verify collection conditions before treating a borderline or inconsistent result as definitive.

Observations and Interpretation

Arterial Blood Gas and Pleural Fluid Interpretation

Observations and Record

Item	What to record	What it tells you
Blood gas	pH, PaCO2, bicarbonate and oxygen support	Primary disorder and oxygenation context
Protein and LDH	Both paired ratios and the serum LDH upper limit	Classification by Light criteria
Additional testing	Cell count, pH and other ordered results	Refines the differential diagnosis

Worked Example

Arterial pH 7.29, PaCO2 55 mmHg and bicarbonate 26 mmol/L suggest respiratory acidaemia. Pleural protein 4 g/dL with serum protein 6 g/dL gives a ratio of 0.67.

Result and Interpretation

The gas supports primary respiratory acidosis. The protein ratio meets one criterion for an exudate. Use the complete clinical and laboratory information to investigate its cause.

Viva Questions and Answers

How many positive Light criteria classify an exudate?

Any one of the three.

What is missing if the blood gas is reported without the oxygen device?

The context needed to judge how well the patient is oxygenating.

Febrile Illness and Empirical Antimicrobial Review

Practical 07 / Clinical or documentation case

Aim

Identify the likely source and severity of infection and complete a supervised empirical prescription exercise.

Principle

Source, severity, host factors, allergies and resistance data guide initial treatment. When results arrive, a scheduled review supports narrowing or stopping therapy when appropriate.

Materials and Requirements

- Fictional fever case chart and completed vital-sign record
- Current hospital guideline, local antibiogram and mock prescription

Procedure

1. Record onset, exposures, recent antibiotics, devices and immune status. Assess vital signs, perfusion, mental state and oxygenation.
2. Build a symptom and observation time line and ask about illness course, medicines, recent procedures and contact or travel history where relevant. Flag instability and make an immediate team call as appropriate.
3. Examine skin, mucosa, nodes, chest, abdomen and other systems suggested by symptoms. Identify possible source and signs of organ dysfunction.
4. Check for a possible source and for new confusion, low perfusion, respiratory compromise or other findings of organ dysfunction. Record signs by site and time.

Continue with step 5 on the next page.

Procedure Continued

Febrile Illness and Empirical Antimicrobial Review

5. Choose focused investigations and relevant cultures where feasible without delaying urgent care. Give the suspected source and acuity in the team handover.
6. Use the likely source and clinical stability to prioritise tests and decide which results may guide targeted care. Confirm the case's sampling timing and the senior clinician's urgency decision.
7. Use the current hospital pathway to choose a guideline-listed candidate for the fictional case. Verify coverage, allergy, route, renal adjustment and previous resistant isolates.
8. Read the current facility pathway and relevant local susceptibility summary. Compare options for source coverage and individual safety and document the reason for checking a specific drug with the instructor.
9. Enter generic medicine, verified dose, interval, route and planned review in the practice chart. State how results will change the plan.
10. Complete the simulated order and add a timed reassessment, responsible clinician, new-result triggers and criteria to revisit, narrow or stop treatment. Read back the order for clarity.

Precautions

- An unstable scenario takes priority over completion of a routine examination.
- Verify all dosing and route decisions with the exercise guideline and supervisor.

Observations and Interpretation

Febrile Illness and Empirical Antimicrobial Review

Observations and Record

Item	What to record	What it tells you
Stability	Perfusion, respiratory rate and mental status	Determines urgency
Source and host factors	Localising signs, allergies and recent treatment	Narrows appropriate testing and coverage
Prescription and review	Indication, patient-specific checks and review trigger	Supports stewardship

Worked Example

A patient has fever, tachypnoea, low blood pressure and new confusion. The case sheet records a severe immediate allergy to the proposed drug. The student alerts the senior, reviews the approved alternative and records the reason.

Result and Interpretation

Suspected infection with signs of organ dysfunction requires urgent senior assessment. Use the institutional emergency pathway and check results before ongoing treatment decisions.

Viva Questions and Answers

When should a culture be obtained in an emergency?

Before antibiotics if this is feasible without delaying urgently indicated treatment.

What makes an antibiotic review actionable?

A named reviewer or team, a time and the findings that could change therapy.

Abdominal Examination and Ascitic Fluid Report

Practical 08 / Supervised clinical examination

Aim

Examine a patient with abdominal distension and interpret matched ascitic fluid reports.

Principle

Examination identifies fluid and accompanying signs. The serum–ascites albumin gradient helps determine whether portal pressure contributes.

Materials and Requirements

- Supervised patient or abdominal model, examination couch and tape measure
- Paired albumin reports and a simulated collection label

Procedure

1. Ask about distension, pain, fever, swelling, weight change and known liver or heart disease. Check vital signs and general signs.
2. Ask about duration, fluid loss or gain, abdominal discomfort, systemic symptoms and prior treatment. Check for haemodynamic instability and record relevant liver or heart context.
3. Inspect the abdomen and examine gently for tenderness, guarding and organ enlargement. Assess for shifting dullness where appropriate.
4. Look for distension, flank fullness and abdominal scars, then percuss from central resonance toward the flank. Where safe, reposition and assess whether the dull region shifts.

Continue with step 5 on the next page.

Procedure Continued

Abdominal Examination and Ascitic Fluid Report

5. Observe the faculty collection workflow, including consent, asepsis, labelled specimen types and documentation. Use the report set for practical interpretation.
6. Trace the demonstration's identity, consent, specimen labels and selected tests on the model sheet. Keep procedural assistance within the student role and note any missing paired sample.
7. Subtract ascitic from serum albumin using matched units. Review total protein, cell count and available culture results with the clinical context.
8. Align serum and ascitic albumin in time and units, subtract fluid albumin and document both values. Review ascitic protein and absolute neutrophil result alongside symptoms and the available culture report.
9. Summarise evidence for portal hypertension and highlight findings that need urgent review.
10. Summarise whether the gradient supports a pressure-related cause and which signs raise concern for infection or instability. Indicate the next action with the supervising clinician.

Precautions

- Pain, fever or haemodynamic deterioration in a patient with ascites requires prompt review.
- A student observes or assists as directed by the responsible clinician.

Observations and Interpretation

Abdominal Examination and Ascitic Fluid Report

Observations and Record

Item	What to record	What it tells you
Examination	Distribution of dullness, tenderness and signs of chronic disease	Supports presence and context of ascites
Albumin gradient	Serum and fluid albumin from comparable sampling	Supports pressure-related mechanism
Fluid cells and protein	Differential, protein concentration and culture when available	Assesses other causes or concerning findings

Worked Example

Serum albumin is 3.0 g/dL and fluid albumin 1.5 g/dL. The gradient is 1.5 g/dL. The patient has a distended abdomen and shifting dullness.

Result and Interpretation

The gradient is at least 1.1 g/dL, which supports portal-hypertensive ascites. Consider the clinical history and full fluid report to establish the cause.

Viva Questions and Answers

How is the gradient calculated?

Serum albumin minus ascitic fluid albumin in the same units.

Why record the fluid differential?

It helps detect an inflammatory or infectious pattern and guides urgent review.

HIV Prevention Counselling

Practical 09 / Communication role-play

Aim

Use clear, confidential language to discuss prevention and support after an HIV-related consultation.

Principle

Prevention counselling works best when it is tailored to exposures, current treatment, relationships and access to care.

Materials and Requirements

- Fictional scenario with test status and treatment history
- Private consultation setting and clinic service information

Procedure

1. Confirm privacy and ask how the person would like to discuss the result and prevention questions. Establish what they already understand.
2. Use a private setting, check preferred language and explain confidentiality and its limits. Ask permission to talk about prevention and whether disclosure raises safety concerns.
3. Explain relevant routes of transmission and practical prevention options, including barrier protection, sterile equipment and clinician-guided PrEP or PEP assessment where relevant.
4. Ask about the relevant situation in open terms and establish time sensitivity. Clarify when clinician assessment for recent exposure or ongoing prevention should be arranged.

Continue with step 5 on the next page.

Procedure Continued

HIV Prevention Counselling

5. Discuss prompt linkage to care and maintaining treatment. Explain that sustained undetectable viral load on treatment prevents sexual transmission.
6. Use plain language to distinguish prevention of sexual transmission with sustained viral suppression from decisions about testing, treatment adherence and routine monitoring.
7. Offer confidential partner services according to local practice and the person's preferences. Discuss barriers and possible support.
8. Offer available confidential referral and prevention choices with the person's preferences and access in mind. Agree on a discreet contact route and offer support if a partner discussion feels unsafe.
9. Ask the person to explain the next action in their own words and record agreed follow-up.
10. Ask the person to repeat the next action, timeline and source of help. Record the agreed plan without unnecessary identifying or exposure detail in the learning note.

Precautions

- Use a private room and protect identifying details in teaching notes.
- Arrange urgent professional assessment when a recent exposure may warrant PEP.

Observations and Interpretation

HIV Prevention Counselling

Observations and Record

Item	What to record	What it tells you
Patient priorities	Questions, concerns and preferred language	Guides the discussion
Prevention plan	Options relevant to the person and time-sensitive needs	Turns information into next steps
Follow-up	Referral, timing and safe contact method	Supports continuity and privacy

Worked Example

A recently diagnosed adult asks whether ordinary shared meals can spread HIV and how a partner can access testing. They prefer a private written follow-up plan.

Result and Interpretation

Explain that casual household contact does not spread HIV. Arrange confidential linkage to treatment and offer partner testing support with permission.

Viva Questions and Answers

What does undetectable mean in prevention counselling?

Sustained undetectable viral load on effective treatment prevents sexual transmission.

Why ask about a safe way to contact the person?

It protects confidentiality when discussing sensitive results.

Renal Function Urine Electrolytes and Acid Base Data

Practical 10 / Report and data interpretation

Aim

Interpret a renal panel and calculate fractional sodium excretion and anion gap from a case record.

Principle

Creatinine trends, urine output and electrolytes describe kidney function and complications. Urine indices and the anion gap provide additional context.

Materials and Requirements

- Trend chart for urine output and renal function
- Matched serum and urine chemistry, medication list and calcium, phosphate and PTH results

Procedure

1. Check times, baseline creatinine and urine output. Review fluid balance, medication exposures and signs of possible obstruction.
2. Build a dated line for serum measurements and hourly or interval urine output. Verify baseline, recent fluid loss, recorded medicines and any signs suggesting urinary obstruction.
3. Review potassium, bicarbonate and renal function trend. Consider calcium, phosphate and PTH where chronic kidney disease is established.
4. Identify findings requiring urgent reporting, such as a critical potassium value. Confirm the specimen notes and whether collection artefact might prompt a rapid repeat under supervision.

Continue with step 5 on the next page.

Procedure Continued

Renal Function Urine Electrolytes and Acid Base Data

5. Calculate the anion gap as sodium − (chloride + bicarbonate). Use the local reference interval and consider albumin.
6. Carry out the gap calculation with matching units from the same panel and record inputs and result. Compare it with the lab's convention and any provided albumin adjustment.
7. Calculate FeNa as 100 × (urine sodium × plasma creatinine) divided by (plasma sodium × urine creatinine). Match creatinine units. Review osmolality when relevant.
8. Verify that urine and plasma specimens are appropriately paired and that their creatinine units match. Work out the fractional calculation and note whether diuretics or illness make interpretation unreliable.
9. Identify confounders, such as diuretics or existing kidney disease, and state what additional assessment the team needs.
10. Give the acuity, trend and likely pattern, noting unresolved perfusion, intrinsic or obstructive causes. Document which result was escalated and what additional information would guide review.

Precautions

- Check for units and transcription errors in paired results.
- Urgently report dangerous electrolyte results according to local protocol.

Observations and Interpretation

Renal Function Urine Electrolytes and Acid Base Data

Observations and Record

Item	What to record	What it tells you
Kidney trend	Baseline and current creatinine, time and urine output	Acute change or chronic context
Anion gap	Serum sodium, chloride and bicarbonate	Screens for unmeasured anions
Urine indices	Paired results, FeNa and relevant drug use	Adds context to volume and tubular assessment

Worked Example

Urine sodium 20 mmol/L, plasma sodium 140 mmol/L, plasma creatinine 2 mg/dL and urine creatinine 100 mg/dL give FeNa 0.29%. Sodium 140, chloride 105 and bicarbonate 20 mmol/L give an anion gap of 15 mmol/L.

Result and Interpretation

A low FeNa can reflect sodium retention. Integrate it with perfusion, medications and the creatinine trend before assigning a cause.

Viva Questions and Answers

What can alter interpretation of FeNa?

Diuretics, chronic kidney disease and several intrinsic or context-specific conditions.

Why check previous creatinine?

A single value cannot establish how quickly renal function has changed.

Capillary Glucose Testing and Diabetes Review

Practical 11 / Skills laboratory simulation

Aim

Demonstrate capillary glucose testing on a trainer and interpret results in relation to symptoms.

Principle

Point-of-care meters provide a rapid estimate. Timing, sample quality, peripheral perfusion, device limits and symptoms affect interpretation.

Materials and Requirements

- Training finger, single-use lancet and sharps bin
- Glucometer, compatible test strips, controls and simulated glucose chart

Procedure

1. Verify identity, symptoms, meal and medication timing. Check meter quality control and strip expiry.
2. Confirm symptoms, relevant food or medication times and which meter and strips are authorised. Verify lot, expiry, measurement units and the simulated quality-control check.
3. Perform hand hygiene and demonstrate the approved collection technique on the trainer. Ensure the site is clean and dry and apply an adequate drop to the strip.
4. Set out a single-use lancet, strip, training site and sharps container. Verify a clean dry site and show the labelled device how to accept the sample without contamination.
5. Read and record value, units, time, device and context. Discard the lancet immediately.

Continue with step 6 on the next page.

Procedure Continued

Capillary Glucose Testing and Diabetes Review

6. Keep the meter until it displays a value and note any out-of-range symbol or error separately. Record symptoms, timing, units and sample method in the practice chart.
7. Review for acute symptoms, illness and possible method interference. Repeat or obtain confirmatory laboratory testing as indicated by the protocol.
8. Check whether perfusion, technique or the clinical context could explain a discordant reading. Activate the facility path for symptomatic low or concerning values and verify recommended follow-up timing.
9. State who must be told of an abnormal result and demonstrate recording the response in the simulated chart.
10. Document alert, intervention by the team, repeat reading and symptoms at reassessment. Communicate who will review the cause or medicine change.

Precautions

- Keep all units visible and use a single-use lancet.
- An unexpected result in an acutely unwell patient requires prompt assessment and confirmation according to protocol.

Observations and Interpretation

Capillary Glucose Testing and Diabetes Review

Observations and Record

Item	What to record	What it tells you
Context	Elapsed time after meal, symptoms and medicines	Makes a reading interpretable
Quality checks	Meter control and strips	Identifies avoidable measurement error
Response	Value with units and escalation	Supports safe follow-up

Worked Example

Two hours after insulin in a teaching case, a patient is sweaty and tremulous and the meter reads 54 mg/dL. The student immediately informs the team and follows the station hypoglycaemia protocol.

Result and Interpretation

The symptoms and result support hypoglycaemia. Document the action, repeat check and review of the precipitating cause under supervision.

Viva Questions and Answers

Why check that the site is clean and dry?

Water and glucose contamination can distort the reading.

Does a bedside value alone establish chronic diabetes?

Use the appropriate diagnostic criteria and laboratory confirmation when indicated.

Thyroid Examination and Function Tests

Practical 12 / Supervised clinical examination

Aim

Perform a focused thyroid examination and classify common thyroid test patterns.

Principle

TSH and free thyroid hormone measurements together distinguish many primary and central patterns. Medication, biotin interference and acute illness can affect results.

Materials and Requirements

- Supervised volunteer or patient, glass of water if safe and blood test cards
- Thyroid function results and reference intervals

Procedure

1. Ask about weight, temperature sensitivity, heart symptoms, neck symptoms, medicines and supplements.
2. Ask about symptom onset, palpitations, weight or bowel changes and neck growth or discomfort. Record relevant therapy, supplements and blood test dates.
3. Observe pulse, hands and eyes. Inspect the neck at rest and during swallowing when safe.
4. Examine hands, pulse and eyes with adequate lighting and note the relevant signs by system. Inspect the neck in a supported sitting position and check movement with swallowing if safe.
5. Palpate the thyroid gently for enlargement, tenderness or nodularity. Assess neck nodes and other relevant signs.

Continue with step 6 on the next page.

Procedure Continued

Thyroid Examination and Function Tests

6. Palpate the lobes and isthmus gently with the supervisor, noting symmetry, surface, size, nodules and tenderness. Examine relevant neck nodes and document limitations.
7. Classify the pattern using both TSH and free T4 against reference intervals. Review free T3 and past values if available.
8. Compare TSH and free T4 with their reported ranges and then check any free T3 and earlier values. Note illness, supplement or assay factors that could affect the combination.
9. State whether the pattern is primary, suggests central disease, or merits repeat testing and context review.
10. Present one supported biochemical category and one clinical explanation or follow-up question. Identify findings such as a new compressive symptom that require timely review.

Precautions

- Stop or adapt examination if there is discomfort or respiratory difficulty.
- Interpret hormone results using the reporting laboratory's intervals and the patient context.

Observations and Interpretation

Thyroid Examination and Function Tests

Observations and Record

Item	What to record	What it tells you
Neck examination	Size, tenderness, nodules and nodes	Local findings relevant to follow-up
Hormones	TSH and free T4 with units and limits	Biochemical pattern
Test context	Medicines, supplements and illness	Possible interference or alternate explanation

Worked Example

A patient with cold intolerance has TSH 15 mIU/L and free T4 below the laboratory reference range. The thyroid is not tender.

Result and Interpretation

Raised TSH with low free T4 is consistent with primary hypothyroidism in this case. Review cause, medication history and the subsequent clinician plan.

Viva Questions and Answers

What pattern suggests primary hyperthyroidism?

Suppressed TSH with raised free T4 and/or T3.

What should be considered with low free T4 and an inappropriately normal TSH?

Central hypothyroidism, illness and assay factors need consideration.

Anaemia Panel and Transfusion Observation

Practical 13 / Clinical or documentation case

Aim

Summarise anaemia investigations and demonstrate bedside checks in an observed transfusion exercise.

Principle

Red-cell indices guide differential diagnosis. Matching the patient to the ordered and compatible component is central to transfusion safety.

Materials and Requirements

- CBC, blood film and iron study report set
- Dummy component pack, compatibility slip and simulated bedside chart

Procedure

1. Review haemoglobin, indices and reticulocyte response. Correlate the pattern with blood film and case history.
2. Compare haemoglobin, MCV, reticulocytes, smear and available ferritin or other tests. Review bleeding and transfusion history and state the likely pattern before discussing any indication.
3. Explain what the blood bank checks and observe its compatibility workflow using the exercise record.
4. Align the teaching patient sample with the ABO, antibody screen and compatibility entry. Identify any prior antibody, special component requirement or unresolved result in the file.
5. At the simulated bedside, verify two identifiers, order, consent, component type, label, compatibility, expiry and special requirements with the supervising team.

Continue with step 6 on the next page.

Procedure Continued

Anaemia Panel and Transfusion Observation

6. Check the dummy wristband and order against the compatibility record and pack in a pair read-back. Verify component number, time limits, integrity and instructions before practising connection.
7. Document baseline observations and the monitoring plan. In a reaction scenario stop the simulated transfusion, summon help and follow the institution's reaction procedure.
8. Assess airway, breathing and circulation and recheck vital signs. Maintain IV access without flushing the existing blood line. Use separate access if needed under the facility procedure.
9. Recheck patient and component identities. Notify the responsible clinician and transfusion service and preserve the mock pack, tubing and records for the authorised investigation.
10. Record component identification, times, observed signs and notification.
11. Record time, identification, baseline and subsequent observations, volume when applicable and the receiving service. Name the person responsible for reviewing the reaction or discrepancy.

Precautions

- Keep all identifiers and component records linked and confidential.
- Escalate any reaction or discrepancy immediately.

Observations and Interpretation

Anaemia Panel and Transfusion Observation

Observations and Record

Item	What to record	What it tells you
Anaemia panel	Hb, MCV, reticulocytes and supporting tests	Guides aetiology work-up
Component verification	Identity match, component and tracking number	Prevents wrong-patient error
Reaction record	Symptoms, timing and actions	Supports investigation and care

Worked Example

A low haemoglobin with low MCV and low ferritin suggests iron deficiency in the case. At the bedside the unit paperwork has a different identifier from the wristband.

Result and Interpretation

Hold the component and contact the transfusion team to resolve the mismatch. The anaemia classification and the decision to transfuse are separate clinical assessments.

Viva Questions and Answers

Why review reticulocytes?

They help assess the marrow response to anaemia.

Who clears an identifier discrepancy?

The responsible clinical team and blood bank must resolve it before use.

CSF Report and Meningitis Case

Practical 14 / Report and data interpretation

Aim

Interpret the CSF pattern with the history and identify findings needing urgent escalation.

Principle

CSF cell type, protein, glucose relative to blood, opening pressure and microbiology narrow the differential. Findings vary with timing, prior therapy and host factors.

Materials and Requirements

- De-identified or fictional CSF report, paired glucose and symptom timeline
- Table for cellular and biochemical findings

Procedure

1. Establish symptom onset, fever, neurological signs, immune status and prior therapy. Identify urgent instability.
2. Review time of first symptoms, observations, immune status, focal findings and prior antimicrobials. Identify the reason the scenario needs urgent assessment before full interpretation.
3. Confirm specimen label and timing. Read opening pressure if available, appearance, red cells and white cell differential.
4. Check which tube or specimen each result belongs to, and whether opening pressure and sample appearance were available. Record red cells, total white cells and the predominant type.

Continue with step 5 on the next page.

Procedure Continued

CSF Report and Meningitis Case

5. Compare CSF glucose with paired serum glucose. Assess protein and microbiology alongside the differential.
6. Calculate the ratio from matching glucose units and timing and compare with protein and the supplied microbiology. Record which findings are pending or limited by the collection.
7. Consider early infection, prior therapy and traumatic collection if results are discordant.
8. Compare candidate bacterial, viral and other inflammatory patterns without assigning an organism from the differential alone. Note why timing or a traumatic sample might alter confidence.
9. Present the leading pattern, two supporting findings and the urgent communication required.
10. In the handover give clinical change, key numbers and suspected pattern. Confirm receipt and state the need for urgent care and follow-up of pending results.

Precautions

- Keep interpretation separate from the decision to perform lumbar puncture, which requires appropriate clinical assessment.
- Prompt review is needed for suspected serious central nervous system infection.

Observations and Interpretation

CSF Report and Meningitis Case

Observations and Record

Item	What to record	What it tells you
Cells	White count, predominant type and red cells	Supports inflammatory pattern
Protein and glucose	Result with serum glucose and units	Refines likely cause
Microbiology	Available stains, molecular tests and laboratory results	Supports cause-specific review

Worked Example

CSF has a neutrophil predominance, protein 160 mg/dL and glucose 25 mg/dL with blood glucose 100 mg/dL. The CSF-to-blood glucose ratio is 0.25.

Result and Interpretation

The pattern supports bacterial meningitis in the scenario. Escalate urgently and interpret available microbiology and the clinical state with the team.

Viva Questions and Answers

Why collect an appropriately timed blood glucose?

It makes a low CSF glucose easier to interpret.

Can a negative stain exclude bacterial meningitis?

Its sensitivity varies. Review all findings and treatment history.

Stroke Examination and Time Critical Handover

Practical 15 / Supervised clinical examination

Aim

Recognise a focal neurological deficit and document a structured stroke examination and handover.

Principle

Sudden focal signs may indicate stroke. Last known well time, glucose, deficits and imaging inform the urgency and pathway.

Materials and Requirements

- Stroke actor or simulation chart, bedside observations and glucose card
- Local stroke activation guide and structured handover sheet

Procedure

1. Identify sudden face, arm, speech, visual or coordination symptoms. Record exact onset or last known well from a reliable witness.
2. Obtain the witness account and distinguish first observed abnormality from last known well. Note whether symptoms are ongoing and document both times as precisely as available.
3. Assess airway, breathing and circulation, review vital signs and obtain a simulated glucose result. Activate the local pathway when indicated.
4. Check initial observations and glucose in parallel with escalation. Share concerning vital findings and avoid delaying pathway activation for a complete neurological examination.

Continue with step 5 on the next page.

Procedure Continued

Stroke Examination and Time Critical Handover

5. Assess alertness, speech and language, pupils, fields, face, limb power and sensation. Assess coordination and neglect when appropriate and safe.
6. Compare face, both arms and legs, language and gaze, documenting side and degree. Add fields, sensation, neglect or coordination as indicated and distinguish weak effort from an untested item.
7. Document side, severity and baseline functional status. Review pertinent medicines including anticoagulants and record known recent procedures or bleeding.
8. Record baseline function, medicines with last relevant doses, recent procedures, bleeding and the deficit trend. Use the facility assessment format and note anything still unknown.
9. Give a time-stamped handover and state the urgent imaging and team assessment required.
10. Give last known well, current deficits, glucose, observations and key eligibility information. Confirm receiving team and times of activation, imaging request and reassessment.

Precautions

- Avoid oral food, fluids or tablets until swallowing safety is assessed under the clinical pathway.
- Do not delay activation to finish a full examination.

Observations and Interpretation

Stroke Examination and Time Critical Handover

Observations and Record

Item	What to record	What it tells you
Timeline	Last known well, onset and arrival	Supports pathway selection
Neurological signs	Laterality, speech, gaze and limb deficits	Defines the deficit and supports localisation
Initial checks	Glucose, observations and medicine history	Identifies mimics and key decision factors

Worked Example

At 09:10 a witness notices slurred speech and left arm weakness. The patient was last known well at 08:40. Bedside glucose is 103 mg/dL.

Result and Interpretation

The findings require immediate stroke pathway activation. Report 08:40 as last known well and document deficit and glucose.

Viva Questions and Answers

Why do we use last known well?

The symptoms may have begun before they were first observed.

Which bedside test checks a common stroke mimic?

Blood glucose.

Tuberculosis Reports and Regimen Selection Exercise

Practical 16 / Clinical or documentation case

Aim

Use case information and the current national TB pathway to justify a supervised regimen proposal.

Principle

Disease site, microbiological confirmation, drug susceptibility, prior treatment and comorbidities affect treatment choice and monitoring.

Materials and Requirements

- Fictional pulmonary and extrapulmonary cases
- Rapid molecular report, susceptibility results and current National TB Elimination Programme tables

Procedure

1. Record symptoms, exposure, site, prior treatment and clinical severity. Identify infection-control needs for possible infectious pulmonary disease.
2. Build a time line for symptoms, prior therapy, exposure, known site and clinical concern. Identify respiratory precautions and who will review them for suspected pulmonary disease.
3. Review the sample type, method, smear or molecular result and susceptibility findings. State what additional evidence is needed if the picture is discordant.
4. Read the fictional reports from specimen identification to molecular findings and drug susceptibility. Distinguish drug resistance findings and evidence of disease from pending or indeterminate results.
5. Classify the case for the national programme pathway. Identify weight band, medical conditions, medicines and important baseline results.

Continue with step 6 on the next page.

Procedure Continued

Tuberculosis Reports and Regimen Selection Exercise

6. Use current programme materials to classify the scenario by site and resistance and review relevant comorbidities, current medicines, prior therapy and weight. Identify need for specialist review.
7. For the exercise, enter the regimen, phases, dose source and monitoring schedule supported by the pathway. Have the supervisor check the proposal.
8. Document the programme section consulted, appropriate pathway, simulated authorised prescription and monitoring items. Have faculty verify the choice against the recorded site, susceptibility and patient factors.
9. Explain the follow-up plan, care support, adverse-effect reporting and programme notification process.
10. Practise a patient-friendly follow-up discussion about access, adherence, adverse effects and review. Record the person responsible for continuity and programme follow-up.

Precautions

- Handle case reports only in this exercise and follow facility respiratory infection-control procedures during postings.
- Use the current programme version and confirm regimen choices with the responsible clinician.

Observations and Interpretation

Tuberculosis Reports and Regimen Selection Exercise

Observations and Record

Item	What to record	What it tells you
Classification	Site, patient factors and evidence of disease	Determines the programme pathway
Resistance status	Drug results and sampling times	Changes regimen and referral choice
Treatment proposal	Programme table, weight band and monitoring	Makes the decision verifiable

Worked Example

The molecular report in a symptomatic pulmonary case detects TB and rifampicin resistance. The student flags the report and refers through the drug-resistant TB pathway for full susceptibility review.

Result and Interpretation

Management must follow the national pathway appropriate to the susceptibility findings, organ involvement and patient factors. Counsel on treatment support and follow-up.

Viva Questions and Answers

Why is the smear result insufficient for choosing a regimen?

It does not define drug susceptibility.

Why record the patient's current weight?

Approved combinations and dosing bands depend on weight and may need revision during follow-up.

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