FRONTIER MEDICAL & DENTAL COLLEGE

ABBOTTABAD

DEPARTMENT OF MEDICAL EDUCATION

PROBLEM-BASED LEARNING (PBL) GUIDEBOOK

1st – 3rd Year MBBS

2025-26

Department of Medical Education				
Problem-Based Learning (PBL) Guidebook				
Doc. No:	**Effective Date:**	**Revision Date:**	**Version:**	**Page**
APPROVED BY:		**COMPILED BY:**		

Table of Contents

Problem-Based Learning (PBL) Guidebook *1*

1.0 INTRODUCTION: WHAT IS PBL AND WHY DO WE USE IT? **3**

WHY IS PBL IMPORTANT FOR YOU? 3

2.0 THE PBL CYCLE: THE TWO-PART PROCESS **3**

PART A (PBL1A) - THE INQUIRY PHASE 3
PART B (PBL1B) - THE SYNTHESIS PHASE 3

3.0 THE SEVEN STEPS OF PBL (USED IN BOTH PBL1A AND PBL1B) **4**

4.0 ROLES AND RESPONSIBILITIES **4**

TABLE 4.1: YOUR ROLE AS A STUDENT 4
TABLE 4.2: THE TUTOR'S ROLE 5

5.0 PBL CASES FOR YEAR 1, 2, & 3 CURRICULUM **5**

TABLE 5.1: PBL CASE DISTRIBUTION 5
5.2: PBL CASES' SCENARIO 6

6.0 ASSESSMENT IN PBL **23**

TABLE 6.1: PBL ASSESSMENT 23

7.0 TEMPLATES FOR YOUR PBL SESSION **24**

8.0 FINAL ADVICE FOR SUCCESS **24**

1.0 Introduction: What is PBL and Why Do We Use It?

What is Problem-Based Learning (PBL)?
PBL is a teaching method where you learn by solving open-ended problems. You will be in a small group with a tutor. The tutor will give you a case (a story about a patient). Your group's job is to figure out the case, step-by-step. You will not be given all the information. You must find it yourselves. This is how real doctors solve problems.

Why is PBL Important for You?

- **Integrates Knowledge:** PBL connects subjects like Anatomy, Physiology, and Biochemistry. You see how they work together in a real patient.
- **Builds Clinical Skills:** You start thinking like a doctor from your first year. You learn to ask the right questions and find answers.
- **Develops Self-Learning:** Medicine changes fast. PBL teaches you how to learn on your own for your whole career.
- **Improves Teamwork:** You learn to work in a team, share ideas, and communicate clearly.

2.0 The PBL Cycle: The Two-Part Process

Each module features one Problem-Based Learning (PBL) case, which is divided into two distinct sessions. This structure ensures that your learning throughout the module remains focused, applied, and directly relevant to real-world scenarios.

Part A (PBL1a) - The Inquiry Phase

- **When:** This session takes place during the first week of the module.
- **Goal:** The primary objective is to understand the presented problem and identify the gaps in your knowledge. This initiates the learning process.
- **Process:** A scenario is introduced to the students. Under the guidance of a tutor, the group dissects the case, asks questions, and identifies key areas for investigation.
- **Outcome:** The session concludes with the formulation of a clear list of Learning Objectives (LOs) . These objectives will direct your self-study and research throughout the module.

Part B (PBL1b) - The Synthesis Phase

- **When:** This session takes place during the **final week** of the module.
- **Goal:** The objective is to synthesize the knowledge you have gained throughout the module and collaboratively apply it to solve the case.
- **Process:** Student groups are distributed among PBL coordinators from various departments. Each coordinator facilitates the final session, which includes a group-based assessment.
- **Outcome:** By integrating knowledge from the entire module, students achieve a deep and comprehensive understanding of the case.

This cycle ensures that your learning throughout the module is focused and relevant.

3.0 The Seven Steps of PBL (Used in both PBL1a and PBL1b)

Your group will follow these seven steps. For PBL1a, you will focus on Steps 1-5. For PBL1b, you will focus on Step 7.

Step	Description	Key Questions to Ask	Example for a Case "The Tired Athlete"
1. Clarify Terms	Find and explain any unknown words or concepts in the case.	"What does this word mean?" "Is this a medical term?"	"What is 'fatigue'? What is 'pallor'?"
2. Define the Problems	List all the problems from the patient's and doctor's perspective.	"What is wrong with the patient?" "What are the symptoms and signs?"	Problems: 1. Fatigue, 2. Pale skin, 3. Shortness of breath on exertion.
3. Brainstorm Ideas	Discuss the case using your current knowledge. Generate ideas and hypotheses.	"What could cause this?" "This might be... because..."	"Could it be anemia? Maybe a heart problem? Perhaps it's due to poor nutrition?"
4. Analyze & Discuss	Organize and critique the ideas from brainstorming. Identify what you know and what you don't know.	"Which idea is most likely? Why?" "What evidence supports this?" "What is missing?"	"Anemia fits with the pallor and fatigue. But we need to know what type of anemia."
5. Formulate Learning Objectives (LOs)	Create a list of specific questions you need to answer to solve the case.	"What do we need to learn about...?"	1. What is iron-deficiency anemia? 2. What is the role of iron in the body? 3. What foods are rich in iron?
6. Self-Directed Learning (SDL)	***(Between Sessions)*** Everyone independently researches the Learning Objectives.	N/A	You read textbooks, watch videos, and use the library to answer the LOs.
7. Report & Synthesize	***(In PBL1b)*** Share your research findings and apply them to fully explain the case.	"Based on what we learned, what is the diagnosis?" "How does it all fit together?"	"The patient has iron-deficiency anemia. This is because... The management would be..."

4.0 Roles and Responsibilities

Table 4.1: Your Role as a Student

Your Duty	What It Looks Like in Practice	What to Avoid
Be Prepared	Read the case before the session. Complete your SDL research thoroughly.	Coming to the session without having read the case or done your research.
Participate Actively	Speak up, share your ideas, listen to others, and write on the whiteboard.	Being silent, using your phone, or having side conversations.
Be Respectful	Listen when others are speaking. Respect different opinions. Build on others' ideas.	Interrupting, dismissing others' ideas, or being rude.

Be a Team Player	Share the workload. Help the group stay on track. Support your peers.	Dominating the discussion or not contributing to the group work.

Table 4.2: The Tutor's Role

Tutor's Duty	What It Looks Like in Practice	What They Will Not Do
Facilitate the Process	Guide you through the 7 steps. Ensure the group is working well together.	Give you the answers or lecture on the topic.
Ask Probing Questions	Ask "why?" and "how?" to make you think deeper. Challenge your assumptions.	Tell you if your answer is right or wrong immediately.
Provide a Safe Environment	Make sure everyone feels comfortable to participate and make mistakes.	Allow anyone to be disrespectful or dominate the session.
Give Feedback	Provide feedback on your group's process and your individual performance.	Take over the discussion or do the work for you.

5.0 PBL Cases for Year 1, 2, & 3 Curriculum

The following table shows the specific PBL cases you will encounter, aligned with your modules.

Table 5.1: PBL Case Distribution

Module	PBL Case Title	Focus of PBL1a (Inquiry)	Focus of PBL1b (Synthesis)
I	**Case 01: The Pale Child with Dark Urine – Hemolytic Anemia**	Understanding chronic anemia, pallor, jaundice, and organomegaly. Formulating differential diagnoses.	Synthesizing hemoglobin metabolism, erythropoiesis, and the pathophysiology of thalassemia.
II	**Case 02: The Clerk with a Slip – Lumbar Disc Herniation**	Understanding low back pain with radiation, foot drop, and nerve root compression.	Correlating intervertebral disc anatomy with nerve compression and muscle weakness.
III	**Case 03: The Teacher Who Kept Fainting – Stokes-Adams Syndrome**	Analyzing recurrent syncope, bradycardia, and ECG findings of complete heart block.	Integrating cardiac conduction system anatomy, action potentials, and the physiology of syncope.
IV	**Case 04: The Housewife with Yellow Eyes – Obstructive Jaundice**	Exploring jaundice, right upper quadrant pain, Murphy's sign, and gallstones.	Synthesizing bile metabolism, liver function tests, and the pathophysiology of biliary obstruction.
V	**Case 05: The Retired Teacher with a Tremor – Parkinson's Disease**	Understanding resting tremor, bradykinesia, rigidity, and postural instability.	Connecting basal ganglia anatomy, dopamine physiology, and clinical features of Parkinsonism.
VI	**Case 06: The Anxious Banker with a Swollen Neck – Graves' Disease**	Exploring hyperthyroidism, goiter, exophthalmos, and tachycardia.	Integrating thyroid hormone synthesis, regulation, and metabolic effects in Graves' disease.
VII	**Case 07: The Retired Clerk with a Weak Stream – Benign Prostatic Hyperplasia (BPH)**	Understanding urinary obstruction symptoms (hesitancy, weak stream, nocturia), enlarged prostate on DRE, and alpha-blocker therapy.	Integrating prostate anatomy, smooth muscle physiology, histological changes in BPH, and pharmacology of alpha-blockers.

VIII	**Case 08: The Lorry Driver with a Racing Heart – Hypertension & Tachyarrhythmia**	Analyzing severe palpitations, chest heaviness, elevated blood pressure, and risk factors (smoking, sedentary lifestyle).	Correlating cardiac pathophysiology, arrhythmia mechanisms, and pharmacology of beta-blockers.
IX	**Case 09: The Irritable Banker with Numb Feet – Diabetes Mellitus with Complications**	Exploring polyuria, polydipsia, polyphagia, peripheral neuropathy (glove-and-stocking), and poor glycemic control.	Integrating diabetic pathophysiology, microvascular complications, neuropathy, and pharmacology of antidiabetic agents.

5.2: PBL Cases' Scenario

1st Year – Module I
Case 01: The Pale Child – Thalassemia

1. Patient Profile & Presenting Complaint

- **Patient:** Akash, a 6-year-old male child.
- **Residence:** Lives in a small village in Punjab.
- **Presentation:** Brought to the Pediatric OPD with the following complaints:
  - Generalized weakness for the last 6 months.
  - Pale appearance (pallor).
  - Recurrent bone pains (mild to moderate, lasting 1–2 weeks, relieved by oral painkillers).
  - Mild yellowish discoloration of the eyes.
  - Passing dark-colored urine.

2. History of Presenting Illness (HPI)

- **Bone Pain:** The pain comes and goes. It is not severe and improves with simple pain relief medication.
- **Recent Illness:** About 15 days ago, he was admitted to a private hospital for 1 week and treated with intravenous (IV) antibiotics for an infection.
- **Constitutional Symptoms:** He feels tired all the time and does not play actively like other children his age.

3. Past Medical & Family History

- **Family History:** Positive for blood disorders (e.g., anemia in close relatives).
- **Birth & Development:** Normal birth and developmental milestones.

4. General Physical Examination (GPE)

Parameter	Findings
General Appearance	Pale child, no obvious breathing difficulty. Looks tired but alert.
Vital Signs	HR: 96/min, Temp: 98°F, RR: 36/min.
Anthropometry	Weight: 14.5 kg, Height: 105 cm. (Below average for age).
Skin & Mucosa	Pallor (paleness) is present. Jaundice (yellowish tint) is present in the eyes. Bruises (ecchymosis) are present (++).
Lymph Nodes	Small, round, soft, movable lymph nodes are felt in both armpits (axillary), each larger than 1.5 cm.

Hands & Feet	No clubbing of fingers. No swelling of feet (pedal edema).

5. Abdominal Examination

Test / Parameter	Findings
Inspection	Scaphoid (flat) abdomen.
Palpation	Soft, non-tender. Liver is enlarged (palpable 3 cm below the right rib cage), firm, with a smooth surface and sharp edge. Spleen is NOT palpable.
Percussion	No free fluid in the abdomen (shifting dullness absent).

6. Review of Other Systems

- **Chest & Heart:** Normal shape, clear breathing sounds, normal heart sounds.
- **Nervous System:** Normal and intact.
- **Urine:** Dark-colored (noted by mother).

7. Initial Investigations (Advised)

Investigation	Status
Complete Blood Count (CBC)	Advised (to check hemoglobin, WBC, and platelets).
Peripheral Blood Smear	Advised (to look at the shape and size of red blood cells).
Urine Examination	Advised (to check for bilirubin/urobilinogen).

1st Year – Module II
Case 02: The Slip That Struck a Nerve – Disc Prolapse

1. Patient Profile & Presenting Complaint

- **Patient:** Rahul, a 45-year-old male bank clerk.
- **Residence:** Lives in a suburban area of Karachi.
- **Presentation:** Presented to the Orthopedic OPD with the following complaints:
  - Severe lower back pain for the last 2 weeks.
  - Pain radiating down the back of his right thigh and leg.
  - Numbness and tingling over the right foot.
  - Difficulty lifting the front part of his right foot for the last 3 days.

2. History of Presenting Illness (HPI)

- **Onset of Pain:** The pain started suddenly while he was lifting a heavy office filing cabinet. He felt a sharp "catch" in his lower back and could not straighten up immediately.
- **Radiation:** The pain started in the lower back and spread down his right leg over the next 48 hours.
- **Aggravating Factors:** The pain becomes worse when he sits for a long time, coughs, or sneezes.
- **Relieving Factors:** The pain is significantly better when he lies down on his side with his knees bent.
- **Foot Drop:** Over the last 3 days, he noticed that his right foot slaps on the ground while walking, and he cannot stand on his right heel.

3. Past Medical & Social History

- **Past Medical History:** No history of diabetes, high blood pressure, or tuberculosis.
- **Lifestyle:** Sedentary desk job with almost no physical exercise. He is overweight.
- **Addictions:** Occasional smoking (5 cigarettes/day). No alcohol.

4. General Physical Examination

Parameter	Findings
General Appearance	Alert, in mild distress due to pain. Walking with a limp (antalgic gait) and a right-sided foot drop.
Vital Signs	HR: 82/min, BP: 130/85 mmHg, Temp: 98.4°F, RR: 18/min.
Anthropometry	Height: 170 cm, Weight: 84 kg, BMI: 29 kg/m² (Overweight).
Spine	The normal inward curve of the lower back (lumbar lordosis) is reduced. The muscles on either side of the spine are tense and tender.

5. Focused Neurological & Musculoskeletal Examination (Right Leg)

Test / Parameter	Findings
Straight Leg Raise (SLR) Test	When the right leg is lifted straight while lying down, pain radiates down the leg at **30°** (highly positive).
Motor Power	- Hip and knee movements: Normal (5/5). - **Ankle dorsiflexion** (pulling foot upwards): Weak (3/5). - **Great toe extension** (pulling big toe up): Weak (2/5). - Ankle plantarflexion (pushing foot down): Normal (5/5).
Sensation	Reduced sensation (numbness) over the **top of the right foot** and the **outer side of the right leg**.

Reflexes	Knee jerk and ankle jerk reflexes are normal and present on both sides.
Bony Tenderness	Mild tenderness over the lower backbone (L4-L5 spine area).

6. Review of Systems

System	Findings
Abdomen	Soft, non-tender. No organ enlargement.
Chest & Heart	Clear chest, normal heart sounds.
Bowel & Bladder	No difficulty in passing urine or stool (important to rule out an emergency).

7. Initial Investigations (Advised)

Investigation	Status
X-Ray Lumbosacral Spine	Advised (to look for bone alignment or fractures).
MRI Lumbosacral Spine	Advised (for detailed view of discs and nerves).
Random Blood Glucose	Advised (to rule out diabetic neuropathy).

1st Year – Module III
Case 03: System (Stokes-Adams)
The Collapsed Teacher – Complete Heart Block

1. Patient Profile & Presenting Complaint

- **Patient:** Mr. Ahmed, a 60-year-old retired school teacher.
- **Residence:** Suburban area of Lahore.
- **Presentation:** Brought to the Emergency Department by his son after he collapsed at home with:
    - Sudden loss of consciousness while reading the newspaper.
    - Brief stiffening of limbs for a few seconds during the episode.
    - Full recovery within 1 minute.

2. History of Presenting Illness (HPI)

- **Recurrent Events:** This is the **3rd similar episode** in the last 4 months. Previous episodes occurred while walking in the garden.
- **Recovery:** Each time, he regained consciousness quickly and was completely normal afterward.
- **Between Episodes:** He feels generally well but admits to mild fatigue and occasional dizziness when climbing stairs or walking fast.
- **No Warning:** He has **no** palpitations, chest pain, or dizziness before these attacks. They happen out of the blue.

3. Past Medical & Social History

- **Past Medical History:** Diagnosed with mild hypertension 5 years ago. He takes medication irregularly because he "feels fine."
- **No History:** No diabetes, no heart attacks, no strokes.
- **Social History:** Non-smoker. No alcohol.

4. General Physical Examination (in ER)

Parameter	Findings
General Appearance	Fully conscious, alert, comfortable at rest.
Vital Signs	HR: 32/min (very slow, regular), BP: 145/90 mmHg, RR: 16/min, Temp: 98.4°F.
Pulse	Very slow, regular, and weak volume.
Neck Veins (JVP)	Elevated. Cannon 'a' waves (large, intermittent pulsations visible in the neck veins).
Heart Sounds	S1 and S2 heard. The loudness of S1 varies from beat to beat (sometimes loud, sometimes soft). No murmurs.
Chest	Clear breathing sounds. No crackles or wheezes.
Abdomen	Soft, non-tender.
Nervous System	Completely normal. No weakness or numbness.

5. Initial Investigations (Done in ER)

Investigation	Finding
Electrocardiogram (ECG)	- P waves (atrial beats) are seen at a rate of 80/min. - QRS complexes (ventricular beats) are seen at a rate of 32/min. - P waves and QRS complexes are completely dissociated (not talking to

	each other). Interpretation: Complete Heart Block (3rd Degree).
Serum Electrolytes	Sodium: 138 mEq/L, Potassium: 4.8 mEq/L, Calcium: 9.8 mg/dL. (Within normal range).
Random Blood Glucose	110 mg/dL (Normal).

2nd Year – Module IV
Case 04: The Yellow Housewife – Gallstones

1. Patient Profile & Presenting Complaint

- **Patient:** Sajida Bibi, a 42-year-old overweight housewife.
- **Residence:** Suburban area of Punjab.
- **Presentation:** Presented with:
    - Yellow discoloration of her eyes (noticed 2 days ago).
    - Yellowing of her hands (noticed this morning).

2. History of Presenting Illness (HPI)

- **Jaundice:** She noticed the yellowing suddenly. Initially, she thought it was the bathroom light, but today she confirmed it in daylight.
- **Constitutional Symptoms:** She has felt "sick and tired" for the past 2–3 weeks, with loss of appetite and nausea.
- **Fever & Chills:** Last night, she developed a high fever with severe rigors (shaking chills) .
- **Pain:** She has a constant pain and fullness in the right upper abdomen. The pain worsens whenever she eats fatty foods like *paratha* or *halwa*. She also feels pain in her right shoulder.
- **Vomiting:** Vomited twice today (non-bloody).
- **Urine & Stools:** Her urine has become dark-colored. She has no diarrhea.
- **Weight Loss:** Unintentional weight loss of about 20 lbs (9 kg) over the last 3 months.

3. Past Medical & Family History

- No history of liver disease, diabetes, or gallstones in herself or her family. No alcohol intake.

4. General Physical Examination

Parameter	Findings
General Appearance	Alert but looks haggard and ill. Appears older than her age.
Vital Signs	BP: 104/60 mmHg, HR: 110/min (fast, regular), Temp: 38.9°C (high fever).
Skin & Eyes	Icterus (yellow discoloration) clearly present in the sclera (whites of eyes) and palms.
Abdomen	Tenderness on pressing the right upper abdomen. Murphy's sign is positive (she stops breathing in when the doctor presses under her right ribs).
Other Systems	No swelling of feet. Normal chest and heart sounds.

5. Review of Systems

System	Findings
Gastrointestinal	Nausea, vomiting, right upper abdominal pain (worse with fatty meals).
Urinary	Dark-colored urine. No burning or frequency.
Respiratory	No cough or breathlessness.
Musculoskeletal	Right shoulder pain (referred pain).

6. Initial Investigations (Advised)

Investigation	Status
Ultrasound Abdomen	Advised (to look for gallstones or bile duct blockage).
Liver Function Tests (LFTs)	Advised (to check bilirubin, liver enzymes).
Complete Blood Count (CBC)	Advised (to check for infection).
Serum Bilirubin	Advised (Total and Direct).

2nd Year – Module V
Case 05: The Shaking Retiree – Parkinsonism

1. Patient Profile & Presenting Complaint

- **Patient:** Mr. Rafiq, a 62-year-old retired schoolteacher.
- **Residence:** Small town near Rawalpindi.
- **Presentation:** Brought to the Neurology Clinic with:
  - Tremor (shaking) in his right hand for the last 8 months.
  - Slowness of movements and difficulty walking for the last 6 months.
  - Smaller handwriting and softer voice for the last 4 months.

2. History of Presenting Illness (HPI)

- **Tremor:** A rhythmic shaking of his right thumb and fingers. It happens when his hand is resting on his lap and disappears when he uses the hand (e.g., holding a cup). It gets worse when he is anxious.
- **Slowness:** His daughter reports he takes a very long time to get up from a chair, turn in bed, or button his shirt.
- **Gait:** He walks with short, shuffling steps. He often "freezes" (cannot move his feet) when trying to start walking or turn around. He has fallen twice recently.
- **Posture:** His back is bent forward (stooped).
- **Face:** He has a "mask-like" expression – he rarely smiles or shows emotion.
- **Voice:** His voice is now very soft, monotonous, and hard to hear.
- **Others:** No memory loss or confusion. He has chronic constipation.

3. Past Medical & Family History

- **Past Medical:** Mild hypertension (well-controlled). No history of stroke or head injury.
- **Medications:** Takes Amlodipine 5mg daily. No new medications.
- **Family History:** No similar illness in the family.

4. General Physical Examination

Parameter	Findings
General Appearance	Alert and fully oriented. Expressionless face. Soft, monotonous speech.
Vital Signs	HR: 72/min, BP: 130/80 mmHg, Temp: 98.4°F.
Gait	Shuffling, slow steps. Reduced arm swing on the right side. He falls backward easily (positive retropulsion).
Posture	Stooped (flexed forward).

5. Focused Neurological Examination

Test / Parameter	Findings
Resting Tremor	Present in the right hand – classic "pill-rolling" tremor (thumb rubbing against fingers).
Rigidity	Increased resistance in the right arm and leg. The resistance is jerky (cogwheel) when moving the wrist.
Bradykinesia	Very slow and small-amplitude movements on repetitive tests (finger tapping).
Postural Reflexes	Positive retropulsion (falls backward when pulled from shoulders).
Power & Sensation	Normal strength (5/5) and normal sensation.
Reflexes	Normal. Plantar reflexes are down-going (normal).

6. Initial Investigations

Investigation	Result
Complete Blood Count (CBC)	Normal.
Serum Electrolytes	Normal.
CT Scan Head	Mild age-related shrinking (atrophy). No stroke, tumor, or bleeding.

2nd Year – Module VI
Case 06: The Restless Banker – Hyperthyroidism

1. Patient Profile & Presenting Complaint

- **Patient:** Mrs. Nadia, a 34-year-old female bank employee.
- **Residence:** Suburban Lahore.
- **Presentation:** Presented with:
  - Palpitations (racing heart) and excessive sweating for 6 months.
  - Weight loss despite eating more for 5 months.
  - Swelling in the front of the neck for 3 months.
  - Bulging and discomfort in both eyes for 2 months.

2. History of Presenting Illness (HPI)

- **Palpitations & Heat:** She feels her heart racing even with light work. She feels excessively hot all the time and sweats a lot on her palms and soles.
- **Weight & Appetite:** She eats much more than usual but has lost **10 kg** in the last 5 months. She feels hungry all the time.
- **Neck Swelling:** Noticed a gradual, painless swelling in the front of her neck. It moves up when she swallows.
- **Eye Symptoms:** Her eyes look abnormally wide and bulging. She feels a gritty sensation and tearing. She cannot close her eyes fully while sleeping.
- **Behavior:** She feels restless, anxious, irritable, and has difficulty sleeping (insomnia).
- **Bowel:** She passes loose stools 3-4 times a day without any pain.

3. Past Medical & Family History

- No history of diabetes, high BP, or thyroid problems. Her mother had a similar "swollen neck."

4. General Physical Examination

Parameter	Findings
General Appearance	Anxious, fidgety, restless. Looks thin and underweight.
Vital Signs	HR: **118/min** (tachycardic), BP: 150/90 mmHg, Temp: 99.2°F.
Anthropometry	Weight: 48 kg (previously 58 kg). BMI: 19.2 (underweight).
Skin	Warm, moist, and smooth. Excessive sweating on palms. Fine, thin hair.
Neck (Thyroid)	Diffuse, smooth, soft enlargement of the thyroid gland. A **bruit** (whooshing sound) is heard when a stethoscope is placed over the gland.
Eyes	Bilateral **proptosis (bulging)** . **Lid retraction** (white of the eye visible above the iris). **Lid lag** (white visible when looking downward).

5. Focused Cardiovascular & Neurological Examination

Test / Parameter	Findings
Heart	Forceful apex beat. Loud heart sounds. Soft systolic murmur. No fluid in the lungs.
Hands	Fine, rapid tremor of outstretched fingers.
Reflexes	Deep tendon reflexes (knee, ankle) are **brisk (hyper-reflexic)** with a very rapid relaxation phase.
Abdomen	Soft, non-tender. Hyperactive bowel sounds.

6. Review of Systems

System	Findings

Gastrointestinal	Increased appetite, loose stools 3-4 times/day.
Menstrual	Irregular and scanty periods for the last 6 months.
Musculoskeletal	Generalized muscle weakness.

7. Initial Investigations

Investigation	Result
Complete Blood Count (CBC)	Mild anemia (Hb: 11.5 g/dL).
Random Blood Glucose	135 mg/dL (mildly elevated).
ECG	Sinus tachycardia (Heart rate ~115/min). Normal rhythm.
Thyroid Function Tests (TFTs)	(Results awaited).
Ultrasound Thyroid	Diffuse enlargement with increased blood flow ("thyroid inferno").

3rd Year – Module VII
Case 07: The Retired Clerk with a Weak Stream – Benign Prostatic Hyperplasia (BPH)

1. Patient Profile & Presenting Complaint

- **Patient:** Mr. Asfandyar, a 65-year-old retired clerk.
- **Residence:** Lives in an urban area of Khyber Pakhtunkhwa.
- **Presentation:** Presented to the Medical OPD with the following complaints:
  - Difficulty starting urination for the last 2 years.
  - Weak urine stream and intermittent flow.
  - Frequent urination, especially at night (nocturia) – waking up 4-5 times per night.
  - Sensation of incomplete bladder emptying after urination.
  - Episodes of urinary retention (difficulty passing urine completely).

2. History of Presenting Illness (HPI)

- **Onset:** Symptoms began gradually over the last 2-3 years. Initially, he noticed mild difficulty initiating urination, which has progressively worsened.
- **Urinary Symptoms:** He reports a weak, interrupted urine stream. He needs to strain (Valsalva maneuver) to initiate and maintain urination. He experiences terminal dribbling.
- **Nocturia:** He wakes up 4-5 times each night to pass urine, disturbing his sleep.
- **Other Symptoms:** No history of gross hematuria (visible blood in urine). No history of urinary tract infections. No lower back pain.
- **Past Medical History:** Diagnosed with hypertension for 4 years, managed with oral antihypertensives. No history of diabetes. No history of allergies.

3. Past Medical & Social History

- **Medications:** Takes a calcium channel blocker (Amlodipine) for hypertension. No alpha blockers or 5-alpha reductase inhibitors taken previously.
- **Family History:** No family history of prostate cancer.
- **Social History:** Retired clerk. Non-smoker. No alcohol consumption. Sedentary lifestyle.

4. General Physical Examination

Parameter	Findings

General Appearance	Alert, oriented. No signs of acute distress.
Vital Signs	BP: **145/90 mmHg** (elevated), HR: 78 bpm, RR: 16/min, Temp: 98.4°F.
Digital Rectal Examination (DRE)	**Enlarged prostate** – smooth, firm, symmetrical enlargement. No hard nodules or irregularity (suggestive of malignancy). Prostate size estimated at approximately 40-50 grams.

5. System Examination

System	Findings
Abdomen	Soft, non-tender. No palpable bladder distension. No organomegaly.
Cardiovascular	Normal heart sounds. No murmurs.
Nervous System	Normal. No signs of neurological bladder dysfunction.
Genitourinary	No external genital abnormalities.

6. Initial Investigations (Advised)

Investigation	Status
Serum Prostate Specific Antigen (PSA)	Advised (to screen for prostate malignancy).
Urinalysis	Advised (to check for hematuria or infection).
Serum Creatinine & BUN	Advised (to assess renal function).
Transrectal Ultrasound (TRUS)	Advised (to assess prostate size and volume).
International Prostate Symptom Score (IPSS)	To be completed (quantifies symptom severity).

7. Treatment Initiated

Parameter	Details
Medication	Tamsulosin 0.4 mg once daily (Alpha blocker) – to relax prostate and bladder neck muscles.
Patient Education	Take at bedtime. Rise slowly from sitting/lying to prevent dizziness. Report fainting or severe allergic reactions.
Monitoring	Regular follow-up in 4 weeks to assess symptom improvement and monitor blood pressure.
Referral	Consider referral to Urologist if symptoms do not improve or worsen.

Module VIII
Case 08: The Lorry Driver with a Racing Heart – Hypertension & Tachyarrhythmia

1. Patient Profile & Presenting Complaint

- **Patient:** A 57-year-old male lorry driver.
- **Residence:** Lives in a suburban area of Punjab.
- **Presentation:** Presented to the Emergency Department with the following complaints:
  - Severe palpitations (racing heart) for the last **20 minutes**.
  - Heaviness in the chest (chest tightness).
  - Feeling of "impending doom" – as if he would die.

2. History of Presenting Illness (HPI)

- **Onset:** The episode started suddenly while he was at rest. He experienced a rapid, forceful heartbeat accompanied by chest heaviness.
- **Associated Symptoms:** He reports headache and mild tremors during the episodes. No shortness of breath. No diaphoresis (sweating).
- **Behavioral Changes:** His family has noted occasional aggressive behavior during episodes of increased heart rate.
- **Previous Episodes:** He has had similar but milder episodes in the past, but they resolved spontaneously.
- **Past Medical History:** No known history of diabetes, hypertension, or heart disease. No prior hospitalizations.
- **Risk Factors: Smoker** – 20 cigarettes daily for approximately 38 pack-years. Sedentary occupation (lorry driver).

3. Past Medical & Social History

- **Medications:** Takes no regular medications.
- **Family History:** No family history of heart disease, sudden cardiac death, or arrhythmias.
- **Social History:** Lorry driver. Heavy smoker (20 cigarettes/day for 38 years). No alcohol consumption.

4. General Physical Examination (in ER)

Parameter	Findings
General Appearance	Anxious, in distress due to palpitations. Appears well-nourished.
Vital Signs	BP: 180/105 mmHg (severely elevated), HR: 110

	bpm (tachycardic, regular, sometimes irregular), RR: 18/min, SpO_2: 97% on room air.
Cardiovascular	No heart murmurs on auscultation. S1 and S2 normal. No added sounds.
Chest	Clear. Normal vesicular breathing. No crackles or wheezes.
Abdomen	Soft, non-tender. No organomegaly.
Nervous System	Intact. No focal neurological deficits. Tremors noted in outstretched fingers.

---

5. Initial Investigations (Done in ER)

Investigation	Result
Electrocardiogram (ECG)	Sinus tachycardia. No ischemic changes. No ST-segment elevation or depression. Some premature beats noted.
Cardiac Enzymes (Troponin I)	Negative (ruling out acute myocardial infarction).
Serum Electrolytes	Within normal limits.
Complete Blood Count (CBC)	Normal.
Chest X-Ray	Normal cardiac silhouette. Clear lung fields.

6. Management Initiated

Parameter	Details
Admission	Admitted for further observation and diagnosis.
Consultation	Referred to a Cardiologist.
Medication	Beta-blocker (e.g., Metoprolol) initiated to control heart rate and blood pressure.
Observation	Monitored for 3 days in cardiology observation unit.
Follow-up	Advised to follow up in cardiology OPD after discharge.

7. Further Findings on Examination (Cardiology OPD)

Parameter	Findings
ECG (Holter Monitoring)	Arrhythmias noted (premature ventricular contractions, occasional atrial fibrillation).
Headache & Tremors	Persistent headache and fine tremors noted.
Blood Pressure	Still elevated despite initial treatment.

End of Module VIII Scenario

Case 09: Module IX
The Irritable Banker with Numb Feet – Diabetes Mellitus with Complications

1. Patient Profile & Presenting Complaint

- **Patient:** Mr. Muhammad Ishaq, a 60-year-old male bank employee.
- **Residence:** Lives in an urban area of Islamabad.
- **Presentation:** Presented to the Medical OPD with the following complaints:
    - Persistent numbness, tingling (pins and needles) in both feet for the last 2 years.
    - Increased thirst (polydipsia) and increased appetite (polyphagia) for the last 1 year.
    - Increased frequency of urination (polyuria) for the last 1 year.
    - Sleep disturbance due to nocturnal symptoms.

2. History of Presenting Illness (HPI)

- **Neuropathic Symptoms:** He reports persistent numbness and tingling in the distal parts of both feet, which has progressively worsened over 2 years. The sensation loss has now ascended to involve the hands (glove-and-stocking distribution).
- **Metabolic Symptoms:** He has experienced excessive thirst, increased hunger, and frequent urination for the last year. He drinks water frequently and wakes up multiple times at night to pass urine.
- **Behavioral:** He admits to being irritable and finds it difficult to restrict his diet. He has a strong preference for fast food and sweets.
- **Past Medical History:** Diagnosed with **Diabetes Mellitus Type 2** for **15 years**. He has been poorly compliant with diet and medication.
- **Hypertension:** Also diagnosed with hypertension for the last 8 years, poorly controlled.

3. Past Medical & Social History

- **Medications:** Previously on oral hypoglycemics; now prescribed **Insulin** by his family physician due to poor glycemic control. On antihypertensive medication (unspecified).
- **Family History:** No family history of diabetes or hypertension.
- **Social History:** Bank employee. **Smoker** for 10 years (10 cigarettes/day). No alcohol consumption. Sedentary occupation. **Obese** (BMI: 31 kg/m²).

4. General Physical Examination

Parameter	Findings
General Appearance	Alert, oriented. Appears obese. Irritable during conversation.
Vital Signs	BP: **170/100 mmHg** (severely elevated), HR: 90 bpm, RR: 20/min, Temp: 98.6°F.
Anthropometry	Obese. Weight: 95 kg, Height: 175 cm, BMI: 31 kg/m².
Skin	No ulcers, no gangrene. No rashes.

5. Focused Neurological Examination

Test / Parameter	Findings
Sensory Examination	**Glove-and-stocking distribution** of sensory loss – reduced sensation to light touch, pain, and vibration in both feet (distal) and hands.
Motor Examination	Normal muscle power (5/5) in all limbs. No muscle wasting.
Reflexes	Ankle jerks are **diminished** (hyporeflexia). Knee jerks are normal.
Autonomic Assessment	No postural hypotension. Normal heart rate response to deep breathing.

6. Systemic Examination

System	Findings
Cardiovascular	Normal heart sounds. No murmurs.
Respiratory	Clear chest. Normal vesicular breathing.
Abdomen	Soft, non-tender. No organomegaly.
Dental Examination	Poor oral hygiene noted. Gum recession and periodontal disease present.

7. Initial Investigations (Advised)

Investigation	Status
Fasting Blood Glucose (FBG)	Advised.
HbA1c	Advised (to assess long-term glycemic control).
Lipid Profile	Advised.
Serum Creatinine & BUN	Advised (to assess renal function).
Urinalysis (Microalbuminuria)	Advised (to screen for diabetic nephropathy).
Fundoscopy	Advised (to screen for diabetic retinopathy).
Nerve Conduction Studies (NCS)	Advised (to confirm diabetic peripheral neuropathy).

End of Module IX Scenario

6.0 Assessment in PBL

PBL is part of your **formative assessment**. You are assessed to help you improve, not to punish you.

Table 6.1: PBL Assessment

PBL (GROUP DYNAMICS) ASSESSMENT

GROUP:_____

CASE TITLE: _____

DATE: _____

TUTOR: _____

Roll # of Students														
Initials of Students														
ATTANDANCE	**MARKS 05**													
On Time														
Within 5 min														
Leave early /during discussion														
GROUP DYNAMICS	**MARKS 10**													
Participation / Effort (raise hand/attentive/valid argument/ critical thinking.														
Cooperation (work as team/tries to understand others)														
Brainstorming (uses prior Knowledge/suggest ways to organize the information.														
Communication style (communicate constructively / does not undermine other people's integrity/polite														
Giving effective Feedback (constructive/inoffensive/) gives applicable feedback to others														
Being open to Feedback (shows understanding of feedback from others)														
Does not participate at all														
Distract Discussion														
TOTAL														

Remarks & initials of Tutor:

Group Leader			
Encouraged uniform participation	**Satisfactory/ Unsatisfactory**	**Summarized the session**	**S/US**
Group Secretory			
Confirmed written points	**S/US**	**Summarized proceedings**	**S/US**

7.0 Templates for Your PBL Session

Template 7.1: PBL Whiteboard Layout Template
Use this table to structure your whiteboard in every PBL session. Fill it in as a group.

PBL Session Component	Details & Notes	Example (The Pale Athlete)
Case Title		The Pale Athlete
STEP 1 & 2: Terms & Problems		
· **Unknown Terms**	List and define unfamiliar words.	· **Pallor:** Paleness of the skin. · **Exertion:** Physical effort.
· **Problem List**	List the patient's main problems.	1. Fatigue 2. Pallor (pale skin) 3. Shortness of breath on exertion
STEP 3 & 4: Brainstorm & Analysis		
· **Initial Ideas/Hypotheses**	List all possible explanations.	· Iron-deficiency anemia · Vitamin B12 deficiency · Underlying heart problem
· **Discussion & Analysis**	Note what you know and what gaps exist.	"Anemia fits the symptoms best. We need to learn what type and why."
STEP 5: Learning Objectives (LOs)		
· **List of LOs**	Write specific, researchable questions.	1. What is the structure and function of hemoglobin? 2. What is the role of iron in oxygen transport? 3. What are the common causes and types of anemia?

8.0 Final Advice for Success

1. **Trust the Process:** It might feel confusing at first, but the 7-step method works.
2. **Be Brave:** Don't be afraid to share a wrong idea. Mistakes are part of learning.
3. **Use Your Tutor:** Ask your tutor for guidance if your group is stuck.
4. **Help Each Other:** You are a team. Your success depends on each other.

We wish you the best of luck in your PBL journey at FMDC!