Principles of internal medicine 2
Course blueprint
5th year
2020
بسم الله الرحمن الرحيم
Kingdom of Saudi Arabia
Ministry of Education
Al Imam Mohammed ibn Saud Islamic University
College of Medicine
Internal Medicine II Course
College of Medicine

Vision
Excellence in medical education which reconciles tradition and modernity.

Mission
Providing high quality environment for medical education that prepares competent and honest physicians. Moreover, to provide excellent medical care for Saudi society that is evidence-based and to enrich academic research.

Values
Professionalism * Commitment * Honesty
Sincerity * Competence * Development
Innovation
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<tr>
<td><strong>Course name</strong></td>
<td>Principles of Internal Medicine II</td>
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<tr>
<td><strong>Credit Hours</strong></td>
<td>5</td>
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<tr>
<td><strong>Course code</strong></td>
<td>MED 512</td>
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<td><strong>Department</strong></td>
<td>Internal Medicine Department</td>
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<td><strong>Course type</strong></td>
<td>Core/Block</td>
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<td><strong>Level/year</strong></td>
<td>8th level/ 5th year</td>
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<tr>
<td><strong>Pre-requisites</strong></td>
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<tr>
<td><strong>Co-requisites</strong></td>
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Course description

The Internal Medicine II course solidifies further the principles of internal medicine for learners and builds on the foundations of the Internal Medicine I course. In this clinical block, learners are exposed to a wide range of medical topics and cases that were chosen based on their commonality in clinical practice, as well their critical nature. In addition to interactive lectures, learners will have the opportunity to evaluate patients as well as formulate effective testing and treatment strategies in clinics and in-patient settings.

As part of the spiral curriculum’s iterative process, in the Internal Medicine course students revisit some of what they have learned in other courses. However, in this course the depth in which the select topic are visited increases. Moreover, students will examine disease pathophysiology and clinical presentation from comprehensive point of view.

By preparing medical students for principles of internal medicine, an foundational specialty for the practice of Medicine, the Internal Medicine course taught by the Department of Internal Medicine, aligns with mission of the College of Medicine which is to provide a high-quality environment for Medical Education contributing to the growth of competent and honest physicians, and prepare physicians who provide excellent medical care for Saudi society and enrich academic research. Moreover, the course is rooted in the College of Medicine’s institutional values: commitment, honesty, sincerity, professionalism, competence, and innovation.

The main objective of the course is to give an overview of Internal Medicine specialty e.g., its philosophy and features; its methods and its holistic approach to patient care. Moreover, this course helps learners become familiar with the
knowledge, attitudes and skills necessary to become sensitive communicator physicians, educators and effective good team member in primary health care (PHC)center. Furthermore, the course aims to further develop the knowledge and skills already acquired by students during their study and attachment in other departments and specialties at the College of Medicine and that are to be utilized in the PHC. To provide an appropriate exposure to the discipline of Internal Medicine II which will assist student in making career decisions.

**Course objective**

The main objective of the Internal Medicine II course is to equip learners with the knowledge, skills, and attitude necessary to provide necessary clinical care for patients. Students will learn to conduct thorough medical histories and physical examinations, as well as form an appropriate plan of investigation and treatment for patients presenting with a wide array of complaints and conditions. Most importantly, students will learn to recognize life-threatening conditions and to manage them. In specific, the course learning outcome (CLOs) for the Internal Medicine II course are:

1. Describe the anatomy and physiology of the relevant bodily systems.
2. Explain concepts relevant to conditions including their epidemiology, etiology, pathophysiology, symptoms and signs, complications, investigations, management and prognosis and that present in an internal medicine setting.
3. Perform commonly used laboratory procedures, investigations, and interventions that are necessary to address conditions in internal medicine.

4. Demonstrate the essential clinical skills including history-taking & physical examination for internal medicine diseases using a patient-centered approach.

5. Formulate a diagnosis based on analysis of clinical presentations that is rooted in evidence-based clinical guidelines.

6. Adhere to professional attitudes of a Saudi physician including interprofessional, reflective, and patient-centered care.

7. Manage patient with common medical conditions, referring them to the appropriate specialist when necessary.

Teaching and learning underpinnings

Like other courses the Internal Medicine II block is guided by a set of beliefs (theoretical paradigms) that guide the way we do things. For this block, we draw on principles of cognitivism, social constructionism, and behaviorism. Cognitivism is a theory that states that the most complex material, if well-structured and presented can be understood and utilized by the learner. The Spiral MBBS curriculum at the College of Medicine is based on Cognitivism theory. The spiral curriculum is known best for the following principles: 1) The learner revisits topics
and themes at different time intervals; 2) The topic increases in complexity with each visit; 3) There is a relationship between topic and previous learning.

Indeed, in the Internal Medicine II course, students will revisit topics (e.g. Respiratory disorders), however in increasing complexity (e.g. acute respiratory distress Syndrome ARDS), and in a manner, that aligns with previous learning (e.g. Respiratory examination). The benefit of this form of curriculum is to 1) reinforce knowledge with each visitation; 2) Logical progression from simple ideas to complex ideas; and 3) learners are encouraged to link previous learning to current and future learning.

The second theory is social constructionism, a widely-used theory of knowledge that examines the development of co-constructed understandings that come to form the basis for shared assumptions about the world. For this block, students are encouraged to articulate their experiences and beliefs, and to come to a shared meaning with their fellow students and facilitators. In this blueprint, the reader will notice the developed course objectives, intended learning outcomes, and aligned proposed instructional strategy provide an orientation and learning environment that encourages learners to make meaning of their experiences (e.g. Inpatient rounds), all the while, becoming reacquainted with familiar concepts (e.g. breaking bade news).
Finally, Behaviorism, a theory of knowledge that states that behaviors can be reinforced by continual feedback and assessment. Behaviorism is used in the design and development of classroom/session management, mainly through attendance and evaluation forms. Moreover, in the formative and summative assessment approaches.

**Instructional design**

The Internal Medicine II block is designed to have several topics based on the commonality of presentations and their critical nature. Topics may be given in the form of interactive lectures, bedside teachings or simulation sessions. Each topic has designated activity learning outcomes mapped to the appropriate Bloom’s taxonomy level, mode of instruction, needed resources and material, as well as assessment method. The assessment method includes both formative and summative assessment strategies.
Assessment goals and strategy

The goal of assessment is to ascertain whether the students are competent and have met the course learning outcomes, and as a result are able to move to the next block or course. In this block students will be assessed using formative and summative assessment. Formative assessment is used to monitor student’s learning and to provide ongoing feedback, it can be used by facilitators to improve students’ learning.

Formative assessment is not graded, rather it is an opportunity to give students feedback and to prepare them for summative assessment.

Summative assessment is used to evaluate student’s learning at a specific time, usually at the end of the course, and to compare their performance against some standard or benchmark. The following table illustrates how students will be assessed during the block.
<table>
<thead>
<tr>
<th>Stage</th>
<th>Type</th>
<th>Time</th>
<th>Frequency</th>
<th>% of grade</th>
</tr>
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<tbody>
<tr>
<td>Formative</td>
<td>During lectures, simulation sessions, and hospital.</td>
<td>throughout</td>
<td>-</td>
<td>Not graded</td>
</tr>
<tr>
<td>Summative (during block)</td>
<td>Log book</td>
<td></td>
<td></td>
<td>5%</td>
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<tr>
<td></td>
<td>Seminar</td>
<td></td>
<td></td>
<td>5%</td>
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<tr>
<td></td>
<td>Clinical sessions and clerking (History taking and physical examination)</td>
<td></td>
<td></td>
<td>10%</td>
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<tr>
<td>Summative assessment (end of block)</td>
<td>Written examination</td>
<td>End of rotation</td>
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<td></td>
<td>OSCE final</td>
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Before the Exam:

1. A list of students who are allowed to sit for exams will be published before assessment activities (quiz, mid-term, final etc.)

2. Students who absent themselves from 25% of the educational unit’s activities will be barred from the final exams & a list of barred students will be published before the exam.

3. The educational unit’s timetable will include the time & place of all assessment activities which will be conducted during that unit.
The Exam

1. Written exams might contain only best answer MCQs questions.
2. OSCE exam could contain real patients or simulated ones, history taking, examination, case scenario with patient approach, breaking bad news, data interpretation which could include pictures with specific disease, blood film, radiological images such as CXR, GI images or CT brain and others, any instruments such as lines in ICU and others, ABG, electrolyte data, CBC data, CSF data and ECG.
3. It is mandatory to obtain (60%) in the final clinical (OSCE) and written exam to pass the course.

During the Exam:

1. Students are strictly not allowed to bring reading material or any electronic devices like laptop and cell phones to the examination room.
2. Students will not be allowed to enter the exam hall if you show up half an hour after the start of exam and will be considered to have absented themselves from the exam
3. Students will only be allowed to leave the examination hall after half an hour of the exam time passes.
4. If the student has to leave the examination room, his examination material must be submitted to the invigilator.
5. Student should use computer answer sheet to submit question answer, answer on the question sheet will not be consider.
6. If a student is found to be involved in any misconduct like cheating or not following instructions from invigilators during the exam, will be asked to leave the examination room after confiscating his examination material and the material used for cheating (if any).
## Resources and references:

<table>
<thead>
<tr>
<th>Resource</th>
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<tbody>
<tr>
<td>1. CURRENT Medical Diagnosis &amp; Treatment</td>
<td></td>
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<tr>
<td>3. Textbook of Medicine - By Souhami and Moxham, latest edition</td>
<td></td>
</tr>
<tr>
<td>4. Davidson’s Principles and Principles of Medicines - C. R. Edward and Ian, A.D. Bonchir,</td>
<td></td>
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<tr>
<td>5. A guide to physical examination and history taking by Barbara Bates</td>
<td></td>
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<tr>
<td>6. Macleod’s Clinical Examination by John Munro and C. Edwards</td>
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<tr>
<td>a. Tally &amp; O’Connor’s Clinical Examination(Latest Edition)</td>
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<tr>
<td>8. • Harrison’s Principles of Internal Medicine</td>
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<tr>
<th>Journals</th>
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<tr>
<td>1. Harrison’s principles of internal medicine (latest Edition)</td>
<td></td>
</tr>
<tr>
<td>2. Current Medical Diagnosis &amp; Treatment(Latest Edition)</td>
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Support for faculty

Support provided by the Department of Medical Education (DME)
The Department of Medical Education provides consultation and services to faculty members, course planners, and the leadership of the department. Faculty members are encouraged to consult the DME for the following issues:

- Development of educational instrument unique to the course (e.g. generation of CBL cases).
- Providing best medical education practices guidelines (e.g. How to conduct PBL sessions).

and for the following services:

- Training opportunities for faculty as requested by the department.
- Interpretation of medical education research (e.g. course feedback)
- Generation of research ideas in relationship to course and department activities.

Support provided by the assessment unit
The assessment unit provides support to the department and its faculty regarding summative assessment. The unit’s responsibilities include:

- Item development
- Item analysis
- Assessment security measures

Support provided by the Quality and Development Vice-Rectorship
The quality and development vice-rectorship is meant to ensure educational quality measures are met. Quality assurance is a continuous process and it is aligned with
NCAA expectations and requirements. Departments are expected to fill out designated forms, and to provide course specifications and evaluations on an annual basis. The Department commits to this process of quality assurance.

Support for students

Internal Medicine Department support
The Internal Medicine department provides guidance to matriculating students by first introducing them to the course and outlining the course learning outcomes during the first lecture. The department will also provide students with a syllabus that contains the course description, course learning outcomes, topics, resources and references.

The department will also provide support to students with regards to logistical issues and coordination of teaching and learning activities. As well as where to find necessary references. Further, the department will provide ongoing support in terms of the content given. Students are encouraged to contact faculty members when in need.

Academic advising unit
The academic advising unit provides cognitive, academic and professional support to students. Some of the services provided are:

- Registration assistance
- Interpreting degree evaluations (progress toward degree completion)
- Negotiating student/professor conflicts
- Committee on transportation and Financial Aids.
- Academic support for students on probation.
- Transfer student information
- Referrals to support services
- Notifying department or emergency of extended illnesses or emergencies
- Contact underperforming and missing students

Course evaluation & improvement

Like other courses, the Internal Medicine II Course must be continuously evaluated and improved. First, the course should align with developments in the field of Internal Medicine. Second, the course should be continuously developed as the MBBS curriculum is developed and changed. Finally, the course should also be aligned with development within the College of Medicine. The Internal Medicine II course should be evaluated annually, based on student and faculty feedback.
Course activities

The course activities are interactive lectures, seminars, case-based discussions, tutorials, exercises, and seminars.

Interactives lectures:

Lecture 1: Lung cancer

1. Describe the clinical manifestation (symptoms and sign) of lung cancer.
2. Recognize findings of lung cancer in clinical examination.
3. List the risk factors predispose to lung cancer.
5. Interpret the laboratory, imaging, and procedural finding in lung cancer.
6. Use TNM for staging of cancer.
7. Outline the surgical and medical treatment of lung cancer.
8. Memorize the chemotherapy agent used for lung cancer.
9. Recognize the expected complications of lung cancer.

Lecture 2: Breast cancer:

1. Describe the common and uncommon clinical manifestation of breast cancer (symptoms and sign).
2. Describe the salient feature of breast cancer.
3. Recognize and differentiate findings of breast cancer in clinical examination.
4. Explain how to do breast examination in screening situation and high risk patient.
5. List the risk factor of breast cancer
6. Create differential diagnosis of both benign and malignant disorder of breast cancer.
7. Name the prevention strategy of breast cancer include the breast self-examination, genetic screening and mammogram.

8. Define the indication of diagnostic procedure use for diagnosis of breast cancer.

9. Interpret the laboratory, imaging, and procedural finding in lung cancer.

10. Outline the surgical and medical treatment for both local and metastatic breast cancer.

11. Memorize the chemotherapy agent used for breast cancer.

Lecture 3: Thyroid cancer:

1. Describe the clinical manifestation (symptoms and sign) of thyroid cancer.

2. Recognize and differentiate findings of thyroid cancer in clinical examination.

3. List the type of thyroid cancer.

4. List the risk factors predispose to thyroid cancer.

5. Create the differential diagnosis of thyroid cancer.

6. Interpret the laboratory, imaging, and procedural finding in thyroid cancer.

7. List the indication of diagnostic procedure use for thyroid cancer.

8. Recognize the expected complication of thyroid cancer.

9. Recognize the common syndrome associated with thyroid cancer and its genetic screening.

10. Outline the surgical and medical treatment of thyroid cancer.

11. Discuss the use of radioactive iodine and radiation therapy agents in treatment of thyroid cancer.

Lecture 4: Shock

1. Describe and analyze the pathogenesis of hypovolemic shock.

2. Describe and analyze the pathogenesis of cardiogenic shock.
3. Describe and analyze the pathogenesis of distributive shock.
4. Recognize the factors that predispose to sepsis.
5. List the common organism cause sepsis in different and common clinical sitting.
7. List the common cause of cardiogenic shock.
8. List the common cause of distributive shock.

**Lecture 5: Hemodynamic Monitoring**

1. Define the hemodynamic physiology
2. Define the hemodynamic monitoring.
3. Explain the goal of hemodynamic monitoring.
4. List the clinical uses of hemodynamic monitoring.
5. Summarize the indication of hemodynamic monitoring
7. Recognize the instruments used for hemodynamic monitoring.

**Lecture 6: Acute respiratory failure and Acute Respiratory Distress Syndrome (ARDS)**

1. Define acute respiratory failure.
2. Explain pathophysiology of acute respiratory failure.
3. Describe the clinical manifestation (symptoms and sign) of acute respiratory failure.
4. Recognize findings of acute respiratory failure in clinical examination.
5. List the causes of acute respiratory failure
6. List the type of respiratory failure.
7. List the clinical condition that could predispose to acute respiratory failure.
8. Create a differential diagnosis of acute respiratory failure
9. Discuss the laboratory, imaging, and procedural finding of acute respiratory failure.
10. Summarize the indication of ventilation in acute respiratory failure.
11. Recognize the common syndrome associated with thyroid cancer with it is genetic screening

Lecture 7: Localization in neurology

1. Recall the central nervous system structure anatomy to be able to localize the lesion.
2. Interpret patient symptoms and sign to make localization.
3. Analyze the tracts for lesion localization.
4. Compare upper versus lower motor neurons signs.
5. Differentiate between motor and sensory lesion.
6. Differentiate between CNS lesion and peripheral lesion.
7. Recall the clinical condition that could cause the localized CNS lesion.

Lecture 8: Epilepsy

1. Recognize the clinical manifestation of epilepsy.
2. Describe the findings in patient with epilepsy
3. Explain the underlying and potentially reversible cause of epilepsy.
4. List types of epilepsy.
5. Recall precipitating factors of epilepsy.
7. Outline treatment of epilepsy and how to select medication.
8. Interpret the laboratory, imaging, and procedural finding in epilepsy.
9. Name the expected complication of epilepsy.
10. Outline treatment of epilepsy and how to select medication.
Lecture 9: CNS infections (bacterial, viral and tuberculous meningitis, encephalitis)

1. Outline the clinical manifestation and key feature of meningitis and encephalitis.
2. Describe the clinical findings in patient with meningitis and encephalitis.
3. List the organisms that could cause acute meningitis and encephalitis.
4. List the causes of chronic meningitis.
5. Recall the factors that predispose to meningitis and encephalitis.
6. Create a differential diagnosis of meningitis and encephalitis.
7. Create differential diagnosis of meningitis and encephalitis based on CSF result analysis.
8. Interpret the laboratory, imaging findings in meningitis and encephalitis.
9. Explain the use of empiric antibiotic, antiviral and treatment for meningitis depend on demographic factors and how to narrow therapy after CSF and culture result.
10. Recognize the complication of meningitis and encephalitis.
11. Recognize the mortality and morbidity rate of meningitis and encephalitis.

Lecture 10: Approach to a patient with encephalopathy.

1. Define altered mental status or encephalopathy.
2. Recognize the clinical manifestation of altered mental status or encephalopathy.
3. Describe the clinical findings in patient with altered mental status or encephalopathy.
4. Explain how to distinguish delirium, stupor and coma.
5. Outline the factors that predispose to the development of delirium.
6. Outline the etiology of delirium and other cognitive disorder.
7. Create a differential diagnosis of altered mental status or encephalopathy.
8. Interpret the laboratory, imaging, and procedural findings in altered mental status or encephalopathy.
9. Outline emergency treatment of altered mental status or encephalopathy.

Lecture 11: Movements’ disorders: investigation and management

A. Parkinson’s Disease tremor and allied disorders
   1. Explain the pathogenesis of Parkinson disease.
   2. Describe the clinical manifestation and objective finding Parkinson disease including the primary attributes of Parkinsonian tremor and gait.
   3. Recognize the secondary cause of Parkinson disease
   4. Create differential diagnosis of Parkinson disease
   5. List the medication classes, combination therapy and surgical options used in the treatment of Parkinson disease.
   6. Discuss the surgical options used in the treatment of Parkinson disease.

B. Wilson Disease:
   1. Explain the pathogenesis of Wilson’s disease.
   2. Describe the genetic defect in Wilson’s disease.
   3. Outline the characteristic clinical manifestation of and
   4. Summarize the screening method and indication.
   5. Create differential diagnosis of Wilson’s disease
   6. Interpret the laboratory, imaging, and procedural finding in Wilson’s disease.
   7. List the complication of Wilson’s disease

C. Tremors
   1. Define tremor and it is type.
   2. Describe the additional features would you seek to support cerebellar tremor.
   3. Describe the clinical examination the student would perform and why.
4. Outline the investigations would be most helpful and why.
5. Describe treatment options of different type of tremor.

Lecture 12: Approach to patient with spinal cord disorders

A. Spinal Cord Injury
   1. List the important causes of spinal cord injury.
   2. Recognize the clinical manifestation of spinal cord injury.
   3. Recognize the findings of spinal cord injury.
   4. Outline the emergency treatment of acute spinal cord injury.

B. Spinal Cord disorder
   1. List the causes of spinal cord disorders
   2. Describe the course of different spinal cord disorders.
   3. Recognize the clinical manifestation of spinal cord disorder.

C. Spinal Cord Syndrome
   1. Outline spinal cord syndromes.
   2. Describe the clinical manifestations of spinal cord syndromes.
   3. Recognize the findings of spinal syndrome.

CBIL 1: Oncology:

A. Febrile neutropenia
A 54-year-old man presents to the emergency room complaining of 24 hours of fevers with shaking chills. He is currently being treated for acute lymphoblastic leukemia (ALL). His most recent chemotherapy with hyperfractionated CVAD (cyclophosphamide, vincristine, doxorubicin, and dexamethasone) was 7 days ago. He denies any cough or dyspnea, headache, abdominal pain, or diarrhea. He has had no sick contacts or recent travel. On physical examination, he is febrile to 103°F, tachycardic with heart rate 122 bpm, blood pressure 118/65 mm Hg, and respiratory rate 22 breaths per minute. He is ill appearing; his skin is warm and moist but without any rashes. He has no oral lesions, his chest is clear to auscultation, his heart
rhythm is tachycardic but regular with a soft systolic murmur at the left sternal border, and his abdominal examination is benign. The perirectal area is normal, digital rectal examination is deferred, but his stool is negative for occult blood. He has a tunneled vascular catheter at the right internal jugular vein with erythema overlying the subcutaneous tract, but no purulent discharge at the catheter exit site. Laboratory studies reveal a total white blood cell count of 1100 cells/mm3, with a differential of 10% neutrophils, 16% band forms, 70% lymphocytes, and 4% monocytes (absolute neutrophil count 286). Chest radiograph and urinalysis are normal.

**Activity learning outcomes:**

1. Define neutropenia.
2. Define febrile neutropenia.
3. Calculate Absolute neutrophil count.
4. List the possible organism that could cause febrile neutropenia according to patient’s clinical condition.
5. Recognize the findings of source of infection in neutropenia patient.
6. Interpret the laboratory and the imaging findings to confirm the diagnosis febrile neutropenia.
7. Outline the treatment of febrile neutropenia.

**B. DIC**

A 60-year-old white male presented with a 4-day history of bleeding from the gums, diffuse spontaneous ecchymoses, mild fatigue, and bone pain. The patient described a 6-month history of pain localized to his right thigh with extension to the posterior part of his right leg. His past medical history included atrial fibrillation, hypercholesterolemia, and hypertension, all well controlled with medication. He had never smoked and had moderate alcohol consumption until 1 year ago. When he presented at another hospital, he had dry blood in his mouth but no active bleeding. His blood pressure was 138/64, his pulse rate was 57, and his temperature was
37.3°C. There was no peripheral lymphadenopathy. Chest was clear to auscultation and the liver and the spleen were not palpable. Examination of the lower extremities showed confluent ecchymoses involving the left ankle, and the posterior of both thighs. Laboratory evaluation revealed hemoglobin of 13.4 g/dL (normal: 14 to 16 g/dL), platelets of 107 × 103/μL (normal: 150 to 400 × 103/μL), and total leukocytes of 8.1 × 103/mm3 (normal: 4.0 to 11 × 103/mm3). His prothrombin time was 22.8 seconds (normal: 11.5 to 15.5 seconds), and his INR was 1.92 (normal: 1 to 1.25). The activated partial thromboplastin time (aPTT) was 45 seconds (normal: 25.2 to 36 seconds), the serum fibrinogen was <0.30 g/L (normal: 1.3 to 3.5 g/L), and the plasma concentration of d-dimers was >4 μg/mL (normal: ≤0.40 μg/mL). Plasma levels of factors V, VII, XIII, and activated protein C as well as serum creatinine and liver function tests were within normal limits. Examination of a blood smear was consistent with a normochromic, normocytic anemia, with reduced platelets and large forms, and possible blasts with folded nuclei. Shortly after admission, all coagulation parameters worsened (INR=2.92; PT=32 seconds; aPTT=55 seconds) and the ecchymoses increased in number and extent.

**Activity learning outcomes:**

1. Define DIC.
2. List the common cause of DIC.
3. Recognize the objective finding of DIC.
4. Interpret the laboratory to confirm the diagnosis of DIC.
5. Outline the predominant adverse consequences of DIC.
6. Outline treatment of DIC.

**C. Hypercalcemia**

A 63-year-old African American woman is brought to the emergency room for upper arm pain and swelling following a fall at home. The family has noted that for approximately the past 2 months, the patient has become progressively fatigued and absent-minded, and she has developed loss of appetite and weight loss. She has been getting up to urinate several times per night and complains of thirst; however, a test
for diabetes in her doctor’s office was negative. This morning, she lost her balance because she felt “lightheaded” and fell, landing on her left arm. Physical examination is notable for an elderly, thin woman in mild distress as a result of pain. She is afebrile; her blood pressure is 110/70 mm Hg and heart rate 80 bpm. Her thyroid gland is normal to palpation. Her mucus membranes are somewhat dry and sticky. Heart and lung examinations are normal, and carotid auscultation reveals no bruits. Examination of her extremities is significant only for deformity of the left mid-humerus with swelling. The left radial pulse is 2+ and symmetric. The radiologist calls you to confirm the fracture of the mid-left humerus but also states that there is the suggestion of some lytic lesions of the proximal humerus and recommends a skull film. Serum creatinine level is 2.1 mg/dL, with normal electrolyte and glucose concentrations, but serum calcium level is 13 mg/dL and hemoglobin level 9.2 g/dL.

**Activity learning outcomes:**

1. Describe the clinical manifestations (symptoms and sign) of hypercalcemia related to malignancy.
2. Recognize and differentiate objective finding of hypercalcemia related to malignancy in clinical examination.
3. Create differential diagnosis of hypercalcemia related to malignancy.
4. Interpret the laboratory, imaging and procedural finding hypercalcemia related to malignancy.
5. Outline treatment of hypercalcemia related to malignancy.
6. Recognize the outcome and complication of hypercalcemia related to malignancy.

**D. Superior vena cava syndrome**

A 59-year-old man presents to his GP with a 1-week history of progressive facial swelling, swelling of both arms and shortness of breath on climbing a flight of stairs. He has smoked 20 cigarettes per day for 40 years and works as a garage foreman. He
is sent down to A&E following a chest radiograph that shows a widened mediastinum and a right hilar mass. He had a previous chest radiograph 6 months earlier, which was normal apart from some patchy shadowing in the left mid zone, which is no longer present.

**Activity learning outcomes:**

1. Describe the clinical manifestation (symptoms and sign) of Superior vena cava syndrome.
2. recognize and differentiate objective finding of Superior vena cava syndrome in clinical examination.
3. Construct the differential diagnosis of Superior vena cava syndrome.
4. interpret the laboratory, imaging and procedural finding of superior vena cava syndrome.

**CIBL 2: Coronary care unit:**

**I. Arrhythmia and myocardial infarction**

26 years presented to ER had been fit and well until 2 months ago when he had a viral infection. Never really regained fitness afterwards. Had had several courses of antibiotics from family doctor but his symptoms persisted. Frequent nocturnal waking with breathlessness. Became worried when he found he was breathless walking around his flat and he noticed his pulse was very erratic.


with poor function. Mildly impaired right ventricular function. Functional mitral regurgitation. ECG

**Activity learning outcomes:**

1. Outline causes of a wide QRS complex tachycardia.
2. Describe and interpret the ECG finding of Wide complex Tachycardia.
4. Outline management of wide complex tachycardia.
5. Formulate the differential diagnosis of a wide QRS complex tachycardia.
6. List the types of myocardial infarction, affected coronary arteries, investigation and outline management (immediate and definite treatment)

II. 76 years Presented to family doctor for a routine health check.

Past medical history Nil of note.

Examination


U&E: Na 137, K 4.8, urea 5.9, creatinine 107.

Thyroid function: normal. Troponin I: negative.

Chest X-ray: normal heart size, clear lung fields.

Echocardiogram: normal valves. Good left ventricular function (ejection fraction 63 per cent).

**Activity learning outcomes:**

1. Outline Causes of a narrow QRS complex tachycardia.
2. Describe and interpret the ECG finding of narrow Complex tachycardia.
3. Formulate the differential diagnosis of a narrow QRS complex tachycardia.
4. Outline management of narrow complex tachycardia.
5. Outline Causes of a narrow QRS complex tachycardia.
6. Describe and interpret the ECG finding of narrow complex tachycardia.
7. Formulate the differential diagnosis of a narrow QRS complex tachycardia.
8. Outline management of narrow complex tachycardia.

**Malignant hypertension**

A 39-year-old man is brought to the emergency room by ambulance after he was found wandering in the street in a disoriented state. He is confused and agitated, and further history is obtained from his wife. Diagnosed with hypertension and was started on clonidine twice per day. He took the clonidine for 2 weeks, but because the drug made him feel sedated, he was instructed by his physician 5 days ago to stop the clonidine and to come to clinic to discuss the option of using other drugs. On examination, he is afebrile, with heart rate 110 bpm, respiratory rate 26 breaths per minute, oxygen saturation 98%, and blood pressure 215/132 mm Hg, equal in both arms. He is agitated and diaphoretic, and he is looking around the room but does not appear to recognize his wife. His pupils are dilated but reactive, and he has papilledema and scattered retinal hemorrhages. He has no thyromegaly. Heart, lung, and abdominal examinations are normal. His pulses are bounding and equal in his arms and legs. He moves all of his extremities well, his reflexes are brisk and symmetric, and he is slightly tremulous. A non-contrast computed tomography (CT) of the head is read as negative for hemorrhage. Laboratory studies normal CBC and electrolyte. Urinalysis is normal, and a urine drug screen is negative. Lumbar puncture is performed, and the cerebrospinal fluid (CSF) has no cells and normal protein and glucose.

**Activity learning outcomes:**

1. Define malignant hypertension.
2. Describe the mechanism of vascular injury in malignant hypertension.
3. Describe the clinical manifestations (symptoms and sign) of malignant hypertension.
4. recognize findinga of malignant hypertension in clinical examination.
5. Interpret the laboratory, imaging, and procedural findings of malignant hypertension.
7. Recognize goal and prognosis of therapy.
8. List the parenteral drugs for treatment of hypertensive emergencies in adults.

**Aortic dissection**

A 42-year-old man is brought to the emergency room by ambulance after a sudden onset of severe retrosternal chest pain that began an hour ago while he was at home mowing the lawn. He describes the pain as sharp, constant, and unrelated to movement. It was not relieved by three doses of sublingual nitroglycerin administered by the paramedics while en route to the hospital. He has never had symptoms like this before. His only medical history is hypertension, for which he takes enalapril. There is no cardiac disease in his family. He does not smoke, drink alcohol, or use illicit drugs. He is a basketball coach at a local high school, and is usually physically very active. On physical examination, he is a tall man with long arms and legs who appears uncomfortable and diaphoretic; he is lying on the stretcher with his eyes closed. He is afebrile, with a heart rate of 118 bpm, and blood pressure of 156/100 mm Hg in the right arm and 188/94 mm Hg in the left arm. His head and neck examination is unremarkable. His chest is clear to auscultation bilaterally, and incidental note is made of pectus excavatum. His heart rate is tachycardic and regular, with a soft, early diastolic murmur at the right sternal border. His abdominal examination is benign, and neurologic examination is non-focal. His chest X-ray shows a widened mediastinum.

**Activity learning outcomes:**

1. Describe the clinical manifestations (symptoms and sign) of aortic dissection.
2. List the type of pain is usually described during aortic dissection.
3. Recognize the findings of aortic dissection in clinical examination.
4. List the cause of aortic aneurysm.
5. List the causes of hypotension in aortic dissection.
6. Describe the radiographic features of aortic dissection.
7. Outline the risk factors for aortic dissection.
8. Discuss the complications of dissection.

Lecture 14: CNS
a. Multiple Sclerosis (MS)
A 39-year-old woman came to the ER complaining of progressive left-sided weakness for 3 days. A few days prior, she had gradually developed right-sided sensory loss that lasted 48 hours with complete resolution. On further questioning, she stated that she experienced partial left visual loss 10 weeks ago that seemed to have recovered completely over 2 months and noticed double vision on looking to the left. Neurological examination revealed a left afferent pupillary defect, right adduction paresis with left abduction nystagmus, mild left lower facial droop, power 4/5 strength in the left upper and lower extremities, mild right hemisensory loss to pinprick and light touch, and left-sided hypertonia and hyperreflexia with an extensor plantar response.

Activity learning outcomes:
1. Classify multiple sclerosis (MS) amongst neurological diseases.
2. Discuss the meaning of the term multiple in MS and what it may refer to.
3. Describe the clinical manifestations (symptoms and sign) of MS.
4. Recognize the findings of MS in clinical examination.
5. Outline the criteria for diagnosis of MS.
6. Create a differential diagnosis of MS.
7. Discuss the what constitutes an attack and the duration of neurological symptoms as a criteria.
8. Interpret the laboratory, imaging, and procedural finding in MS.

9. Discuss what the patient should avoid to decrease the possibility of new attacks.

10. Outline the treatment of MS as an inpatient and outpatient.

b. Myasthenia gravis
A 42-year-old woman had complained of intermittent double vision, difficulty chewing, and easy fatigability in her arms for a month. She was brought to the ER complaining of severe dyspnea, which she thought was related to a recent respiratory tract infection. On examination, she had a respiratory rate (RR) of 28 per minute and she was unable to complete a short sentence in one breath. There was bilateral fatigable ptosis, bilateral abduction paresis, nasal speech, facial diplegia, and proximal weakness (power 4/5) that worsened with exercise (power 2/5).

Activity learning outcomes:

1. Describe the clinical manifestations (symptoms and sign) of myasthenia gravis and which muscle groups are most likely to be affected.

2. Recognize findings of myasthenia gravis in clinical examination.

3. List the factors that predispose to developing myasthenia gravis.

4. List the disease associated with myasthenia gravis.

5. Create a differential diagnosis of myasthenia gravis.

6. Interpret laboratory, imaging, and procedural finding in myasthenia gravis.

7. Outline treatment of myasthenia gravis including which patient should be referred for thymectomy.

8. Recognize the complications of myasthenia gravis.

9. Discuss the prognosis of myasthenia gravis.

10. List the indications of admission of patient with myasthenia gravis.
Tutorial 1: Oncology

a. Renal Cell Carcinoma

75 year-old male presented with abdominal pain. He had a medical history of hypertension & coronary artery disease and a surgical history including triple bypass, cardiac stent placement, partial colectomy for diverticulitis, and multiple laminectomies. Has weight loss of 10 kg in 2 months with occasional fever

Abdominal examination reveal mass 4*4 cm in the right iliac fossa. Abdominal CT revealed a 7.5 x 8.0 cm mass in the lower pole of the left kidney and a 4.7 x 4.1 cm mass in the mid to upper pole of the right kidney.

Activity learning outcomes:

1. Outline the autosomal dominant disorder associated with renal cell carcinoma.
2. Outline the characteristic clinical manifestation of renal cell carcinoma.
3. Memorize the classical triad associated with renal cell Carcinoma.
4. Name the commonest site of renal cell carcinoma metastasis.
5. Summarize how to stage renal cell carcinoma.
6. Interpret the laboratory, imaging, and procedural finding in renal cell carcinoma.

b. Prostate Carcinoma

A 45-year-old businessman presents with a raised PSA after routine testing as part of his insurance screen. He is fit and well, and has no urinary symptoms.

Activity learning outcomes:

1. Describe the clinical manifestation (symptoms and sign) of prostate cancer.
2. Memorize the demographic and other risk factors that predispose to prostate cancer.
3. Interpret PSA testing and how level correlate with prostate cancer likelihood and disease progress.
4. Recognize and differentiate objective finding of prostate cancer in clinical examination.
5. Create the differential diagnosis of prostate cancer.
6. Memorize the option available for prostate cancer screening.
8. Outline chemotherapy agent used in treatment of prostate carcinoma.

**Tutorial 2: GI malignancy (esophageal, gastric & colorectal cancer)**

- **Esophageal cancer.**
  A man aged 68 presents with continuous and progressive problems with swallowing. He is able to swallow liquids but finds solids more difficult. Weight loss 20 kg in 1 month, feeling fatigue most of the time.

- **Gastric**
  A 60 year old Chinese gentleman and a smoker, came to see his doctor for ‘gastric’ pains associated with food on and off for the past 20 years and loss of weight over the past one year. But he had never seen a doctor. He was well, but thin. Examination of his abdomen revealed a firm lump where his stomach was. His doctor recommended that he undergo urgent Gastroscopy, which revealed that he had a 5 cm gastric ulcer in the lower part of his stomach. He also had Helicobacter pylori infection in his stomach.

- **Colorectal cancer.**
  A 66-year-old woman, a retired nurse, consults her general practitioner (GP) with a 4-month history of tiredness, slight breathlessness on exertion and loss of weight from 71 to 65 kg. Her appetite is unchanged and normal, she has no
nausea or vomiting, but over the last 2 months she has had an altered bowel habit with constipation alternating with her usual and normal pattern. She has 3 episodes of passing blood in her faeces and has had mild intermittent abdominal pain. There is no relevant past or family history, and she is on no medication. She has smoked 20 cigarettes daily for 48 years and drinks 20–28 units of alcohol a week.

**Activity learning outcomes:**

1. Describe the clinical manifestation (symptoms and sign) of esophageal, gastric & colorectal cancer.
2. Describe the demographic and other risk factors that predispose to esophageal, gastric & colorectal cancer.
3. Recognize and differentiate objective finding of esophageal, gastric & colorectal cancer in clinical examination.
5. Describe the recommended screening test of colorectal Cancer.
7. Describe how to prevent esophageal, gastric & colorectal cancer.

**Tutorial 3: Multiple Meyloma**

A 55-year-old male presents to your office with new symptoms of exertional fatigue. He is otherwise well with no significant past medical history. His hemoglobin is found to be low at 10.6g/dl, with an MCV of 92. He has normal serum ferritin, vitamin B12, and folic acid levels. Absolute neutrophil count is 1.3 x 10^3/ul and platelets 117 x 10^9/uL. He has a creatinine of 0.9 mg/dL, calcium of 9.2 mg/dL, and albumin of 3.8 g/dL. A serum protein electrophoresis is performed that demonstrates a monoclonal IgA protein of 1.5 g/dL. A skeletal survey shows occult lytic lesions in the skull and
bilateral humeri, and a bone marrow biopsy shows 30 percent involvement by abnormal appearing plasma cells, confirmed by CD138+ immunohistochemical stain.

**Activity learning outcomes:**

1. Describe Pathogenesis of multiple myeloma.
2. Describe the demographic and other risk factors that predispose to multiple myeloma.
3. Describe the clinical manifestation (symptoms and sign) of multiple myeloma.
4. Recognize the findings of multiple myeloma in clinical examination.
5. Formulate a differential diagnosis for multiple myeloma.
7. Interpret the laboratory, imaging, and procedural finding in multiple myeloma.

**Tutorial 4: ICU/CCU:**

A. Shock (Diagnosis & management)

A 44-year-old man presents with Three days of shaking chills, fever, and productive cough. He was in his usual state of good health until 1 week ago, when he developed mild nasal congestion and achiness. He otherwise felt well until last night, when he became fatigued and feverish, and he developed a cough associated with right-side pleuritic chest pain. His medical history is remarkable only for his 15-pack per year smoking habit. In your office, his vital signs are normal except for a temperature of 102°F. His oxygen saturation on room air is 75 %. He is comfortable, except when he coughs. His physical examination,BP 70/50 mmhg,T=40C,RR=26 breath/mint,HR=150 beat/mint cold extremity with bronchial breath sounds and end- inspiratory crackles in the right lower lung field.
A 70-year-old woman comes to the office after a near-fainting spell she experienced 1 day ago. She was outside playing tennis when she vomited and felt lightheaded. She spent the rest of the day lying down with mild, diffuse, abdominal pain and nausea. She has diarrhea for last 5 days 6 time/day but she did NOT seek any medical advice. Her medical history is significant for hypothyroidism for which she takes levothyroxine. She takes no medications. On examination, her temperature is 37°C, heart rate 102 bpm, blood pressure 80/62 mm Hg, and normal respiratory rate. She does become lightheaded, and her heart rate rises to 125 bpm upon standing with a drop in systolic blood pressure to 70 mm Hg. Rhythm is tachycardic but regular. Dry mucus membrane, decrease skin turgor will capillary refill time more than 15 second, On abdominal examination, she has normal bowel sounds and mild diffuse tenderness without guarding. Her pulses are rapid and thready. She has no peripheral edema. Initial laboratory Studies are significant for Na 121 mEq/L, K 5.8 mEq/L, HCO3 16 mEq/L, glucose 52 mg/dL, and creatinine 1.0 mg/dL.

Mr. CP is a 55 year old man that enters the emergency room complaining of cramping abdominal pain and chest pressure as well as nausea. He is cool and clammy to the touch. He states he cannot remember his phone number and he feels scared about this feeling pain in chest You take his vital signs and determine that his blood pressure is 80/50 and his heart rate is 96, 95% on RA, Afebrile Labs: WBC 8.1, Hgb 12.1, BUN 12, Creat 1.0, Troponin 3.1, BG 121

A 17-year-old boy fell from a horse while riding at about 40 miles an hour approximately 1–2 hours ago. He hit the ground head first with associated neck flexion. He complained of inability to move his arms or legs and some difficulty breathing. On examination, temperature was 37.2°C, BP 75/40 mmHg, HR was 48 per minute with RR at 30 per minute. Neurological examination showed intact mental status and cranial nerve function. Motor examination showed flaccid quadriplegia
apart from power of 1/5 strength in shoulder abduction and elbow flexion bilaterally. Sensory examination revealed a sensory level to pinprick at the level of the clavicles with normal light touch examination. There was generalized areflexia with extensor plantar responses.

**Activity learning outcomes:**

1. Outline the clinical manifestation and key feature of hypovolemic shock.
2. Outline the clinical manifestation and key feature of cardiogenic shock.
3. Outline the clinical manifestation and key feature of distributive shock.
4. Recognize the findings of hypovolemic shock.
5. Recognize the findings of cardiogenic shock.
6. Recognize the findings of distributive shock.
7. List the factors that predispose to higher mortality in sepsis.
8. List the common infection source for G-negative Organism.
11. Create a differential diagnosis of distributive shock.
12. Interpret the laboratory, imaging, and procedural finding in hypovolemic shock.
13. Interpret the laboratory, imaging, and procedural finding in cardiogenic shock.
14. Interpret the laboratory, imaging, and procedural finding in distributive shock.
15. Discuss the empiric treatment of sepsis.
17. Outline treatment of cardiogenic shock and how to select medication.
18. Outline treatment of distributive shock and how to select medication.
19. Discuss the outcomes of hypovolemic shock, including complication and prognosis.
20. Discuss the outcomes of cardiogenic shock, including complication and prognosis.
21. Discuss the outcomes of distributive shock, including complication and prognosis.

**B. Principles of Mechanical ventilation.**

A 63-year-old lawyer complained of increasing fatigue and sleepiness over several months. He became short of breath when walking but had no problem breathing at rest. He did not feel rested when he awoke in the morning and often had morning headaches. When he was five years old, he had polio and was treated with an iron lung. A physical examination showed that his chest wall movement was diminished. He had severe curvature of the spine, and his abdomen did not rise during inspiration, which indicated a weak diaphragm. His pulmonary function (breathing) tests showed a sharply reduced lung volume and an inability to sustain a maximal breathing effort. His blood carbon dioxide was high and his oxygen low. A sleep study showed that his breathing slowed down even more at night, which was associated with a severe decrease in his oxygen level.

**Activity learning outcomes:**

1. List the conditions often requiring mechanical ventilation.
2. Describe the objectives of mechanical ventilation.
3. Recognize the modes of mechanical ventilation
4. Describe the type of non-invasive mechanical ventilation
5. Outline indication of non-invasive mechanical.
6. Outline indication of invasive mechanical ventilation.
7. Outline associated risk of non-invasive mechanical ventilation.
8. Outline associated risk of invasive mechanical ventilation.
10. Outline complications of invasive mechanical ventilation.
11. Describe when to withdraw (invasive and non-invasive) mechanical ventilation.
Tutorial 5: Infections in ICU.

Ventilator associated pneumonia:
76-year-old man who lived in a nursing home, had a history of dementia and chronic obstructive pulmonary disease. This man developed massive epistaxis requiring transfer to the emergency department. In the emergency department, he was treated with 2 units of packed red blood cells. This gentleman was admitted to the intensive care unit and required intubation and mechanical ventilation. He received no initial antibiotic prophylaxis on admission. On day 4 of hospitalization, fever developed up to 38.4°C, hypotension, and a new left-sided infiltrate was identified.

- **UTI in ICU:**

80-year-old women who lived in a nursing home, had a history of diabetes, hypertension, dyslipidemia, presented with deterioration of level of consciousness. This lady was admitted to the intensive care unit and required intubation and mechanical ventilation. Urinary catheter and nasogastric tube was inserted on the time of admission. On day 5 of ICU admission, fever developed up to 40.4°C, hypotension, and WBC increase to 20,000 with neutrophil of 80%. Empiric antibiotic was started and blood culture, urine culture was send. On the same day the when Nurse change the urinary catheter she notice the urine odour was offensive with turbid colour.

- **Line associated infection:**

a 28 year old patient with a who is 3 days post colon surgery. She was started on parental nutrition through central line on day no 10 He spikes a fever and has blood, and developed sever pain on the site of line insertion when the nurse examine the site of central line, found it to be erythematous with tenderness and pus discharge around the site of insertion. Cultures x2 drawn; 1 set is negative, 1 bottle from the second set is positive for staph aureus.

**Activity learning outcomes:**

1. Outline the clinical manifestation and key feature of ventilator associated pneumonia.
2. Outline the clinical manifestation and key feature of UTI in ICU.
3. Outline the clinical manifestation and key feature of line associated infection.
4. Recognize the findings of ventilator associated pneumonia.
5. Recognize the findings of UTI in ICU.
6. Recognize the findings of line associated infection.
7. Create differential diagnosis of fever in critical ill patient who is admitted to ICU.
8. Interpret the laboratory, imaging, and procedural finding in ventilator associated pneumonia, UTI, line associated infection.
9. List the empiric antibiotic treatment of ventilator associated pneumonia, UTI and line related infection.
10. List risk factors of ventilator associated pneumonia, UTI and line associated infection.
11. Describe how to prevent ventilator associated pneumonia, UTI and line related infection.
12. Discuss the outcomes of ventilator associated pneumonia, UTI and line related infection, including complication and prognosis.

**Tutorial 6: Neurology**

A. ischemic stroke and Hemorrhagic Stroke

A 72-year-old man is admitted to the hospital because of acute onset of a right facial droop, right arm weakness, and some difficulty speaking. These symptoms started 6 hours ago while he was sitting at the breakfast table. He had no headache, no diminishment of consciousness, and no abnormal involuntary movements. Two weeks ago, he had a transient painless loss of vision in his left eye, which resolved spontaneously within a few hours. His medical history is significant for long-standing hypertension and a myocardial infarction (MI) 4 years previously, which was treated with percutaneous angioplasty. His medications include a daily aspirin, metoprolol,
and simvastatin. He does not smoke. When you see him in the emergency room, his symptoms have been the same with no improvement.

He is afebrile, heart rate 62 bpm, and blood pressure 135/87 mm Hg. The corner of his mouth droops, with slight flattening of the right nasolabial fold, but he is able to fully elevate his eyebrows.

His strength is 2/5 in his right arm and hand, has carotid bruits, his heart rhythm is irregular with no murmur but with an S4 gallop. The remainder of his physical examination is normal. Laboratory studies, including renal function, liver function, lipid profile, and complete blood count (CBC), all are normal.

A 21-year-old right-handed male, with a past medical history significant for asthma and Attention Deficit Disorder (ADD), treated with methylphenidate, who was found in a gym bathroom with left sided weakness and urinary incontinence shortly after lifting weights. Upon arrival to the emergency department (ED), he was following commands with left hemiparesis. He complained of severe headache. Initial laboratory studies revealed a normal platelet count, coagulation profile, and negative toxicology screen. The patient was examined in the ED prior to intubation. His head of bed was at 30 degrees. Vitals signs were as follows:

Temperature of 37 °C, blood pressure (BP) of 130/79 mmHg, pulse of 63, respiratory rate of 20, and oxygen saturation of 98% on 3 liters/minute nasal cannula. He was diaphoretic. Neurologically, his Glasgow coma scale (GCS) was 15. He opened eyes to voice, he was oriented to person, place and date, and he had a dense left hemiparesis but was able to move his right side against gravity to commands (M6). His speech was fluent.

He had right gaze preference. His pupils were 4 mm, equal in size and equally reactive to light bilaterally. He had a left facial droop. Babinski’s sign was absent. Urine toxicology were all negative. Brain non-contrast CT showed a large right frontal
intraparenchymal lesion with 7-mm midline shift and partial effacement of the basilar
cisterns.

Over a period of hours, while in the NSICU, the patients GCS declined from 15 to 8.
Given his deteriorating neurological status, a parenchymal fiber optic bolt was placed
to measure his ICP. His initial ICP was 30 mmHg (normal < 20 mmHg), for which he
received rapid intravenous boluses of 50 grams of mannitol and 500 mL of 3% saline.
Thereafter, 250 mL of intravenous 3% saline was administered every 6 hours to
maintain a serum sodium range of 145-150 mEq/L. A radial arterial catheter was
placed to maintain a cerebral perfusion pressure (CPP = Mean Arterial Pressure -
Intracranial Pressure) between 60 and 80 mmHg with norepinephrine intravenous
drip titration. Sedation with propofol and fentanyl was no longer held once ICP
monitoring was initiated.

**Activity learning outcomes:**

1. Describe the common and uncommon clinical manifestation of ischemic and
   hemorrhagic stroke (symptoms and sign).
2. Describe the salient feature of ischemic and hemorrhagic stroke.
3. Recognize and differentiate objective finding of ischemic and hemorrhagic
   stroke in clinical examination.
4. List the risk factor for development of ischemic and hemorrhagic stroke.
5. Create differential diagnosis of both ischemic and hemorrhagic stroke.
6. Interpret the laboratory, imaging, and procedural finding. Of ischemic and
   hemorrhagic stroke.
7. Describe the treatment modality of ischemic and hemorrhagic stroke.
8. List the rule of physiotherapy, occupational and speech therapy in management
   of stroke.
9. Describe the prognosis of both ischemic and hemorrhagic stroke.
10. Describe the preventive methods of both ischemic and hemorrhagic stroke.

B. Headache
A 44-year-old woman presents to her general practitioner (GP) complaining of headaches. These headaches have been present in previous years but have now become more intense.

She describes the headaches as severe and present on both sides of her head. They tend to worsen during the course of the day. There is no associated visual disturbance or vomiting. She also complains of loss of appetite and difficulty sleeping, with early morning waking. She has had eczema and irritable bowel syndrome diagnosed in the past but these are not giving her problems at the moment. She is divorced with two children aged 10 and 12 years, whom she looks after. She has a part-time job as an office cleaner. Her mother has recently died of a brain tumour. She smokes about 20 cigarettes per day and drinks 15 units of alcohol per week. She takes regular paracetamol or ibuprofen for her headaches.

**Activity learning outcomes:**

1. Describe the difference between functional and organic headache.
2. Describe the common and uncommon clinical manifestation (symptoms and sign) of functional and organic headache.
3. List the differential diagnosis of functional headache.
4. List the differential diagnosis of non-functional headache.
5. Analyze the characters of headache symptoms and use the presenting sign to be able to differentiate type of headache.
6. Recognize the feature that suggest a serious cause of headache.
7. Describe the characteristic quality of pain in different type of headache.
8. Recognize the objective finding in clinical examination of different types of headache.
10. List the precipitating and reliving factors of different type of headache.
11. Interpret the laboratory, imaging, and procedural finding of different type of headache.
12. Outline treatment modalities of different type of headache.
13. Describe the prognosis of different type of headache.

**C. Facial Pain**

53 y.o. male has since 6 months right facial pain pain is constant, described as severe aching, resistant to analgesics or NSAIDs it is centered on the right upper & lower teeth and irradiates towards the r. ear & nostrum the patient is a heavy smoker diagnosis on referral: “atypical facial pain”.

68 y.o. male has since 1 week pain in the left inferior Mandible light permanent pain with excruciating, unbearable, brief paroxysms irradiating to ipsilateral temple and neck the paroxysms are only alleviated by putting lukewarm water in his mouth no associated symptoms during the last 2 years, he has had similar pains twice for a few days has seen a dentist: “no problem” mandibular X-Rays: slight bone erosion ant. root left inf. premolar I

**Activity learning outcomes:**

1. List common neurological cause of facial pain.
2. Describe the pain character according to the cause of facial pain.
3. Describe the associated symptoms with facial pain to use it to reach diagnosis of facial pain.
4. List the systemic symptoms that is important to reach diagnosis of facial pain.
5. Outline treatment modalities of different type of facial pain.

**Tutorial 7: Approach to a patient with Myopathy**

28-year-old woman complained of slowly progressive, difficulty climbing stairs for about 2 months. Over the last 4 weeks, she had also noticed some difficulty lifting her hands above her head, requiring more time for grooming and feeding. On examination, there was weakness in shoulder abduction, shoulder and elbow flexion, shoulder and elbow extension, and external rotation of the shoulders bilaterally power 3/5. Similar weakness was also noticed in the hip flexors, extensors,
abductors, and adductors bilaterally. Multimodal sensory examination and reflexes were normal.

**Activity learning outcomes:**

1. Define myopathy and how to differentiate it from asthenia, motor impairment due to pain or joint dysfunction, and true weakness.
2. Recognize the classification of myopathies with systemic disorders.
3. Describe the common and uncommon clinical manifestation (symptoms and sign) associated with Myopathy.
4. Recognize the objective finding of Myopathy.
5. List the differential diagnosis of myopathy.
6. Analyze the characters of muscle weakness clinical manifestation and objective finding to be able to diagnose the patient.
7. Evaluate the Distribution of weakness as a guide to localizing the lesion.
8. Interpret the laboratory, imaging, and procedural finding in myopathy.
9. Outline treatment modalities of myopathy according to the underlying cause.

**Tutorial 8: Approach to Patient with Neuropathy:**

Three days ago, a 15-year-old boy complained of progressive numbness and tingling in his feet that was restricted to his legs. He had noticed weakness in his lower extremities that initially affected his feet and progressed proximally over 24 hours. On examination, there was mild bilateral abduction paresis, facial diplegia, quadri-paresis with MRC 4/5 in the upper extremities and 3/5 in the lower extremities, mild sensory loss to vibration, and pinprick in a stocking distribution and areflexia.
A 55-year-old man complained of a 3-week history of low back pain, associated with some low-grade fevers and generalized malaise. Over the last 6 hours, he developed urinary and fecal incontinence, progressive loss of sensation in his perineum and thighs, with some difficulty walking. Clinical examination revealed point tenderness at the T12–L1 spinal level, mild weakness in ankle dorsiflexion and plantarflexion power 4/5, symmetrical saddle anesthesia to pinprick, and absent ankle jerks bilaterally.

**Activity learning outcomes:**

1. Describe how Sensory loss is categorized.
2. Describe the common and uncommon clinical manifestation (symptoms and sign) associated with neuropathy.
3. Describe the cardinal clinical features of Guillain-Barré syndrome.
4. Recognize the objective finding of neuropathy.
5. Recognize the objective finding of Guillain-Barré syndrome.
6. Describe the pattern of neuropathy.
7. Describe the common antecedent illnesses to GBS.
8. Analyze the clinical manifestation and the objective finding to localize the lesion.
10. Interpret the laboratory, imaging, and procedural finding in neuropathy.
11. Interpret the laboratory, imaging, and procedural finding in Guillain-Barré syndrome.
12. Outline treatment modalities of neuropathy according to the underlying cause.
13. List the proper supportive management of Guillain-Barré syndrome.
14. Summarize the course of Guillain-Barré syndrome.
15. Summarize the serious complication of Guillain-Barré syndrome.

**Seminar 1: Intracranial tumors:**

1. List the types of intracranial tumors.
2. Name the type of primary Intracranial tumor.

3. Name the tumor that could metastasis to brain.

4. Describe the clinical manifestation (symptoms and sign) of different type of intracranial tumor.

5. Recognize and differentiate objective finding of intracranial tumor in clinical examination.

6. List the risk factors predispose to intracranial tumor.

7. Create the differential diagnosis of intracranial tumor.

8. Interpret the laboratory, imaging, and procedural finding in intracranial tumor.

9. Use TNM for staging of cancer.

10. Outline the basic treatment of intracranial tumor.

11. Recognize the expect complication of intracranial tumor.

Seminar 2: Toxicology
Toxicology seminar will cover the Poisoning or over dose (Acetaminophen (paracetamol) poisoning in adults, Salicylate(aspirin) poisoning in adults, Acute iron poisoning, Acute opioid intoxication in adults, Ethanol intoxication and Carbon monoxide poisoning).

1. Describe the General approach to drug poisoning in adults.

2. Describe the clinical manifestation (symptoms and sign) poisoning of (Acetaminophen poisoning in adults, Salicylate poisoning in adults, Acute iron poisoning, Acute opioid intoxication in adults, Ethanol intoxication and Carbon monoxide poisoning.


4. Interpret the laboratory, imaging, and procedural finding in poisoning of (Acetaminophen poisoning in adults, Salicylate poisoning in adults, Acute iron poisoning, Acute opioid intoxication in adults, Ethanol intoxication and Carbon monoxide poisoning.
poisoning, Acute opioid intoxication in adults, Ethanol intoxication and Carbon monoxide poisoning.

5. Outline the initial management of the critically ill adult with an unknown overdose.

6. Outline the basic treatment poisoning of (Acetaminophen poisoning in adults, Salicylate poisoning in adults, Acute iron poisoning, Acute opioid intoxication in adults, Ethanol intoxication and Carbon monoxide poisoning.

7. Recognize the expect complication poisoning of (Acetaminophen poisoning in adults, Salicylate poisoning in adults, Acute iron poisoning, Acute opioid intoxication in adults, Ethanol intoxication and Carbon monoxide poisoning

8. Outline the initial management of the critically ill adult with an unknown overdose.


Seminar 3: Approach to a patient with coma

1. Define coma.

2. Describe the difference between coma, stupor and altered level of consciousness

3. List the causes that should be consider in every comatose patient.

4. Recognize the pathogenesis of coma.

5. Recall the clinical manifestation (symptoms and sign) that is important in history which will be taken from patient family, witnesses.

6. List and memorize the common cause of coma.

7. Recognize where is the dysfunction of which brain structure in comatose patient.

8. Describe what is the characteristic motor response in comatose patient.

9. List the difference between decortications and decortications posture.

10. Discuss the importance of posturing in comatose patient.

11. Discuss condition mistaken for coma.

13. Explain how to do bedside test that will help to establish whether coma result from dysfunction of reticular activating system or from bi-hemispheric dysfunction.


15. Interpret the laboratory, imaging, and procedural finding in patient with coma.


Seminar 4: Cranial nerves neuropathy

1. Describe the clinical manifestation (symptoms and sign) 1-12 cranial nerves neuropathy.

2. Recognize and differentiate objective finding of 1-12.

3. Describe the objective finding of cranial nerves neuropathy in clinical examination.

4. List the risk factors predispose to cranial nerves neuropathy

5. Create the differential diagnosis of cranial nerves neuropathy

6. Interpret the laboratory, imaging, and procedural finding in cranial nerves neuropathy.

7. Outline the basic treatment of cranial nerves neuropathy

8. Recognize the expect complication of cranial nerves neuropathy.

9. Recognize the prognosis of cranial nerves neuropathy.
Facility-based clinical sessions 1: Examination of patient with Oncology disease.
1. Demonstrate history taking in oncology disease in sitting of inpatient and outpatient.
2. Interpret symptoms of oncology patient and Construct it into scientific terminology.
3. Recognize and be familiar with definitions of different oncology disease terminology
4. Demonstrate the basic technique for physical examination of different system could be affected by oncology disease.
5. Describe the abnormal physical finding of system affected by oncology disease.
6. Construct differential diagnosis based on history and clinical examination finding.
7. Justify the different diagnosis during bed side teaching based on his knowledge and the patient interview.
8. Formulate plan for investigation and management.
9. Demonstrate Professionalism, which includes demonstration of compassion, service, altruism, and trustworthiness, in all interactions in the educational environment in order to provide the best quality care to patients.

Facility-based clinical sessions 2: Examination of critical ill patient & Examination of patient with acute cardiac condition.
1. Demonstrate the ability to take history of critical ill patient who is conscious.
2. Demonstrate the ability to take history taking of critical ill patient from family members or to collect the data from medical documents in ICU unit.
3. Memorize the definitions of different medical terminology used in intensive care & coronary care unit.
4. Demonstrate basic technique for physical examination of critical ill patient who is conscious, unconscious and sedated.
5. Describe the abnormal physical finding of different system in critical ill patient.
6. Construct differential diagnosis based on history and clinical examination finding.

7. Justify their different diagnosis during bed side teaching based on his knowledge and the patient interview.

8. Formulate a plan for investigation and management.

9. Demonstrate professionalism, which includes demonstration of compassion, service, altruism, and trustworthiness, in all interactions in the educational environment in order to provide the best quality care to patients.

Facility-based clinical sessions 3: examination of patient with neurological disorder
1. Demonstrate history taking of neurology disease in sitting of inpatient and outpatient.

2. Interpret symptoms of neurology disease and construct it into scientific terminology.

3. Recognize and be familiar with definitions of different medical terminology used in neurology disease.

4. Demonstrate the basic technique for central nervous system examination.

5. Describe the abnormal physical finding of central nervous system examination.

6. Construct differential diagnosis based on history and clinical examination finding.

7. Construct differential diagnosis based on history and clinical examination finding.

8. Justify their different diagnosis during bed side teaching based on his knowledge and the patient interview.

9. Formulate plan for investigation and management.

10. Demonstrate Professionalism, which includes demonstration of compassion, service, altruism, and trustworthiness, in all interactions in the educational environment in order to provide the best quality care to patients.
Training 1: Procedures for Oncology
1. Describe and explain how to do the diagnostic tissue biopsy from different site of the body in bed side sitting.

2. Describe how the bone marrow biopsy and aspiration is done.

Training 2: Procedures for ICU/CCU
1. Describe and explain how to do the following procedures
   a) Endotracheal intubation
   b) Tracheostomy
   c) Central line insertion
   d) Arterial line insertion
   e) Arterial blood gas
   f) Chest tube insertion
   g) Pleural tap
   h) Defibrillation
   i) Transcutaneous Cardiac Pacing
   j) Nasogastric tube insertion
   k) Folley’s catheter insertion.

Training 3: Procedures for Neurology
Describe and explain how to do the following procedures
   1. Lumber puncture
   2. Electroencephalography (EEG)
   3. Nerve conduction study (NCS)
   4. Electromyography (EMG)
   5. Muscle biopsy
   6. Evoked potentials (visual, auditory, somatosensory)

Simulation 1: ICU/CCU
Demonstrate and illustrate the following procedure:
1. Central line insertion (Internal jugular, femoral line and subclavian line)
2. Arterial line insertion
3. Arterial blood gas
4. Endotracheal intubation
5. Nasotracheal intubation
6. Insertion of Nasopharyngeal Airway
7. Tracheostomy
8. Chest tube insertion
9. Pleural tap
10. Start initial Ventilator sitting
11. Defibrillation
12. Transcutaneous Cardiac Pacing
13. Nasogastric tube insertion
14. Foley’s catheter insertion

**Simulation 2: Oncology**

Perform the following procedure:

1. Bone marrow biopsy and aspiration is done.

**Simulation 3: Neurology**

Perform the following procedures:

1. Lumber puncture.
2. Electroencephalography (EEG)
3. Nerve conduction study (NCS)
4. Electromyography (EMG)
5. Muscle biopsy.
6. Evoked potentials (visual, auditory, somatosensory)

**Signs and symptoms**
### A. Core presentation

<table>
<thead>
<tr>
<th>ICU &amp; CCU</th>
<th>Approach and situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool and clammy skin</td>
<td>x</td>
</tr>
<tr>
<td>Fever</td>
<td>x</td>
</tr>
<tr>
<td>Loss of consciousness</td>
<td>x</td>
</tr>
<tr>
<td>Vomiting blood</td>
<td>x</td>
</tr>
<tr>
<td>Black discoloration of the stool</td>
<td>x</td>
</tr>
<tr>
<td>Cough</td>
<td>x</td>
</tr>
<tr>
<td>Skin erythema</td>
<td>x</td>
</tr>
<tr>
<td>Shortness of the breath</td>
<td>x</td>
</tr>
<tr>
<td>Itching</td>
<td>x</td>
</tr>
<tr>
<td>Swelling of the lips and tongue</td>
<td>x</td>
</tr>
<tr>
<td>Yellow discharge from the central or peripheral line</td>
<td>x</td>
</tr>
<tr>
<td>Palpitation</td>
<td>x</td>
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<tr>
<td>Rapid and shallow breathing</td>
<td>x</td>
</tr>
<tr>
<td>Wheezing</td>
<td>x</td>
</tr>
<tr>
<td>Tearing chest pain</td>
<td>x</td>
</tr>
<tr>
<td>Blue discoloration of lips and nails</td>
<td>x</td>
</tr>
<tr>
<td>Swelling of the lower limb, face, and sacral area</td>
<td>x</td>
</tr>
<tr>
<td>Nausea and vomiting after medication overdose</td>
<td>x</td>
</tr>
<tr>
<td>Burning micturition</td>
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</tbody>
</table>

### 2. Oncology

<table>
<thead>
<tr>
<th>Oncology</th>
<th>Approach and situation</th>
</tr>
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<tbody>
<tr>
<td>Pallor</td>
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<tr>
<td>Red discoloration of the skin</td>
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<tr>
<td>Easy bruising of the skin</td>
<td>x</td>
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<tr>
<td>Gum bleeding</td>
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<tr>
<td>Red discoloration of the urine</td>
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</tr>
<tr>
<td>Pain less Neck swelling</td>
<td>x</td>
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<tr>
<td>Axillary or neck small lumps</td>
<td>x</td>
</tr>
<tr>
<td>Breast mass</td>
<td>x</td>
</tr>
<tr>
<td>Change in breast colour</td>
<td>x</td>
</tr>
<tr>
<td>Change in breast skin shape</td>
<td>x</td>
</tr>
<tr>
<td>Nipple retraction or blood discharge</td>
<td>x</td>
</tr>
<tr>
<td>Frequency or difficulty to pass urine</td>
<td>x</td>
</tr>
<tr>
<td>Increase abdominal size</td>
<td>x</td>
</tr>
<tr>
<td>Bony Pain</td>
<td>x</td>
</tr>
<tr>
<td>Weight loss</td>
<td>x</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>x</td>
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<tr>
<td>Night Sweating</td>
<td>x</td>
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<tr>
<td>Fatigability</td>
<td>x</td>
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<tr>
<td>Vomiting Blood</td>
<td>x</td>
</tr>
<tr>
<td>Cough</td>
<td>x</td>
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<tr>
<td>Coughing blood</td>
<td>x</td>
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<tr>
<td>Distension of the vessels of the neck and chest</td>
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<tr>
<td>Red discoulation of the face</td>
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<tr>
<td>Polyuria</td>
<td>x</td>
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<tr>
<td>Excessive thirst</td>
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<tr>
<td><strong>3 Neurology</strong></td>
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<tr>
<td>Confusion</td>
<td>x</td>
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<tr>
<td>Loss of smell</td>
<td>x</td>
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<tr>
<td>Decrease visual acuity</td>
<td>x</td>
</tr>
<tr>
<td>Double vision</td>
<td>x</td>
</tr>
<tr>
<td>Dizziness</td>
<td>x</td>
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<tr>
<td>Loss of the face sensation</td>
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<tr>
<td>Weakness of mastication muscles</td>
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<tr>
<td>Change in the face shape (Facial droop)</td>
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<tr>
<td>Decrease hearing (deafness)</td>
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<tr>
<td>Recurrent shocking with liquid or solid food</td>
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<tr>
<td>Reduce strength or weakness of the upper or lower limbs</td>
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<tr>
<td>Flacciosity of upper or lower limb</td>
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<tr>
<td>Abnormal movement of the upper or lower limb</td>
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<tr>
<td>Decrease muscle bulk</td>
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<tr>
<td>Unsteady gait</td>
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<tr>
<td>Difficulty in speaking</td>
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<tr>
<td>Cannot name objects</td>
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<tr>
<td>Severe neck pain and neck muscle spasm</td>
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<tr>
<td>Electrical pain in the upper and lower limb</td>
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<tr>
<td>Loss of sensation of upper and lower limb</td>
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</tr>
<tr>
<td>Numbness over upper and lower limb</td>
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<tr>
<td>Poor memory</td>
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<tr>
<td>Pain over the facial area</td>
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<tr>
<td>Headache</td>
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</table>

**Clinical conditions:**
## B. Core clinical conditions

<table>
<thead>
<tr>
<th>Approach and situation</th>
<th>Must be seen, tackled &amp; documented</th>
<th>Must be seen &amp; documented</th>
<th>Discussed or simulated</th>
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<tbody>
<tr>
<td>Septic shock</td>
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<tr>
<td>Hypovolemic shock</td>
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<tr>
<td>Cardiogenic shock</td>
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<tr>
<td>Neurogenic Shock</td>
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<tr>
<td>Toxicology case</td>
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<tr>
<td>Arrhythmia</td>
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<tr>
<td>Ischemic stroke</td>
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<tr>
<td>Hemorrhagic stroke</td>
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<td>Meningitis</td>
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<tr>
<td>Epilepsy</td>
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<td>Headache</td>
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<tr>
<td>Multiple sclerosis</td>
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<td>Ataxia</td>
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<td>Encephalopathy</td>
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<td>Dementia</td>
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<tr>
<td>Myasthenia graves</td>
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<td>Gaullian bery syndrome</td>
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<td>Temporal arteritis</td>
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<td>Myopathy</td>
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<tr>
<td>Neuropathy</td>
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<tr>
<td>Cranial nerves neuropathy</td>
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<td>Parkinson disease</td>
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<td>Movements' disorders</td>
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<tr>
<td>Lung cancer (any type)</td>
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<tr>
<td>Brain tumor (any type)</td>
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<tr>
<td>Thyroid cancer (any type)</td>
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<tr>
<td>Multiple myloma (any type)</td>
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<tr>
<td>Breast cancer (any type)</td>
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<tr>
<td>Acute spinal cord compression</td>
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<tr>
<td>GI malignancy (esophageal, stomach&amp; colorectal cancer)</td>
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<tr>
<td>Renal cell carcinoma</td>
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<td>Prostate carcinoma</td>
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<td>Febrile neutropenia</td>
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<td>DIC</td>
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<tr>
<td>Hypercalcemia</td>
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### Procedures:

<table>
<thead>
<tr>
<th>Content</th>
<th>Approach and situation</th>
</tr>
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<tbody>
<tr>
<td>C. Procedural skills</td>
<td>Students must be trained on this on real patients or simulators</td>
</tr>
<tr>
<td>• Surgical procedures</td>
<td></td>
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<tr>
<td>• Nursing procedures</td>
<td></td>
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<tr>
<td>• Diagnostic procedures</td>
<td></td>
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<tr>
<td>• Therapeutic procedures</td>
<td></td>
</tr>
<tr>
<td>Central line insertion Internal jugular</td>
<td>x</td>
</tr>
<tr>
<td>Central line insertion Femoral line</td>
<td>x</td>
</tr>
<tr>
<td>Central line insertion Subclavian line insertion</td>
<td>x</td>
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<tr>
<td>Arterial line insertion</td>
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<tr>
<td>Arterial blood gas</td>
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<tr>
<td>Endotracheal intubation</td>
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<tr>
<td>Intubation, Nasotracheal</td>
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</tr>
<tr>
<td>Insertion Nasopharyngeal Airway</td>
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<tr>
<td>Ventilator Management</td>
<td>x</td>
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<tr>
<td>Tracheostomy</td>
<td>x</td>
</tr>
<tr>
<td>Chest tube insertion</td>
<td>x</td>
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<tr>
<td>Pleural tap</td>
<td>x</td>
</tr>
<tr>
<td>Lumbar Puncture</td>
<td>x</td>
</tr>
<tr>
<td>Nasogastric tube insertion</td>
<td>x</td>
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<tr>
<td>Follys catheter insertion</td>
<td>x</td>
</tr>
<tr>
<td>Defibrillation</td>
<td>x</td>
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<tr>
<td>Transcutaneous Cardiac Pacing</td>
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<tr>
<td>Lumber puncture</td>
<td>x</td>
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<tr>
<td>Electroencephalography (EEG)</td>
<td>x</td>
</tr>
<tr>
<td>Nerve conduction study (NCS)</td>
<td>x</td>
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<tr>
<td>Electromyography (EMG)</td>
<td>x</td>
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<tr>
<td>Muscle biopsy</td>
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<tr>
<td>Evoked potentials(visual, auditory,somatosensory )</td>
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<tr>
<td>Bone marrow aspiration</td>
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</tr>
<tr>
<td>Bone marrow biopsy</td>
<td>x</td>
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<tr>
<td>Tissue biopsy</td>
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</table>
تم بحمد الله