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| Modul designation | Endocrine and Metabolism System |
| Semester in which the module is taught | 3rd Semester of Academic/Bachelor Stage |
| Person responsible for the module | <ol style="list-style-type: none"> 1. Siti Annisa Devi Trusda,dr.,M.Kes. 2. Yuli Susanti,dr. MM 3. Eka Hendryanny,dr.,M.Kes 4. Ajeng Kartika Sari,dr.,MKes 5. Listya Hanum,dr.,MKes. |
| Language | Bilingual (Indonesia & English) |
| Relation to curriculum | Compulsory |
| Teaching methods | <ul style="list-style-type: none"> - Lecture - Tutorial - Laboratory activity |
| Workload | <p>Total workload : 7 weeks</p> <p>Contact hours : Lecture 2 hours/week</p> <p style="padding-left: 40px;">Tutorial 3 hours/meeting (3 meeting/week)</p> <p style="padding-left: 40px;">Laboratory activity 3 hours/meeting</p> |
| Credit points | 10 ECTS (7 SKS) |
| Required & recommended prerequisites for joining the module | Learning course at 1 st -2 nd semester |
| Module Objective | <p>At the end of course, students will be able to:</p> <ol style="list-style-type: none"> 1. Explain the meaning of endocrinology, neuroendocrinology, and related organs in accordance with the rules of basic medical science (C4) 2. Describe the embryological process and development of endocrine organs. (C4) 3. Explain the macrostructure of endocrine organs, including topography and vascularisation in general, according to the rules of anatomy (C3) |

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| | <ol style="list-style-type: none">4. Explain the microstructure of endocrine glands according to the rules of histology. (C3)5. Explain the structure of adipose tissue, the substances produced, and the role of these substances in the development of metabolic disorders (C2)6. Explain the general structure of hormones (C2)7. Explain the processes of synthesis, secretion, regulation, transport, and mechanisms of action of hormones according to the rules of biochemistry. (C2)8. Explain the biological effects of hormones at the cellular and systemic levels according to the principles of physiology. (C2)9. Explain the definition, etiology, and classification of endocrine disorders (C3)10. Explain diseases caused by metabolic disorders (C3)11. Analyze and identify clinical manifestations based on the pathogenesis and pathophysiology of endocrine and metabolic disorders. (C4)12. Explain the pathogenesis of excess hormone production in accordance with the rules of basic medical science. (C2)13. Explain the pathogenesis of deficiency in hormone production in accordance with the rules of basic medical science (C2)14. Explain mineral metabolism related to the production and effects of certain hormones (C2)15. Explain the interrelated metabolism that occurs under conditions of excess nutrition (C2)16. Apply biomedical science and clinical medicine in selecting supporting examinations and managing endocrine disorders according to the problem. (C3)17. Determine the differential diagnosis and prognosis of endocrine disorders in accordance with the rules of clinical medicine. (C5)18. Determine acute and chronic complications of endocrine disorders according to the rules of clinical medicine (C5)19. Behave politely, ethically, and professionally in communicating in accordance with the principles of bioethics and humanities. (C6) |
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| Content | Endocrine and Metabolism System discusses basic science, including embryology, anatomy, histology, and physiology of endocrine organs/glands, along with the structure, synthesis, secretion, transport, mechanism of action, and biological effects of hormones. This module will also discuss several endocrine, metabolic, and nutritional system disorders that are most frequently encountered and must be known to general practitioners. |
| Examination forms | Multidisciplinary Examination (MDE), SOOCA, Lab exam |
| Study and examination requirements | System Pass Criteria : Minimum MDE, SOOCA and Lab exam score 55.5 (C) |
| Reading list | <ol style="list-style-type: none"> 1. Gardner DG., Shoback D., Greenspan's Basic Clinical Endocrinology 10th ed. McGraw Hill Education 2. Harper's Illustrated Biochemistry, 30th edition 3. Guyton & Hall, Textbook of Medical Physiology. 11th Edition. Elsevier Saunder 4. Moore KL., Dalley AF., Agur AMR., Clinically Oriented Anatomy. 8th edition. Lippincott Williams & Wilkins, A Wolters Kluwer Business. 5. Mescher AL., Junqueira's Basic Histology Text & Atlas., 13th Edition. Mc Graw Hill-Lange. 6. Wallen K. Lippincott Illustrated Review : Pharmacology. Wolters Kluwer. sixth edition : 447-56 7. Fauci AS., Braunwald E., Kasper DL., Hauser SL., Longo DL., Jameson JL., et al. Harrison's Principle of Internal Medicine. Mc Graw Hill. 19th Edition. 8. Konsensus pengelolaan dan pencegahan DM tipe 2 di Indonesia, Perkeni 9. Robbins & Cotran Pathologic Basis of Disease, 9th ed. |

Rubric of Tutorial Process:

Rubric Tutorial Process

CASE 1/2/3/4/5/6/7

| No. | Students matrix | Students's name | Group | Interpersonal group capability | Problem solving ability | The ability to gather information | Evaluation capability | Average score |
|-----|-----------------|-------------------|-------|--------------------------------|-------------------------|-----------------------------------|-----------------------|---------------|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
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| 10 | | | | | | | | |
| | | Tutor Name | | | | | | |

Total = (Score / 4) x 100

Date:

Criteria

Tutor's name:

- Very good, if scored 80-100
- Good : 70-79
- Acceptable : 60-69
- Poor : < 60

Signature:

RUBRIC OF STUDENTS' ORAL CASE ANALYSIS (SOCA)

3rd SEMESTER ACADEMIC YEAR 2023/2024

MODULE ENDOCRINE AND METABOLIC SYSTEM/ DATE _____

| Assessed components | 0 | 1 | 2 | 3 |
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| Problem identification | Unable to identify the patient's problems only | Able to identify only 1-2 patient problems | Able to identify 3-4 patient problems | Able to identify the following 5-6 patient problems |
| Concept Map | Does not make concept map | Create a concept map but are wrong and/or don't understand | Creating and explaining concept maps correctly but incompletely | Create and explain concept maps completely and correctly |
| Basic science | Unable to explain basic science | Able to explain basic science well on 1 component | Able to explain 2 components of basic science well | Able to explain 3-4 components of basic science well |
| Clinical science | Unable to explain <i>clinical science</i> | Able to explain other than points 3-4 (Pathogenesis and Pathophysiology and diagnostic criteria) or 3-4 other components | Able to explain points 3-4 (Pathogenesis and Pathophysiology and diagnostic criteria) and 1-2 other components of clinical science well | Able to explain points 3-4 (Pathogenesis and Pathophysiology and diagnostic criteria) and 3-4 other components of clinical science well |
| Pathomechanism | Does not make pathomechanism | Making a pathomechanism but wrong and/or not understanding | Creating and explaining pathomechanism correctly but incompletely | Creating and explaining the map correctly and completely |
| Diagnostic Enforcement | Unable to explain the reasoning/basis of the diagnosis | | Able to establish the diagnosis and explain the reasoning/basis of the diagnosis accurately but incompletely | Able to establish the diagnosis and explain the reasoning/basis of the diagnosis completely and accurately |
| Bioethic and Humanity Aspect | Not explaining education to patients | | Explaining education but incomplete | Explain patient education completely and well |
| Islamic Value Integration | Does not make Islamic Value Integration | Mention verses/hadiths but are less related | Mention related verses/hadiths but cannot explain the relationship properly | Mention relevant verses/hadiths and be able to explain the relationship well |
| Perform | Speech is unclear, unsystematic and uncooperative and disrespectful | Speak clearly but not systematically and uncooperatively | Speak clearly, politely, cooperatively, but not systematically | Speak clearly, systematically, cooperatively and politely |

Example of Written Test Exam:

Questions 1-4 below refer to the following information:

A 30-year-old woman visits the health center with complaints of a painless lump in the front of her neck that has been present for 6 months. The patient also complains of palpitations, excessive sweating, and a preference for cool places. She has experienced weight loss despite having a good appetite. On physical examination, the following was found:

General condition: fully conscious

Blood pressure: 160/80 mmHg
Pulse: 116 beats/min
Respiration: 24 breaths/min
Temperature: 37.2°C
Head: exophthalmos
Neck: mass in the anterior neck, moves when swallowing
Chest: tachycardia
Abdomen: increased bowel sounds
Extremities: fine tremor, moist and warm hands
Lab tests: Increased T3 and T4, decreased TSH

1. The patient above is experiencing a hormonal disturbance. What is the structure involved in hormone formation that is disturbed in this patient?
 - a. Polypeptides
 - b. Proteins
 - c. **Amino acid derivatives**
 - d. Steroids
 - e. Fatty acid derivatives
2. What mineral is required for the synthesis of the hormone that is problematic in this patient?
 - a. Calcium
 - b. Phosphorus
 - c. Iron
 - d. **Iodine**
 - e. Zinc
3. In the process of synthesizing the hormone that is increased in this patient, which one works as the receptor for I⁻ from the circulation?
 - a. NaK ATPase
 - b. Na channel
 - c. NaK symporter
 - d. **NIS**
 - e. GLUT
4. In the blood circulation, which protein is the largest transporter for the hormone that is increased in this patient?
 - a. **Globulin**
 - b. Albumin
 - c. Prealbumin
 - d. Lipoprotein
 - e. Fibrinogen