Module for Tutor

The 9th Block

ENDOCRINE, METABOLISM, & NUTRITION

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Medical Faculty
University of Jember
2022

MODULE FOR TUTOR

9th BLOCK

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FACULTY OF MEDICINE
UNIVERSITY OF JEMBER
JEMBER

2022

Preface

This Endocrine, Metabolism, and Nutrition Block is the 9th block of all learning blocks in the Medical Education Curriculum at the Faculty of Medicine, University of Jember. In this block, students learn to prepare themselves as medical students and prospective doctors, and how to build a comprehensive understanding of endocrine, metabolic and nutritional blocks as the basis for medical science to support their future careers.

In this module, there are five scenarios as triggers in tutorial discussions, completed in five weeks and followed by an exam in the sixth week. The implementation of this module uses a PBL strategy with tutorial discussions as the heart of all activities. Other learning activities include lectures, practical work, and basic clinical skills training carried out to support the achievement of learning objectives. After completing this module, students are expected to be ready to undergo the entire series of medical education.

We would like to thank the contributors, colleagues, and all parties involved in the preparation of this module. Hopefully, this module can be implemented to achieve the expected goals. Further criticism and advice to better develop this module would surely be highly appreciated.

Jember, November 2022

Authors

Contents

I. Introduction

a. OVERVIEW

In this block, students will study several endocrine glands which include the pituitary, pancreas, thyroid, parathyroid and adrenals in terms of Anatomy, Histology, Physiology, Pathology, Anatomy and Biochemistry. Besides that, it also discusses the abnormalities that occur due to the dysfunction of hormones produced by these glands. This block also examines nutrition and metabolism with accompanying disorders, such as malnutrition, obesity, and hyperuricosemia that occur in agro-industrial communities.

b. AIM

After following this block, students are expected to be able to understand the scientific basis of endocrine, metabolic and nutritional basics so that they are able to manage cases that occur due to defects in hormones, metabolic and nutritional disorders, namely by taking anamnesis, examinations, and providing the right diagnosis, as well as applying therapy. or adequate management of diseases or disorders that occur in the endocrine system, especially agromedical diseases.

c. INTERRELATION WITH OTHER BLOCKS

In studying endocrine, metabolic and nutritional blocks, students should also pay attention to their relationship, especially with block 8 which studies cardiovascular, block 11 which studies nephrology, block 12 which studies reproduction, and block 18 which studies emergency.

d. LEARNING OUTCOMES

After students are declared to have passed this endocrine, metabolic and nutritional block, students are expected to be able to:

1. Act in accordance with the basic principles of medical ethics and the Indonesian medical code of ethics
2. Be open, and respect differences in perceptions that are influenced by religion, age, gender, ethnicity, disability, and socio-cultural-economic related endocrine, metabolic and nutritional disorders
3. Identifying vulnerable groups and their management steps for endocrine, metabolic and nutritional disorders
4. Recognize complementary and alternative health efforts that are developing in a multicultural society on endocrine, metabolic and nutritional disorders

5. Recognizing the limitations of one's own abilities and referring to those who are more capable of endocrine, metabolic and nutritional disorders
6. Build communication and empathy verbally and nonverbally with polite and understandable language
7. Listening actively to explore health problems of the respiratory organs holistically and comprehensively
8. Utilize communication information technology and health information management skills for lifelong learning and information dissemination
9. Using basic medical, clinical, humanities, community and public health principles in promotion, prevention, curation, medical and social rehabilitation, and to plan strategies for managing endocrine, metabolic, and nutritional disorders
10. Use scientific principles to understand normal mechanisms and changes occurring at the molecular, cellular, organ, system, individual, family and community levels to plan strategies for managing endocrine, metabolic, and nutritional disorders
11. Using clinical data and rational investigations to determine the problem, establish a diagnosis, prognosis of endocrine, metabolic, and nutritional disorders
12. Using scientific reasons in determining the management of respiratory organ health problems, based on the etiology, pathogenesis, and pathophysiology of diseases, endocrine disorders, metabolism, and nutrition
13. Determining disease prognosis through understanding basic medical and clinical principles in endocrine, metabolic, and nutritional disorders
14. Apply the principles of humanities, public health, community medicine and family medicine to determine medicoanthropological factors and priority health problems for individuals, families and communities in endocrine, metabolic, and nutritional disorders
15. Taking into account the ability and willingness of patients (patient preference), medical scientific evidence (medical evidence), and limited resources in health services (health care constraints) to make decisions on endocrine, metabolic, and nutritional disorders
16. Identify the need for behavior change and lifestyle modification for health promotion of various age groups, religion, society, gender, ethnicity, and culture in endocrine, metabolic, and nutritional disorders

17. Planning health education in the context of health promotion at the individual, family, and community levels and identifying efforts to prevent health problems from endocrine, metabolic, and nutritional disorders.
18. Carry out screening activities for latent disease risk factors to prevent and slow the onset of disease, as well as take precautions to slow the progression and onset of complications of endocrine, metabolic, and nutritional disorders.
19. Interpret clinical data and formulate it into a diagnosis, as well as interpret family and community health data in order to identify health problems in endocrine, metabolic, and nutritional disorders.
20. Select and implement the most appropriate management strategy based on the principles of quality control, cost, and evidence-based medicine in endocrine, metabolic, and nutritional disorders.
21. Manage health problems independently and responsibly according to the level of authority by taking into account the principles of patient safety and consulting and/or referring in accordance with medical service standards that apply to endocrine, metabolic, and nutritional disorders.
22. Determine the basis for writing prescribing drugs wisely and rationally, clearly, completely, and legibly, as well as identifying various indicators of treatment success, monitoring developments in management, correcting and changing therapy appropriately in endocrine, metabolic, and nutritional disorders.
23. Using the principles of epidemiology and family doctor services in a comprehensive, holistic and sustainable manner in managing endocrine, metabolic, and nutritional disorders.
24. Planning management in outbreaks and disasters, starting from problem identification to community rehabilitation for endocrine, metabolic, and nutritional disorders.
25. Identifying health promotion, prevention, curation, medical and social rehabilitation efforts for health problems arising from agro-industry activities through molecular, cellular, individual, family, community and community approaches to endocrine, metabolic, and nutritional disorders.
26. Recognize the biological, psychological, sociological, cultural, and economic aspects that arise as the basis for the management of endocrine, metabolic, and nutritional disorders

e. BASIC KNOWLEDGE

To be able to master this block competency, students need the following basic knowledge:

a. Anatomy: The anatomical structure of the endocrine glands
b. Biochemistry: Fundamentals of endocrine, thyroid and lipid metabolism

c. Clinical Pathology: Laboratory examination of thyroid and pancreatic function (DM)
d. Anatomical Pathology: Pathology of the endocrine system
e. Pharmacology: Endocrine system drugs and corticosteroids
f. SMI/Nutrition: Nutrition in diabetes mellitus and obesity, macro and micronutrients
g. Internal Medicine: Diseases related to endocrine gland disorders (pituitary, pancreatic, thyroid, adrenal), diseases related to metabolic disorders (hyperuricosemia, hyperlipidemia, obesity)
h. Pediatrics: Pediatric endocrinology, malnutrition in children
i. Surgical diseases: Surgical therapy in diseases of the endocrine glands
j. Ethics and Humanities: Patient safety, endocrine socio-cultural aspects

f. SUPPORTING PRACTICAL WORKS

To be able to master this block competency, students need a basic knowledge which is also supported by the following practicum:

a. Anatomy: anatomy of endocrine organs
b. Histology: histology of endocrine glands
c. Anatomical Pathology: Pathology of the endocrine system
d. Pharmacology: experimental animal DM
e. Physiology: regulation of blood pressure and blood sugar, basal metabolism
f. Biochemistry: insulin hormone, TG . examination
g. SMI: epidemiology of endocrine diseases

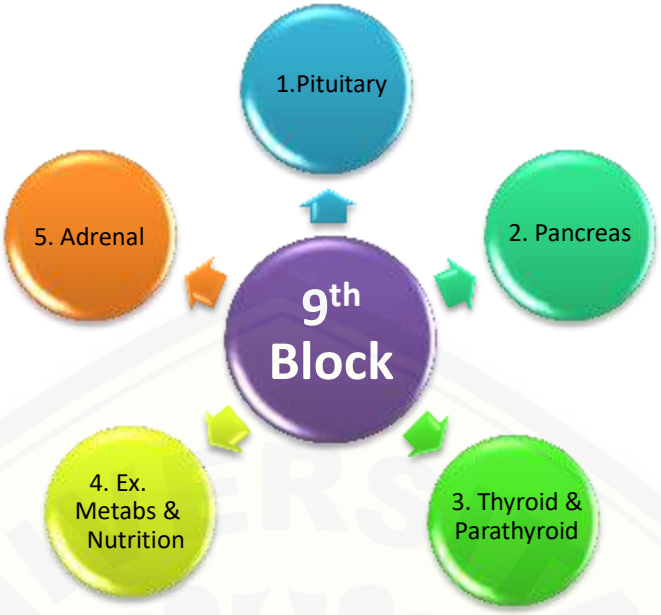
g. CLINICAL SKILLS LABORATORY

a. Diet regulation
b. Insulin administration
c. Laboratory tests
d. Diagnostic procedures
e. Therapeutic procedures
f. Endocrine pharmacotherapy
g. Therapeutic communication
h. Community medicine

h. INVOLVED DEPARTMENTS

In studying this block, it is necessary to involve several departments, namely: Anatomy, Histology, Physiology, Biochemistry, Pharmacology, Anatomical Pathology, Clinical Pathology, Pharmacology, Public Health Department, as well as Surgery, Internal Medicine, Pediatrics, Humanities, Agromedicine Department.

i. TOPIC TREE



j. PREREQUISITE BLOCKS

To participate in this block, students must have taken courses in Blocks 1-8.

k. REFERENCES

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II. Learning Methods

Learning activities are conducted based on a competency-based curriculum known as the SPICES method. Students are expected to be able to learn from problem (problem-based learning PBL). This module contains scenarios with problems as triggers in learning through tutorial discussions. Information is obtained through independent study, lectures, expert consultation, and practical works. The information that has been obtained is discussed in groups according to a schedule with a tutor/facilitator. To train medical skills, students are given training in clinical skills laboratory, field practice, and clinical work practice.

1. **Small Tutorial Group Discussion**

   The tutor-facilitated discussion follows the problem-based learning principle in which students from a big class are divided into small groups ideally consisted of 8-10 students, guided by a tutor for conducting discussions. Students are presented with a case as a trigger for discussion. The discussion for one scenario occurs in two meetings separated by a three- or four-days interval, and follows the seven jumps method as indicated below:

   1. Clarify unfamiliar terms/concepts,
   2. Identify the problem,
   3. Brainstorm to find answers to the problems based on prior knowledge,
   4. Summarize and organize the result of the brainstorming session,
   5. Formulate the learning objectives,
   6. Independent study,
   7. Discuss the findings based on the knowledge gathered.

   Steps 1 to 5 are conducted in the first meeting, step 6 is done independently, and step 7 occurs during the second meeting.

2. **Lectures**

   Lectures improve students understanding by clarifying complicated or specialistic concepts or theories, hence the required presence of an expert. Lectures come in the form of problem-based interactive consultation. They can proceed on a fixed scheduled or requested by students when necessary.

3. **Practical Works**

   Practical works aims to improve or clarify the material understanding and increase the skills of working in the laboratory. Some materials will be easier to understand by conducting laboratory practicums so that concepts or theories become easier.

4. **Basic Clinical Skills Training**

   Basic clinical skills training aims to train students medical skills by using existing learning

models such as mannequins, phantoms, simulated patients, etc. The training materials include physical examinations, emergency assistance, as well as special skills training such as wound care, wound sewing, injection, infusion, catheters, and others.

5. **Expert Consultation**

Session of expert consultations emerge as requested by the students supposed they encounter difficulties in understanding certain concepts or theories during the group discussion or independent learning. Expert consultations are conducted in small groups or as whole-class lecture as necessary.

6. **Independent Learning**

During independent learning, students gather broader and deeper information on a topic related to the learning problems to help comprehend the scenario from a multidisciplinary point of view.

7. **Evaluation**

The block evaluation occurs in the sixth week and includes components such as students' presence during the academic activities, ethics, and completion of assignments. Students should get a score of a minimum of 60 to pass the block examination. The weighing of each component of the grade is as follows:

(1) Exam (75%) (75% theory and 25% practical work)

(2) Tutorial (25%)

The final mark of the block is a 0-100 number with predicates as follow:

NUMBER	GRADE	INDEX	NOTE
80.00 – 100	A	4	Excellent
75.00 – 79.99	AB	3.5	Very good
70.00 – 74.99	B	3	Good
65.00 – 69.99	BC	2.5	Sufficient good
60.00 – 64.99	C	2	Sufficient
55.00 - 59.99	CD	1.5	Insufficient
50.00 – 54.99	D	1	Insufficient
45.00 – 49.99	DE	0.5	Highly insufficient
0 – 44.99	E	0	Highly insufficient

III. Block 9 Activity Schedule

CLASS OF 2021						
Date	**Time**	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Week 1 (14-18 Nov 2022)	05.10-06.50			Lect 3		
	07.00-07.50	Lect. 1	TKD 3 / Pract 1 (P3)	TKD 3 / Pract 3 (P1)	Pract 3 (P3)	FESTIVE FRIDAY
	07.50-08.40					
	08.50-09.40	Tut 1.1				
	09.40-10.30		Pract 1 (P4)	Pract 3 (P2)	Pract 3 (P4)	
	10.40-11.30	Lect 2				
	11.30-12.20					Break
	12.30-13.20	Pract 1 (P1)	Pract 2 (P1)	Pract 2 (P3)	Tut 1.2	Gen. Lect.
	13.20-14.10					
	14.10-15.10				Tut 1.3	Lect 5
	15.10-16.00	Pract 1 (P2)	Pract 2 (P2)	Pract 2 (P4)		
	16.00-17.00				Lect 4	Lect 6
	17.00-17.50					

Date	**Time**	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
week 2 (21-25 Nov 2022)	05.10-06.50			Lect 9		
	07.00-07.50	Lect 7	TKD 3 / Pract 4 (P3)	TKD 3 / Pract 3 (P1)	Pract 6 (P3)	FESTIVE FRIDAY
	07.50-08.40					
	08.50-09.40	Tut 2.1				
	09.40-10.30		Pract 4 (P4)	Pract 6 (P2)	Pract 6 (P4)	
	10.40-11.30	Lect 8				
	11.30-12.20					Break
	12.30-13.20	Pract 4 (P1)	Pract 5 (P1)	Pract 5 (P3)	Tut 2.2	Gen. Lect.
	13.20-14.10					
	14.10-15.10				Tut 2.3	Lect 11
	15.10-16.00	Pract 4 (P2)	Pract 5 (P2)	Pract 5 (P4)		
	16.00-17.00				Lect 10	Lect 12
	17.00-17.50					

Date	**Time**	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
week 3 (28-02 Dec 2022)	05.10-06.50			Lect. 15		
	07.00-07.50	Lect. 13	TKD 3 / Pract. 7 (P3)	TKD 3 / Pract. 9 (P1)	Pract. 9 (P3)	FESTIVE FRIDAY
	07.50-08.40					
	08.50-09.40	Tut 3.1				
	09.40-10.30		Pract. 7 (P4)	Pract. 9 (P2)	Pract. 9 (P4)	
	10.40-11.30	Lect. 14				
	11.30-12.20					Break

Date	Time	Monday	Tuesday	Wednesday	Thursday	Friday
	12.30-13.20	Pract. 7 (P1)	Pract. 8 (P1)	Pract. 8 (P3)	Tut 3.2	Gen. Lect
	13.20-14.10					
	14.10-15.10				Tut 3.3	Lect. 17
	15.10-16.00	Pract. 7 (P2)	Pract. 8 (P2)	Pract. 8 (P4)		
	16.00-17.00				Lect. 16	Lect. 18
	17.00-17.50					

Date	Time	Monday	Tuesday	Wednesday	Thursday	Friday
week 4 (05-09 Dec 2022)	05.10-06.50			Lect. 21		
	07.00-07.50	Lect. 19	TKD 3 / Pract. 10 (P3)	TKD 3 / Pract. 12 (P1)	Pract. 12 (P3)	FESTIVE FRIDAY
	07.50-08.40					
	08.50-09.40	4.1	Pract. 10 (P4)	Pract. 12 (P2)	Pract. 12 (P4)	
	09.40-10.30					
	10.40-11.30	Lect. 20				
	11.30-12.20					Break
	12.30-13.20	Pract. 10 (P1)	Pract 11 (P1)	Pract 11 (P3)	Tut 4.2	Gen. Lect
	13.20-14.10					
	14.10-15.10				Tut 4.3	Lect. 23
	15.10-16.00	Pract. 10 (P2)	Pract 11 (P2)	Pract 11 (P4)		
	16.00-17.00				Lect. 22	Lect. 24
	17.00-17.50					

Date	Time	Monday	Tuesday	Wednesday	Thursday	Friday
week 5 (12-16 Dec 2022)	05.10-06.50			Lect. 27*		
	07.00-07.50	Lect. 25	TKD 3 / Pract. 13 (P3)	TKD* 3 / Pract. 15* (P1)	Pract. 15 (P3)	FESTIVE FRIDAY
	07.50-08.40					
	08.50-09.40	Tut 5.1	Pract. 13 (P4)	Pract. 15 (P2)*	Pract. 15 (P4)	
	09.40-10.30					
	10.40-11.30	Lect. 26				
	11.30-12.20					Break
	12.30-13.20	Pract. 13 (P1)	Pract 14 (P1)	Pract 14 (P3)	Tut 5.2	Gen. Lect.
	13.20-14.10					
	14.10-15.10				Tut 5.3	Lect. 29
	15.10-16.00	Pract. 13 (P2)	Pract 14 (P2)	Pract 14 (P4)		
	16.00-17.00				Lect. 28	Lect. 30
	17.00-17.50					

Description:* TKD 4 exam plan

a. LECTURE TOPICS

1.	LECT. 1	Overview	:	dr. Zahrah Febianti, M. Biomed
2.	LECT. 2	Endocrine Organ Anatomy 1	:	dr. Laksmi Indraswari, Sp.B
3.	LECT. 3	Histology of the Endocrine Glands	:	Dr. dr. Dina Helianti, M.Kes
4.	LECT. 4	Hormone Metabolism Biochemistry	:	Dr. dr. Sugiyanta, M. Ked
5.	LECT. 5	Endocrine Organ Anatomy 2	:	dr. Laksmi Indraswari, Sp.B
6.	LECT. 6	Metabolic Physiology (2)	:	dr. Pipiet Wulandari, Sp.JP, FIHA
7.	LECT. 7	Endocrine Physiology (2)	:	dr. Jauhar Firdaus, M. Biotek
8.	LECT. 8	Pharmacology of Anti-Diabetes Drugs	:	dr. Desie Dwi W., M. Biomed
9.	LECT. 9	Pancreas and Diabetes Mellitus	:	dr. Ali Santoso, Sp.PD
10.	LECT. 10	IDD and the Socio-Cultural Aspects of the Community That Accompany It	:	dr. Ancah Caesarina NM, Ph.D.
11.	LECT. 11	Endocrine Gland Anatomy Pathology	:	dr. Azham P., M.Si., Sp.N
12.	LECT. 12	Insulin Regulation and Management of Diabetic Coma	:	dr. Ali Santoso, Sp.PD
13.	LECT. 13	Endocrine Drug Pharmacology	:	dr. Cholis Abrori, M.Kes., M.Pd.Ked.
14.	LECT. 14	Clinical Pathology Laboratory Examination Thyroid Abnormalities	:	Dr. dr. Rini Riyanti, Sp.PK
15.	LECT. 15	Pediatric Endocrinology - DM Juvenil & Hypothyroid	:	Pediatric Dept./dr. M. Ali Sodikin, M.Kes., Sp.A
16.	LECT. 16	Thyroid Surgery	:	Surgery Dept./dr. Adi N., Sp.B
17.	LECT. 17	Obesity and Hyperuricosemia	:	dr. Ali Santoso, Sp.PD
18.	LECT. 18	Lipid Metabolism	:	Dr. dr. Sugiyanta, M. Ked
19.	LECT. 19	DM Nutrition, Macro and Micronutrients	:	dr. Irawan Fajar K., M.Sc., Sp.PD
20.	LECT. 20	Adrenal and Adrenal Hormone Abnormalities	:	dr. Yuli Hermansyah, Sp.PD
21.	LECT. 21	Malnutrition: Marasmus, Kwashiorkor	:	Pediatric Dept./dr. Gebyar, Sp.A
22.	LECT. 22	Comorbidities in the Field of Agromedicine	:	Dr. dr. Hairrudin, M.Kes.

b. PRACTICAL WORKS TOPICS:

1.	PRACT. 1 (Anatomy of endocrine gland)	: dr. Laksmi Indraswari, Sp.B
2.	PRACT. 2 (Histology of Endocrine Gland)	: Dr. dr. Dina Helianti, M.Kes.
3.	PRACT 3 (Faal: Blood pressure regulation)	: dr. Jauhar Firdaus, M. Biotek.
4.	PRACT. 4 (Biochemistry of Insulin)	: Dr. dr. Hairrudin, M.Kes
5.	PRACT. 5 (Animal Model of Diabetes Mellitus)	: dr. Elly Nurussakinah., M.Si.

6. PRACT. 6 (Pathology of endocrine gland) : dr. Azham P., M.Si., Sp.N
7. PRACT. 7 (Faal: Blood Glucose Regulation) : dr. K. Dian Sofiana, M. Biomed
8. PRACT. 8 (Biochemistry- TG Examination) : dr. Zahrah Febianti, M. Biomed.
9. PRACT 9 (Faal:Basal Metabolism) : dr. Pipiet Wulandari, Sp.JP, FIHA
10. PRACT. 10 (IKM -Epid. Endocrine Disease) : dr. Irawan Fajar K., M.Sc., Sp.PD

c. TUTORS LIST

Group A/Int. Class	: dr. Irawan Fajar K., M. Med. Ed., Sp.PD	(08113777461)
Group B	: dr. Zahrah Febianti, M. Biomed	(085236827288)
Group C	: dr. Sheilla Rachmania, M. Biotek	(081336222909)
Group D	: Dr. dr. Sugiyanta, M. Ked	(081216061009)
Group E	: dr. Komang Yunita W., Sp.S	(081330746655)
Group F	: dr. Ancah Caesarina, Ph.D	(082245628388)
Group G	: dr. Yuli Hermansyah, Sp.PD	(08113504153)
Group H	: dr. Ida Sri Surani, M.Kes.	(081357484568)
Group I	: Dr. dr. Wiwien Sugih Utami, M.Kes	(085232013825)
Group J	: dr. Dita Diana Parti, Sp.OG	(081289583589)
Group K	: dr. Alif Mardijana, Sp.KJ	(08989894400)
Group L	: dr. M. Ali Shodikin, M.Kes., Sp.A	(08155007780)
Group M	: Dr. dr. Enny Suswati, M. Kes	(08123482238)
Group N	: dr. Ali Santosa, Sp.PD	(08123475134)
Group O	: Dr. dr. Dina Helianti, M.Kes	(08113507725)
Group P	: dr. Inke Kusumastuti, M. Biomed., Sp.KJ	(081904243828)

IV. *Scenario*

SCENARIO 1: Post-Traumatic Hormone Disorder

A 32 years-old woman came to the doctor complaining of frequent headaches since she fell from a motorcycle 10 days ago. At that moment, the patient's head hit the road because she was not wearing a helmet. Since then, the patient has complained of double vision. She often feels cold even though the weather is not cold, urinates frequently, and has a decreased appetite since then. Her menstrual cycle also came earlier than the monthly schedule. She is a breastfeeding mother and complains that her milk production has decreased drastically after the accident. From the results of the physical examination were as follows: Axilary temperature 37◦ C, BP 120/80 mmHg, RR 18 x/minute, FBP = 95 mg/dl; 2hPP-BG 118 mg/dl; The doctor did a visual examination and found diplopia (+) on both eyes. The doctor thought about an abnormality around the optic chiasma and that was thought to interfere with the production of several hormones produced by the intracranial endocrine glands. Therefore, the doctor made a referral to an internal medicine specialist for endocrinology and radiology examinations.

a. LEARNING ACHIEVEMENTS

During the first-week, students are expected to be able to:

1. Describe the anatomy of the pituitary gland
2. Describe the histology of the pituitary gland
3. Explain the physiology related to the regulation of hormones produced by the pituitary gland
4. Explain the biochemistry related to the mechanism of action of hormones produced by the pituitary gland (GH, ACTH, MSH, ADH, Oxytocin, Vasopressin)
5. Explain the etiology/risk factors, pathophysiology, clinical manifestations, differential diagnosis, investigations, mechanisms of complications, holistic management, and prognosis, and also determine appropriate referrals for disorders/diseases of the pituitary gland (gigantism, acromegaly, dwarfism, Pituitary myxedema, Panhypopituitarism and diabetes insipidus)

b. SUBJECT

In this scenario students learn:

1. Endocrine
2. Classification and mechanism of action of hormones
3. Anatomy and histology of the pituitary gland
4. Physiology and biochemistry of the pituitary gland hormones (GH, ACTH, MSH, ADH, Oxytocin, Vasopressin)
5. Definition, etiology, pathophysiology, clinical manifestations, differential diagnosis, investigations, mechanism of complications, holistic management, prognosis, and determining referral for pituitary gland disorders (Gigantism, acromegaly, Dwarfism, Pituitary myxedema, panhypopituitarism, and diabetes insipidus)

c. *CLUE* (INSTRUCTION)

1. Double vision
2. Feeling cold even though the weather is hot
3. Frequent urination
4. Menstrual cycle disorders
5. Decreased milk production
6. Optic chiasm

d. MINIMUM PROBLEM

1. Hormone regulation and mechanism of action
2. Diabetes insipidus
3. Pituitary gland disorders

SCENARIO 2: The Unhealed-Wounds

A 55 years-old man came to the doctor's office with a chief complaint of an unpainful and smelled wound on his left sole foot in the last 2 months. The patient has been examined many times by the nurse near his house and has taken various antibiotics, but the wound has not healed yet. The patient also complained that the soles of his feet felt numb, so he had difficulty in wearing sandals. He was getting slimmer and weaker even though he ate a lot and had enough rest. The patient also complained of being thirsty even though he had drunk water a lot. The patient's weight 2 months ago was 95 kg, with a height of 154 cm. During the last 1 week, the patient also complained of blurred vision which did not improve with wearing glasses.

From the physical examination, it was known that the patient's blood pressure was 160/90 mmHg; pulse 80 beats/minute; respiratory rate 20 times/minute; temperature 36.3^{o}C. The patient's current weight is 70 kg. Examination of the wound revealed a diameter of 3 cm, the base of the wound looked pale, pus (+). The laboratory examination showed that his blood sugar level was 430 mg/dL and his urine glucose was +3. Based on the results, the doctor treated the wound and gave him antibiotics, and anti-diabetic drugs. The doctor informed that the patient's complaints were a manifestation of an abnormality in his pancreas gland.

Two days later, the patient was brought back to the emergency room by his family because he looked pale and weak and had cold sweats after taking his anti-diabetic medication.

a. LEARNING ACHIEVEMENTS

This week students are expected to be able to:

1. Describe the anatomy and histology of the pancreatic gland
2. Describe the physiology and biochemistry of the hormones produced by the pancreatic gland (insulin, glucagon, somatostatin, and pancreatic polypeptide (PP))
3. Explain the etiology/risk factors, pathophysiology, clinical manifestations, differential diagnosis, investigations, holistic management, prognosis, and follow-up of type 2 diabetes mellitus
4. Explain the etiology/risk factors, pathophysiology, clinical manifestations, differential diagnosis, investigations, initial management, and prognosis, and determine the appropriate referral in cases of type 1 diabetes mellitus
5. Explain the mechanism of complications of diabetes mellitus and their prevention and management
6. Describe the clinical picture and management of hypoglycemia

7. Describe the pharmacology of oral and injectable anti-diabetic drugs (pharmacokinetics, pharmacodynamics, indications, contraindications, dosage, drug selection, and administration methods based on applicable guidelines)

b. SUBJECT

1. Anatomy, histology, physiology, and biochemistry of the pancreatic gland
2. Diabetes mellitus and its complications
3. Hypoglycemia

c. CLUE (HINT)

1. Wounds don't heal
2. Feet feel thick
3. Weight loss
4. Blurred vision
5. High sugar content

d. MINIMUM PROBLEM

1. High/low blood glucose levels
2. Clinical symptoms of diabetes mellitus
3. Complications of diabetes mellitus
4. DM type 2
5. DM type 1
6. Hypoglycemia
7. Anti-diabetic drugs

SCENARIO 3: THE NECK LUMP

A 45-years-old woman came to the doctor's office due to a lump in her neck that has been felt since 3 months ago. The lump is painless and grows slowly. She also felt sleepiness and more fatigue even though her activities remains as usual. She was getting fatter although his appetite tends to decrease. She still often had constipation for the past 1 month despite drinking a lot of water and always eating vegetables and fruit. Patients easily feel cold even though the weather is normal. From the history taking, it is known that the patient's family died due to suffering from a toxic lump in the neck.

From the physical examination, the patient's blood pressure was 140/90 mmHg, pulse was 55 times/minute, and respiratory rate was 20 times/minute. The patient's hair is thin, dry, and coarse, the nails are brittle, the skin is dry, and the abdomen is distended.

From the examination of the local status, it was found that there were solid, firm lumps on the left and right anterior necks, each approximately 2 cm in diameter, painless, mobile, and well-defined. To confirm the diagnosis, the doctor performs an ECG, certain hormone levels, and radiological examinations. The results of these examinations help the doctor to determine whether the patient will be referred to a surgeon or to an internist.

a. LEARNING ACHIEVEMENTS

During this week students are expected to be able to:

1. Describe the anatomy and histology of the thyroid and parathyroid glands.
2. Describe the anatomical pathology of thyroid and parathyroid gland disorders.
3. Explain the synthesis (iodine metabolism), secretion, regulation, and mechanism of action of hormones produced by the thyroid gland (thyroxine, triiodothyronine, calcitonin) and parathyroid (parathyroid hormone).
4. Explain the etiology / risk factors, pathophysiology, clinical manifestations, determine differential diagnosis, investigations (measurement of hormone levels), complications, holistic management, prognosis, and determine appropriate referrals for thyroid gland disorders (hypothyroidism, hyperthyroidism, and hyperthyroidism emergencies)
5. Explain the etiology / risk factors, pathophysiology, clinical manifestations, differential diagnosis, investigations, mechanisms of complications, holistic management, prognosis, and determine appropriate referrals for parathyroid gland disorders (hypoparathyroidism, hyperparathyroidism)
6. Explain the etiology / risk factors, pathophysiology, clinical manifestations, differential diagnosis, investigations, mechanisms of complications, holistic management, prognosis, and

determine appropriate referrals for goiter and thyroiditis

7. Describe the pharmacology of drugs used in the treatment of disorders of the thyroid and parathyroid glands (pharmacokinetics, pharmacodynamics, indications, contraindications, dosage, drug selection, and route of administration)
8. Indications, contraindications, and complications of surgical therapy in enlarged thyroid gland

b. SUBJECT

In this scenario students learn:

1. Anatomy and histology of the thyroid and parathyroid glands
2. Physiology and biochemistry of the hormones thyroxine, triiodothyronine, calcitonin, and parathyroid hormone
3. Anatomical pathology description of thyroid gland disorders
4. Enlargement of the thyroid gland
5. Iodine Metabolism
6. Measurement of thyroid hormone levels
7. Clinical features of hypo and hyperthyroidism
8. Clinical features of hypo and hyperparathyroidism
9. Goiter
10. Thyroiditis
11. Pharmacological therapy for enlargement of the thyroid gland
12. Thyroid gland enlargement surgery

c. CLUE (HINT)

1. Lump on neck
2. Tired easily
3. Getting fatter
4. Appetite down
5. Bradycardia
6. Died of a poisonous lump
7. Hormone levels
8. Reference

d. MINIMUM PROBLEM

1. Hypothyroid and hyperthyroid
2. Iodine Metabolism
3. Goiter

4. Hypothyroid and hyperthyroid therapy
5. Parathyroid disorders and their clinical symptoms
6. Thyroid hormone check
7. Check blood electrolytes (calcium, phosphate)

SCENARIO 4: FATTY AND SKINNY

Mr. Fredi, 45 years old, came to the doctor's office complaining of neck stiffness since 1 week ago. It is especially felt after he comes home from work. He works as a graphic designer where most of his time was spent sitting in front of the computer. Mr. Fredi likes to eat seafood and Padang cuisine every time he has lunch at the office. Mr. Fredi never exercised because he felt shortness of breath when he did exercise. He is a heavy smoker who can spend 1 pack of cigarettes per day. About 2 weeks ago, Mr. Fredi also went to the doctor due to the swelling and pain in the big toe of his right foot. From anthropometry, it is known that his BMI was 31 kg/m^2 and his waist circumference was 115 cm. On physical examination, his blood pressure was 140/90 mmHg, pulse 80 beats/minute, respiratory rate 20 times/minute, and body temperature 36.5 ^{o}C. Laboratory examination showed uric acid levels of 9.8 mg/dL, total cholesterol 320 mg/dL, HDL 20 mg/dL, LDL 300 mg/dL, triglycerides 350 mg/dL, and random blood glucose 115 mg/dL.

Meanwhile, Mr. Fredi's daughter, Santi (5 years old), has the opposite condition as his father. Santi has a decreased appetite since her mother left her one year ago. She looks very thin with prominent ribs. In addition, almost every month, Santi has an unknown fever. From the physical examination, her weight was 12 kg, and she was 95 cm tall. Santi seems less active than other children at her age. Santi's skin and hair looked thin, dry, and dull. Her conjunctiva was anemic, her lips looked dry and cracked, and her tongue surface was smooth.

a. LEARNING ACHIEVEMENTS

During this week students are expected to be able to:

1. Explain the etiology / risk factors, pathophysiology, clinical manifestations, investigations, diagnosis, differential diagnosis, holistic management, complications, prognosis, and follow-up of malnutrition (marasmus, kwashiorkor).
2. Explain the etiology / risk factors, pathophysiology, clinical manifestations, investigations, diagnosis, differential diagnosis, holistic management, complications, prognosis, and follow-up of vitamin deficiency cases.
3. Explain clinical manifestations, differential diagnosis, investigations, mechanisms of complications, holistic initial management, and prognosis, and determine appropriate referrals for cases of hyperuricemia and gout.
4. Explain the etiology / risk factors, pathophysiology, clinical manifestations, differential diagnosis, investigations, mechanisms of complications, holistic management, and prognosis of hypercholesterolemia.

5. Explain the etiology / risk factors, pathophysiology, clinical manifestations, differential diagnosis, investigations, mechanisms of complications, holistic management and prognosis of hyperlipoproteinemia.
6. Explain the etiology / risk factors, pathophysiology, clinical manifestations, differential diagnosis, investigations, mechanisms of complications, holistic management, prognosis of obesity.
7. Describe risk factors, pathophysiology, clinical signs, and holistic management of the metabolic syndrome.
8. Describe the pharmacology of drugs used in the treatment of metabolic and nutritional disorders

a. SUBJECT

In this scenario students learn:

a. Malnutrition/ PEM
b. Vitamin Deficiency
c. Hyperuricosemia
d. Hypercholesterolemia/hyperlipoproteinemia
e. Obesity
f. Metabolic syndrome

b. *CLUE* (INSTRUCTION)

a. Obesity
b. High uric acid
c. High cholesterol
d. Metabolic syndrome
e. Malnutrition due to appetite disorders
f. Dry, thin, dull skin
g. Dry lips

c. MINIMUM PROBLEM

a. Obesity
b. Metabolic syndrome
c. Gout
d. Malnutrition/poor
e. Vitamin deficiency

SCENARIO 5: THE PLUMPED FACE

A 55-years-old woman went to the doctor because her face and body became fatter over a month ago. Surprisingly, the patient's hands and feet were relatively thin compared to her face and body. The patient has a history of itching that spreads all over her body since 1 year ago and often consumes "allergy" drugs from the drug store. The doctor did a physical examination and found her blood pressure was 150/100 mmHg, pulse was 100 times per minute, respiratory rate 26 times per minute and temperature 36.3^{0}C. There were striae on the abdominal wall and a painless swollen neck.

a. LEARNING ACHIEVEMENTS

During this week students are expected to be able to:

1. Describe the anatomy and histology of the adrenal glands
2. Explain physiology and biochemistryhormone produced by the adrenal glands
3. Explain the definition, etiology, clinical picture, diagnosis, and initial management in cases of adrenal cortex failure
4. Describe the clinical picture of Cushing's disease
5. Describe the clinical features of primary hyperaldosteronism
6. Describe the clinical picture of phaeochromacytoma
7. Explain the clinical picture of precocious puberty
8. Describe the clinical features of testicular femininity syndrome
9. Describe the clinical picture of hypogonadism
10. Describe the clinical features of adrenogenital syndrome
11. Describe the clinical picture of Addison's disease
12. Describe the clinical picture of multiple endocrinological neoplasia (men syndrome)
13. Explain the clinical picture of tumors with ectopic production of hormone
14. Describe the metabolism of corticosteroids and their pharmacology

b. SUBJECT

In this scenario students learn:

1. Anatomy, histology of the adrenal glands
2. Physiology and biochemistry of hormones produced by the adrenal glands
3. Adrenal cortex failure
4. Cushing's disease
5. Primary hyperaldosteronism
6. Phaeochromacytoma

7. Precocious puberty
8. Testicular femininity syndrome
9. Hypogonadism
10. Adrenogenital syndrome
11. Addison's disease
12. Multiple endocrinological neoplasia (men syndrome)
13. Tumor with ectopic production of hormone
14. Corticosteroid metabolism and pharmacology

c. CLUE (HINT)

1. Swelling on the face
2. Consumption of "anti-allergic" drugs
3. striae
4. Swollen back of neck

d. MINIMUM PROBLEM

1. Increase/decrease in glucocorticoid levels
2. Increase/decrease in mineralocorticoid levels
3. Cushing disease e.c. long-term use of steroids
4. Adrenal gland disorders

V. The 2012 Indonesian Doctor's Standard of Competence for The 9th Block

KONSIL KEDOKTERAN INDONESIA

Endocrine, metabolic disorder and nutrition

Endocrinological disorders					
IDDM	1	2	3A	3B	4
NIDDM	1	2	3A	3B	4
Complication of DM (acute and chronic)	1	2	3A	3B	4
Hypoglycemia	1	2	3A	3B	4
Diabetes incipidus	1	2	3A	3B	4
Acromegaly, gigantism	1	2	3A	3B	4
Growth hormone deficiency		2	3A	3B	4
Hyperparathyroidism	1	2	3A	3B	4
Hypoparathyroidism	1	2	3A	3B	4
Hyperthyroidism	1	2	3A	3B	4
Hypothyroidism	1	2	3A	3B	4
Thyroiditis	1	2	3A	3B	4
Cushing's disease	1	2	3A	3B	4
Adrenal cortex failure	1	2	3A	3B	4
Primary hyperaldosteroidism	1	2	3A	3B	4
Phaeochromocytoma	1	2	3A	3B	4
Precocious puberty	1	2	3A	3B	4
Testicular feminization syndrome	1	2	3A	3B	4
Hypogonadism	1	2	3A	3B	4
Adrenogenital syndrome	1	2	3A	3B	4
Addison's disease	1	2	3A	3B	4
Multiple endocrinological neoplasia (men syndrome)	1	2	3A	3B	4
Tumor with ectopic production of hormone	1	2	3A	3B	4
Nutritional deficiency					
Marasmus	1	2	3A	3B	4
Kwashiorkor	1	2	3A	3B	4
Vitamin deficiencies	1	2	3A	3B	4
Error of metabolism					
Hyperlipoproteinemia	1	2	3A	3B	4
Porphyria	1	2	3A	3B	4
Gout	1	2	3A	3B	4
Obesity	1	2	3A	3B	4