



وزارة التعليم العالي والبحث العلمي
الجامعة التقنية الشمالية
المعهد التقني الدور



الحقيبة التعليمية

القسم العلمي: الإسعاف
الفوري

اسم المقرر: الدوائيات

المرحلة / المستوى:
الثاني

الفصل الدراسي: الأول

السنة الدراسية:
2024/2023



اسم المقرر:	الدوايات
القسم:	الإسعاف الفوري
الكلية:المعهد	المعهد التقني الدور
المرحلة / المستوى	الثاني
الفصل الدراسي:	الاول
عدد الساعات الاسبوعية:	نظري 30 عملي 30
عدد الوحدات الدراسية:	4
الرمز:	IMA209
نوع المادة	نظري عملي كلهما ✓
هل يتوفر نظير للمقرر في الاقسام الاخرى	
اسم المقرر النظير	/
القسم	/
رمز المقرر النظير	/
معلومات تدريسي المادة	
اسم مدرس (مدرسي) المقرر:	عبدالله ضياء عبدالله
اللقب العلمي:	لا يوجد
سنة الحصول على اللقب	لا يوجد
الشهادة :	ماجستير
سنة الحصول على الشهادة	2023
عدد سنوات الخبرة (تدريس)	4 سنوات

الوصف العام للمقرر

مادة الدوائيات هي فرع من فروع علم الصيدلة يدرس الأدوية والمخدرات، وتشمل دراسة الخواص الكيميائية والفيزيائية للأدوية، وآليات عملها داخل الجسم البشري، واستخداماتها الطبية، وآثارها الجانبية، وطرق التخزين والتحليل والتصنيع لها.

الاهداف العامة

- التشريح والفلسفة الصيدلانية: دراسة تفصيلية للأنظمة والأعضاء البشرية المختلفة، وكيفية استجابتها للأدوية، بما في ذلك الأنظمة العصبية، الهضمية، القلبية، والهضمية والتنفسية.
- الكيمياء الصيدلانية: تتضمن دراسة الخواص الكيميائية والفيزيائية للأدوية، وكذلك تفاعلاتها وتحليلها.
- الفارماكولوجيا: دراسة تأثيرات الأدوية على الجسم وآليات عملها، بما في ذلك الفارماكوكينيتيكا (الامتصاص، التوزيع، الاستقلاب، والإخراج) والفارماكوديناميكا (الآثار البيولوجية).
- استخدامات الأدوية: دراسة مختلف الاستخدامات الطبية للأدوية، وكذلك استخداماتها في الوقاية والعلاج والتشخيص.
- آثار الجانبية والسمية: تحليل الآثار الجانبية المحتملة للأدوية وكيفية تقليلها أو تجنبها، بالإضافة إلى دراسة السمية الدوائية.
- تصميم الدواء وتطويره: دراسة عمليات تصميم الدواء، وتطويره، واختباره، بما في ذلك الدراسات السريرية.
- السياسات الصيدلانية والقانونية: النظر في السياسات والتشريعات التي تنظم استخدام الأدوية، والأخلاقيات المتعلقة

الأهداف الخاصة

- الأهداف الخاصة لمادة الدوائيات تركز على تطوير مهارات وفهم عميق للطلاب في مجال الأدوية والصيدلة. إليك بعض الأهداف الخاصة التي قد تشملها مادة الدوائيات:
1. فهم تأثيرات الأدوية على الجسم: تحديد آليات عمل الأدوية داخل الجسم وفهم كيفية تأثيرها على الأنظمة الفيزيولوجية المختلفة، مثل الجهاز العصبي، الجهاز الهضمي، والجهاز القلبي-الوعائي.
 2. تفسير الفارماكوكينيتيكا والفارماكوديناميكا: فهم العمليات الحيوية للأدوية بما في ذلك امتصاصها، توزيعها، استقلابها، وإخراجها، وكذلك تفسير آليات تأثيرها الفيزيولوجية والبيولوجية على الجسم.
 3. تقييم الاستخدام السريري للأدوية: دراسة مختلف التطبيقات السريرية للأدوية بما في ذلك استخداماتها العلاجية والوقائية، والتقييم النقدي لفعاليتها وسلامتها في الاستخدام السريري.
 4. تحليل آثار الجانبية والتفاعلات الدوائية: تعريف الطلاب على الآثار الجانبية المحتملة للأدوية وكيفية إدارتها، بالإضافة إلى فهم التفاعلات بين الأدوية المختلفة وكيفية تجنب المضاعفات.
 5. فهم أساسيات تصميم وتطوير الأدوية: تقديم للطلاب أساسيات تصميم الأدوية وتطويرها، بما في ذلك الأبحاث المخبرية والسريرية اللازمة لتقييم فعالية الأدوية الجديدة.

الأهداف السلوكية او نواتج التعلم

- الأهداف الخاصة لمادة الدوائيات تركز على تطوير مهارات وفهم عميق للطلاب في مجال الأدوية والصيدلة. إليك بعض الأهداف الخاصة التي قد تشملها مادة الدوائيات:
- فهم تأثيرات الأدوية على الجسم: تحديد آليات عمل الأدوية داخل الجسم وفهم كيفية تأثيرها على الأنظمة الفيزيولوجية المختلفة، مثل الجهاز العصبي، الجهاز الهضمي، والجهاز القلبي-الوعائي.
- تفسير الفارماكوكينيتيكا والفارماكوديناميكا: فهم العمليات الحيوية للأدوية بما في ذلك امتصاصها، توزيعها، استقلالها، وإخراجها، وكذلك تفسير آليات تأثيرها الفيزيولوجية والبيولوجية على الجسم.
- تقييم الاستخدام السريري للأدوية: دراسة مختلف التطبيقات السريرية للأدوية بما في ذلك استخداماتها العلاجية والوقائية، والتقييم النقدي لفعاليتها وسلامتها في الاستخدام السريري.
- تحليل آثار الجانبية والتفاعلات الدوائية: تعريف الطلاب على الآثار الجانبية المحتملة للأدوية وكيفية إدارتها، بالإضافة إلى فهم التفاعلات بين الأدوية المختلفة وكيفية تجنب المضاعفات.
- فهم أساسيات تصميم وتطوير الأدوية: تقديم للطلاب لأساسيات تصميم الأدوية وتطويرها، بما في ذلك الأبحاث المخبرية والسريرية اللازمة لتقييم فعالية الأدوية الجديدة.

المتطلبات السابقة

- اذكر أي متطلبات سابقة قد يحتاجها الطالب قبل التسجيل في المقرر، مثل مواد دراسية سابقة أو مهارات معينة.

الأهداف السلوكية او مخرجات التعليم الأساسية		
ت	آلية التقييم	
1	توفير المعرفة السليمة لفعاليات العديد من مجموعات الأدوية الهامة المستخدمة في الطب. طرق إعطاء الدواء، تأثير الادوية على الجسم، طرق حقن الدواء، التسمم بالأدوية والمعادن.	تقارير ، واجبات ، امتحانات نظرية شفوية وتحريرية
2	عمل الدواء على عمليات امتصاص الدواء وتوزيعه واستقلابه وإفرازه، وكيف يمكن وصف التغيرات في تركيزات الأدوية في الجسم كمياً (الحركية الدوائية)، إظهار كيفية ارتباط نشاط الدواء بتركيبه الكيميائي وكيف يمكن للتغيرات الهيكلية أن تعدل الفعالية العلاجية أو السمية. التعرف على الآثار الجانبية للدواء والتفاعلات الدوائية.	تقارير ، واجبات ، امتحانات نظرية شفوية وتحريرية
3	تعريف الطلاب بالديناميكية الدوائية والحركية الدوائية والاستخدامات السريرية للمستقبلات والمضادات الكولينية والأدرينالية وكذلك الأدوية التي تؤثر على تخليق النورادرينالين وتخزينه وإطلاقه. وكذلك تأثير الادوية على حواجز المستقبلات العصبية	تقارير ، واجبات ، امتحانات نظرية شفوية وتحريرية

	والعضلية والعقدية.	
تقارير ، واجبات ، امتحانات نظرية شفوية وتحريرية	تزويد الطلاب بالمعلومات المتعلقة بالكيمياء والتأثيرات الدوائية، الحركية الدوائية، والسمية، وآلية العمل والتطبيق العلاجي للفئات الرئيسية من الأدوية بما في ذلك أدوية الجهاز التنفسي، والكلية، والجهاز الهضمي، والأدوية التي تؤثر على الدم.	4

أساليب التدريس (حدد مجموعة متنوعة من أساليب التدريس لتناسب احتياجات الطلاب ومحتوى المقرر)

الاسلوب او الطريقة	مبررات الاختيار
1. المناقشة	تقديم الخلاصة والفهم للموضوع
2. الالقاء	اكتساب الطالب مهارة تفسير النصوص
3. المحاضرة	محدد وواضح ويطبق بسهولة وهو التقليدي
.	

الفصل الاول من المحتوى العلمي

عنوان الفصل				الوقت	
التوزيع الزمني				النظري	العملي
طرق القياس	التقنيات	طريقة التدريس	العنوان الفرعي		
	السبورة / شرائح البور بوينت	المحاضرة	Drugs	2	2
	السبورة / شرائح البور بوينت	المحاضرة	The dose.	2	2
	السبورة / شرائح البور بوينت	المحاضرة	The route of drug administration	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Autonomic nerves system (Cholinergic)	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Autonomic nerves system (Adrenergic)	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Drugs acting on digestive system	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Anticholinergic drugs	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Drugs acting on respiratory system	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Inotropic agents	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Antiarrhythmic, antianginals, Antihypertensive, and antilipimics	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Control bleeding agents, anticoagulants, and diuretics	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Drugs effect on urinary tract	2	2
	السبورة / شرائح البور بوينت	المحاضرة	Histamine and antihistamine (H1 and H2 receptor antagonist)	2	2

المحتوى العلمي

Module unit -1-

Drugs

A: Over View

1. Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn the basic Pharmacological

Concepts that apply to the health field.

It is also intended for students who have little or no Science background

3-Central ideas

3-1: General view about Pharmacology

3-2: Branches of Pharmacology

3-3: Definition of drugs

3-4: Definition of Pharmacology

3-5: Definition of Pharmacodynamic

3-6: Definition of Pharmacokinetic

3-7: Definition of receptor

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more. you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular unit.

*In case you get less than (9) degree, you must return to the same unit in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance objectives

After studying this modular unit, you should be able to:

- Define Pharmacology.
- Define drugs.
- List of the branches of Pharmacology.
- Define the Pharmacodynamics.
- Define the Pharmacokinetics.
- Define the receptor.

C: Pre- test

Put a circle in front of right sentence:

- Pharmacology .is the science which deals with the studying of.
 - Chemical compounds used for prevention ,diagnosis, and treatment

of many diseases.

- Chemicals used for treatment of poisoning.
- Chemicals used for treatment of Angina pectoris.
- Interaction of chemical compounds and living systems.
- Pharmacodynamics is the branch of Pharmacological sciences deals with.
 - Estimation of the dose
 - Drugs exert toxic effect.
 - The study of the drug effect and handling of drugs by the body.
 - The diagnosis of the diseases.
 - D: The modular unit of this package:
- General view about pharmacology:

Definition

Pharmacology:

Science deals with the properties and effects of drugs, in amore general with the interactions of chemical compounds and living systems.

Drugs

Are chemical compounds used for prevention, diagnosis, and treatment of many diseases,

And effective in a small quantities, the action of drugs on living systems are called drug effects e.g. analgesic, analgesic, antipyretic.....etc.

Pharmacodynamics

IS the study of the mechanism of action of drugs. There are three mechanism

- Drug-receptor interaction ---the drug combines with cellular receptors.
- Drug-enzyme interaction---the drug interacts with cellular enzyme systems
- Non specific drug interaction ---the drug alters physical and chemical properties of the outer cell membrane and intracellular structures.
- Pharmacokinetics

The study of drug movement through the body over time, helps predict drug action (therapeutic and adverse drug effects), 4 basic processes a drug undergoes after it enters the body.

- Absorption
- Distribution
- Metabolism
- Excretion

The magnitude of a drugs effect depends on the drug concentration at the site of action.

A drug must move from the administration site to the target tissues in which it will act

By distributing through numerous tissues. Some tissues such as the liver, may biotransform

(metabolize) the drug as it moves through them. After metabolism, the drug is eliminated.

Absorption: the 1st process

D: The modular unit of this package:

- General view about pharmacology:

Definition

Pharmacology:

Science deals with the properties and effects of drugs, in a more general with the interactions of chemical compounds and living systems.

Drugs

Are chemical compounds used for prevention, diagnosis, and treatment of many diseases,

And effective in a small quantities, the action of drugs on living systems are called drug effects e.g. analgesic, analgesic, antipyretic.....etc.

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The magnitude of a drug's effect depends on the drug concentration at the site of action.

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By distributing through numerous tissues. Some tissues such as the liver, may bio transform (metabolize) the drug as it moves through them. After metabolism, the drug is eliminated.

Absorption: the 1st process

Take the drug from the administration site into the blood stream (systemic circulation). I.V. or intra –arterially enters the blood stream directly and therefore does not undergo absorption the entire dose is 100% bioavailable immediately, ready for distribution to its receptor site.

Drugs administered by all other routes [oral (P.O., I.M., rectal (P.R.), subcutaneous(S.C.), sublingual (S.L.), buccal, nasal, intratracheal, intradermal, and topical] must be absorbed before they can become available to target tissue. Special formulations of oral drugs(such as sustained- release tablets) can change the rate at which a drug dissolves in the stomach or small intestine, therefore slow the rate of absorption.

Distribution

Once the blood reaches the blood stream it distributed throughout the body blood flow play a role in drug distribution, determine how quickly a drug reaches its receptor sites highly perfused tissues, heart, liver, kidneys, and brain received most drug before it distributes to other tissues, (skin, fat, muscle, and viscera) is slower

Metabolism

By changing drugs chemically, the body bio transforms (metabolizes) them so it can eliminate them . it does this through the action of enzymes that change a drug's structure

To a more water- soluble form less likely to cross semi permeable membranes and remain in the plasma to undergo filtration by the kidney. The metabolites may or may not be pharmacologically active. liver is the 1st site of drug metabolism, it could be in lungs, kidneys, skin, placenta, blood-brain barrier each of this have enzymes act on several chemical substances

Excretion

Drug removal from the body through an eliminating organ- usually occurs via the kidneys into the urine. Some drugs are excreted hepatically (via the bile into the faces) and a few by minor routes (the lungs, saliva, sweat, and breast milk).

Auto-test

Q1- Define the following

Drugs, pharmacology, pharmacodynamics, pharmacokinetics

Q2- what do you mean by pharmacokinetics? explain briefly with it's steps.

Q3- what do you mean by pharmacodynamics? explain briefly.

E: Post test

Put a circle in front of right sentence:

- Pharmacology is the science which deals with the studying of.
 - Chemicals used for treatment of poisoning.
 - Chemical compounds used for prevention, diagnosis, and treatment of many diseases.
 - Chemicals used for treatment of Angina pectoris.
 - Interaction of chemical compounds and living systems.
- Pharmacodynamics is the branch of Pharmacological sciences deals with.
 - The diagnosis of the diseases.
 - Estimation of the dose
 - Drugs exert toxic effect.
 - The study of the drug effect and handling of drugs by the body.
 - Largest amount that exert therapeutic effect.
- Pharmacokinetics include
 - Fragmentation of the drug.
 - Absorption of the drug.

- Absorption, distribution, metabolism, and excretion.
- Amount of drug given to patients to exert therapeutic effect.

Key of answers

pre -test		Auto -test	Post -test	
<u>Q. No.</u>	<u>Answer No.</u>	Q1: Drugs: Are chemical compounds used for prevention, diagnosis, and treatment of many diseases, And effective in a small quantities, the action of drugs on living systems are called drug effects e.g. analgesic, analgesic, antipyretic.....etc. <u>Pharmacology:</u> Science deals with the properties and effects of drugs, in amore general with the interactions of chemical compounds and living systems. <u>Pharmacodynamics</u> IS the study of the mechanism of action of drugs. There are three mechanism • Drug-receptor interaction ---the drug combines with cellular receptors. • Drug-enzyme interaction---the drug interacts with cellular	<u>Q. No.</u>	<u>Answer No.</u>
1	a		1	b
2	c		2	d
			3	c

enzyme systems

- Non specific drug interaction ---the drug alters physical and chemical properties of the outer cell membrane and intracellular structures.

Pharmacokinetics

The study of drug movement through the body over time, helps predict drug action (therapeutic and adverse drug effects), 4 basic processes a drug undergoes after it enters the body.

- Absorption
- Distribution
- Metabolism
- Excretion

Q2: Pharmacokinetics

The study of drug movement through the body over time, helps predict drug action (therapeutic and adverse drug effects), 4 basic processes a drug undergoes after it enters the body.

- Absorption
- Distribution
- Metabolism
- Excretion

Module Unite -2-

The dose

A: Over View

2. Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn the basic Pharmacological

Concepts that apply to the health field.

It is also intended for students who have little or no Science background

3- Central ideas

3-1: General view about the dose

3-2: How to calculate the toxic dose

3-3: How to calculate the fatal dose

3-4: The factors affecting the dose of the drug

3-5: Estimation of child dose

3-6: The rule in estimation of child dose

3-7: Estimation of child dose depend on the weight of child

3-8: Estimation of child dose depend on the age of child

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more. you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must do it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance objectives

After studying this modular unit, you should be able to:

- Define the dose and effective dose limit.
- Define the effective dose and fatal dose.
- List the important factors that the dose of drug depends.
- Calculate the child dose of the drug depend on
 - Child weight
 - Child age

C: pre -test

Put a circle in front of right sentence:

- Fatal dose is amount of drug (c)
 - Exert therapeutic effect
 - Exert toxic effect
 - Kill the patient
 - Exert headache, nausea, hallucination
- Estimation of child dose according to age of patient by:
 - Young's rule and Dilling's rule (a)
 - Surface area of patient by $(\text{meter})^2$
$$\frac{\text{Wt. Of child (pound)}}{150} \times \text{Adult dose}$$
 - $$\frac{\text{Largest dose} + \text{lowest dose}}{2}$$

- Habitual use is one of (a)
 - Important factor for estimation the anaesthetic dose
 - Oral route for drug administration
 - The factor that kill the patient
 - General, famous, and incidence event
- Sex is the important factor that (b)
 - Affect the fetus haemodynamic
 - Affect the dose of drug
 - Affect the fertility of patient
 - Affect the excretion of drug

D: the modular unit of this package:

- General view about therapeutic dose

Definition

Effective dose

Amount of drug given to patient to exert therapeutic effect

Minimal dose

Smallest amount of drug given to patient to exert therapeutic effect

Maximal dose

Largest amount of drug given to patient to exert therapeutic effect

Toxic dose

Amount of drug more than maximal dose, exert toxic effect

Fatal dose

Amount of drug more than toxic dose cause death of patient (kill the patient)

Important factors that affecting the dose of drug

- Type of the drug
- Route of administration of the drug
- Time of drug taken
- Age
- Sex

- General health of the patient(as fever)
- Habitual use(common use of the drug)

Auto –test

Q1: what are the important factors that affect the dose of patient drugs?

Q2: What do you mean by effective dose, give dose limit for every drug?

Estimation of the dose

According to:

- Age of the patient child age
- Young's rule Child dose=-----X Adult dose

child age+12

- Dilling;s rule

Child age

Child dose=-----X Adult dose

20

- Weight of the patient

Wt. Of child (pound)

Child dose=-----X Adult dose

150

Q3- Calculate Ampicillin dose for a child, his weight (9kg),
10 months, adult dose 250gm.

E: post- test

Put a circle in front of right sentence:

- Fatal dose is amount of drug (d)
 - Exert therapeutic effect
 - Exert toxic effect
 - Exert headache, nausea, hallucination
 - Kill the patient

2- Estimation of child dose according to age of patient by: (c)

- Surface area of patient by_(meter)2

Wt. Of child (pound)

- Child dose = $\frac{\text{Wt. Of child (pound)}}{150} \times \text{Adult dose}$

150

- Young's rule and Dilling's rule

Largest dose + lowest dose

- $$\frac{\text{Largest dose} + \text{lowest dose}}{2}$$

2

3- Habitual use is one of the factors (c)

a- Oral route for drug administration

b- The factor that kills the patient

c- Important factor for estimation of the anaesthetic dose

d- General, famous, and incidence event

4- Sex is the important factor that affects (b)

- Affects the fetus hemodynamic
- Affects the dose of drug
- Affects the fertility of patient

- Affect the excretion of drug

References:-

Laurence- Clinical pharmacology-Oxford on

B.R. Jones

((Pharmacology of student and pupil nurse))

William H. Medical Books limited.

Key of answers

pre -test		Auto -test	Post -test	
Q. No.	Answer No.		Q. No.	Answer No.
1	C	Q1: Type of the drug	1	a
2	a	• Route of administration of the drug	2	d
3	a	• Time of drug taken	3	b
4	b	• Age • Sex • General health of the patient(as fever)	4	c
		Habitual use(common use of the drug)		
		Q2-Effective dose		
		Amount of drug given to patient to exert therapeutic effect		
		Minimal dose		
		Smallest amount of drug given to patient to exert therapeutic effect		
		Maximal dose		
		Largest amount of drug given to patient to exert therapeutic effect		
		Toxic dose		

Amount of drug more than maximal dose, exert toxic effect

Fatal dose

Amount of drug more than toxic dose cause death of patient (kill the patient)

Q3: child age

Child dose=-----X Adult dose

child age+ 12

10

= -----X250

10+ 12

2500

=-----=113.63mg

22

Module Unit -3-

The route of drug administration

A: Over View

1. Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn the basic Pharmacological Concepts that apply to the health field.

It is also intended for students who have little or no Science background

3- Central ideas

3-1: General view about the dosage form

3-2: Definition the dosage form and the route of drug administration.

3-3: The branch of the dosage form.

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more. you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular

Unit.

*In case you get less than (9) degree, you must return to the same unit in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance Objectives

After studying this modular unit, you should be able to:

- Define dosage form.
- Classify the drugs according to the route of administration

C: Pre- test

Put a circle in front of right sentence:

1- Dosage form (b)

a- Is the container that the dose of drug exist in.

b- Is the physical form of medication, such as capsule, tablet, and injection.

c- Is the multi dose where the drug kept in vial

d- Is the single dose of drug kept in ampoule

2- The route of administration is depend on: (b)

a- The patient age and weight

b- B- The dosage form of a given drug

c- The state of central nervous system

d- Patient sickness, sign, and symptom e.g. hyperacidity, fever, and headache

3- Parenteral dosage form is

a- The solution for enema

b- Paste

c- Liniment

d- Solution or suspension for injection

4- Transdermal patches is a dosage form for

a- Ophthalmic use

b- Inhalation use

c- Oral use

d- Topical use

D: The modular unit of this package.

General view about the dosage form

Definition

Dosage form

Is the physical form of a dose of medication, such as capsule, injection , the route of administration is depend on the dosage form of a given drug various

dosage forms may exist for the same compound e.g. metechlopromide can be exist in solution for injection, tablet, syrup....etc.

Inhaled dosage forms

a- Aerosol

b- Gas

c- Inhaler

d- Solution for nebulizer

Ophthalmic dosage forms

- a- Eye drop (solution or suspension)
- b- Ophthalmic gel
- c- Ophthalmic ointment

Oral dosage form

- a- Capsule
- b- Powder
- c- Solution
- d- Suspension
- e- Tablet
- f- Buccal or sublingual tablet
- g- Thin film

Parenteral dosage form

- a- Solution or suspension for injection

Rectal dosage forms

a- Enema

b- Suppository

Topical dosage form

a- Cream: emulsion of oil and water in equal proportions

b- Ointment: combines oil 80% and water 20%

c- Gel

d- Paste

e- Powder

f- Liniment

g- Lotion

h- Transdermal patches

Auto- test

Q1- Define the dosage form, and what is the factor that is depend on?

Q2- How many types of ophthalmic dosage form?

Q3- How many types of oral dosage form?

e: POST- TEST

Put a circle in front of right sentence:

1-Dosage form (a)

- Is the physical form of medication, such as capsule, tablet, and injection.
- Is the container that the dose of drug exist in.
- Is the multi dose where the drug kept in vial
- Is the single dose of drug kept in ampoule

2- The route of administration is depend on: (c)

a-The patient age and weight

b-The state of central nervous system

c- The dosage form of a given drug

- Patient sickness, sign, and symptom e.g. hyperacidity, fever, and headache
- Parientral dosage form is

a-The solution for enema (b)

b- Solution or suspension for injection

C- Paste

d- Liniment

4-Transdermal patches is a dosage form for

- Ophthalmic use
- Inhalation use
- Oral use
- Topical use

Key of answers

pre -test		Auto -test	Post -test	
Q. No.	Answer No.	Q1: Is the physical form of a dose of medication, such as capsule, injection , the route of administration is depend on the dosage form of a given drug various dosage forms may exist for the same compound e.g. metechlopromide can be exist in solution for injection, tablet, syrup....etc.	Q. No.	Answer No.
1	b		1	a
2	b		2	c
3	d		3	b
4	d		4	d

		Q2- a. Eye drop (solution or suspension) b. Ophthalmic gel - b- Ophthalmic ointment Q3- - a- Capsule - b- Powder - c- Solution - d- Suspension - e- Tablet - f- Buccal or sublingual tablet - g- Thin film		
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Module unit – 4 & 5-

Autonomic nerves system

Cholinergic

A: Over View

1- Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn the autonomic nerves system that apply to health field.

It is also intended for students who have little or no science background

3: Central ideas

3-1: General view about the autonomic nerves system.

3-2: The part of autonomic nerves system.

3-3: The type of chemicals secret by the parasympathetic nerve ending
(Acetylcholine).

3-4: The receptor for acetylcholine and the enzyme which inhibit its effect.

3-5: Mechanism of action of parasympathomimetic drug.

3-6: Drugs mimic Acetylcholine.

3-7: The uses of parasympathomimetics

3-8: The effect of increase ACH and parasympathomimetics

3-9: The drug which block the effect of ACH (Atropine, Scopolamine).

3-10: The uses of Atropine and Scopolamine.

3-11: Mechanism of action of Atropine& Scopolamine.

3-12: Side effect of these blockers (Atropine& Scopolamine)

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking

B: performance objectives

After studying this modular unit, you should be able to:

- 1- Define the autonomic nerves system
- 2- Classify the autonomic nerves system.
- 3- List the drug which is parasympathomimetic and its uses.
- 4- List the uses of Ach .
- 5- List the side effect of increase Ach.
- 6- Define the Ach blockers
- 7- List the uses of Ach blockers.
- 8- List the side effect of increase Ach blockers.

C: pre- test

Put a circle in front of right sentence (s):

- 1- The neurotransmitter which is secret by the parasympathetic nerve ending is: (c)
 - a- Epinephrine
 - b-Nor epinephrine

C-Acetylcholine

d-Ephedrine

2- The receptor for Acetylcholine is : (a)

a- Muscarinic receptor

b- Dopaminergic receptor

c- Beta receptor

d- Alpha receptor

3- The drug which mimic ACH is : (d)

a- Ephedrine

b- Atropine

c- Mexiletine

d- Neostigmine

4- The effect of Ach is: (b) +(d)

a- Inhibit the effect of Neostigmine

b- Antagonise the effect of adrenaline

c- Mimic the effect of atropine.

d- Meiosis the pupil of the eye.

D: The modular unit of this package:

- General view about the autonomic nerves system.

Acetyl choline

An acetic acid ester of choline, normally present in the body. it is a neurotransmitter at the neuromuscular junction, in sympathetic and parasympathetic ganglia, and at parasympathetic nerve endings.

Autonomic nervous system: portion of the nervous system that controls the involuntary visceral functions of the body.

Cholinergic: stimulated, activated, or transmitted by acetylcholine or a similar substance

Neurotransmitter: chemical substance secreted by the neuron at the synaps that acts on receptor proteins in the membrane of the adjacent neuron or muscle to stimulate, inhibit, or modify its activity .

Parasympathetic nervous system: cholinergic division of autonomic nervous system.

Parasympathomimetic: agent that produces effects similar to those from stimulation of the parasympathetic nerves; also called cholinergic or muscarinic.

Nerves that innervate skeletal muscle also release Ach when stimulated .

The released Ach binds to specific sites in skeletal muscle, triggering contraction.

Disordered release of acetylcholine from these nerves or impaired binding with skeletal muscle leads to profound muscle weakness(myasthenia gravis).

Cholinesterase inhibitors (e.g. neostigmine) improve muscle performance in patients with this disease.

Cholinergics are classified primarily into the cholinestrse inhibitors and the parasympathomimetic agent.

Parasympathetic nerve ending secrete Ach , which is inhibited by the effect of the enzyme cholinesterase as well as its action, Ach is bound to named muscarinic receptors

Drugs mimic Ach.

1. Edrophonium
2. Neostigmine
3. Physostigmine
4. Ambenonium
5. Bethanechol

Major uses

1. Ambenonium, neostigmine, physostigmine, and pyridostigmine are used to treat symptoms of myasthenia gravis.
2. Edrophonium and neostigmine aid in the differential diagnosis of myasthenia gravis.
3. Neostigmine is used to prevent and treat postoperative urine retention.
4. Neostigmine and pyridostigmine reverse the effect of neuromuscular blocking agents used in surgery.
5. Physostigmine is an antidote in anticholinergic poisoning, such as poisoning caused by tricyclic antidepressants (TCAs).

6. Bethanechol is used to prevent and treat postoperative urine retention, postoperative gastric atony and retention, abdominal distension and megacolon

Mechanism of action

1. Ambenonium, edrophonium, neostigmine, physostigmine and pyridostigmine inhibit the destruction of ACh released from the parasympathetic nerves. ACh accumulates, increased the stimulation of the receptor.
2. Bethanechol directly, binds to muscarinic receptors, mimicking the action of ACh.

All cholinergics except physostigmine are poorly absorbed orally. They are widely distributed to organs innervated by the parasympathetic nervous system, metabolized in the liver, and excreted by the kidneys as water soluble metabolites.

Physostigmine the only cholinergic that effectively crosses the blood–brain barrier is useful for tricyclic antidepressant (TCA) and anticholinergic poisoning.

Adverse reaction

Increase level of ACh directly or indirectly but symptoms of increase cause adverse reaction which is:

1. Sweating
2. GI disturbances (nausea, diarrhea, abdominal cramping).
3. Cardiac problems
4. Bradycardia, hypotension and arrhythmias.

5. Respiratory difficulties due to increase airway secretions.
6. CNS reactions
7. Headache, confusion, nervousness in high dosage seizures
8. Visual reactions (effect on eyes)
9. Problem of accommodation, miosis, excessive lacrimation and diplopia.

Auto- test

Q1- what are the major uses of parasympathomimetics?

Q2- what are the effect of increase level of Ach?

Q3- what are the adverse reaction of Acetylcholine on CNS and eyes?

E: post- test

Put a circle in front of right sentence (s):

1- The neurotransmitter which is secret by the parasympathetic nerve ending is: (c)

a-Epinephrine

b-Nor epinephrine

c-Acetylcholine

d-Ephedrine

2-The receptor for Acetylcholine is : (b)

- a- Dopaminergic receptor
- b- Muscarinic receptor
- c- Beta receptor
- d- Alpha receptor

3-The drug which mimic Ach is : (a)

- a- Neostigmine
- b-Ephedrine
- c- Atropine
- d-Mexiletine

4-The effect of Ach is: (a) +(b)

- a-Miosis the pupil of the eye
- b-Antagonise the effect of adrenaline
- c-Mimic the effect of atropine.
- d-Inhibit the effect of Neostigmine.

Key of answers

pre -test		Auto -test	Post -test	
<u>Q. No.</u>	<u>Answer No.</u>		<u>Q. No.</u>	<u>Answer No.</u>
1	c	Q1: 1-Ambenonium, neostigmine, physostigmine, and pyridostigmine are used to treat symptoms of myasthenia gravis.	1	c
2	a	2-Edrophonium and neostigmine aid differential diagnosis of myasthenia gravis.	2	b
3	d	3-Neostigmine is used to prevent and treat postoperative urine retention.	3	a
4	b+d	4-Neostigmine and pyridostigmine reverse the effect of neuromuscular blocking agents used in surgery.	4	a+b
		5-Physostigmine is antidote in anticholinergic poisoning, such as poisoning caused by tricyclic antidepressants (TCAs).		
		6-Bethanechol is used to prevent and treat postoperative urine retention, postoperative gastric atony and retention, abdominal distension and megacolon		
		Q2: 1- Sweating		
		2-GI disturbances (nausea, diarrhea, abdominal cramping).		
		3-Cardiac problems		
		Bradycardia, hypotension and arrhythmias.		
		4-Respiratory difficulties due to increased airway secretions.		
		5-CNS reactions		
		Headache, confusion, nervousness in high dosage seizures		
		6-Visual reactions (effect on eyes)		
		Problem of accommodation, miosis, excessive lacrimation and diplopia.		
		Q3: 1- CNS reactions		

		Headache, confusion, nervousness in high dosage seizures 2-Visual reactions (effect on eyes) Problem of accommodation, miosis, excessive lacrimation and diplopia.		
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Module unit -6& 7- Autonomic nerves system Adrenergic

A: Over View

1- Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale

This (unit) will aid those who want to learn the Autonomic nerves system (sympathetic part) apply to the health field.

It is also intended for students who have little or no science background.

3- Central ideas

3-1: General view about the sympathetic nerves system.

3-2: The neurotransmitter which act in the sympathetic nerves system .

3-3: The major types of receptors within sympathetic nerves system.

3-4: The drug used as adrenergic stimulant.

3-5: The uses of sympathetic(adrenergic).

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit

in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance Objectives

After studying this modular unit, you should be able to:

1. Define adrenergics (sympathomimetics).
 2. List the effect of adrenergic on receptor sites.
 3. List the major types of receptors within sympathetic nerves system.
 4. List the major part of sympathetic nerves system,(adrenal medulla), how activation adrenal medulla to release epinephrine.
 5. List the drugs used as adrenergic stimulant.
 6. List the uses of adrenergic drug.
-
-

C: Pre- test

Put a circle in front of right sentence:

1- The major types of receptors within sympathetic nerves system are (b).

a- Muscarinic type.

b- Alpha, Beta, and dopaminergic receptors.

C- Opioid receptor

d- cholinestrace.

2- The adrenal medulla is a major part of : (b)

a- parasympathomimetic N.S.

b- Circulatory system.

c- sympathetic nerves system during stress or danger it release epinephrine or adrenaline.

d- Thyroid gland that secret thyroxine.

D: The modular unit of this package:-

1- General view about the drug act as Adrenergics

Also called sympathomimetics produce their effect either by mimicking the actions of dopamine, epinephrine, or norepinephrine at receptor sites in the sympathetic N.S. or by displacing natural norepinephrine from neural storage sites. These drugs do not stimulate all types of adrenergic receptors equally, their effects and indications for use differ. Their action is not organ- or site- specific and may occur at other than the desired sites.

Three major types of receptors within sympathetic N.S.

Alpha, beta, and dopaminergic

The sympathetic nerves system innervates numerous organs (e.g. heart, blood vessels, respiratory tract , liver, urinary bladder, and intestines, regulate of many body functions. When stimulated, sympathetic nerves release norepinephrine except for sympathetic nerves that innervate sweat glands, which release Ach. Norepinephrine combines with receptor sites on the innervated organ to elicit a response. stimulation of alpha receptors causes vasoconstriction and uterine and sphincter contraction.

Beta divided into B1and B2

Beta1 receptors are largely in the heart; when stimulated, they increase the rate and force of contraction and the rate of AV node conduction .

Beta2 receptors are primarily in bronchi, blood vessels, and uterus; stimulation produce bronchodilation, vasodilatation and uterine relaxation.

Dopaminergic receptors in splanchnic blood vessels; stimulation dilates these vessels.

The adrenal medulla is a major part of sympathetic nervous system. During times of danger or acute stress, the sympathetic N.S. can activate the adrenal medulla to release epinephrine into the systemic circulation.

Epinephrine activates alpha and beta receptor, producing physiologic and metabolic effects that prepare the person to cope with the stress(as in the fight- or-flight response).

Drug used as adrenergic stimulant

Albuterol

Adrenaline and noradrenaline

Ephedrine

Phenylephrine

Pseudoephedrine

Uses of adrenergic drug

Raise blood pressure and cardiac output.

Relieve bronchoconstriction.

Treat heart block and certain arrhythmias and to restore cardiac rhythm in cardiac arrest.

Epinephrine and phenylephrine are used to treat anaphylaxis and other allergic reactions.

Pseudoephedrine are nasal decongestants.

Phenylpropranolamine is used in weight- control aid by increase the release of glucose from the liver, increase the heart rate and ventricular contractility.

Auto- test

Q1- what are the uses of adrenergic drug?

Q2- what are the drugs acting as sympathomimetic? List four only.

E : Post- test

_Put a circle in front of right sentence:

1-The major types of receptors within sympathetic nerves system is: (c)

- a. Muscarinic type.
- b. Opioid receptor
- c. Alpha, Bete, and dopaminergic receptors.
- d. cholinestrase.

2- The adrenal medulla is a major part of:(a)

- a. Sympathetic N.S. during stress or danger it release epinephrine or adrenaline.
- b. Parasympathetic N.S.
- c. Circulatory system.
- d. Thyroid gland that secret thyroxine.

Key of answers

pre -test		Auto -test	Post -test	
<u>Q.</u> <u>No.</u>	<u>Answer</u> <u>No.</u>	Q1: • Raise blood pressure and cardiac output. • Relieve bronchoconstriction. • Treat heart block and certain arrhythmias and to restore cardiac rhythm in cardiac arrest. • Epinephrine and phenylephrine are used to treat anaphylaxis and other allergic reactions. • Pseudoephedrine are nasal decongestants. • Phenylpropranolamine is used in weight- control aid by increase the release of glucose from the liver, increase the heart rate and ventricular contractility. Q2: 1- Albuterol 2- Adrenaline and noradrenaline 3- Phenylephrine 4- Pseudoephedrine	<u>Q.</u> <u>No.</u>	<u>Answer</u> <u>No.</u>
1	b		1	c
2	c		2	a

Module unit -8-

Drugs acting on digestive system

A: Over View

Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn the drugs acting on digestive system that apply to the health field.

It is also intended for students who have little or no Science background

3-Central ideas

3-1: General view about the digestive system.

3-2: The part of digestive system, and classification.

3-3: The type of chemicals(drugs) acting on each site of digestive system.

3-4: Definition of antacid, antiemetic, antidiarrhea, and antiulcer.

3-5: Mechanism of action of the drugs acting on digestive system.

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit

in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance objectives

After studying this modular unit, you should be able to:

1. Define the digestive system.
 2. Classify the parts of digestive system.
 3. List the drugs acting on each part of digestive system.
 4. List the uses of antacid, antidiarrhea, antiemetic....etc.
 5. List the mechanism of action of antacid, antidiarrhea, antiemetic....etc.
 6. List the adverse reaction (side effect) of antacid, antidiarrhea, antiemetic....etc.
-

C: Pre-test

Put a circle in front of right sentence:

- 1- The antacid which contain aluminium cause: (c)
 - a- Hallucination
 - b- Vomiting
 - c- Constipation, may lead to osteomalacia.

d- d-Obstructive jaundice .

2- Antidiarrheals that adsorb bacteria and toxins are: (d)

Bisacodyl.

a- Diphenoxylate Hcl.

b- Omeprazole

c- Kaolin & pectin

3- The most widely used digestant are: (b)

a- Methylcellulose

b- Bile salts, dehydrocholic acid and pancrelipase

c- Calcium carbonate

d- Acetylcholine

D: the modular unit of this package:

1- General view about the drug acting on digestive system

Antacid

Neutralize gastric acid and help control ulcer pain. They don't seem to have coating effect on ulcers. Drugs used as antacid are:

1- Aluminium carbonate

2- Aluminium hydroxide

3- Calcium carbonate

4- Magnesium trisilicate

Magnesium containing antacids have laxative effect and cause diarrhea. In patients with renal failure, they may cause hypermagnesemia.

Aluminium- containing antacids cause constipation, may lead to osteomalacia and hypophosphatemia.

Digestants:

Digestant promote digestion in the gastrointestinal tract, used in patient lacking such digestive substances as bile salts, gastric acid, and pancreatic enzymes most widely used digestant are:

- 1- Bile salts and hydrochloric acid: stimulate bile flow from the liver, promote digestion and absorption of fats, fat- soluble vitamins, and cholesterol.
- 2- Pancreatin
- 3- Pancrelipase
- 4- Glutamic acid HCl >>> replaces gastric acid, inhibit growth of putrefactive microorganisms in ingested food.

Pancreatin and pancrelipase replace endogenous exocrine pancreatic enzymes and aid intestinal digestion of starches, fats, and proteins.

antidiarrheals

reduce the fluidity of the stool and frequency of defecation. Diarrhoea may be caused by foods or drugs, laxative abuse, allergies, endocrine dysfunction, malabsorption, neurological or inflammatory diseases, mechanical obstruction parasitic infection, gastric resection, or radiation poisoning

Drugs used as antidiarrhoea

1- Bismuth subgallate

2- Diphenoxylate Hcl

3- Kaolin & pectin

4- Loperamide Hcl

*Bismuth salts have a mild water-binding capacity; may absorb toxins and provide protective coating for intestinal mucosa

*Diphenoxylate and loperamide: increase smooth muscle tone in GI tract, inhibit motility and propulsion, and diminish digestive secretions

*Kaolin and pectin: decrease the stool's fluid content by adsorption of bacteria and toxins that may cause diarrhoea.

laxative

they prevent constipation, evacuate the bowel before the bowel examination, exposure of abdominal X-ray films, barium enema and various surgical procedures.

Drugs used

1- Bisacodyl

2- Cascara sagarada

3- Castor oil

4- Glycerine lactulose

5- Magnesium salts

6- Methyl cellulose

7- Mineral oil

*glycerine lactulose is also used to treat hepatic encephalopathy.

Mechanism of action:

1- Bulk- forming laxative

2- Stool softeners increase liquidity of stool.

3- Absorption water from intestine osmotic laxative.

4- Increase intestinal movement.

Antiemetics

Drug that relieves nausea and vomiting

Classify into three groups

1- Antihistamines

2- Phenothiazines

3- Miscellaneous agents

Antihistamine

1- Cyclizine Hcl

2- Dimenhydrinate

Phenothiazines

Prochlorperazine maleate

Miscellaneous

1- Metoclopramide

2- Diphenidol Hcl

3- Scopolamine

Most of these act on the CNS on the region known as chemoreceptor trigger zone(CTZ)

Antiulcer agents

Ulcer diagnosis by endoscopy.

Classified into 3 groups:

1- Histamine₂ receptor antagonist(H₂receptor antagonist)

2- Protectants

3- Acid pump inhibitor

H₂ R antagonist e.g. Cimetidine, ranitidine, famotidine, treat peptic ulcers; they promote healing of duodenal and gastric ulcers.

Protectants e.g. sucralfate

Acid pump inhibitor e.g. Omeprazole

Auto- test

Q1- Define antacids, enumerate four antacid.

Q2- What are the group of drugs acting on GIT?

Q3- Classify antiulcer agents, and give example for each group.

E: Post- test

Put a circle in front of right sentence:

1- The antacid which contain aluminium cause: (b)

- a- Hallucination
- b- Constipation, may lead to osteomalacia.
- c- Vomiting
- d- Obstructive jaundice .

2- Antidiarrheals that adsorp bacteria and toxins are: (d)

- a- Bisacodyl.
- b- Diphenoxylate Hcl.
- c- Omeprazole
- d- Kaolin &pectin

3- The most widely used digestant are: (a)

- a- Bile salts, dehydrocholic acid and pancrelipase
- b- Methylcellulose
- c- Calcium carbonate
- d- Acetylcholine

Key of answers

pre -test		Auto -test	Post -test	
Q. No.	Answer No.	Q1- Neutralize gastric acid and help control ulcer pain. They don't seem to have coating effect on ulcers. Drugs used as antacid are: - a- Aluminium carbonate - b- Aluminium hydroxide - c- Calcium carbonate - d- Magnesium trisilicate Q2- - a- Antacid - b- Digestant - c- Antidiarrhea - d- Antiemetic - e- Antiulcer - f- Laxative Q3- - a- H₂ receptor antagonist e.g.cimetidine, ranitidine,	Q. No.	Answer No.
1	C		1	b
2	d		2	d
3	b		3	a

		famotidine		
		b- Protectants e.g. sucralfate		
		c- Acid pump inhibitor e.g. omeprazole		

Module unit -9-

Anticholinergic drugs

A: Over View

1- Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn the cholinergic blockers that apply to the health field.

It is also intended for students who have little or no Science background

3- Central ideas

3-1: General view about the cholinergic blockers

3-2: The groups of cholinergic blocker and their uses.

3-3: The mechanism of action of cholinergic blockers.

3-4: The adverse reaction of cholinergic blockers.

3-5: The antiulcer agents.

3-6: The mechanism of action of antiulcer agents.

3-7: The drugs used as antiulcer agents.

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance objectives.

After studying this modular unit, you should be able to:

1. Define the cholinergic blockers.
2. List the drugs which are adrenergic blockers.
3. List the uses of adrenergic blockers.
4. List the side effect of adrenergic blockers.
5. Define the antiulcer agents.
6. Classify the uses of antiulcer agents.
7. List the mechanism of action of antiulcer agents.

C: pre- test

Put a circle in front of right sentence:

1- The chemical compound which antagonist acetylcholine is: (b)

- a. Neostigmine
- b. Atropine and scopolamine
- c. Digitalis glycosides
- d. Non steroidal anti-inflammatory analgesics.

2- The medical uses of atropine is associated with it's adverse effect: (c)

- a. Myosis of the pupils, bradycardia, hypotension, and respiratory depression.
- b. Nasal congestant, increase secretion of GIT and respiratory system.
- c. GIT effect, dry mouth, constipation, and thirst.
- d. Abdominal cramps, diarrhoea, pale face, and bradycardia.

3- Omeprazole is: (c)

- a. Expectorants
- b. Acid –base electrolyte imbalance correctants.
- c. Acid pump inhibitor
- d. Gastrointestinal protectants.

D: The modular unit of this package:

- General view about the Cholinergic blockers

Atropine sulphate

Glycopyrrolate

Scopolamine hydrobromide

Cholinergic blockers (also called parasympatholytics) inhibit the action of acetylcholine

released by parasympathetic and some sympathetic nerves. The effects of parasympatholytics are typically opposite those of parasympathetic stimulation

parasympathetic(vagal) stimulation of the heart decreases heart rate . whereas atropine,

a parasympatholytic drug, increase heart rate.

parasympatholytic drugs are not organ- specific.

The administration of atropine to reverse severe bradycardia can dry oral and respiratory

secretions , the use of glycopyrrole preoperatively to dry oral secretions can produce urine retention, especially in men with prostatic hypertrophy.

Major uses

1. Atropine may be used for treatment of poisoning by organic phosphate insecticides and certain mushrooms.
2. As preanaesthetic medications, atropine, glycopyrrolate, and scopolamine are used
3. to reduce salivary and respiratory secretions.
4. Scopolamine may be used to prevent motion sickness.

Mechanism of action

Cholinergic blockers inhibit the effect of acetylcholine (as the neurotransmitter for impulses in parasympathetic nervous system) at the junction between postganglionic parasympathetic nerve endings and effector organs.

These receptor sites are also called muscarinic sites.

Adverse reactions

Anticholinergic reactions include

- GI reactions

Dry mouth, thirst, constipation, nausea, and vomiting.

1. Urinary symptoms

Hesitancy and retention

2. Cardiovascular reactions

Tachycardia, palpitations, and activation of angina

3. Dermatologic reaction

Hot ,flushed skin

4. Visual changes

Mydriasis, blurred vision and photophobia.

5. CNSreactions

Headache, restlessness, ataxia, disorientation, hallucination, delirium, agitation, mental confusion, insomnia and coma with excessive dosage.

Antiulcer agents

1- Histamine₂–receptor antagonists.

Cimetidine

Cimetidine hydrochloride

Famotidine

Nizatidine

Ranitidine hydrochloride

2- Protectants

Misoprostol

Sucralfate

3- Acid pump inhibitor

Omeprazole

Cimetidine, Cimetidine hydrochloride, Famotidine, nizatidine, and ranitidine hydrochloride are drugs of choice to treat peptic ulcers; they promote healing of duodenal and gastric ulcers, also used for long –term treatment of pathologic GI hypersecretory conditions, such as Zollinger-Ellison syndrome or hyperhistaminemia

H₂ – receptor antagonists are prescribed to reduce gastric acid output and prevent stress ulcers in severely ill patients as with reflux oesophagitis or upper GI bleeding.

The ability of cimetidine to inhibit drug metabolism is currently being evaluated as a potential treatment of acetaminophane overdose (it may decrease the formation of hepatotoxic metabolites).

Protectants (misoprostol and sucralfate).

Misoprostol is prescribed to prevent NSAID-induced gastric ulcers at high risk for complications from gastric ulcers.

Sucralfate is used for short-term treatment (up to 8 weeks) of duodenal ulcers and for gastric ulcer.

Omeprazole, acid pump inhibitor, indicated for short-term treatment of active duodenal ulcers.

Auto-test

Q1- classify antiulcer agents.

Q2- Enumerate (3) drugs used as cholinergic blockers, mention briefly their adverse reaction.

E: post-test

Put a circle in front of right sentence:

- The chemical compound which antagonizes acetylcholine is: (d)
 - Neostigmine

- Non steroidal anti-inflammatory analgesics
- Digitalis glycosides
- Atropine and scopolamine.

2- The medical uses of atropine is associated with it's adverse effect: (a)

- GIT effect, dry mouth, constipation, and thirst.
- Myosis of the pupils, bradycardia, hypotension, and respiratory depression.
- Nasal congestant, increase secretion of GIT and respiratory system.
- Abdominal cramps, diarrhoea, pale face, and bradycardia.

3- Omeprazole is: (b)

- Expectorants
- Acid pump inhibitor
- Acid –base electrolyte imbalance correctants.
- Gastrointestinal protectants.

Key of answers

pre -test		Auto -test		Post -test	
<u>Q.</u> <u>No.</u>	<u>Answer</u> <u>No.</u>	Q1: • Histamine₂–receptor antagonists. Cimetidine Cimetidine hydrochloride Famotidine Nizatidine Ranitidine hydrochloride • Protectants Misoprostol Sucralfate • Acid pump inhibitor Omeprazole Q2: Atropine sulphate Glycopyrrolate Scopolamine hydrobromide Anticholinergic reactions include 1- GI reactions Dry mouth, thirst, constipation, nausea, and vomiting. 2-Urinary symptoms Hesitancy and retention 3-Cardiovascular reactions Tachycardia, palpitations, and activation of angina 4-Dermatologic reaction Hot ,flushed skin	<u>Q.</u> <u>No.</u>	<u>Answer</u> <u>No.</u>	
1	b		1	d	
2	c		2	a	
3	c		3	b	

		5-Visual changes Mydriasis, blurred vision and photophobia. 6-CNSreactions Headache, restlessness, ataxia, disorientation, hallucination, delirium, agitation, mental confusion, insomnia and coma with excessive dosage.		
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Module unit -10-

Drugs acting on respiratory system

A: Over View

1. Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn the drugs acting on respiratory system that apply to the health field.

It is also intended for students who have little or no Science background

3-Central ideas

3-1: General view about the respiratory system.

3-2: The type of chemicals (drugs) acting on each site of respiratory system.

3-3: classification of the cough (productive and unproductive).

3-4: Mechanism of action of the drugs acting on respiratory system.

3-5: the side effect of the drug acting on respiratory system.

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit

in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance objectives

After studying this modular unit, you should be able to:

- 1- Define the respiratory system.
3. Classify the drug acting on respirator system.
4. List the drugs acting on respiratory system.
5. List the mechanism of action of expectorant, antitussive, bronchodilator, , and mucolytic agent.

List the adverse reaction (side effect) of expectorant, antitussive, bronchodilator, and mucolytic agent.

C: Pre-test

Put a circle in front of right sentence:

1-The (unproductive cough)must be use drug like: (d)

a-Iodide, chloride, and bicarbonate.

b-omeprazole

c-magnesium sulphate, atenolol, and angised.

d-Codien sulphate and dextromethorpin.

2- Bronchodilators used to treat: (b)

a-Headache, nausea, and vomiting.

b- Cough with spasm as in asthma.

c-Cardiac arrhythmia.

d-Increase cholesterol blood level.

3- "Mucolytics" are the drug that decrease viscosity of sputum used in case of: (a)

a-"productive cough" like bromohexine and solvodin.

b-Haemorrhagic disease.

c-Meningitis.

d-Peptic ulcer.

D: the modular unit of this package:

1- General view about the drug acting on respiratory system.

Drug which effect and used in respiratory system include:

1- Expectorant.

2- Antitussive.

3- Bronchodilators.

4- Mucolytics

Normally respiratory tract secret about 100ml of fluid, in some cases it produce more quantity and patient can't clearing his chest.

1- Expectorants:

Act by reflex from stomach stimulate cough and causes increase bronchial secretion. These agents should be used only in conjunction with a total care plan that includes adequate fluid intake and a cool mist or steam vaporizer, example for these:

a-Guaifenesin

b-Iodinated glycerol

c-Potassium iodide

d-Terpin hydrate

Facilitate expectoration in pneumonia, bronchitis, T.B., cystic fibrosis and bronchial asthma

2- Antitussives

Or cough suppressants, reduce the frequency of cough, when it is dry and non productive, desirable when chronic cough produces extreme fatigue(as in lung cancer) like:

a-Benzonatate

b-Codeine phosphate

c-Codeine sulphate

d-Dextromethorphan HBr

e-Diphenhydramine Hcl

3-Bronchodilators:

Are used for patients with respiratory diseases, include asthma, bronchitis, and emphysema.

Classified into:

a-Adrenergics

b-Anticholinergics

c-Methylxanthines

a-Adrenergics

1-Ephedrine

2- Epinephrine Hcl

3- Isoetherine

4- Terbutaline sulphate

Cause bronchodilation by acting on smooth muscle of bronchial tree also act on Beta₂ adrenergic receptors facilitating relaxation of bronchial smooth muscle

b-Anticholinergics

1-Atropine sulphate

Block muscarinic receptors, bronchodilating agents are administered by inhalation, minimizing absorption into the systemic circulation, thereby decreasing systemic effects.

c-Methylxanthines

1-Aminophylline

2-Dyphylline

3-Theophylline

Acting on smooth muscle of the bronchial tree, stimulate the respiratory centre in the brain, increasing rate and depth of respiration.

4-Mucolytic

Acetylcystein is used to decrease the viscosity of respiratory tract secretion in chronic pulmonary diseases such as bronchitis, cystic fibrosis, and emphysema.

Auto-test

Q1- Classify the drugs acting on respiratory tract, give an example for each group.

Q2- Classify bronchodilators, give an example for each group.

e: post-test

Put a circle in front of right sentence:

1-The (unproductive cough) must be use drug like: (b)

a-Iodide, chloride, and bicarbonate.

b- Codien sulphate and dextromethorphan.omeprazole

c-magnesium sulphate, atenolol, and angised.

d- omeprazole

2- Bronchodilators used to treat: (a)

a- Cough with spasm as in asthma.

b-Headache, nausea, and vomiting.

c-Cardiac arrhythmia.

d-Increase cholesterol blood level.

3- "Mucolytics" are the drug that decrease viscosity of sputum used in case of: (c)

a- Meningitis.

b-Haemorrhagic disease.

c-“productive cough”like bromohexine and solvodin.

d-Peptic ulcer.

Key of answers

pre -test		Auto -test	Post -test	
Q. No.	Answer No.	Q1-a- Expectorants: Act by reflex from stomach stimulate cough and causes increase bronchial secretion. These agents should be used only in conjunction with a total care plan that includes adequate fluid intake and a cool mist or steam vaporizer, example for these: 1-Guaifenesin b-Antitussives Or cough suppressants, reduce the frequency of cough, when it is dry and non productive, desirable when chronic cough produces extreme fatigue(as in lung cancer) like: 2- Benzonatate C-Mucolytic Acetylcystein is used to decrease the viscosity of respiratory tract secretion in chronic pulmonary diseases such as bronchitis, cystic fibrosis, and emphysema. d-Bronchodilators: 1-aminophylline	Q. No.	Answer No.
1	d		1	b
2	b		2	a
3	a		3	c

Q2-

a-adrenergics e.g.1- epinephrine 2- terbutaline

b-anticholinergics e.g. atropine

c-methylxanthine e.g.aminophylline

Module unit -11-

Inotropic agents

A: Over View

- Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn inotropic agents Concepts that apply to the health field.

It is also intended for students who have little or no Science background

3- Central ideas

3-1: General view about cardiovascular system.

3-2: The types of drugs effect on cardiovascular system.

3-3: The effect of digitalis glycoside on cardiac muscle.

3-4: The uses of digitalis glycoside and its side effect.

3-5: The factors that causes toxicity with digitalis.

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit

in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance Objectives

After studying this modular unit, you should be able to:

1. Define the cardiovascular system.
2. List the cardiac glycoside or digitalis glycoside.
3. List the mechanism of action of digoxin.
4. List the uses of digoxin.
5. List the causes of toxicity with digoxin.
6. List the side effect of digoxin.

C: Pre- test

Put a circle in front of right sentence:

- 1- The medical use of digitalis are: (c)
 - a- Stimulate the contractility of the skeletal muscle.

- b- Myosis of the pupil, decrease secretion of respiratory tract.
- c- Increase cardiac output in acute or chronic congestive heart failure.
- d- Bronchodilators, decrease incidence of asthma.

2- Digitalis glycoside have: (a)

- a- Narrow range between therapeutic and toxic doses.
- b- Low solubility so there is no toxic effect.
- c- Rapidly metabolized in liver so therefore no accumulative effect.
- d- Safe effect and uses due to effect on Bacteria cell wall.

3- Digoxin mechanism of action depend on: (b)

- a- Whole environmental factors and the sex.
- b- Drug concentration and cardiac status.
- c- Habitual use of the drug and time of taken.
- d- The state of gastric secretion.

D: The modular unit of this package.

General view about the cardiac glycoside

Digitalis or cardiac glycosides

Digoxin, Lanoxin

Derivative of digitalis, influence the force of myocardial contractility, it is extracted from plants of genus Digitalis or chemically synthesized, are used to treat congestive heart failure and tachyarrhythmias.

The range between therapeutic and toxic doses is extremely narrow.

Its toxicity may be due to:

- a- Altered absorption
- b- Serum electrolyte level
- c- Renal or hepatic dysfunction
- d- Drug interactions
- e- Other factors

Major uses

- a- Increase cardiac output in acute or chronic congestive heart failure.
- b- They control the rate of ventricular contraction in atrial flutter or fibrillation.

c- They are used to prevent or treat paroxysmal atrial tachycardia and angina associated with congestive heart failure.

Mechanism of action

1- Influence both mechanical and electrical activity of the heart it depend on:

a- Drug concentration

b- Cardiac status

Increase force of contraction no effect on normal heart but in present of congestive heart failure it produce beneficial slowing of heart rate according to severity of tachycardia.

2- The increase force of contraction is caused by increase (Ca^{++}) availability to the contractile proteins actin and myosin.

3- The range between therapeutic and toxic doses is narrow.

4- Digitalis glycoside also act on CNS to decrease sympathetic activity and increase vagal activity, this increase results in a slower firing rate of the sinoatrial node (SA) and slower conduction velocity through the atrioventricular (AV) node.

Auto –test

Q1- What are the medical uses of digitalis glycoside?

Q2- What are the factors that causes the toxicity with digitalis?

Q3- What are the adverse reaction of digitalis?

Adverse reaction full into 4 groups

a- Cardiac

b- Neurologic

c- Gastrointestinal

d- Visual

a- Cardiac reactions

Caused by drug toxicity secondary to excessive blood levels which may result in arrhythmias, most commonly premature ventricular contraction, AV node conduction block.

b-Neurological reactions

1- Headache, fatigue, depression, confusion, and insomnia.

2- Less common include psychosis, delirium and neuralgia

C- Gastrointestinal reactions

Anorexia, nausea and vomiting and, less commonly, diarrhea and abdominal pain.

d- Visual reactions

Blurred vision and abnormal color vision, green and yellow halos.

e: POST- TEST

Put a circle in front of right sentence:

1-The medical use of digitalis are: (b)

a- Myosis of the pupil, decrease secretion of respiratory tract.

- b- Stimulate the contractility of the skeletal muscle.
- c- Increase cardiac output in acute or chronic congestive heart failure.
- d- Bronchodilators, decrease incidence of asthma.

2- Digitalis glycoside have: (c)

- a- Low solubility so there is no toxic effect.
- b- Rapidly metabolized in liver so therefore no accumulative effect.
- c- Narrow range between therapeutic and toxic doses.
- d- Safe effect and uses due to effect on Bacteria cell wall.

3- Digoxin mechanism of action depend on: (d)

- a- Whole environmental factors and the sex.
- b- Habitual use of the drug and time of taken.
- c- The state of gastric secretion.
- d- Drug concentration and cardiac status.

Key of answers

pre -test		Auto -test	Post -test	
Q. No.	Answer No.		Q. No.	Answer No.
1	c	Q1: a- Increase cardiac output in acute or chronic congestive heart failure. b- They control the rate of ventricular contraction in atrial flutter or fibrillation. c- They are used to prevent or treat paroxysmal atrial tachycardia and angina associated with congestive heart failure.	1	b
2	a		2	c
3	b		3	d
		Q2: Its toxicity may be due to: a- Altered absorption b- Serum electrolyte level c- Renal or hepatic dysfunction d- Drug interactions e- Other factors		
		Q3: a- Cardiac reactions Caused by drug toxicity secondary to excessive blood levels which may result in arrhythmias, most commonly premature ventricular contraction, AV node conduction block. b- Neurological reactions 1- Headache, fatigue, depression, confusion, and insomnia. 2-Less common include psychosis, delirium and neuralgia C- Gastrointestinal reactions Anorexia, nausea and vomiting and, less commonly, diarrhoea and abdominal pain.		

		d- Visual reactions Blurred vision and abnormal colour vision, green and yellow halos.		
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Module Unit -12-

Antiarrhythmic, antianginals, Antihypertensive, and antilipimics

A: Over View

- Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale

This (unit) will aid those who want to learn the drug acting on cardiovascular system (antiarrhythmics, antianginals, antihypertensives, Antilipimics) apply to the health field.

3- Central ideas

3-1: General view about the cardiovascular system.

3-2: The types of drugs effect on cardiovascular system.

3-3: The effect of antiarrhythmics on cardiac muscle.

3-4: The uses of antihypertensives and its side effect

3-5: The uses of antilipimics and there mechanicanism of action.

3-6: The medical uses of antianginals.

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular

Unit.

*In case you get less than (9) degree, you must return to the same unit in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: PERFORMANCE OBJECTIVES

After studying this modular unit, you should be able to:

- Define the cardiovascular system.
 - List the antiarrhythmic drugs and their mechanism of action.
 - List antihypertensive group of drugs and their mechanism of action.
 - List antianginals and their mechanism of action.
 - List the antilipemics.
-

C: pre-test

Put a circle in front of right sentence:

1- Antiarrhythmics are drugs used to prevent atria fibrillation by using: (a)

a-Procainamide, mexiletine, lidocaine, and phenytoin.

b-Librax, thiamine, and silymarin

c-Gentamicin, streptomycin, and kanamycin

d-Nystatin, amphotericin B, and clotrimazole.

2- "Hypertension" when systolic blood pressure 160mmHg or higher and diastolic blood pressure 95 mmHg or higher you could use : (c)

a-Cholecalciferol, Tocopherol, and Ascorbic acid.

b-Omeprazole, prochlorperazine, and sucralfate.

c-Atenolol, verapamil, lisinopril and minoxidil.

d-Codeine, and dextromethorphan.

3-Mrs. Jafar have high cholesterol blood level what do you prefer take? (d)

a- Phentolamine, phenoxymethamine, and minoxidil.

b- Furosemide, etthacrynic acid, and amiloride.

c-Bisacodyl, castor oil, and magnesium trisilicate.

d-Clofibrate, lovastatin, and cholestyramine.

D: The modular unit of this package:

- General view about antiarrhythmic drugs

Used to prevent atrial fibrillation, including those secondary to MI (myocardial infarction) or digitalis toxicity.

Drug used	mechanism of action
1. Procainamide	block transport of sodium
2. Mexiltene, lidocain, and a. Phenytoin.	block transport of sodium
3. Acebutolol	for supraventricular arrhythmia
4. Amiodarone	alpha and beta inhibition
5. Verapamil	Ca ⁺⁺ channel blocker

Antianginals

Angina pectoris : chest pain caused by myocardial anoxia related to atherosclerosis of coronary arteries.

Infarction: formation of a localized of tissue necrosis caused by hypoxia resulting from inadequate blood flow to the area.

Ischemia:

Decrease blood supply to an area caused by vascular constriction or obstruction.

Antianginals classified into 3 groups

1- Nitrates

a-Amylnitrate

b-Isosorbide dinitrate

c-Nitroglycerin

2- Beta –blockers

a- Atenolol relief moderate to sever angina

b- propranolol relief moderate to sever angina

3- calcium channel blockers

a- Diltiazem treat both classic, effort- induced angina and Prinzmetal's angina.

b- Nifedipine treat both classic, effort-induced angina and Prinzmetal's angina.

c-Verapamil same as above.

Antihypertensives

Classified into:

1-Angiotensin converting enzyme inhibitors

a-Captopril

b-Lisinopril

2-Beta- adrenergic blockers

a- Atenolol

b- Propranolol

3- Calcium channel blockers

a-Nifedipine

b-Verapamil

4-Alpha adrenergic blockers

a) Phenoxybenzamine

b) Phentolamine

5-Vasodilators

- a) Minoxil
- b) Nitroprusside

Hypertension

Systolic blood pressure 160mmHg or higher

Diastolic blood pressure 95mmHg or higher

Two or more antihypertensives (with different mode of action) may be needed, untreated hypertension can lead to stroke and cardiac or renal disease

Antilipimics

1. Cholestamine
2. Clofibrate
3. Lovastatin

Lowering cholesterol levels or triglycerides or both, may reduce the risk of coronary artery disease and myocardial infarction

Mechanism of action

Cholestamine combine with bile acid to form insoluble compound that is excreted

Clofibrate

Inhibit cholesterol biosynthesis at an early stage

Lovastatin

Inhibit the hepatic synthesis of cholesterol

Auto- test

Q1: Classify antihypertensive drug, and give an example for each group.

Q2: Enumerate 3 drugs acting as antilipimics, mention the mechanism of action for each one.

Q3: Classify antianginals, and give an example for each groups.

e: post-test

Put a circle in front of right sentence:

1-Antiarrhythmics are drugs used to prevent atria fibrillation by using: (b)

- a. Librax, thiamine, and solvodin
- b. Procainamide, mexiletine, lidocain, and phenytoin.
- c. Gentamycin, streptomycin, and kanamycin
- d. Nystatin, amphotericin B, and clotrimazole.

e. 2-“Hypertension “when systolic blood pressure 160mmHg or higher and diastolic blood pressure 95 mmHg or higher you could use : (d)

- a. Chlcalciferol, Tocopherol, and Ascorbic acid.
- b. Omeprazole, prochlorperazine, and sucralfate.
- c. Codein, and dextromethophin.
- d. Atenolol, verapamil, lisinopril and minoxidil.

3- Mrs. Jafar have high cholesterol blood level what do you prefer take? (c)

- a. Phentolamine, phenoxybenzamine, and minoxidil.
- b. Furosemide, etthacrynic acid, and amiloride.
- c. Clofibrate, lovastatin, and cholestamine.
- d. Bisacodyl, castor oil, and magnesium trisilicate.

Key of answers

pre -test		Auto -test	Post -test	
Q. No.	Answer No.		Q. No.	Answer No.
1	C	Q1- Neutralize gastric acid and help control ulcer pain. They don't seem to have coating effect on ulcers. Drugs used as antacid are: - Aluminium carbonate - Aluminium hydroxide - Calcium carbonate - Magnesium trisilicate	1	b
2	d		2	d
3	b		3	a
		Q2- - Antacid - Digestant - Antidiarrhea - Antiemetic - Antiulcer - Laxative		
		Q3- - H₂ receptor antagonist e.g. cimetidine, ranitidine, famotidine - Protectants e.g. sucralfate - Acid pump inhibitor e.g. omeprazole		

Module unit -13-

Control bleeding agents, anticoagulants, and diuretics

A: Over View

1- Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn anticoagulants, control bleeding agents, and diuretics Concepts that apply to the health field.

It is also intended for students who have little or no Science background

3- Central ideas

3-1: General view about haemorrhage.

3-2: General view about the control bleeding agents.

3-3:The type of drugs that affect the clotting factor.

3-4: Definition the diuretics and its medical uses.

3-5: Definition the agents that control bleeding.

3-6: The branch of diuretics, potassium sparing diuretics.

3-7: The side effect of diuretics, and anticoagulants.

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance Objectives

After studying this modular unit, you should be able to:

1. Define diuretic s, haemorrhage agents, and anticoagulents.
2. Classify the diuretics.
3. List the uses of haemorrhagic agents, anticoagulants, and diuretics.
4. List the contraindication of the haemorrhagic agents, anticoagulants, and diuretics.

C: Pre- test

Put a circle in front of right sentence:

- 1- Haemorrhagic agents are drugs that: (c)
 - a. Decrease cholesterol level of the blood.
 - b. Decrease glucose level of the blood.
 - c. Reduction of haemorrhage in haemophilia patient's example tranexamic acid (cyklocapron).
 - d. Decrease incidence of angina like amyl nitrate (angised).

2- Heparin is drug used to: (c)

- a. Prevent haemorrhage.
- b. Prevent infection.
- c. Prevent fibrin formation, and clot enlargement.
- d. Prevent hypertension.

3- The uses of potassium sparing diuretic are to: (c)

- a. Increase glucose with aid of insulin to inter tissues.
- b. Prevent the tachycardia.
- c. Replace the loss of potassium ions.
- d. Prevent Beri- Beri in hypertensive patients.

D: The modular unit of this package.

1- General view about the haemorrhagic agents also call control bleeding agents.

Tranexamic acid (cyclocapron)

Reduction or prevention of haemorrhage in haemophilia patients.

Blood derivatives.

Albumin 5%

Albumin 25%

Plasma protein fraction

Blood derivatives act as plasma expanders in hypovolemic shock caused by burns, trauma, sepsis or surgical procedures also treat hypoproteinemia associated with malnutrition, toxemia of pregnancy, or prematurity.

- Albumin is used to treat hypoproteinemia associated with hepatic cirrhosis and nephritic syndrome.
- Some blood derivatives (antihemophilic factor, factor IX complex) are used to replace missing clotting factors in patients with hereditary coagulopathies.

Anticoagulants

1. Heparine
2. Warfarin

Anticoagulants, drug used to prevent fibrin formation also prevent clot enlargement.

Heparin is not active after oral administration.

Warfarin is oral anticoagulants.

Thrombolytic agents are effective in treating acute and extensive episodes of thrombotic disorders. Before administering these agents, be aware of increased risk of haemorrhage that attends their use, thrombolytic therapy should be accompanied by close laboratory monitoring.

Uses

1. Treatment pulmonary emboli and deep vein thrombosis.

2. Reduce thrombus after cardiac valve replacement surgery.
3. Heparin is administered subcutaneously in low doses to prevent deep vein thrombosis and pulmonary embolism.
4. Oral anticoagulants used in rheumatic heart disease with valvular damage and in atrial arrhythmias that impair haemodynamic.

Mechanism of action

- Heparin inactivates thrombin and prevents conversion of fibrinogen to fibrin.
- The oral anticoagulants inhibit vitamin K dependent activation of clotting factor II, VII, IX, and X which are formed in the liver.

Diuretics

Diuretics: reduce the body's total volume of water and salt by increasing their excretion in urine.

Most diuretics are used to treat essential hypertension (except miscellaneous diuretics)

Diuretics

Classified into 4 groups

1- Thiazide and thiazide- like diuretics

- a. Benzthiazide
- b. Chlorothiazide

2- Potassium- sparing diuretics

- a. Amiloride reduce the loss of potassium ions in urine
- b. Spiranolactone = = = = = =

3- Loop diuretics

- a. Ethacrynic acid
- b. Furosemide

4- Miscellaneous diuretics

- a. Acetazolamide
- b. Mannitol
- c. Urea

Mannitol and urea: are used to reduce intracranial pressure in patient with hydrocephalus or head injury, also used to rapidly decrease intraocular pressure in patient with glaucoma.

Auto- test

Q 1: Define diuretics, how do you classify them?

Q2: Define anticoagulants, how do you classify them?

Q3: mention 2 drugs act as potassium sparing diuretics.

C: POST- TEST

Put a circle in front of right sentence:

1- Haemorrhagic agents are drugs that: (d)

- a. Decrease incidence of angina like amyl nitrate (Angised).

- b. Decrease cholesterol level of the blood.
- c. Decrease glucose level of the blood.
- d. Reduction of haemorrhage in haemophilia patient's example tranexamic acid (cyklocapron).

2- Heparin is drug used to: (a)

- a. Prevent fibrin formation, and clot enlargement.
- b. Prevent haemorrhage.
- c. Prevent infection.
- d. Prevent hypertension.

3- The uses of potassium sparing diuretic are to: (c)

- a. Increase glucose with aid of insulin to inter tissues.
- b. Prevent the tachycardia.
- c. Replace the loss of potassium ions.
- d. Prevent Beri- Beri in hypertensive patients.

Key of answers

pre -test		Auto -test	Post -test	
Q. No.	Answer No.	Q1: Diuretics: reduce the body's total volume of water and salt by increasing their excretion in urine. Most diuretics are used to treat essential hypertension (except	Q. No.	Answer No.
1	c		1	d
2	c		2	a
3	c		3	c

miscellaneous diuretics

Diuretics

Classified into 4 groups

1- Thiazide and thiazide- like diuretics

a. Benzthiazide

b. Chlorothiazide

2- Potassium- sparing diuretics

a. Amiloride reduce the loss of potassium ions in urine

b. Spiranolactone = = = = =

3- Loop diuretics

a. Ethacrynic acid

b. Furosemide

4- Miscellaneous diuretics

a. Acetazolamide

b. Mannitol

c. Urea

Q2:

a. Heparine

b. Warfarin

Anticoagulants, drug used to prevent fibrin formation also prevent clot enlargement.

Q3:

a. amiloride

b. spiranolactone.

Module Unit -14

Drugs effect on urinary tract

A: Over View

- Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn the drugs effect on urinary tract

Concepts that apply to the health field.

It is also intended for students who have little or no Science background.

3- Central ideas

3-1: General view about the disease that affect urinary tract.

3-2: General view about the antibiotic that uses for urinary tract infection.

3-3: General view about the analgesic that used for urinary tract.

3-3: The urinary acidifier and alkalinizers.

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit

in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance Objectives

After studying this modular unit, you should be able to:

- Define the diseases that affect the urinary tract.
- Define the antigout agents.
- List the side effect of the drug acting on urinary tract.
- List the mechanism of action of the drug acting on urinary tract.

C: Pre- test

Put a circle in front of right sentence:

- Allopurinol is used to treat: (c)
- Hyperglycemia.
- Hypertension.

- Primary gout and gout associated with blood disorders, such as leukemia and polycythemia.
- Angina pectoris.
- Alkalinizers like sodium bicarbonate, sodium lactate and troinethamine are used to treat: (b)
- Hyperuricemia.
- Acid-base imbalance and raise blood pH
- Osteoporosis.
- Vitamine malabsorption.

D: The modular unit of this package.

General view about the diseases that affect urinary tract.

Dysuria: discomfort or pain on urination, usually resulting from a bacterial infection or obstruction in urinary tract.

There are many methods to treat urinary tract infection.

1st of all there must be done sensitivity test and culture of urine and according to sensitivity test, that uses antibiotic disc like penicillin, ampicillin, cephalosporin, erythromycin and gentamycin. Choosing antibiotic that suitable for the infection depend on its sensitivity test.

The uses of samafurantin 50mg, 100mg it has antiseptic effect on urinary tract (uvamin)^R.

Phenazopyridine HCl 100mg (urisept)^R, It has analgesic effect decrease the pain that associated with frequent urination (burning and urgency) associated with cystitis, prostatitis, and urethritis, once thought to have antiseptic properties, these agent are ineffective against microorganisms responsible for urinary tract infections.

Antigout agents.

Uricosurics.

- Probenecid
- Sulfonpyrazone
- Allopurinol
- Colchicines

Gout a hereditary disease involving an error in metabolism, leads to hyperuricemia and the formation of monosodium urate crystals.

Deposits of these monosodium urate crystals in and around a joint cause the inflammation and resultant pain of the disease.

- Allopurinol is used to treat primary gout and gout associated with blood disorders, such as leukemia and polycythemia, cancer, and cancer chemotherapy.
- Colchicine is used to relieve acute attacks of gouty arthritis.
- Probenecid and sulfonpyrazone act to increase uric acid excretion in the urine by competitively inhibiting the active resorption of uric acid at the proximal convoluted tubules of the kidney.

Probenecid also blocks active secretion of penicillins into the urine. It is used to prolong high serum drug levels during antibiotic therapy.

Allopurinol lowers serum and uric acid levels by inhibiting xanthine oxidase, the enzyme that catalyzes the formation of uric acid from xanthine.

Urinary acidifier and alkalinizers

Acidifier e.g. ammonium chloride

Alkalinizers e.g.

- sodium bicarbonate

- sodium lactate
- troinethamine

Correct acid- base imbalances in metabolic disorders.

In sever metabolic alkalosis, acidifiers may be given to lower blood PH

Adverse reactions to ammonium chloride result from too- rapid I.V. infusion or ammonia toxicity. severe reactions include hypocalcemic tetany, EEG abnormality alternating episodes of depression and excitation.

Auto-test

Q1- Enumerate antigout agents.

Q2- define dysuria, how do you treat this condition?

E: Post- test

Put a circle in front of right sentence:

- Allopurinol is used to treat: (a)
- Primary gout and gout associated with blood disorders, such as leukemia and polycythemia.
- Hyperglycemia.
- Hypertension.

- Angina pectoris.
- Alkalinizers like sodium bicarbonate, sodium lactate and troinethamine are used to treat: (d)
- Hyperuricemia.
- Osteoporosis.
- Vitamine malabsorption.
- Acid-base imbalance and raise blood pH

Key of answers

pre -test		Auto -test	Post -test	
Q. No. 1 2	Ans wer No. c b	Q1: • Allopurinol is used to treat primary gout and gout associated with blood disorders, such as leukemia and polycythemia, cancer, and cancer chemotherapy. • Colchicine is used to relieve acute attacks of gouty arthritis. • Probenecid and sulfinpyrazone act to increase uric acid excretion in the urine by competitively inhibiting the active resorption of uric acid at the proximal convoluted tubules of the kidney. Q2: Dysuria: discomfort or pain on urination, usually resulting from a bacterial infection or obstruction in urinary tract.	Q. No. 1 2	Ans wer No. a d

	There are many methods to treat urinary tract infection. 1st of all there must be done sensitivity test and culture of urine and according to sensitivity test, that uses antibiotic disc like penicillin, ampicillin, cephalosporin, erythromycin and gentamycin. Choosing antibiotic that suitable for the infection depend on its sensitivity test. The uses of samafurantin 50mg, 100mg it has antiseptic effect on urinary tract (uvamin)^R. Phenazopyridine HCl 100mg (urisept)^R, It has analgesic effect decrease the pain that associated with frequent urination (burning and urgency) associated with cystitis, prostatitis, and urethritis, once thought to have antiseptic properties, these agent are ineffective against microorganisms responsible for urinary tract infections.	
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Module Unite -15-

Histamine and antihistamine

(H₁ and H₂ receptor antagonist)

A: Over View

- Target population:

This learning package had designed to the second year students in the Immediate Ambulance Department of Al Dour Technical Institute

2- Rationale:

This (unit) will aid those who want to learn histamine and antihistamine

(H₁ and H₂ receptor antagonist) Concepts that apply to the health field.

It is also intended for students who have little or no Science background

3- Central ideas

3-1: General view histamine and its definition

3-2: General view about the histamine source.

3-3: Allergic symptoms appear due to histamine release.

3-4: Definition of H₁ and H₂ receptor antagonist.

3-5: The drug used as H₁ and H₂ receptor antagonist.

3-6: The mechanism of action of H₁ receptor antagonist (Allermine, Cyproheptadine)

3-7: The mechanism of action of H₂ receptor antagonist.

3-8: The side effect of H₁ and H₂ receptor antagonist.

4- Instructions:

4-1: Study the over view carefully.

4-2: Learn briefly the modular unit of this package.

4-3: Perform the pre-test of this unit:

*If you get (9) degree, or more .you will not need to learn this modular Unit. In this case you must contact with your teacher to inform him about your results.

*But when you get less than (9) degree in this test, you will need to Continue learning this modular unit.

4-4: After you studying this modular unit.

The post-test you must doing it.

*If you get (9) degree or more, you must go to learn the second modular Unit.

*In case you get less than (9) degree, you must return to the same unit in order to learn and understand the steps which you need.

*After you complete the studying, perform the post-test examination for checking.

B: Performance objectives

After studying this modular unit, you should be able to:

1. Define histamine and the receptor which it bound with.
2. List the drug which is antihistaminic
3. Classify the antihistamine

C: pre-test

Put a circle in front of right sentence(s)

- 1- Histamine is organic compound, and it has :

- a. Three receptors Alpha, Beta, and Gama
- b. Two receptors H_1 , H_2 receptors
- c. No receptor
- d. Muscarinic receptor

2- Cimetidine and Ranitidine are drugs which act on:

- a. Acid pump directly
- b. Histamine receptor
- c. H_2 receptor
- d. Bound with dopaminergic receptor and give response

D: The modular unite of this package:-

1- General view about

Histamine and antihistamine

Histamine is organic compound composed of histidine molecule.it is present in animal tissues, cells and plants in abound form. So it is inactive form but in certain circumstances

Histamine released and then will have pharmacological effect.

It has two types of receptors

H_1 receptor (smooth muscle)

H_2 receptor (gastric secretion)

Allergic symptoms appear due to histamine release includes:

1. respiratory symptoms: as sinusitis, asthma, increase nasal secretion, nasal congestion
2. skin symptoms: as redness, urticaria, edema
3. cardiac symptom: as palpitation, hypertension, hypotension,
4. neurological system: as headache, vertigo
5. digestive symptoms: as colic, indigestion, nausea, vomiting, diarrhea, due to gastric secretion so antihistamines found to treat these symptoms of allergy and anaphylaxis

also acts as antiemetics for motion sickness

Examples:

Diphenhydramine ((Allermine)) H_1 receptor antagonist

It has sedative effect and cause drowsiness used as antiemetics and for motion sickness in a derivative of it called

1. Dimenhydrinate (Dramamine^(R)), and travimine^(R)
2. Chlorphenhydramine
3. Cyproheptadine: periactin^(R)
4. Promethazine: phenergan^(R)
5. Promethazine thiocolate: Avomine^(R)

H_2 receptor antagonist

1. Cimetidine: Tagamate^(R)

2. Ranitidine: Zantac^(R)

Potent antihistaminic used to decrease gastric secretion, used in treatment of peptic

Ulcer used as tablets can be given I.V. injection

Auto –test

Q1: Define histamine, what are the allergic symptoms appear due to histamine release

Q2- Classify the receptors which the receptor act on, give example of drugs for each group

Post-test

Put a circle in front of right sentence(s)

1- Histamine is organic compound, and it has :

- a. Two receptors H_1 , H_2 receptors
- b. Three receptors Alpha, Beta, and Gama
- c. Muscarinic receptor
- d. No receptor

2- Cimetidine & Ranitidine are drugs which act on :

- a. Histaminic receptor
- b. H_2 histamine receptor

c. Bound with dopaminergic receptor and give response

d. Acid pump directly

Key of answers

pre -test		Auto -test	Post -test	
Q. No.	Answer No.	Q1:is organic compound composed of histidine molecule it is present in animal tissues, cells and plants in abound form. So it is Inactive form but in certain circumstances histamine released and Then will have pharmacological effect • respiratory symptoms: sinusitis, asthma, increase nasal secretion • skin symptom: redness, urticaria, odema • cardiac symptom: palpitation, hypertension, hypotension • neurological system: headache, vertigo • digestive symptoms: colic, indigestion, nausea, vomiting, diarrhea Q2 H₁ , H₂ receptor H₁ receptor antagonist • Dimenhydramine • Chlorphenhydramine • Cyproheptadine • Promethazine H₂ receptor antagonist • Cimetidine • Ranitidine	Q. No.	Answer No.
1	b		1	a
2	c		2	b

• المصادر الأساسية:

"Basic and Clinical Pharmacology" by Bertram G. Katzung, Susan B. Masters, and Anthony J. Trevor.2017.

"The Pharmacological Basis of Therapeutics" by Laurence L. Brunton, Randa Hilal-Dandan, and Bjorn Knollmann.2017.

"Pharmacotherapy: A Pathophysiologic Approach" by Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, and L. Michael Posey.2020.

"Applied Biopharmaceutics & Pharmacokinetics" by Leon Shargel, Andrew B.C. Yu, and Susanna Wu-Pong .2015.

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