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GASTRO-INTESTINAL PROBLEMS MODULE

STUDENT TEXT

1980
Rural Health Development Project
Ministry of Health and Social Welfare
Maseru, Lesotho

ACKNOWLEDGEMENTS

Nurse Clinician training materials are Lesotho adaptations based upon the MEDEX prototype curriculum for training mid-level health workers.

The prototype MEDEX materials were developed by the Health Manpower Development Staff of the John A.Burns School of Medicine, University of Hawaii. The original prototypes were based on training experience in over a dozen third-world countries. These were revised on the basis of HMDS experience in Micronesia, Thailand, Pakistan, and Guyana before being made available to Lesotho under a U.S.A.I.D. funded contract.

Major adaptation in Lesotho began at the National Nurse Clinician Training Programme Curriculum Adaptation Workshop held at Mazenod in January 1980. The nearly fifty participants represented all major health and health related activities in Lesotho, both Government and private. These participants and others working as individuals and then as review committees have adapted the Nurse Clinician training materials to meet the conditions and needs of Lesotho.

The Government of Lesotho and particularly the staff of the Nurse Clinician training Programme are grateful to HMDS for supplying the prototype materials and to all those individuals who have helped in the Lesotho adaptation process.

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SCHEDULE

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5

STUDENT GUIDE
ANATOMY AND PHYSIOLOGY OF THE G.I.TRACT

I. Entry Level Skills and Knowledge

Before starting this unit, you should be able to:

1. Define the words in the glossary of the Anatomy and Physiology Module pertaining to the abdomen/ digestive system.

II. Objectives

Using the information and experiences provided by the instructor and the module text, you will be able to:

1. List the two major divisions of the anatomy of the G.I.system.
2. Describe the process of digestion.
3. Identify by labeling the parts of the G.I.tract and the G.I.accessory organs.
4. Describe the function of each of the digestive organs.
5. Identify on another trainee the correct locations of parts of the G.I.tract and the G.I.accessory organs, using landmarks described in the Physical Exam Module.

III. Evaluation

Upon completion of the module, you will be assessed on:

1. Knowledge: Written test based upon contents of unit in module text. Acceptable performance 80%.
2. Skill: Examination of the abdomen including observation/identification of landmarks.

IV. Activities you will be participating in to complete the above objectives.

1. Read module text and answer review questions.
2. Participate in large group discussion concerning text material.
3. Participate in demonstration session by instructor on location of landmarks and their relation to G.I. and other accessory organs in the abdominal cavity.
4. Participate in practice session of the above mentioned skill.

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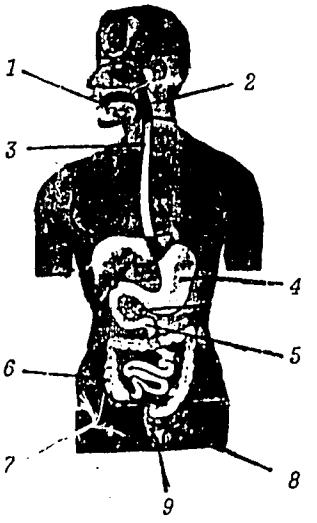
ANATOMY

What is in the abdominal cavity?

The anatomy of the gastro-intestinal (G.I.) system consists of two major divisions: the G.I.tract and the additional digestive organs.

G.I.Tract (See Figure GI 1)
This is the passage-way which begins at the mouth where the food is taken in and ends at the anus where solid waste is expelled from the body. The G.I.tract has several parts:

1. Mouth
2. Throat
3. Oesophagus
4. Stomach
5. Small Intestine
6. Large Intestine
7. Appendix
8. Rectum
9. Anus

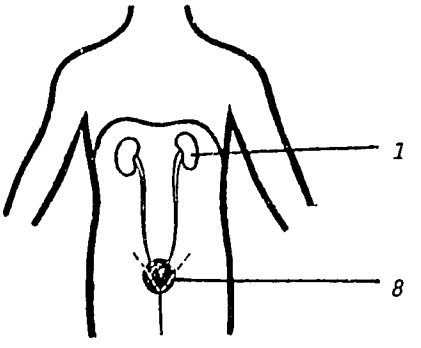


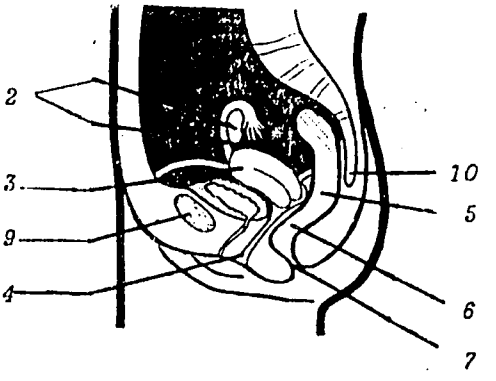
Additional Digestive Organs. The accessory organs are not part of the G.I.tract, but they contribute to the general digestive functions. The three organs in this category include: 1) salivary glands, 2) liver and gall bladder, and 3) pancreas.

Other Organs in the Abdominal Cavity

Other organs are also contained within the abdominal cavity which are not part of the G.I.system. It is important, however, to be able to distinguish these from the G.I.organs and to know where they are located in relation to the G.I.organs (See Figure GI 2). These include:

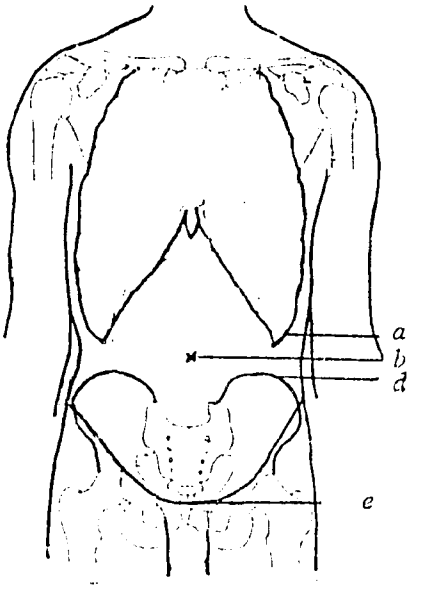
1. Kidney
2. Ovary and Fallopian Tube
3. Uterus
4. Vagina
5. Large Intestine
6. Rectum
7. Anus
8. Bladder
9. Pubic Bone
10. Coccyx





<u>Landmarks</u> (See Figure GI 3) Several landmarks are helpful in locating the organs of the G.I.system. Each should be studied in terms of how it relates to the G.I.tract and G.I. accessory organs. They are:

a. Costal Margins (Rib Margins)
b. Umbilicus
c. Symphysis Pubis
d. Anterior Superior Iliac crest
e. Quadrants - The surface of the abdomen can be divided into four parts through two particular lines crossing each other at the umbilicus (See Figure GI 4).
   1) Right upper quadrant
   2) Left upper quadrant
   3) Right lower quadrant
   4) Left lower quadrant



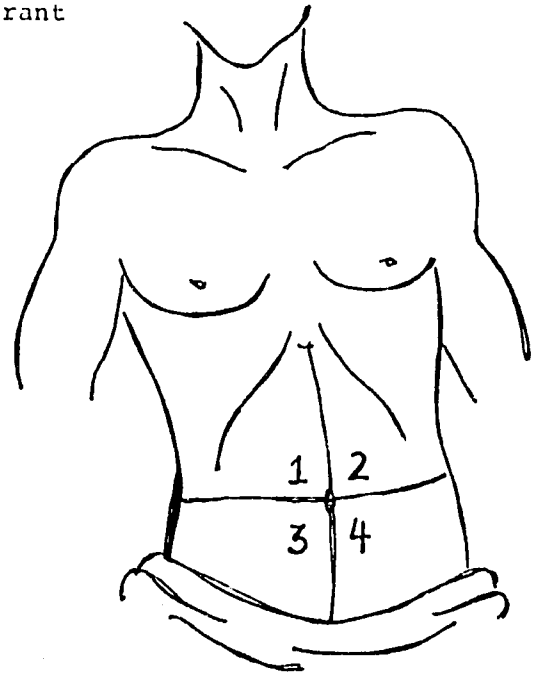


Figure GI 4

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REVIEW QUESTIONS

1. List the two major divisions of the anatomy of the G.I.system.

   1)

   2)

2. List the three additional digestive organs.

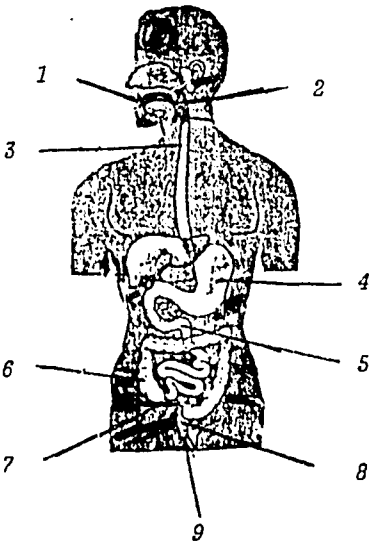
   1)

   2)

   3)

3. Label the following diagram:

   1)
   2)
   3)
   4)
   5)
   6)
   7)
   8)
   9)



PHYSIOLOGY

What happens?

The G.I.system has two main jobs or functions:

1) Food must be changed into a form that the body can use. This is digestion.

2) The products of digestion must be moved from the G.I. tract into the blood stream to be transported to the rest of the body. This is absorption.

Therefore, digestion and absorption are the two chief functions of the digestive system.

The G.I.system is divided into two groups of organs:

1) The G.I.tract is the passage-way which begins at the mouth where food is taken in and ends at the anus where solid waste is expelled from the body.

2) Additional digestive organs help with the digestive process but are not part of the G.I.tract.

What happens in the G.I.tract?

1. The mouth serves as the entry to the passage-way. Food is prepared for the digestive process by the mechanism of chewing, food becomes semi-solid with the addition of saliva from the salivary glands, is swallowed and pushed down in the canal.

2. The throat, during the process of swallowing, continues to help push food down the oesophagus.

3. The oesophagus is a flexible tube which conveys food from the mouth to the stomach.

4. The stomach is actually an enlarged section of the tube. It has three primary functions:
   a. Stores and holds food for 2 to 6 hours.
   b. Adds gastric acids which soften the food, kill bacteria and prepare the food for absorption.
   c. The stomach muscles also churn and mix food with gastric acids.

5. The small intestine is the location where the greatest part of digestion and absorption occur. Food moves relatively quickly through the small intestine. It takes only 6 to 9 hours to pass through approximately 6-8 metres long canal.

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a. Food is broken down into the basic materials that the body needs.
b. Then, the broken-down food is absorbed into the bloodstream in order to distribute the raw materials to the whole body.
c. The useable parts of food are:
   - Carbohydrates
   - Fats
   - Proteins
   - Mineral Salts
   - Vitamins
   - Water

6. The appendix is a small, worm-like structure which protrudes from the wall of the large intestine near its juncture with the small intestine.

7. The large intestine is approximately 1.5 metres in length. It extends from the small intestine to the rectum. By the time food and water reach the large intestine, all of the useable parts of the food have been digested (broken down) and absorbed (have crossed the lining of the small intestine and into the bloodstream). In the large intestine, fluid is absorbed into the bloodstream. This fluid consists of water from both food and digestive juices. This is the most important function of the large intestine. The remnant from the food - water and non-useable nutrients (waste products) - is compacted together and pushed through the passage-way to the rectum. The contents are normally stored 24 hours.

8. The rectum is the temporary storage area for the solid waste products left over after digestion and absorption has been completed. It is located at the end of the large intestine and is about 20 centimetres in length.

9. The anus is the opening to the outside of the body located at the end of the G.I.tract. The body evacuates the solid waste products through this opening.

Structure and Function of the Walls of the G.I.Tract

The tube of the G.I.tract from the oesophagus (swallowing) to the anus (excretion) is similar in structure. The tube has three layers. Proceeding from the inside out, they include:

a. Inside the tube there is a lining of mucous membrane.

b. The middle layer of tissue contains blood vessels and nerves.

c. The outer layer is muscle tissue.

Each layer of the walls of the G.I.tract has a specific function:

a. The mucous membrane (inner layer) is the lining that nutrients must cross to get to the blood vessels for absorption. The mucous layer protects the other layers of the wall from the digestive acids. Specific nutrients are actively pumped through this lining.

b. The middle layer, which contains the blood vessels, is where the nutrients are absorbed into the bloodstream to be transported to the body in general.

c. The muscle tissue (outer layer) intermittently squeezes and pushes food the entire length of the tube, mixing and churning the food as it goes.

Functions of the Additional Digestive Organs

The salivary glands are situated in the mouth which secrete saliva into the mouth which help in mixing the food and make it easier to swallow.

The liver is a large organ located under the right costal margin. If it is normal in size, it cannot be felt through the abdominal wall. The liver has many multiple functions, only a few of which are mentioned.

a. The secretion of bile which is important in helping to break fat into small particles so that it can be digested more efficiently. Bile enters the G.I. tract in the small intestine.

b. Storage and release to the body, as needed, of simple sugar and of certain vitamins (A, D, E and K).

c. Gall bladder: It is situated below the liver. Its main function is to concentrate and store bile produced by the liver. The bile is then released into the small intestine when needed.

The pancreas is located behind the stomach and has two important functions:

a. Production of insulin to regulate the use of sugar in cells.

b. Production of pancreatic juice to aid in digestion of food. The pancreatic juice is emptied into the small intestine, and acts on food to complete the digestive process for fats and proteins; it also acts on starches to change them to sugar.

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Review Questions

1. Match the part of the G.I.tract with its primary functions. Write the appropriate letter on the blank spaces.

_____ 1. Stomach	A. Food is broken up by mechanics of chewing.
_____ 2. Small Intestine	B. Fluid absorbed into bloodstream.
_____ 3. Large Intestine	C. Nutrients absorbed into bloodstream.
_____ 4. Throat	D. Adds gastric acid to foods to soften food and kill bacteria.
_____ 5. Mouth	E. Is approximately 1.5 metres in length.
_____ 6. Oesophagus	F. Aids in swallowing.
_____ 7. Anus	G. Conveys food from mouth to stomach.
	H. Is approximately 6-8 metres in length.
	I. Excretes solid waste products.

2. The main functions of the G.I.system are digestion and absorption. Define each term.

   - Digestion:

   - Absorption:

3. The wall of the G.I.tract consists of three layers. For each, list its components and describe its function.

	Components	Functions
Inner Layer -		
Middle Layer -		
Outer Layer -		

4. The end of the large intestine, where solid waste is stored before evacuation from the body,is the _____ .

5. What two substances are produced by the pancreas?

   1)

   2)

6. List two functions of the liver:

   1)

   2)

7. The small intestine is the location where the greatest part of _____ and _____ occur.

8. The usable parts of food are fats, proteins, water, carbohydrates, mineral salts and _____.

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STUDENT GUIDE

SIGNS OF G.I.SYSTEM PROBLEMS

I. Entry Level Skills and Knowledge

Before starting this unit, you should be able to:

1. Describe and discuss the anatomy and physiology of the normal G.I.tract and G.I.accessory organs.
2. Perform examination of the abdomen, observation and recognition of landmarks.

II. Objectives

Using the information and experiences provided by the instructor and the module text, you will be able to:

1. Describe the altered functioning of the G.I. system when the following problems are present:
   a. vomiting
   b. diarrhoea
   c. pain
   d. jaundice
   e. dehydration
   f. ascites

III. Evaluation

Upon completion of the module, you will be assessed on:

1. Knowledge: Written test based upon contents of unit in module text. Acceptable performance, 80%.

IV. Activities you will be participating in to complete the above objectives.

1. Read module text and answer review questions.
2. Participate in large group discussion of text material read and ask questions where necessary.
3. Small group activities and role plays to reinforce physical exam and history taking skills.
4. Observe a demonstration of history taking and physical exam procedure for G.I.problems.
5. Participate in role plays to practice history taking and physical exam skills.

VOMITING

Vomiting is the sudden, strong forcing of the contents of the upper G.I.tract out through the mouth. To produce vomiting, two sets of muscles work together: the muscles forming the outside of the abdomen (the abdominal wall muscles) and the diaphragm. They force the contents of the upper G.I. tract up the tube and out. This working together of abdominal muscles and diaphragm is triggered (coordinated and signaled) by the vomiting centre in the brain.

This working together of the muscles mentioned above is started by a centre in the brain, called vomiting centre. This centre receives messages from any part of the body through the nerves. These messages are carried from different organs of the body, e.g., alimentary canal, uterus, and ureters. The most important messages are from the alimentary canal. When these messages are received by the vomiting centre in the brain, it causes tightening of the muscles of the abdominal wall, which forces up the contents of the stomach. At the same time the diaphragm tightens and descends. The contents forced out is called "vomitus." Vomitus consists of partially digested food and digestive secretions. Acids and juices from the stomach cause the bad taste and strong smell. If there is bleeding in the stomach, it mixes with acids which change the colour of the blood from red to brown.

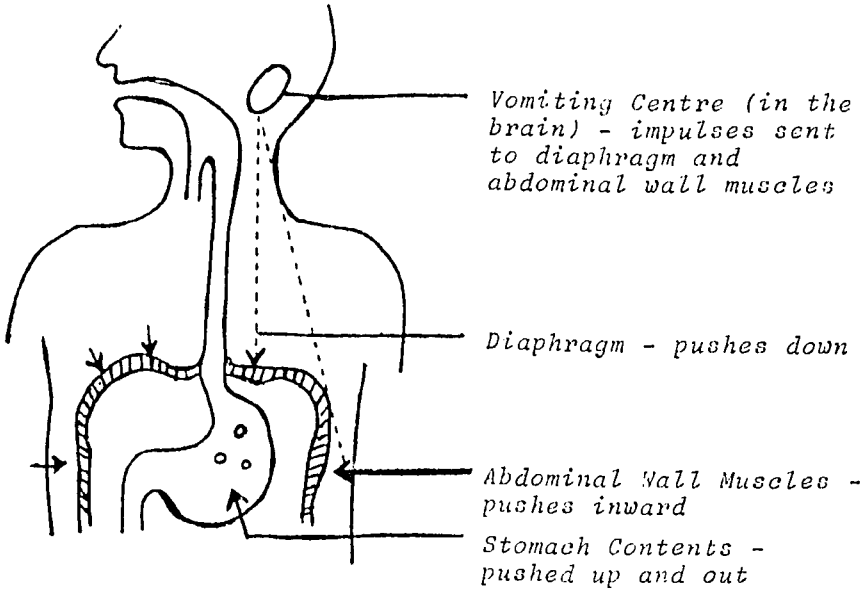

Figure GI 5 - Vomiting Centre, Diaphragm, and Abdominal Muscles.

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DIARRHOEA AND DEHYDRATION

Diarrhoea is the frequent passage of loose watery stools. The stools are more watery than usual and contain less formed matter. Food is not digested nor absorbed properly because the muscles in the intestinal wall move it forward too quickly. However, an even more serious result is that the movement occurs so quickly that water is not properly absorbed. This is made worse because inflammation of the bowel mucosa is often present and absorption of food and water is impaired. Ingested materials may speed through the large intestine in a matter of a few hours rather than the usual 24 to 48 hours.

The most serious complication of diarrhoea is dehydration. Dehydration occurs when the body becomes depleted of water. It is due to an excessive loss of water from the body and inadequate replacement. Diarrhoea is the most common cause of dehydration but vomiting also contributes.

If dehydration continues and progresses because water and electrolytes are not being absorbed by the intestine, coma and death is the ultimate result.

Children with diarrhoea may actually progress to death in a matter of 12 to 24 hours. If, however, dehydration is prevented or adequately treated, death will be avoided.

It has been found that the proper treatment of diarrhoea due to any cause - such as food poisoning, gastro-enteritis, malnutrition, allergy - is first to prevent or treat the dehydration and hence prevent a death and only then to consider the primary disease.

The treatment of diarrhoea and prevention of dehydration is the replacement of the water and essential ingredients being lost, such as body salts.

The inflamed intestine is unable to absorb properly. However, it has been found that glucose (a simple sugar) can be absorbed even through a diseased mucosa and when the glucose is absorbed, it carries with it water, sodium and other electrolytes.

This replacement can be given by mouth if the person is not in a coma or vomiting severely. If in a coma or severely vomiting, the replacement of fluids must be given through the intravenous approach.

PAIN

Pain originating from the G.I.tract itself is usually due to inflammation, irritation or obstruction somewhere along the tube. Pain may also be caused by one of the other organs in the abdominal cavity. Occasionally, pain felt in the abdomen is actually originating in the chest. Abdominal pain is frequently described by one or more of the following terms:

1. Local pain or tenderness.
   If an organ or section of the G.I.tract is inflamed (hot, red, irritated), it causes pain and tenderness in the abdomen directly over the inflamed organ (for example, if the liver is inflamed or irritated, the pain will occur directly over the liver).

2. Regional pain or tenderness.
   If infection and inflammation have spread from one organ to other organs in that immediate area, it causes regional pain or tenderness. (For example, inflammation of the appendix can spread to the near-by bowel and peritoneum, causing regionalized pain in the right lower quadrant.)

3. Generalized pain.
   If the inflammation or infection is large enough, the whole lining of the abdomen (peritoneum) will become tender. The lining will also become tight and irritated. The pain is usually constant.

4. Colicky pain.
   When there is stretching of the lining of the alimentary canal due to swelling or inflammation along the tube, the pain comes and goes as the muscle in the wall of the alimentary pushes and relaxes. The pain is sharp and it comes and goes. Stones in the bile duct or ureters can also cause colicky pain.

5. Referred pain.
   Sometimes pain in the abdomen can be due to problems in the chest. Heart pain, for example, may be "felt" in the upper abdomen. Also, pneumonia and pleurisy (inflammation of the lining inside the chest wall) can cause pain in the upper part of the abdomen.

JAUNDICE

Jaundice is the accumulation of bile pigments in the skin, conjunctiva and scelera, which change their colour to yellow.

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Physiology of Bile Production. In the normal physiology of bile production, the following occurs:

Bilirubin is produced from the breakdown of old RBC's in the spleen. This reaches the liver via the blood stream. In the liver, bilirubin is combined with other substances and the resultant bile is secreted into the hepatic ducts. It then goes to the gall bladder where it is concentrated and later excreted into the duodenum. The bile in the gut is changed by bacteria and colours the stool brown.

Jaundice may be caused by anything obstructing the normal process:

a. A derangement of liver cell function as seen in viral hepatitis and cirrhosis will cause jaundice.

b. An obstruction in the ducts leading from the liver to the duodenum will cause jaundice.

CONSTIPATION

Most people have a bowel motion once in 24 hours, but there are normal variations in individuals from several bowel movements each day to one every few days. Infrequent passage of hard stools is called constipation.

REVIEW QUESTIONS

Abdominal pain is frequently described by one or more of the following terms. Give an EXAMPLE of each of the following types of abdominal pain.

1. Local pain or tenderness -

2. Regional pain or tenderness -

3. Generalized pain or tenderness -

4. Colicky pain -

5. Referred pain -

6. Jaundice is the accummulation of bile pigments in the skin, conjunctiva and sclera which change their colour to yellow. Explain the reason for the jaundice when a patient has hepatitis.

REVIEW QUESTIONS (cont'd)

7. To produce vomiting, two sets of muscles work together; name them:

8. Describe the process of vomiting. Include in your description the role of the vomiting centre, diaphragm and abdominal muscles.

9. Blood vomited from the stomach is brown. Explain why blood that has been in the stomach is this colour.

10. Diarrhoea is the frequent passage of loose watery stools. The muscles of the intestinal wall are moving more quickly than normal and as a result, both food and water are not properly absorbed. Explain the most serious result of this process:

11. What is the most important step to take when a patient is suffering from diarrhoea?

12. What is the reason for adding glucose to oral rehydration solution?

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STUDENT GUIDE

DISEASES OF THE G.I.TRACT

I. Entry Level Skills and Knowledge

Before starting this unit, you should be able to:

1. Describe the associated anatomy, physiology and pathophysiology of the G.I.system.

II. Objectives

Using the information and experiences provided by the instructor and module text, you will be able to:

1. Identify the physical signs associated with each of the following diseases:

   Hyperacidity and peptic ulcer disease
   Acute appendicitis
   Acute abdomen
   Intestinal obstruction
   Viral hepatitis
   Cirrhosis
   Enteric fever (Typhoid)
   Dysentery
   Parasites (round worms, thread worms, pinworms, tape worms)
   Gastro-enteritis

2. Demonstrate Physical Exam procedures including abdominal inspection, palpation, auscultation, percussion and rectal exam.

3. Describe the general characteristics and course of the diseases including the following discriminations:

   Abdominal distention
   Guarding, tenderness
   Rebound tenderness
   Ascites
   Enlarged liver, spleen
   Jaundice
   Dehydration
   Anaemia
   Tympanic percussion
   Increased/decreased bowel sounds

4. Describe the management procedures for the disease.

5. Perform following management procedures:
   pass N.G.tube.

III. Evaluation

MODULE PHASE

Upon completion of the module, you will be assessed on:

1. Knowledge: Written test based upon contents of unit in module text. Acceptable performance, 80%.

2. Skill: a. Your ability to perform a physical examination of the abdomen which includes the following:

   Abdominal palpation, percussion, ausculation, and inspection.

   b. Your ability to make the following physical examination discriminations:

   Abdominal distention, Guarding, Tenderness, Rebound Tenderness, Ascites, Anaemia, Enlarged liver, Tympanic percussion note.

ROTATION PHASE

Upon completion of the rotation phase you will be assessed on:

a. Your ability to diagnose and manage the following problems:

   Hyperacidity and peptic ulcer disease, Acute appendicitis, Acute abdomen, Intestinal obstruction, Viral hepatitis, Cirrhosis, Enteric fever, Dysentery, Parasites, Gastroenteritis.

b. Your ability to pass a naso-gastric tube in an adult.

c. Your ability to perform a rectal examination.

IV. Module Phase activities you will be participating in to complete the above objectives.

1. Read module text and answer review questions.
2. Participate in large group discussion concerning text material.
3. Participate in demonstration session by instructor on location of landmarks and their relation to G.I. and other accessory organs in the abdominal cavity.
4. Participate in practice session of the above mentioned skills.

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HYPERACIDITY AND PEPTIC ULCER DISEASE

General Considerations

Digestion of food in the stomach is aided by the secretion of enzymes and acids from the gastric mucosa. When 1) the amount of acid secreted is increased or 2) the resistance of the mucosa in the stomach and upper portion of the duodenum is reduced, irritation, inflammation and eventually ulceration can occur. Irritation and inflammation alone is called "Hyperacidity" (heartburn). When ulceration occurs it is called "Peptic Ulcer Disease" or "Peptic Ulceration." The most common site for ulceration is at the beginning of the duodenum.

The causes underlying these conditions are complex. However, there are some factors which are frequently related such as:

1) Emotional stress.
2) Certain drugs, especially corticosteroids, aspirin and indomethacin.
3) Alcohol, large amounts of coffee or tea.
4) Smoking cigarettes.
5) Certain types of food, varying with individuals.

Clinical Picture

The typical picture is that of a person with a history of occasional mild to moderate pain just below the breastbone ("epigastric pain"). The pain usually comes on about 1 hour after eating. It is relieved by food or antacids. The pain is usually worse in the afternoon and evening.

Complications

1. Bleeding from an ulcer may result in black stools and/or vomiting of red-brown blood.

2. Perforation (a hole through the gut wall) will result in peritonitis (infection and/or inflammation of the lining of the abdominal cavity - peritoneum). This is an emergency situation requiring immediate transfer to a hospital where abdominal surgery can be performed to repair the perforation.

3. Obstruction due to oedema and/or scarring of the first portion of the duodenum is seen occasionally.

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ACUTE APPENDICITIS

General Considerations

This is an acute inflammation of the appendix. Sometimes the opening into the appendix is blocked by faeces or worms. With these conditions, the appendix is blocked and then there is super-added infection. Other times, the appendix gets inflamed for no apparent reason. As in any infection, there is swelling and inflammation. At first, the irritation is confined locally and then later it can spread. If left alone, the appendix can eventually rupture.

Clinical Picture

Usually the patient first notices mild vague colicky pain around the umbilicus. Nausea and vomiting then develop. A few hours to several days later the pain shifts to the right lower quadrant (RLQ) with an accompanying rise in temperature to 37.5 - 38°C.

There will be guarding and tenderness in the RLQ. Later rebound tenderness develops. Rectal and pelvic examinations are usually negative. Bowel sounds are normal or decreased.

Complications

Ruptured appendix with generalized peritonitis and a clinical picture like an acute abdomen.

Management

Acute appendicitis is a surgical emergency. The patient must be referred immediately. If immediate transport is not available, cover the patient with antibiotics until you can get the patient out.

Procaine Penicillin 1.2 million Units IM once a day
AND
Streptomycin one gm IM once a day

Patient education must involve an attempt to allay the fears of the patient and to prepare them psychologically for surgery.

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ACUTE ABDOMEN

General Considerations

The abdomen contains a number of organs that if inflamed may cause serious disease requiring definitive care at a hospital. It is important to be able to recognize which patients should be immediately referred to a hospital perhaps for abdominal surgery.

The pancreas and gall bladder may become inflamed and even infected. A peptic ulcer may perforate. An appendix may become inflamed and go on to perforation. The small or large intestine may obstruct mechanically. Each one of these conditions requires hospital care.

Clinical Picture

The onset of abdominal pain may be relatively slow or abrupt. It is often severe. Nausea, vomiting and severe prostration is common. Fever is often present.

The abdomen is tender, often distended. Guarding and rebound tenderness are present. Bowel sounds are usually decreased to absent.

The patient looks very ill and may go into shock. If not referred quickly, there is a good possibility of death.

Emergency Management

This is an emergency and the patient should be referred at once.

1. Emergency measures to combat impending shock. Bed rest in shock position.

2. Give an analgesic - Pethidine 100 mg.I.M. if the patient is in severe pain.

3. Start Procaine Penicillin - 1.2 million units I.M. every 12 hours,

   AND

   Streptomycin - 0.5 gm I.M. every 12 hours.

4. Withhold oral feeds.

5. Start IV (normal saline or ½ strength Darrows Solution in Dextrose).Give 1000 cc every four hours while being transported.

6. If the patient is distended, pass an NG tube into the stomach and leave it in place.

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INTESTINAL OBSTRUCTION

General Considerations

1. Intestinal Obstruction is any blockage in the G.I. tract which prevents food and water from moving past that point. If food is blocked, the stomach or the intestinal muscle wall becomes stretched. This triggers the vomiting centre in the brain. The body tries to remove the blocked food by vomiting.

2. Intestinal obstruction can be caused by masses, adhesions on the gut wall, twisting of the gut on itself, obstructed hernias, and telescoping of the gut into itself, worm impactions or hard stool. It is always necessary to examine for a hernia in intestinal obstruction.

3. As you remember, water must be reabsorbed from the intestine, into the blood stream. If the water cannot move through the intestine, no new water will be absorbed. If no new water can be absorbed, the water lost in urine, sweat, etc. cannot be replaced by the body. After a few days (12 - 24 hours in children) with no water flowing from the intestine to the blood stream, the patient becomes dehydrated.

Clinical Picture

The patient will complain of colicky abdominal pain and distention. The patient is also constipated. Later, vomiting will ensue - usually bile stained. As the vomiting gets worse, dehydration occurs because of continual loss of fluid.

On examination, there is a distended abdomen with a tympanic percussion note. Bowel sounds are present and hyperactive often occuring in bursts. The skin is dehydrated and "tents" on pinching. A rectal examination usually reveals an empty rectum.

The combination of vomiting, constipation and abdominal distention should always alert the nurse clinician to think of intestinal obstruction.

Management

1. This patient must be referred immediately.
2. Withhold oral feeds.
3. Before transporting the patient, pass a NG tube and remove excess fluid in the stomach. (See Patient Management Skills Module)
4. Start IV fluids (Normal saline or ½ strength Darrows in Dextrose solution). Give 1000 cc every four hours while being transported.

VIRAL HEPATITIS

General Consideration

This is an acute viral inflammation of the liver. The two most common ways of spreading hepatitis are through the oral faecal route,or through blood transfusion and use of improperly sterilized needles. It affects the entire liver tissue causing inflammation of each and every liver cell.

Hepatitis is often seen in multiple numbers within communities. These epidemics can usually be traced to a specific water source with faecal contamination.

Clinical Picture

This varies from a symptomatic infection without jaundice to a serious disease with death in a few days. There is a slow onset of general tiredness, fever, nausea and vomiting with severe lack of appetite. Many patients develop clinical jaundice with yellow eyes and dark yellow urine. On examination there is jaundice, tenderness over the right upper quadrant, a palpable enlarged liver and bile in the urine. There may be pale stool associated with itching.

Complications

Severe fulminating hepatic necrosis and liver failure may occur, with the patient getting progressively jaundiced, drowsy with irrational behavior, slipping gradually into coma; patient must be referred. Pregnant women with hepatitis are particularly prone to this complication.

Management

There is no specific treatment for hepatitis and the disease will run its course. Supportive measures, however, can be given.

1. Rest from heavy labour is advisable.
2. Encourage the patient to eat whatever appeals to him/her.
3. Give multivitamin tablet twice a day.
4. Avoid all alcohol and all medications such as barbiturates, pethidine, and sulphonamides.
5. If the patient appears to be getting sicker with increased jaundice and drowsiness, then refer to hospital. All pregnant women with jaundice should be referred to a hospital immediately.

Prevention

1. During epidemics of hepatitis people should be advised to boil their drinking water.
2. Chlorinate the water supply of the patient's community. (See Community and Environmental Health Module)

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CIRRHOSIS

General Consideration

Cirrhosis is a chronic inflammation of the liver. It is usually associated with alcoholism but sometimes follows viral hepatitis. It is more common in males.

Clinical Picture

The patient may not complain until he presents with jaundice or a swollen abdomen. He will however admit to having weakness, weight loss, lack of appetite, nausea, loss of interest in sex.

On physical examination, jaundice may or may not be present. There will be red palms, enlarged breasts in a male and enlarged liver and spleen. Dilated abdominal veins, oedema and ascites are late findings. There is a change in the normal male distribution of hair - scanty chest hair and pubic hair of a female pattern. The patient may vomit bright red blood from ruptured oesophageal veins. In advanced conditions, liver failure occurs, severe ascites and jaundice, delirium, flapping tremors of the hands, sluggish pupils, drowsiness and eventually coma- a change in the level of consciousness, from alert to drowsiness is an early sign of hepatic pre-coma.

Complications

1. Liver failure.

2. Shock from bleeding oesophageal veins.

Management

1. Refer for management.

2. On patient's return, he ought to have been given a follow-up regime - please see that he follows it.

3. Avoid all alcohol and medications other than those prescribed by a doctor.

4. Patient should be seen at regular intervals - look for jaundice, ascites, oedema. If these are found, refer back to a physician.

Patient Education

You must explain to him the seriousness of his condition and get him to understand that if he doesn't stop drinking he will die. However, alcoholics will find avoidance of alcohol very difficult.

REVIEW QUESTIONS

Check your understanding of the preceding material by answering the following questions.

1. Hepatitis is caused by virus. Mark the ways this disease can be spread. (T/F)

   _____ spread oral-faecal route

   _____ water borne

   _____ spread through blood transfusion

   _____ coughing and spitting

   _____ dirty needles

   _____ mosquitoes

2. Describe the clinical picture associated with severe fulminating hepatic necrosis.

3. The usual management of hepatitis is based upon general support of the patient with adequate nutrition and vitamins and avoidance of drugs and alcohol. Under what circumstances would you refer the patient rather than manage in the above fashion?

4. Describe the clinical signs and symptoms associated with cirrhosis early in the disease process.

5. List the two complications of cirrhosis.

6. Your major responsibility in the care of a patient who has cirrhosis is patient education. What must you teach this patient?

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True or False

_____ 7. Heartburn is relieved by food or antacid.

_____ 8. Aspirin can cause further irritation if a person has hyperacidity.

_____ 9. When the amount of acid secreted is decreased or the resistance of the mucosa in the stomach is increased, ulceration can occur.

_____10. Epigastric pain usually comes after eating.

_____11. The most common site for ulceration is at the end of the duodenum.

12. List three complications of peptic ulcer disease:

1)

2)

3)

13. When should you refer a patient who has hyperacidity or peptic ulcer disease symptoms?

14. Your patient is diagnosed as having a peptic ulcer. Which of the following habits should he stop? (Circle the correct answers)

1) eats small amounts of food frequently.

2) smokes two packs of cigarettes a day.

3) drinks 3 glasses of milk a day.

4) drinks tea with his meals.

15. Which of the following signs and symptoms are part of the clinical picture associated with appendicitis? (Check the correct answers)

_____ Pain immediately localized at RLQ
_____ Pain initially generalized and later localized at RLQ
_____ Nausea
_____ Vomiting
_____ Diarrhoea
_____ Fever

16. All patients diagnosed as having acute appendicitis require surgical removal of the appendix. If there is a delay in referral, what should you do?

17. The signs and symptoms of an acute abdomen indicate an inflammatory process within the abdominal cavity. Describe these signs and symptoms.

18. As is the case with acute appendicitis, the person needs to be referred. In addition to starting antibiotic therapy, what other management is important for this patient?

19. What is the combination of signs which will always alert you to consider intestinal obstruction? (Check the correct answers)

_____Nausea _____Vomiting _____Diarrhoea

_____Constipation _____Ascites _____Abdominal distention

20. What is your management responsibility for a patient with intestinal obstruction?

<u>True or False</u>

_____ 21. Intestinal obstruction is any blockage in the G.I.tract which prevents food and water from moving past that point.

_____ 22. Obstruction triggers the vomiting centre in the brain.

_____ 23. Water must be reabsorbed from the intestine into the blood stream.

_____ 24. Within 12 to 24 hours, with no water flowing from the intestine to the blood stream, the patient becomes dehydrated.

Check your diagnostic skills. Make a diagnosis based upon the information given. Use the protocols and module text to assist.

25. A 19-year old man comes to the clinic complaining of the following:
- general tiredness
- fever
- nausea and vomiting
- anorexia

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Physical exam reveals
- abdominal tenderness right upper quadrant
- palpable enlarged liver
- yellow foam on shaking the urine (bile in the urine)
- jaundice

Diagnosis:

26. A 15-year old boy is brought to your centre complaining of:
- colicky abdominal pain

Additional complaints include:
- vomiting
- constipation
- abdominal distention

Upon examination you find:
- distended tympanic abdomen
- increased bowel sounds
- empty rectum
- dehydration (tenting of skin)

Diagnosis:

27. A 10-year old boy is brought to your clinic with the following complaints:
- sudden onset of periumbilical pain
- pain now radiating to right lower quadrant
- nausea and vomiting
- fever

Upon examination you find:
- guarding or tenderness in right lower quadrant
- temperature 38.5^{o}
- rebound tenderness

Diagnosis:

ENTERIC FEVER (TYPHOID)

General Considerations

This is an infection caused by salmonella, a bacteria. It is mainly spread by eating contaminated food or drinking contaminated water. It attacks the G.I.system in the first week, passes this into the blood during the second week. Following that, it re-emerges in the G.I. system causing ulceration and mucosal destruction. At this point, the bacteria may be spread throughout the body - into bone, brain, kidneys and the gall bladder.

Clinical Picture

There is a slow onset of fever - over 1 week with the major symptoms being constipation, headache, nausea and vomiting. Later diarrhoea may occur, often including blood.

The temperature classically is of the step ladder variety, but this is not always so. The pulse is comparatively slow.

Complications

- G.I.ulceration and haemorrhage with bloody diarrhoea
- G.I.perforation with an acute peritonitis
- Meningitis
- Osteomyelitis especially of the spine
- Chronic gall gladder disease
- Overwhelming toxaemia

Management

If you suspect typhoid fever, refer. Start on Chloramphenicol at a high dosage until the fever subsides - then reduce until the symptoms have completely cleared up (at least 2-3 weeks).

0- 6 years	10 mg/kg four times a day
6-12 years	1 cap (250 mg) four times a day until fever comes down, then reduce to ½ cap (125 mg) four times a day
12-adult	2 caps (500 mg) four times a day until fever comes down, then reduce to 1 cap (250 mg) four times a day

Prevention

A clean water supply, proper human waste and good personal hygiene will prevent this disease. Patient education should be aimed at acquainting the patient and his community about the cause of his condition and the importance of following proper waste disposal steps and having a good pure water supply. (See Community Environmental Health Module).

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AMOEBIASIS

General Considerations

Small one-celled parasites called protozoa are a common cause of diarrhoea. The protozoa are ingested with contaminated food and then migrate to the large intestine. There the organisms infest the bowel mucosa sometimes causing blood and mucous in the stool. Faeces contaminated by these organisms contaminate other food and hence the disease is spread.

The disease occurs in all ages and in both sexes.

Clinical Picture

With amoebiasis, the patient usually has a history of repeated mild attacks of diarrhoea. There is usually no fever. Occasionally, the inflammation of the bowel is so severe that the stool will contain blood and mucous. There may be mild abdominal pain. A person complaining of loose motions with mucous and blood may be suffering from amoebic dysentery.

Complications

The amoeba can move through the intestinal wall into the blood stream. From here it can migrate anywhere, but the most common site is the liver via the portal circulation. Here it can cause severe liver damage due to abscess formation.

When a patient has a liver abscess, he appears very ill and the liver is enlarged and tender. This abscess may rupture into the chest or the abdominal cavity.

Management

The management of choice for amoebiasis is metronidazole for seven days:

1 - 3 years	½ tab (100 mg)	three times a day
3 - 7 years	½ tab (100 mg)	four times a day
7 - 10 years	1 tab (200 mg)	three times a day
10 to adult	2 tabs (400 mg)	three times a day

If there is no improvement, the patient should be referred to a hospital.

Any person with a suspected liver abscess should be referred to a physician.

PARASITES

General Considerations

This condition may present with severe colicky abdominal pain - all over the abdomen and especially around the umbilicus. Sometimes the patient, usually a child, may present with failure to thrive, abdominal discomfort, anaemia or restlessness.

Clinical Picture

Roundworms

These worms are 20 to 30 cm long and pink or white in colour. They are spread from faeces to mouth because of lack of cleanliness. The roundworm eggs which are invisible to the naked eye pass from one person's stool to another's mouth by contaminated food or water. Once swallowed, the worms hatch and enter the blood stream, travel to the lungs and cause a cough which results in swallowing the sputum containing young worms. They then travel into the intestine and grow to full size.

Roundworms (ascaris) are commonly associated with colicky pain and abdominal discomfort. Rarely it can cause appendicitis or intestinal obstruction. Frequently, the patient comes to the clinic having passed worms in the stool or coughed/vomited worms.

Management

1. Give a) Mebendazole 100 mg twice a day for three days for any patient over 2 years of age.

   b) Piperazine liquid 75 mg/Kg per day (maximum 3.5 gms) for 2 days with the evening meal

   The worms are passed out in the next stool.

Threadworms

These worms are only one (1) cm long, thin and threadlike. They live in the lower intestine and come outside the anus at night to lay their eggs. This causes itching. The child scratches because of the itching and the eggs stick to his nails and hands. Eventually, they reach his mouth or the mouth of others causing infestation.

Threadworms (Enterobis) or pinworms are associated with itching around the anus, restlessness and bedwetting in children. If one member of the family has threadworms, it spreads quickly to the whole family.

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Management

Treat the whole family.

1. a) Mebendazole 100 mg single dose; repeat after two weeks (for any patient over 2 years of age).

or b) Piperazine 75 mg/Kg (maximum 3.5 gms) one dose then repeat after 2 weeks.

2. Thoroughly wash all bedding and clothing including night clothing.

3. Cut the fingernails of the patient very short.

4. A child with pinworm should wear tight nappies or pants while sleeping to prevent him from scratching his anus.

Tapeworms

Tapeworms may grow to be several metres long but the small, flat white pieces found in faeces are usually about one (1) cm. long.

An animal eats the eggs found in human stools and the worm egg develops in the animal's body as cysts in muscle (meat). When a person eats poorly cooked meat containing these cysts, the cysts develop into a tapeworm which attaches itself to the intestinal wall and grows. The segments that are passed in the stool become eggs which can be ingested by animals, etc.

Tapeworms are associated with diarrhoea, abdominal pain, lack of appetite, weight loss. The diagnosis is made by finding eggs and segments in the stools. It is commonly found among people who eat raw meat or fish.

Management

Niclosamide is given in the morning before food as a single dose (chewed thoroughly).

11 - 34 Kg. - 2 tablets
35 - 50 Kg. - 3 tablets
Adult - 4 tablets

Prevention

Roundworms and threadworms can be prevented by proper disposal of human waste, clean drinking water and personal hygiene. (See Community Environmental Health Module).

Tapeworms are prevented by avoidance of eating undercooked or raw meat.

GASTRO-ENTERITIS

General Considerations

Irritation of the stomach and the intestines may be caused by viruses, bacteria or toxins. No matter what the cause, the symptoms and treatment are often the same.

Food poisoning as a result of contaminated food is associated with a number of people (all who ate some contaminated food) getting sick at one time.

Faecal contamination of food or water is often the cause of gastro-enteritis.

Clinical Picture

The patient is usually well until vomiting, colicky abdominal pain, and diarrhoea begin. A mild fever may also be present. If the diarrhoea is severe it may be associated with mucous, blood and an urge to defaecate without passing anything.

Complications

The most severe complication is dehydration. Because of continual loss of water and salts, the patient can become rapidly dehydrated and salt depleted. This is especially true in children. This will progress to coma and death if untreated.

Management

1. The prevention and treatment of dehydration is the most important role of effective management. Oral rehydration solutions should be given to the patient in sufficient quantities as to correct any loss of fluids and to maintain his fluid needs.

   To 1000 cc of clean water, add:
   - 2 thumb and finger pinches salt
   - 1 thumb and finger pinch soda
   - 2 four fingered scoops sugar

   Give as much of this fluid as the person is losing in diarrhoea stool.

2. If the patient is comatose or moribund due to dehydration, I.V.fluids must be given. (See Diseases of Infants and Children Module).

   Adults should be given 2,000 cc of ½ strength Darrow's in Dextrose solution in one hour. Then another 1,000 cc in the next two hours, until they can take oral fluids. As soon as the patient is able to take oral fluids, he should be given oral rehydration solution.

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Potassium in the form of orange juice or other citrus fruit juices should be started as soon as this patient is able to drink fluids.

An adult patient with diarrhoea and dehydration to the stage of coma will not survive a referral transfer; so you must explain the seriousness of the condition to the family, the likelihood of death and then treat vigorously.

3. A patient not yet severely dehydrated but unable to take oral rehydration solution because of vomiting should be given IV's until he can take oral fluids. 1,000 cc of ½ Dextrose and Darrow's Solution in the first 2 hours. Consider referral to a hospital if he doesn't improve in 8 hours.

Prevention

1. Severe epidemics of gastro-enteritis should be reported to the district medical officer immediately.

2. During epidemics of gastro-enteritis, all water and drinks should be boiled.

3. Proper personal hygiene and public sanitation will prevent most gastro-enteritis.

4. Food poisoning can be avoided by throwing away and not eating left-over food that has not been preserved or refrigerated.

REVIEW QUESTIONS

Check your understanding of the preceding material by answering the following questions.

True or false. If the statement is true, write "T" on the blank space, and if the statement is false, write "F" on the blank space to your left.

____1. Enteric fever is an infection caused by salmonella, a bacteria.

____2. It is spread through contact of people who are sneezing, coughing, or vomiting.

____3. It attacks the G.I.system at first and then passes the bacteria into the blood.

____4. It re-emerges in the G.I.system causing ulceration and mucosal destruction.

____5. The bacteria may be spread throughout the body.

____6. In addition to fever, other symptoms are constipation, headache, nausea, vomiting and a comparatively slow pulse.

7. What is your job in the community to help prevent enteric (typhoid) fever?

8. Give the oral rehydration recipe.

9. A 44 year old man with diarrhoea (6 stools this morning) enters the clinic. No fever, vomited one time last night. How would you manage this man (mark one).

_____ 1) Teach the patient how to make oral rehydration solution and ask him to return tomorrow.

_____ 2) Start an IV.

_____ 3) Refer to the nearest hospital.

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10. List three (3) preventive measures of gastro-enteritis.

    1)

    2)

    3)

11. A 40-year old man enters with a complaint of occasional abdominal cramping. His stools have been formed but his appetite has been a little reduced. A festival in which men often eat raw ground meat was six weeks ago. Your management. (mark one) -

    _____ 1. Don't worry about anything, it is a self-limiting condition.

    _____ 2. Examine the stools closely looking for whitish segments.

    _____ 3. Refer to a physician, immediately.

12. Explain the movement of the round worm from the time it enters the body until it resides in the intestine.

13. Both roundworms and threadworms are treated with the same drug. What is the treatment.

14. Match the symptoms with the conditions. In all instances, there is more than one correct answer. Choose <u>all the answers</u> which apply.

_____1.Dysentery	A.Sudden onset
_____2.Gastro-enteritis	B.Gradual onset
_____3.Typhoid	C.Blood in stool
_____4.Acute appendicitis	D.Undigested food in stool
_____5.Acute abdomen	E.Faecal-mouth transmission
_____6.Intestinal obstruction	F.Possible vomiting
	G.Possible abdominal pain
	H.Constipation, headache
	I.Mild, colicky pain around the umbilicus
	J.Severe prostration
	K.Distension
	L.Diarrhoea
	M.Fever may be present

15. Describe the two ways gastro-enteritis causes fluid loss.

    1)

    2)

16. What condition, which presents with diarrhoea, can lead to severe liver damage?

17. Inflammation of the lining of the abdominal cavity

    is _____ .

18. The combination of what three symptoms should cause you to think of the diagnosis of intestinal obstruction?

    1)

    2)

    3)

19. Acute abdomen is the name given a serious abdominal problem which results from an inflamed, infected or perforated abdominal organ. What is your management responsibility for a person with this problem?

20. An adult male arrives at your clinic complaining of the following:

    -repeated attacks of mild diarrhoea
    -stool ccntains mucous and blood
    During interview you obtain the following information:
    -no history of fever
    -little abdominal discomfort
    Physical exam reveals:
    -slight lower abdominal tenderness

    Diagnosis:

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HAEMORRHOIDS
(Piles)

General Considerations

Piles are enlarged veins around the anus. The cause is usually unknown. They, however, frequently occur during pregnancy. Symptoms usually are mild and come and go over several years.

Clinical Picture

The patient will usually present with pruritis, pain and/or bleeding in the rectum. On examination enlarged bluish coloured masses can be seen at the anus. Internal haemorrhoids originate inside the sphincter and should be pushed back in. External haemorrhoids originate outside the sphincter.

Management

1. Have the patient keep internal haemorrhoids inside the sphincter using petroleum jelly.

2. Avoid constipation with high roughage diet, at least 2 litres of water per day and 30 cc of mineral oil daily (if needed during acute phase).

3. If possible have patient sit in tub of hot water for 15-30 minutes, three times a day (t.i.d.), when symptoms are more marked.

4. In severe cases refer to hospital for surgery.

REVIEW QUESTIONS

1. Haemorrhoids are enlarged veins around the anus. Internal and external haemorrhoids originate in different locations. Explain how to identify internal and external haemorrhoids.

2. What management steps should be taken for relief of pain and itching of haemorrhoids?

MODULE PHASE

SKILL EVALUATION

Before you are advanced to the rotation phase of training, a staff member will evaluate your mastery of the physical examination procedures and discriminations which have been identified in the modules.

You will have the opportunity to be rated on your performance of these skills at any time during the module phase that you feel prepared.

To help you prepare, the module contains a list of the skills to be evaluated. You are advised to do the following:

1. Work at perfecting your techniques of examination by practicing with another student.
2. During the clinical practice time provided, each week, practice the skills applicable to the subject being taught.
3. Have a fellow student observe and evaluate your performance.
4. When you feel you are ready, ask a trainer to observe and rate your performance.
5. If your performance is unacceptable, the trainer will give you specific comments on how to improve.
6. Practice again until you are ready for evaluation, and arrange to be rated.
7. If after two attempts you are unable to perform a skill at an acceptable level, arrange for a meeting with members of the training staff, who will help you obtain the experiences necessary for improving your performance.