

# TRAINING COURSE IN WOMEN'S HEALTH

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## **Module Two**

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### **The Female Urinary System**

## International Prototype

Developed by the International Women's Health Coalition and converted to self-instructional format by the Institute for Development Training, this manual, and others in the series, is intended as a prototype only. For effective use in training programs, a country adaptation focused on the needs of a specific type of trainee, followed by pre-testing, is considered essential. For information on sources of funding for adaptation workshops, pre-tests and multiple copies of the adapted manual contact:

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April 1, 1985

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Dear Clinician:

This manual was prepared for your use by a number of able and committed persons, dedicated, as you are, to improving the health care in your country. Every effort has been made to include the most accurate and up-to-date essentials of gynecological health care.

The material was designed and developed by the International Women's Health Coalition, and has been adapted for self-instructional use by the Institute for Development Training.

We do know, however, that as a prototype the material is not suitable for use in all training situations. We hope you will feel free to change anything that is inappropriate.

Your task is a significant and important one. We sincerely hope this manual plays a small part in helping you with your work.

Yours for good health.

Sincerely,

Joan B. Dunlop  
President

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## **Introduction to Module Two**

Module Two - "The Female Urinary System" - is one of a series of modules which make up the Training Course in Women's Health. Module Two focuses on the female urinary system, including the anatomy of the system and an explanation of how the system functions. Also covered in this module are major urinary and kidney disorders, the causes of these disorders, and recommended treatments.

The information in this module is particularly important for you to know in order to broaden your understanding of women's health and specific health services they may require.

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## Instructions for the Learner

This module, which is one of a series of modules, is self-instructional. Self-instruction is a method by which you, the learner, learn by yourself from carefully sequenced materials. The module is divided into short sections of information and each of these sections is followed by a series of questions which give you a chance to practice using the information you have learned. Answers to these questions are given so that you can check your understanding of the information.

The self-instructional method allows you to learn at your own speed and enables you to consistently check your progress in learning the information.

Follow the steps below in order to proceed through this self-instructional module in the most effective way:

1. Read the objectives for the module. They will outline for you what you will learn and be able to do after completing the module.
2. Take the Pre-test to get an idea of what you already know and what you need to learn.
3. Read and study the information in Section 1.
4. Answer the practice questions following the section without looking back at the information. Use a separate sheet of paper.
5. Check your answers using the answer sheet on the page following the questions.
6. If any of your answers are incorrect, reread the information in the section and try to answer the questions again.
7. When all your answers are correct, go on to the next section.
8. Proceed through the rest of the sections in the same way: read section; answer questions; check answers; reread section if necessary.
9. Take the Post-test after you have completed the entire module.
10. Check your answers to the Post-test using the answer sheet at the end of the module.

# Prerequisites and Objectives

## Prerequisites

As a prerequisite for this module, you must have a basic knowledge and understanding of the following terms, concepts, and procedures:

1. female reproductive system (Module One)
2. basic anatomy
3. chemical analysis of body fluids
4. concept: bacteria
5. urinalysis

## Main Objective

The learner will be able to describe the organs of the female urinary system; explain how the system functions; and describe the nature of urinary disorders and kidney disorders including causes, signs, symptoms, and possible treatments.

## Sub-objectives

After completing this module, the learner will be able to:

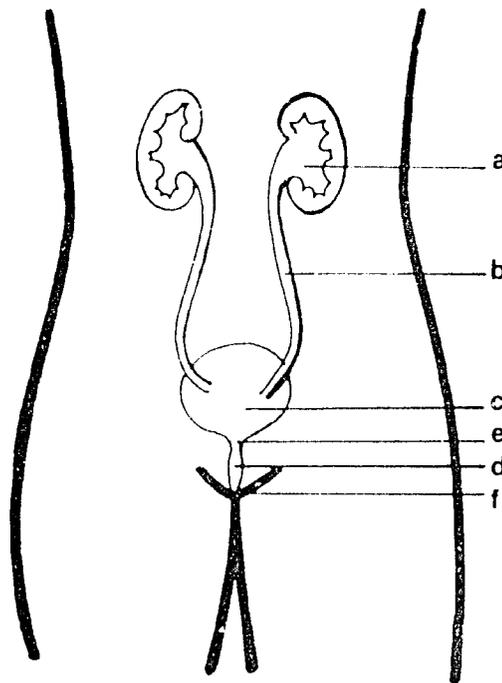
1. identify the 4 organs of the female urinary system on a diagram
2. describe the function of these 4 organs
3. list signs and symptoms in the urine, urination, and the body that might indicate a urinary disorder
4. recognize 4 types of urinary disorders from signs and symptoms and give their causes and recommended treatment
5. list at least 4 types of kidney disorders
6. list 3 symptoms of kidney infections
7. define and describe the 3 main symptoms of acute cystitis
8. name 2 alternative causes of cystitis and explain how they occur
9. describe the procedure for diagnosing chronic cystitis
10. describe 4 possible treatments for cystitis
11. list at least 5 things to tell the patient to do when she feels she may be getting an attack of cystitis

## Pre-test

**To the Learner:** Before starting this module, try taking the following test. This test will give you an idea of what you already know and what you will learn in this module. You will take the same test again after you have completed the module. A comparison of your two sets of answers will give you an idea of how much you have learned from this module.

Record your answers on a separate sheet of paper. You will find the correct answers to this Pre-test in the last section of this module.

1. Using the diagram, identify and label the four main organs of the female urinary system.



**The Female Urinary System**

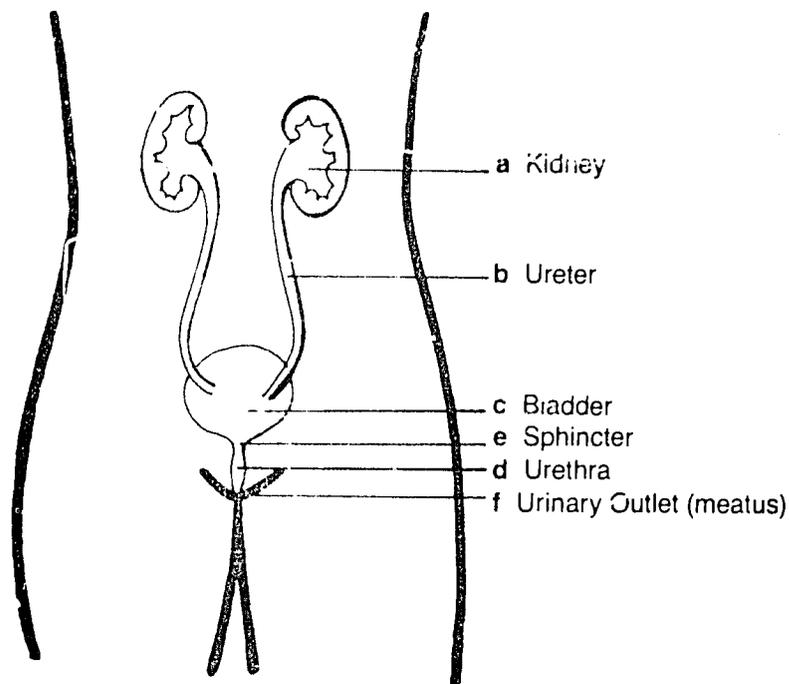
2. Describe the purpose of each of the four organs in the urinary system.
3. A woman patient gives a urine specimen for examination. What characteristics would you look for that might indicate a problem?
4. What questions would you ask a patient about her pattern of urination that would let you know if there might be a urinary problem?

5. If you examine the woman, what signs would you look for that might indicate a urinary problem?
6. A woman patient complains of pain on urinating and frequent urination. What types of urinary disorders might she have and what procedures are used to diagnose her specific disorder?
7. If the woman is diagnosed as having an infection, what is the cause and what is the recommended treatment?
8. A woman complains that the flow of urine seems obstructed. What is the disorder? What might be the cause and what treatment is recommended?
9. If a woman cannot control urination, what is her disorder called? Give several causes for this disorder and give the treatment.
10. Name at least 4 types of kidney disorders.
11. What are 3 symptoms of kidney infection?
12. What are the 3 main symptoms of acute cystitis?
13. What are 2 alternative causes of cystitis?
14. If a woman gets cystitis through infection, how might she have gotten that infection?
15. If a woman gets cystitis through inflammation without infection, what might have caused the inflammation?
16. What is the procedure for diagnosing chronic cystitis?
17. What are 4 possible treatments for cystitis?
18. A woman patient has cystitis attacks. What are at least 5 things you would tell her to do at the first hint of trouble?

## 1. Anatomy of the Urinary System

The urinary system consists of those organs that produce and excrete urine:

- (a) a pair of kidneys;
- (b) a pair of tubes called ureters;
- (c) a muscular bag called the bladder; and
- (d) another single tube called the urethra.



**The Female Urinary System**

Study the diagram of the urinary system as you read the descriptions of the four organs and their function within the system.

### The Kidneys

These are located on either side of the spine, in the region of the middle back. The right kidney lies slightly lower than the left. Each kidney is bean-shaped, and is about 10 cm long, 6 cm wide, and 3.8 cm thick. Each weighs about 140 g.

The kidneys are chemical processing works. In them, waste matter in the blood is filtered off under pressure, through more than 2 million

tiny filtering units. This filtrate is called urine. In this way the balance and concentration of components of the blood are maintained, and potential poisons are removed.

### The Ureters

These are muscular tubes, each 25 cm long. One tube leads from each kidney, and down them the urine passes to the bladder, at the rate of a drop every 30 seconds.

### The Bladder

This is a balloon-like, muscular bag that acts as a reservoir for the urine. When full, it holds about .57 liters of urine - though the desire to urinate is usually felt when about half that amount is present.

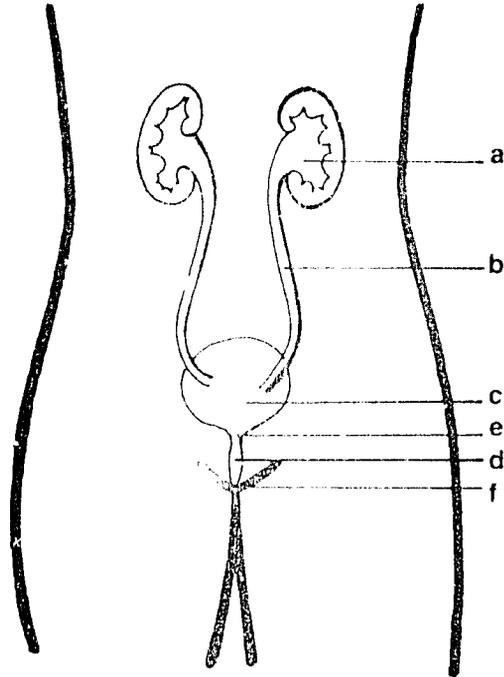
### The Urethra

This is a muscular tube, about 3.8 cm long in a woman (compared with 20 cm in a man). It leads from the bladder to the exterior, and, when the sphincter (e) relaxes, it is along this tube that urine leaves the body ("urination"). The diameter of the urethra is larger in women than in men, and this is why women take less time to urinate than men.

The waste matter from the kidneys is called urine. Urine consists of 96% water and 4% dissolved solids. Only 60% of the water taken into the body is normally eliminated as urine. The rest passes out in sweat and feces, and through the lungs. Urine is normally straw or amber colored. In 24 hours an adult usually passes between 0.8 and 1.4 liters, spread over 4 to 6 occasions. Most do not find it necessary to get up to pass urine at night. However, all these characteristics vary normally with: the amount of fluid drunk and when; the amount lost in sweat; the size of the bladder.

## Practice Questions

1. On the diagram, identify and label the four main organs of the female urinary system.



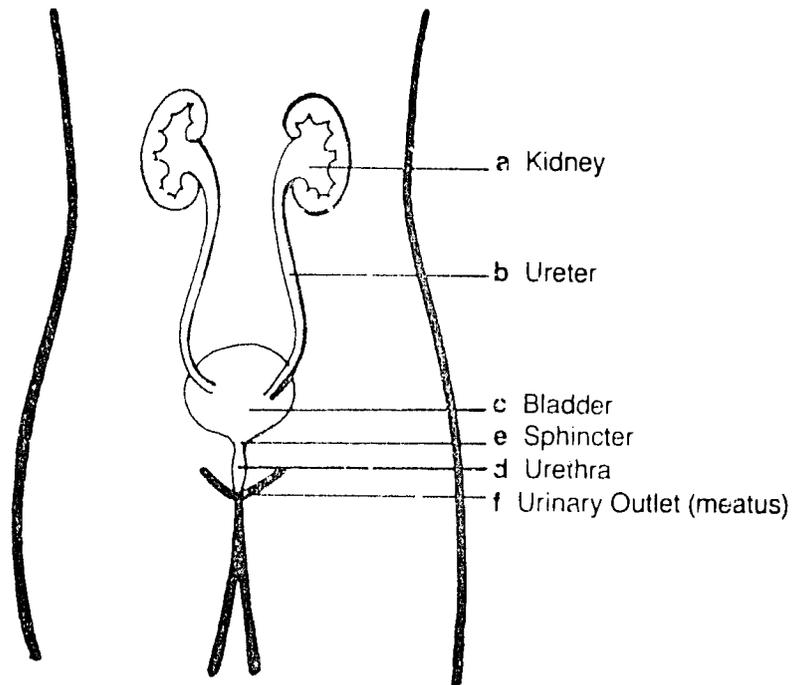
**The Female Urinary System**

2. What is the function of each of the 4 organs within the urinary system?
3. What is urine?

To the Learner: Turn the page to check your answers.

## Answers to Practice Questions

### 1. Organs of the Female Urinary System:



**The Female Urinary System**

2.
  - a. Kidneys are the chemical process works. They filter waste matter from the blood.
  - b. Ureters are the tubes which carry the urine from the kidneys to the bladder.
  - c. The bladder is the reservoir for the urine.
  - d. The urethra is the tube that carries the urine from the bladder to the outside of the body.
3. Urine is the waste matter of the blood after it has been filtered through the kidneys. It consists of 96% water and 4% dissolved solids.

**To the Learner:** If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go on to section 2 on the next page.

## 2. Urinary Disorders

For a clinician, the urine and urination are among the most useful signs of disorder - relating sometimes not just to the urinary system, but to the general health of the body.

### Symptoms of Urinary Disorders

There are several areas to examine for signs and symptoms of urinary disorders:

#### 1. Urination

Characteristics of urination that may indicate a problem include: (1) changes in quantity and frequency (including rising at night); (2) slow and weak, or unusually forceful flow; (3) stopping and starting, and dribbling; (4) difficulty in beginning or continuing; (5) inability to restrain (incontinence); (6) sudden stopping; and, of course, (7) pain and burning or other unusual sensation on urinating, or (8) inability to urinate at all.

#### 2. Urine

Characteristics of the urine that are of interest include unusual color, odor, cloudiness, frothiness, and content. Abnormal chemical content can include albumin (which may indicate kidney disorder) or sugar (diabetes). Other abnormal contents can include bacteria, parasites, kidney tube casts, bile pigment, ketone, and especially red blood cells or pus (white blood cells).

Many unusual characteristics of the urine or urination will more usually be due to insignificant causes than to disorder. Strikingly unusual colors can be produced just by certain medicines and foods.

#### 3. Other Signs and Symptoms

Other signs and symptoms of disorder include: itching, redness, or stickiness at the urethral opening; any discharge from the urethra; pain or tenderness in the area of the back over the kidneys (costovertebral angle); descending pain in the groin; chills or fever.

## Types of Urinary Disorders

### 1. Infection

Causes: Infection can reach the urinary system in two ways: "downward," via the bloodstream and then to the kidneys; or "upward," via the urethral opening in the genitals. An example of the first can be tuberculosis. But the second is much more common in women: (a) because in women the closeness of anus and genitals helps bacteria pass between them; and (b) because the shortness of the female urethra allows bacteria to reach the higher parts of the tract more easily.

Symptoms: Most bacteria entering the tract from outside are killed by the urine, but 5% of women (both adults and children) DO HAVE ACTIVE BACTERIA IN THE BLADDER. Often there are no symptoms. If there are, frequency of urination and pain on urinating are typical.

Diagnosis and treatment: Diagnosis is by bacteriological examination of a urine sample. Treatment is with an antibiotic, depending on culture and sensitivity of urine analysis.

### 2. Inflammation

Causes: Inflammation of the tract is mostly caused by infection, but also by: dietary irritation (e.g., alcohol, and perhaps food allergy); use of chemicals (vaginal deodorants, contraceptive foams, douches, etc.); and tissue damage during sexual activity, childbirth, or surgery. Even when not caused by infection, it can offer a favorable site for infection. Inflammation of the urethra is called "urethritis," that of the bladder, "cystitis."

Symptoms: Symptoms again include pain on urination.

Treatment: Treatment depends on the cause, but drinking large quantities of fluid may help.

### 3. Flow Abnormality

Causes: Flow abnormality includes obstruction of flow, complete or incomplete; also apparently normal flow that nevertheless leaves stagnant pools of urine in the bladder. Causes for flow abnormality include:

- (1) blockage from within by extraneous objects (e.g., stones, blood clots, etc.);
- (2) malfunction of the tract itself (e.g., through congenital malformation, tumors or tissue changes, and temporary spasm);
- (3) outside pressure on the tract (e.g., from fibroids, displaced uterus, or pregnancy); and

- (4) strictures of the ureters or urethra caused by scar tissue formed in the healing process after trauma or infection.

Treatment: Stagnant urine is a likely site for infection. When there is flow blockage as well, pressure builds up behind the obstruction, and that section of the tract may be stretched and dilated. Eventually the pressure and dilation may back up toward the kidneys. Kidney infection may result, and rapid surgical treatment is needed before the kidneys suffer permanent damage.

#### 4. Incontinence

Causes: Incontinence is inability to control urination. Incontinence sometimes occurs in younger women. Causes include: psychological stress (e.g., severe fright); disorders of the bladder; congenital defects; tissue damage occurring in childbirth or surgery; and impairment of the nerves due to injury or disease. Two types are fairly common:

- (1) urgency incontinence, where there is a shortened time gap between the desire to urinate and uncontrollable urination - it occurs quite often in women over 40; and
- (2) stress incontinence, typified by small amounts of urine escaping when the person strains, coughs, or laughs - whether the bladder is full or virtually empty. This is usually only seen in postmenopausal women.

Treatment: The treatment for stress incontinence is special exercises, or sometimes surgery.

### Practice Questions

1. What are two useful signs and symptoms of disorder - relating sometimes not just to the urinary system, but to the general health of the body?
2. Name at least 5 characteristics of urination that may indicate a problem.
3. Name at least 3 characteristics of urine that may indicate a problem.
4. Name at least 3 other symptoms - other than one associated with urine or urination - that may indicate a problem.
5. List 4 types of urinary disorders. Give the causes, symptoms, and recommended treatment for each one.
6. If a woman patient complains of having pain on urinating, she may have one of two urinary disorders. What are they? What procedure is used to diagnose her specific problem?

**To the Learner:** Turn the page to check your answers.

## Answers to Practice Questions

1. The two useful signs and symptoms of disorder are: changes in urine and urination.
2. Any of the following are characteristics of urination that may indicate a problem:
  - (1) changes in quantity and frequency
  - (2) slow and weak, or unusually forceful, flow
  - (3) stopping and starting, and dribbling
  - (4) difficulty in beginning or continuing
  - (5) incontinence
  - (6) sudden stopping
  - (7) pain or burning or other unusual sensation on urinating
  - (8) inability to urinate at all
3. Any of the following are characteristics of urine that may indicate a problem:
  - (1) unusual color
  - (2) cloudiness
  - (3) frothiness
  - (4) abnormal content such as albumin, sugar, bile pigment, ketone, bacteria, parasites, kidney tube casts, red blood cells, or pus (white blood cells)
4. Other symptoms that may indicate a problem include:
  - (1) itching at the urethral opening
  - (2) redness at the urethral opening
  - (3) stickiness at the urethral opening
  - (4) discharge from the urethra
  - (5) pain or tenderness of in the area of the back over the kidneys
  - (6) descending pain in the groin
  - (7) chills or fever
5. Infection:

Cause: Bacteria reaches the urinary system from the bloodstream or from the genitals.

Symptoms: Frequency of urination and pain on urinating

Treatment: Antibiotics

Inflammation:

Cause: Infection, use of chemicals (vaginal deodorants, foams), tissue damage, childbirth, surgery

Symptoms: Pain on urinating

Treatment: (Depends on cause) - Have patient drink large quantities of fluids

Flow Abnormality:

Cause: Blockage from within by extraneous objects, malfunction of urinary tract, outside pressure on tract

Symptoms: Complete or incomplete obstruction of urine flow

Treatment: Rapid surgical treatment may be necessary

Incontinence:

Cause: Psychological stress, bladder disorders, congenital defects, tissue damage from childbirth or surgery, and nerve impairment

Symptoms: Inability to control urination

Treatment: Special exercises, or sometimes surgery

6. She may have either an infection or inflammation. A bacteriological examination of the urine sample would reveal if she had an infection.

**To the Learner:** If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to section 3 on the next page.

### 3. Kidney Disorders

There are a number of different kinds of kidney disorders.

These include: (1) congenital defects  
(2) tumors  
(3) stones  
(4) damage through injury  
(5) inflammation without infection and  
(6) infection

**Infection** is especially common in women. It can arrive via the bloodstream or the urinary system. In acute attacks, bacterial infection via the urinary tract is typical.

Symptoms: Chills and fever, acute pain in loin or under ribs at back, and frequent urination.

Treatment: Qualified medical attention is vital: appropriate antibiotics, bedrest, and plenty of fluids; and even hospitalization if warranted.

Long-term infection may follow acute infection, or arise from urinary obstruction or blood-borne infection. (Stones are frequent sites). Symptoms include dull back pain, painful and frequent urination, tiredness, headache, nausea, loss of appetite, and fever. Treatment depends on causes. In neglected cases, kidney damage may result, with possible high blood pressure and chronic renal failure.

### Practice Questions

1. Name at least 4 types of kidney disorders.
2. What are three symptoms of kidney infection?
3. How are kidney infections treated?
4. What may happen if kidney infections go untreated?

**To the Learner:** Turn the page to check your answers.

## Answers to Practice Questions

1. Any of the following are types of kidney disorders:
  - (1) congenital defects
  - (2) tumors
  - (3) kidney stones
  - (4) damage through injury
  - (5) inflammation without infection
  - (6) infection
2. Three symptoms of kidney infection are:
  - (1) chills and fever
  - (2) acute pain in loin or under ribs at back
  - (3) frequent urination
3. Kidney infections are treated with appropriate antibiotics, bedrest, plenty of fluids, and even hospitalization if warranted.
4. If kidney infections go untreated, kidney damage may result, with possible high blood pressure and chronic renal failure.

**To the Learner:** If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go on to section 4 on the next page.

## 4. Cystitis

Strictly, cystitis means inflammation of the bladder. It is generally characterized by a certain collection of symptoms, usually in women, which can arise in a variety of ways.

### Symptoms of Cystitis

The main symptoms of an attack (acute cystitis) are:

1. great frequency of urination (perhaps every few minutes);
2. pain on urination - often extreme; and yet
3. a recurrent or even continuous desire to urinate even when there is no urine to pass. (urgency)

As the attack continues, there may also be increasing incontinence, and often blood in the urine. Other associated symptoms can include: pain just above the pubic bone or in the loin; and a foul smell from, and perhaps debris in, the urine. Also, extreme pain may be felt if sexual intercourse is attempted. This syndrome is very common: perhaps 80% of women suffer from it at some time in their lives, and it is often recurrent (chronic cystitis) and hard to eradicate.

### Causes of Cystitis

There are two main alternative causes:

1. infection:
2. inflammation without infection (though infection may also set in later)
1. Infection is usually caused by Escherichia coli (E. coli) bacteria from the rectum finding their way into the urethral opening. E. coli are often found on the perineum (the skin between anus and genitals). Sources of infection are:
  - a. transport of E. coli from anus to vulva by careless use of toilet paper or by sexual activity
  - b. similar cross-infection from the vagina (e.g., candidiasis, trichomoniasis, or gonorrhoea); and
  - c. infections from the kidneys that pass downward (e.g., tuberculosis).

Infection may be precipitated by: stones, stagnant pools of urine due to retention; lowered resistance, as in anemia; and (for bacteria preferring nonacidic urine) diabetes.

2. Inflammation: in cystitis, the usual cause (apart from infection) is bruising or skin cracking through sexual activity. This may be due to frequency of intercourse and insufficient lubrication. Four other causes of inflammation are:
  - a. tissue irritation through use of vaginal deodorants, foam contraceptives, unsuitable lubricants, etc.;
  - b. strain on the bladder due to prolapse of the uterus;
  - c. damage through childbirth or surgery; and possibly
  - d. allergic reaction of the urinary tract to certain foods, or chemicals.

Inflammation can, in turn, provide a breeding ground for infection (and an entry for infection into the bloodstream).

### Chronic Cystitis

Chronic cystitis is usually caused by repeated attacks of acute cystitis, but there may be long-term tissue changes also involved, including changes in the urethra due to the menopause, and changes in the bladder lining from bacterial or other infection.

#### Procedure for diagnosing chronic cystitis:

**Proper tests** should be made to pinpoint the cause. The first step should be laboratory testing of a urine sample for infection and (if present) culture and test for sensitivity to specific antibiotics.

**Collect a clean catch.** The sufferer should drink fluids before scheduled tests so as to be ready to pass urine for this. A clean sample is important: the vulva should be swabbed, and only a small midstream sample (from halfway through urination) taken.

**Take a good history.** The patient may be able to give useful information, e.g., the amount of time between the attack and the last previous intercourse. (Cystitis due to inflammation alone will follow intercourse sooner than that due to infection, since bacteria need time to multiply. Estimates vary - from "very soon after" for inflammation and 12-24 hours after for infection, to 24 hours after for inflammation and 36 for infection.)

### Treatment for chronic cystitis:

Depending on the cause of trouble, treatment may include:

1. antibiotics and similar drugs, to combat urinary and/or kidney infection;
2. increase of the patient's fluid intake;
3. drugs to relax the muscles of the bladder;
4. drugs to combat vaginal infection.

If the patient does not improve with this treatment, or she gets recurrent infections, refer her to a specialist for detailed investigations. She may require surgery to correct the problem.

Note: When the patient is on a course of antibiotics, the symptoms may vanish soon after starting the course, and there may be side effects of the drugs such as nausea. But it is very important to finish the whole course, which is about 10 days.

### **Information for the Patient**

Cystitis attacks still have to be dealt with by the woman, despite available medical help and preventive precautions. Tell the woman patient what early warning signs to notice and what she should do at the first hint of trouble.

#### What To Tell the Patient

At the first hint of trouble which might signal the beginning of a cystitis attack:

1. Pass a urine specimen into a clean closed container for the clinician for analysis, culture and sensitivity;
2. See the clinician for appropriate treatment;
3. Take a mild painkiller, after consultation with the clinician;
4. Lie or sit down with two warm compresses, one against the back, one high between the legs;
5. Drink 1/2 liter of water (boiled), or diluted fruit juice as frequently as possible.
6. After every urination, wash the skin between anus and vulva and dab it dry. Be sure to clean from the vulva towards the anus (from front to back), and not touch the vulva after the tissue or hand has touched the anus (and been contaminated by it).

## Practice Questions

1. What is cystitis?
2. What are the 3 main symptoms of acute cystitis?
3. What are 2 alternative causes of cystitis?
4. Following is a list of causes of both infection and inflammation. Decide which ones are the causes of infection and which ones are the causes of inflammation only and put the cause under the appropriate term.

### Causes:

- a. damage through childbirth or surgery
  - b. infections from the kidneys that pass downward
  - c. strain on bladder due to prolapse of uterus
  - d. allergic reaction of urinary tract to certain foods
  - e. cross-infection from the vagina
  - f. transport of E. coli from anus to vulva
  - g. frequency of intercourse
  - h. tissue irritation
  - i. insufficient lubrication during sexual intercourse
5. Describe the procedure for diagnosing chronic cystitis.
  6. If a woman patient is diagnosed as having chronic cystitis, what treatments might you prescribe for her?
  7. List at least 5 things you would tell a woman patient to do at the first hint of trouble.

**To the Learner:** Turn the page to check your answers.

## Answers to Practice Questions

1. Cystitis means the inflammation of the bladder, characterized by a collection of symptoms.
2. The 3 main symptoms of acute cystitis are:
  - (1) great frequency of urination
  - (2) pain on urination
  - (3) recurrent or continuous desire to urinate even when there is no urine to pass (urgency)
3. Two main alternative causes of cystitis are infection and inflammation without infection.
4. Causes of Infection
  - b. infections from the kidneys that pass downward
  - e. cross-infection from the vagina
  - f. transport of E. coli from anus to vulva

### Causes of Inflammation

- a. damage through childbirth or surgery
  - c. strain on bladder due to prolapse of uterus
  - d. allergic reaction of urinary tract to certain foods
  - g. frequency of intercourse
  - h. tissue irritation
  - i. insufficient lubrication during sexual intercourse
5. To diagnose chronic cystitis, tests must be made to pinpoint the cause. Test a urine sample for infection. A clean catch sample is important: the vulva should be swabbed and a midstream sample taken. Take a good history. The patient may give useful information.
  6. Treatment may include (depending on the cause):
    - (1) antibiotics and similar drugs
    - (2) increase in fluid intake
    - (3) drugs to relax bladder muscles
    - (4) drugs to combat vaginal infections
    - (5) referral to specialist if patient doesn't improve with treatment
  7. The woman patient should do the following at the first hint of trouble:
    - (1) see a clinician for appropriate treatment
    - (2) give a urine specimen for analysis, culture and sensitivity

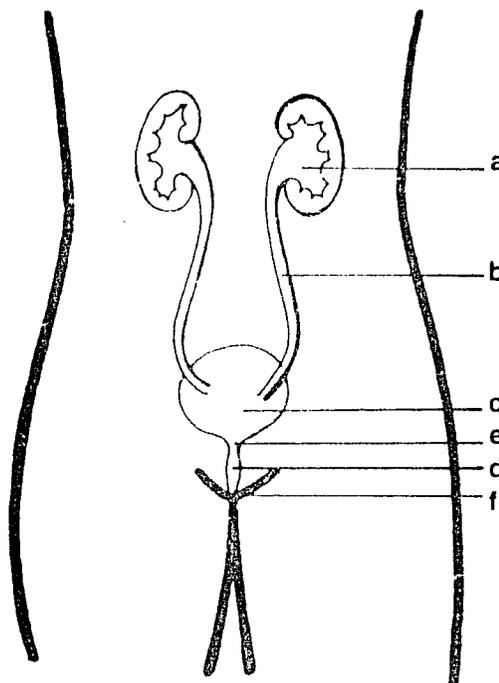
- (3) take mild painkiller, after consultation with a clinician
- (4) use warm compresses
- (5) drink 1/2 liter of boiled water as frequently as possible
- (6) wash and dab dry the skin between anus and vulva after every urination

**To the Learner:** If you missed any of the answers to the questions, go back to the information section and study it again. When all of your answers are correct, go to the Post-test on the next page.

## Post-test

**To the Learner:** This test will tell you how much you have learned from this self-instructional module. After taking the test, check your answers on the page following the test. Be sure to use a separate sheet of paper for recording your answers.

1. Using the diagram, identify and label the four main organs of the female urinary system.



**The Female Urinary System**

2. Describe the purpose of each of the four organs in the urinary system.
3. A woman patient gives a urine specimen for examination. What characteristics would you look for that might indicate a problem?
4. What questions would you ask a patient about her pattern of urination that would let you know if there might be a urinary problem?
5. If you examine the woman, what signs would you look for that might indicate a urinary problem?
6. A woman patient complains of pain on urinating and frequent urina-

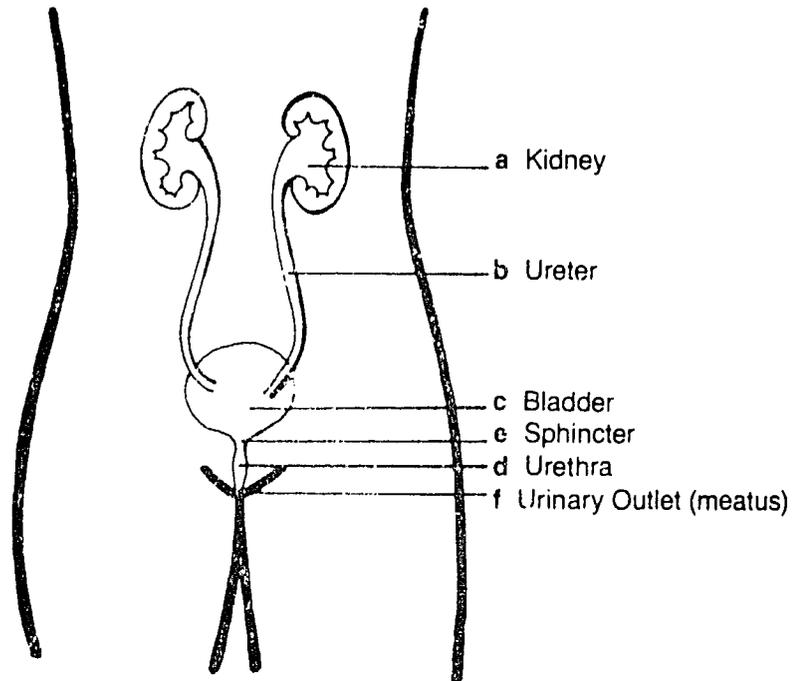
tion. What types of urinary disorders might she have and what procedures are used to diagnose her specific disorder?

7. If the woman is diagnosed as having an infection, what is the cause and what is the recommended treatment?
8. A woman complains that the flow of urine seems obstructed. What is the disorder? What might be the cause and what treatment is recommended?
9. If a woman cannot control urination, what is her disorder called? Give several causes for this disorder and give the treatment.
10. Name at least 4 types of kidney disorders.
11. What are 3 symptoms of kidney infection?
12. What are the 3 main symptoms of acute cystitis?
13. What are 2 alternative causes of cystitis?
14. If a woman gets cystitis through infection, how might she have gotten that infection?
15. If a woman gets cystitis through inflammation without infection, what might have caused the inflammation?
16. What is the procedure for diagnosing chronic cystitis?
17. What are 4 possible treatments for cystitis?
18. A woman patient has cystitis attacks. What are at least 5 things you would tell her to do at the first hint of trouble?

**To the Learner:** Turn the page to check your answers.

## Answers to Test

### 1. Organs of the Female Urinary System:



**The Female Urinary System**

2.
  - a. The kidneys are the chemical process works. They filter waste matter from the blood.
  - b. The ureters are the tubes which carry the urine from the kidneys to the bladder.
  - c. The bladder is the reservoir for the urine.
  - d. The urethra is the tube that carries the urine from the bladder to the outside of the body.
3. Characteristics of the urine that might indicate a problem include unusual color, odor, cloudiness, frothiness, and abnormal chemical content such as albumin, sugar, bile pigment, ketone, red blood cells, pus (white blood cells), casts, bacteria, or parasites.
4. Questions you might ask about the woman's urination pattern:
  - (1) Have there been changes in quantity and frequency?
  - (2) Is the flow slow and weak, or unusually forceful?

- (3) Do you stop and start or have dribbling?
  - (4) Do you have difficulty in beginning or continuing?
  - (5) Do you find yourself unable to restrain your flow?
  - (6) Does the urination stop suddenly?
  - (7) Do you have any pain or other unusual sensation on urinating?
  - (8) Are you unable to urinate at all?
5. Signs to look for during an examination would be itching, redness or stickiness at the urethral opening, discharge from the urethra, pain or tenderness in the area of the back over the kidneys, descending pain in the groin, and chills or fever.
  6. According to the symptoms, the woman may have either infection or inflammation. Diagnosis by a bacteriological examination of a urine sample would indicate her disorder. Presence of bacteria would mean infection.
  7. Infection is caused by bacteria in the urinary system from blood stream or genitals. Treatment of infection is with an antibiotic.
  8. The disorder is flow abnormality. It can be caused by blockage from within by extraneous objects, malfunction of the tract itself, strictures or outside pressure on the tract. Treatment is referral to a specialist for possible rapid surgery.
  9. Her disorder is called incontinence. It can be caused by psychological stress, congenital defects, tissue damage occurring in surgery or childbirth or nerve impairment. The treatment for stress incontinence is special exercises, or sometimes surgery.
  10. Any of the following are types of kidney disorders:
    - (1) congenital defects
    - (2) tumors
    - (3) kidney stones
    - (4) damage through injury
    - (5) inflammation without infection
    - (6) infection
  11. Three symptoms of kidney disorder are:
    - (1) chills and fever
    - (2) acute pain in the loin or under ribs at back
    - (3) frequent urination

12. 3 main symptoms of acute cystitis are:
  - (1) pain on urination
  - (2) great frequency of urination
  - (3) recurrent or continuous desire to urinate even when there is no urine to pass (urgency)
13. Two main alternative causes of cystitis are infection and inflammation.
14. She might have gotten the infection in any of the following ways:
  - (1) transport of E. coli from anus to vulva by careless use of toilet paper or by sexual activity
  - (2) cross-infection from the vagina
  - (3) infection from kidneys passing downwards
15. The inflammation might have been caused by bruising or skin cracking through sexual activity; tissue irritation; strain on bladder due to prolapse of the uterus; damage through childbirth or surgery; or allergic reaction of the urinary tract to certain foods, or chemicals.
16. To diagnose chronic cystitis, tests must be made to pinpoint the cause. Test a urine sample for infection. A clean catch sample is important: the vulva should be swabbed and a midstream sample taken. Take a good history. The patient may give useful information.
17. Treatment may include (depending on the cause):
  - (1) antibiotics and similar drugs
  - (2) increase in fluid intake
  - (3) drugs to relax bladder muscles
  - (4) drugs to combat vaginal infections
  - (5) referral to specialist if patient doesn't improve with treatment
18. The woman patient should do the following at the first hint of trouble:
  - (1) see a clinician for appropriate treatment
  - (2) give a urine specimen for analysis, culture and sensitivity
  - (3) take mild painkiller, after consultation with a clinician
  - (4) use warm compresses
  - (5) drink 1/2 liter of boiled water as frequently as possible
  - (6) wash and dab dry the skin between anus and vulva after every urination