PN-AAT-069

COMMON MEDICAL CONDITIONS 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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The Merck Manual, 10th.edition, Merck, Sharp and Dohme Research Laboratories, 1961

Primer on Rheumatic Diseases, 7th edition, The Arthritis Foundation, New York, NY, 1973.

Stroke Rehabilitation is adopted from Strike Back at Stroke by the American Heart Association, 44 East 23rd.Street, New York, NY 10010.

SCHEDULE

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5

STUDENT GUIDE

ARTHRITIS

I. Entry Level Skills and Knowledge

Before starting this unit, you should be able to:

1. Describe anatomy and physiology of a normal joint.

2. Perform examination of skeletal (joint) system.

3. Explain the inflammatory process.

II. Objectives

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

1. Diagnose rheumatoid arthritis and osteoarthritis based on physical examination and patient history.

2. Differentiate rheumatoid arthritis from:
   -septic joint (sepsis)
   -rheumatic fever

3. Identify signs and symptoms of rheumatoid arthritis and osteoarthritis.

4. Identify the complications of rheumatoid arthritis and osteoarthritis.

5. Manage rheumatoid arthritis with drug therapy, rest, and patient education.

6. Manage osteoarthritis with drug therapy, physical measures, and patient education.

7. Provide follow-up management for rheumatoid arthritis and osteoarthritis.

8. Identify the complications of drug therapy for arthritis.

9. Identify the means of preventing contractures and decreasing the severity of arthritis.

III. Evaluation

MODULE PHASE

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

1. Knowledge: Written test based upon the content of the module text. (Acceptable performance, 80%.)

2. Skill: Your ability to perform physical examination of the skeletal system. Your ability to identify the physical examination discriminators for osteaoarthritis and rheumatoid arthritis.

ROTATION PHASE

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

1. Your ability to diagnose and manage osteoarthritis and rheumatoid arthritis
2. Your ability to perform a range of motion exercise, and use finger splints to prevent contractures.
3. Your ability to instruct patients/family in range of motion exercise.

IV. Activities you will be using to accomplish objectives include:

1. Read module text and answer review questions.
2. Participate in large group discussion covering text material.
3. Participate in role playing activity in which trainees will practice patient education.

RHEUMATOID ARTHRITIS

General Considerations

Rheumatoid arthritis is an inflammatory disease of the body's connective tissues in which the joints become stiff, painful, and swollen. It is an autoimmune disease, which means the person makes antibodies which attack and damage certain of his own body tissues, but the actual cause of rheumatoid arthritis is unknown.

The tissue around the joint becomes inflamed and swollen and secretes more fluid causing the joint space to swell. Scar tissues form and gradually cause the joint to become swollen and deformed. (See Figure CM 1)

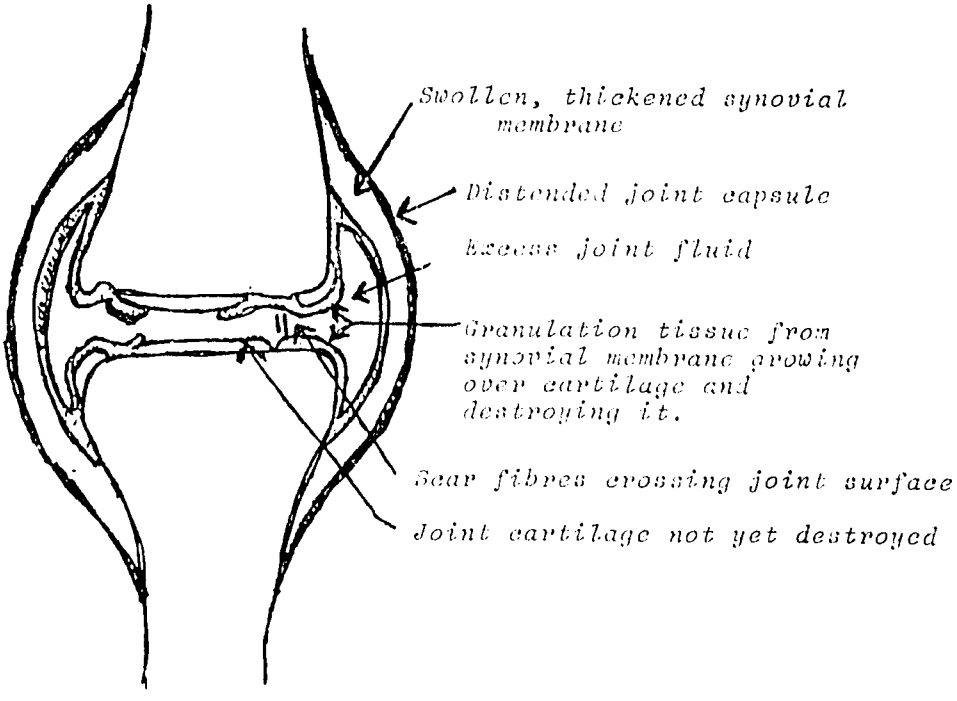


Figure CM 1 - Joint inflamed with rheumatoid arthritis.

Clinical Picture

In most cases the onset of the disease is gradual, beginning with the swelling of several joints and some muscle aches. Gradually other joints become swollen and painful. The joints remain swollen and painful for at least 2-3 weeks or longer. The disease is known for its exacerbations and remissions which gradually destroy the joint and cause deformities.

Joint swelling and pain is typical. Often all of the joints of the hand and fingers become swollen except the most distal finger joints. The wrist joints, ankle joints, and knee joints are also frequently involved. Joint pain may be more severe in some joints than in others. The pain usually occurs with motion, but may be present at rest in joints that are acutely inflamed. During periods when the inflammation is less, the pain also improves and may temporarily entirely disapper. Painful joints are often tender to pressure. (See Figure CM 2.)

-fingers deviate laterally

-wrist joints swollen

-distal joints are not swollen

-middle joints and metacarpo-phalangeal joints are swollen and deformed.

Figure CM 2 - Hand with rheumatoid arthritis.

Patient's joints often feel stiff after waking up in the mornings and improve after they have moved around for an hour or so. Muscle aching is rather common in the neck and shoulder but also occurs in other muscles near affected joints. Most rheumatoid arthritis patients tire very easily.

Some patients have a low grade fever especially during periods of active inflammation. High fever is unusual but can occur during periods of severe inflammation.

The feet and hands often feel cold with numbness or tingling. Subcutaneous nodules - ½ to 1 cm in diameter, may occur over bony prominences or attached to joint capsules. Sometimes they gradually resolve. Weight loss frequently occurs.

The principal complication is limitation of joint motion, often with muscle contractures. In severe cases, such a patient may be unable to walk about.

Differential Diagnosis

The fully developed case is usually easy to diagnose. However, early cases with fever, fatigue and just one or two joints affected can be very difficult.

There are two other serious illnesses with which rheumatoid arthritis may be confused. They are septic joint and rheumatic fever.

1. Rheumatoid arthritis may be confused with a septic joint in its early stages when only one or two joints may be acutely inflamed. When doubt exists, treat for septic joint and refer to the hospital. (See G.U.Disease Module.)
2. Early rheumatoid arthritis with more joints involved may also be confused with rheumatic fever, but in rheumatic fever the joint swelling moves from some joints to other joints every few days.

Management

Rheumatoid arthritis cannot be permanently cured but pain and some deformity can be prevented.

1. Moderate exercise is necessary to prevent joint contractures. To prevent contractures each patient needs to move every joint through its full range-of-motion several times daily.

2. Rheumatoid arthritis patients usually require more rest than well people. They should get adequate sleep and, if feeling tired, take additional rest during the day.

3. Any joint that is acutely inflammed (red, hot, and painful) should be rested. Finger splints are helpful. Walking should be avoided when the ankle, knee or hip are acutely inflamed.

4. Aspirin is the best drug for arthritis. It decreases the inflammation as well as the pain. High doses may be necessary and should be given as long as signs of inflammation or pain are present.

   Adults: 2 tabs (600 mg) four times a day
   to
   3 tabs (900 mg) four times a day

   Watch for stomach burning and pain, as well as signs of G.I.bleeding such as bomiting of "coffee grounds" or black stools. If the patient complains of burning in the stomach, give an antacid along with the aspirin. (The aspirin should always be given with food or a full glass of milk or water.) If the burning continues or there are any signs of G.I.bleeding, have the patient discontinue the aspirin and refer her to the hospital.

   Ringing of the ears is a common side effect associated with high dosages of aspirin. This by itself is not a serious problem - but in older people may progress to deafness so should be closely watched.

   Drugs such as phenylbutazone or indomethacin may be used for a 10-14 day course. The patient should not stay on these indefinitely because of the serious side effects such as bone marrow suppression or peptic ulcer disease.

Prevention

There are no preventive measures for rheumatoid arthritis. Contractures, however, can be prevented by patient education with adequate medication to reduce the inflammation and encouragement to fully move joints.

Patient Education

Since this is a progressive chronic disease, patients and their families should understand that rheumatoid arthritis is a disease which cannot be permanently cured but that it can be expected to improve for sometime before getting worse again.

They should also know that proper rest, exercise, and medication will help relieve the pain and reduce the progression of the disease.

REVIEW QUESTIONS

1. Rheumatoid arthritis is a disease which affects the:

_____ eyes
_____ sense of hearing
_____ joints
_____ nerves

2. With rheumatoid arthritis, the patient's joints become:

_____ painful
_____ stiff
_____ swollen

Place a "T" or "F" in front of the following statements to indicate whether they are TRUE or FALSE.

_____3. With rheumatoid arthritis, joints are swollen and painful for only 3 to 7 days.

_____4. Joint swelling with rheumatoid arthritis usually develops gradually.

_____5. Symptoms of rheumatoid arthritis may disappear and return later.

_____6. With rheumatoid arthritis, joint swelling moves from one set of joints to another set of joints every few days.

_____7. The principle complication of rheumatoid arthritis is limitation of joint motion.

_____8. Once a person has rheumatoid arthritis, he is immune to future inflammation of rheumatoid arthritis.

_____9. The most distal finger joints are most susceptible to inflammation of rheumatoid arthritis.

10. Name two illnesses with which rheumatoid arthritis may be confused.

1)

2)

11. Patient education is an important component in the management of rheumatoid arthritis. Discuss some important points to be discussed with the patient.

12. What is the preferred drug for treatment of rheumatoid arthritis and what is the dosage for adults?

13. What are signs of possible drug reactions to treatment with aspirin?

14. You have been treating a 45-year old woman for rheumatoid arthritis. At her last visit she complained of a burning stomach pain whenever she takes aspirin to relieve the joint pain. How will you manage this?

OSTEOARTHRITIS

General Considerations

Osteoarthritis is a degenerative disease of movable joints. It is a common disorder especially in the elderly and seems to be a part of the aging process. The inner joint structure becomes roughened and worn. Weight bearing joints are most commonly involved.

Osteoarthritis may be seen in younger people associated with old joint injuries. Certain other factors may promote the development of degenerative changes. They include the increased "wear and tear" on joints associated with obesity

Clinical Picture

Most symptoms relate directly to the joints involved - joint pain on motion, stiffness after periods of rest and aching at times of rainy weather.

On physical examination, roughness or clicking may be felt when moving the joint. The joint may have a limited range of motion from normal and changes of the joint shape may be observed. Tenderness may be present but other signs of inflammation are rare.

Hip involvement can be very painful and result in "marked decrease" in range of motion and difficulty walking. Knee involvement is common in older women and is associated with loss of motion and difficulty in walking. Degenerative disease of the spine is a common cause of back pain.

Osteoarthritis is a slowly progresseive disease and although not life threatening is disabling and painful. It usually is confined to a few joints and does not spread to all the joints like rheumatoid arthritis does.

Management

Supervision is important to prevent unnecessary disability.

1. Physical measures
   a. Daily rest at mid-day is often helpful. If the back is involved, a firm mattress with a board underneath is recommended for sleeping.
   b. Local support. When knees and hips are involved, canes or crutches may be helpful.

c. Weight reduction will decrease the wear and tear on weight bearing joints.
d. Hot soaks or packs to painful areas will reduce the pain. Three times a day for fifteen minutes.

2. Drug therapy
Aspirin seems to reduce the joint changes as well as decreasing the pain.
Aspirin 2 tabs (600 mg) four times a day.

Prevention

Avoidance of obesity may decrease the severity of osteoarthritis of the weight bearing joints.

REVIEW QUESTIONS

Mark the following "O" for Osteoarthritis and "R" for Rheumatoid Arthritis. (May have two answers.)

____ 1. Associated with aging

____ 2. May improve for a while and then get worse

____ 3. Aspirin

____ 4. Obesity makes it worse

____ 5. Daily rest

____ 6. Disability may be decreased

____ 7. No prevention

____ 8. Low grade fever

____ 9. Subcutaneous nodules

STUDENT GUIDE

OSTEOMYELITIS

I. Entry Level Knowledge and Skills

Before starting this unit, you should be able to:

1. Describe the associated anatomy and physiology of the skeletal system.
2. Explain the infection process.

II. Objectives

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

1. Identify the high risk factors associated with osteomyelitis.
2. Explain the causes of osteomyelitis.
3. Explain the signs and symptoms associated with osteomyelitis in adults and children.
4. Identify localized pain and tenderness in bone(s) as a physical examination discrimination for osteomyelitis.
5. Diagnose and manage osteomyelitis using protocols and management guidelines.

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. Acceptable performance, 80%.
2. Skills - Your ability to make the physical examination discriminations for osteomyelitis.

Rotation

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

1. Your ability to diagnose and manage osteomyelitis.
2. Your ability to immobilize limbs or vertebral column.
3. Your ability to describe appropriate patient education regarding trauma and infection.

IV. Activities you will use to accomplish the objectives:

1. Students read module text on osteomyelitis and answer review questions.
2. Instructor conducts a discussion of the diagnosis and management of osteomyelitis.
3. Instructor demonstrates immobilization of limbs and vertebral column.

OSTEOMYELITIS

Osteomyelitis or bone infections can be caused by direct contamination of the bone or by spread of infection through the bloodstream to the infected bone. Direct contamination most often is a complication of open fractures, penetrating wounds or unsterile surgery. In osteomyelitis from systemic spread, the primary infection can be found in only half of the patients. History may reveal that patients have a past history of trauma to the region.

Clinical Picture

In children:

Usually osteomyelitis begins with a fever, which may be quite high, and in severe cases, is accompanied by chills and signs of generalized infection. The pulse is elevated. Inflammatory signs over the bone area may be absent early but later localized pain, tenderness, swelling, warmth and redness may be observed. The patient often complains of pain and may not want to move or to be moved or touched when the localized signs occur. Any bone may be involved - long bone, hip, vertebrae, etc.

In adults:

Osteomyelitis is typically seen with sudden pain in the affected bone and a sharp rise in temperature, but in fact, fever and other signs of infection may be absent or vague. Usually there is localized pain and tenderness, and one of the earliest signs may be limitation of movement. Overlying tissue becomes swollen, red, and may show abscess formation (this is most common in chronic osteomyelitis). Any bone may be involved - long bones, hip, vertebrae, etc.

Complications

The most common complication of acute osteomyelitis is chronic bone infection which may occur following delayed diagnosis or inadequate early treatment. Chronic osteomyelitis or more complicated acute osteomyelitis can form an abscess formation in the surrounding soft tissue. Other complications include damage to the bone due to infection and subsequent fractures at the site of infection.

Management

Osteomyelitis is a very serious infection and may need special types of antibiotics and/or surgery. Therefore, the patient should be seen by a doctor.

1. Immobilize the affected limbs or vertebral column.
2. Transfer to a hospital for treatment.
3. Long-term antibiotic therapy may be necessary and a nurse clinician may be asked to follow up at the clinic level. Patients with osteomyelitis should be seen periodically to observe for complications.

Prevention

There is no specific prevention of osteomyelitis.

REVIEW QUESTIONS

1. Osteomyelitis is said to be caused by direct contamination of the bones or by infection through the bloodstream. Explain the history associated with each of these:

   a. Direct contamination:

   b. Infection through bloodstream:

2. Describe the clinical picture of a child with osteomyelitis.

3. Describe the typical picture of osteomyelitis in an adult.

4. How would you manage a patient who you diagnose as having osteomyelitis?

STUDENT GUIDE

BACKACHE

I. Entry Level Skills and Knowledge

Before starting this unit, you should be able to:

1. Describe the normal anatomy and physiology of the vertebral column, the spinal cord and the peripheral nervous system.
2. Know the historical questions to ask concerning the musculo-skeletal and nervous system.
3. Do a physical examination of the musculo-skeletal and nervous system.

II. Objectives

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

1. Describe the symptoms and signs associated with backache.
2. On physical examination recognize:
   a. Musculo-skeletal change, including -
      1) Abnormal curvature of spine
      2) Swelling or tenderness of joints
      3) Decreased mobility
   b. Neurological changes, including -
      1) Abnormal sensory or motor findings

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. Skills - Your ability to perform a complete history and physical examination of the musculo-skeletal and neurological systems.

ROTATION PHASE

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

1. Your ability to diagnose and manage the common causes of backache.

BACKACHE

General Considerations

Backache or pain in the back is one of the most common types of pain. The pain may be from the back itself, or it may be caused by disorder in some other organ. It is important to recognize that while most pain in the back is because of muscle strain, not all of it is, and other, more serious causes must be considered.

The back has two parts each with a separate job. One part is the vertebral bodies and the discs between them. These are responsible for supporting the body. The other part is the spines themselves. These protect the spinal cord and paravertebral muscles. The stability and strength of the body depends on two types of structures - the ligaments and the muscles. Either the bones, ligaments or the muscles can be the cause of pain. The upper (cervical) and lower (lumbar) parts of the back have most freedom of movement and are most frequently injured. Most people are talking about the lower (lumbar) back when they complain about "backache".

History

When someone complains of back pain, it is most important that you take a careful history:

- Where exactly does it hurt?
- When did it start?
- Did it start suddenly or gradually?
- What was the patient doing when and just before it started to hurt?
- Has it hurt before? When? Under what circumstances?
- How severe is the pain? (Can normal work still be done?)
- Does anything make the pain worse? (coughing, sneezing, bending, etc.)
- What relieves the pain?
- Are there any other signs or symptoms? (fever, chills, haematuria, urinary frequency, loin tenderness, swelling, vaginal discharge, vaginal bleeding, pregnancy, mass, amenorrhoea, menstruation, joint deformity, obesity, etc.)

IF THERE MAY BE A FRACTURE, IMMOBILIZE THE PATIENT IMMEDIATELY, BEFORE DOING ANYTHING ELSE!

Physical Examination

The physical examination of the back should help to confirm your diagnosis. Inspection of the spine buttocks and legs when standing erect, walking, stooping and squatting is of value. Look for straightness, deviations from the normal curve and the presence of muscle spasm. Observe the joints in motion. Remember, you are observing to determine the location and character of pain, not to see how much you can make the patient hurt.

Palpation and Percussion should be done last and should be done gently. Always begin in the areas least likely to cause pain. If there is any indication of nerve damage, search for neurological changes in the lower extremities. Do not forget that the abdominal, pelvic and rectal examinations may detect causes of referred pain.

Specific Causes of Back Pain and Their Management

TRAUMA

From the history you may be able to easily determine the cause of the pain. If there has been an injury or trauma, the pain may be resulting from that. There could be a fracture with injury to the spinal cord soft tissue injury. If you suspect spinal cord injury of fracture that could cause it, immobilize the patient on a stretcher (face up if neck trauma, and face down if back trauma), then stabalize and treat for shock if required and refer to the hospital immediately.

If the back pain came on suddenly after straining and there is pain on straight leg raising, pain that radiates down a leg, or pain that worsens with coughing or sneezing, the patient may have herniated a disc producing pressure on the spinal cord or on a nerve. Have the patient rest in bed for a week and give Diazepam 5 mgm three times a day to relieve the muscle spasm. If there is no improvement within a week, refer the patient to the hospital.

INFECTION

If the patient has fever and/or chills, you should consider the possibility that the back pain is from an infection.

If the pain is in the loins or costovertebral angles, it may be from nephritis. See the Genito Urinary Module.

If there is pain in the low abdomen and adenexal tenderness is present, it may be from pelvic inflammatory disease. See Problems of Women Module.

If the pain has developed gradually and there is pain over one or two vertebra with an associated mass present, it may be from tuberculosis of the spine. See Communicable Disease Module.

OBSTETRIC OR GYNAECOLOGICAL PROBLEMS

If the patient has been pregnant or has missed a period or two, the pain may be from a complication of pregnancy. See Antenatal and Postnatal Module.

If the patient is or may be pregnant and there is vaginal bleeding, it is likely to be from an abortion. See Antenatal and Postnatal Module.

If there is a pelvic mass present, the pain may be from a fibroid of the uterus or cancer of the cervix. See Problems of Women Module.

If the pain occurs just before or during menstruation, it may be dysmenorrhoea. This tends to be felt in the low back, if partly localized, tends to radiate down the legs and is of a crampy nature. See Problems of Women Module.

ARTHRITIS

If the back pain is associated with other joint pains and joint deformity it may be from rheumatoid arthritis. This is often worse in the morning. See Rheumatoid Arthritis in this Module.

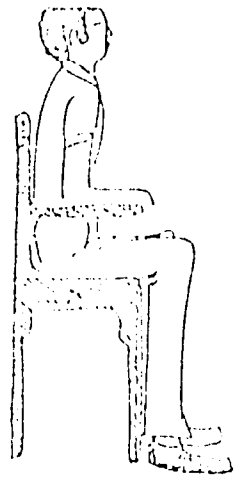
If the back pain is chronic, especially in an older person, someone with a history of an old back injury, or someone who is grossly overweight, it may be from osteoarthritis. See Osteoarthritis in this Module.

MUSCLE STRAIN

If the back pain came on suddenly, has associated tenderness but does not radiate or worsen with coughing or sneezing, it is probably due to muscle strain. Have the patient rest in bed, apply heat to the tender area and use Aspirin two tablets four times a day for pain relief if needed. This pain should not persist, but may recur after further minor back strains.

If the back pain is chronic, localized, and there is limited back movement, but is in a younger person, it may be what is called simply "chronic low back pain". Encourage low back exercises, rest daily as needed and use Aspirin two tablets up to four times a day as needed for pain relief. Poor posture may be a contributing factor and should be improved.

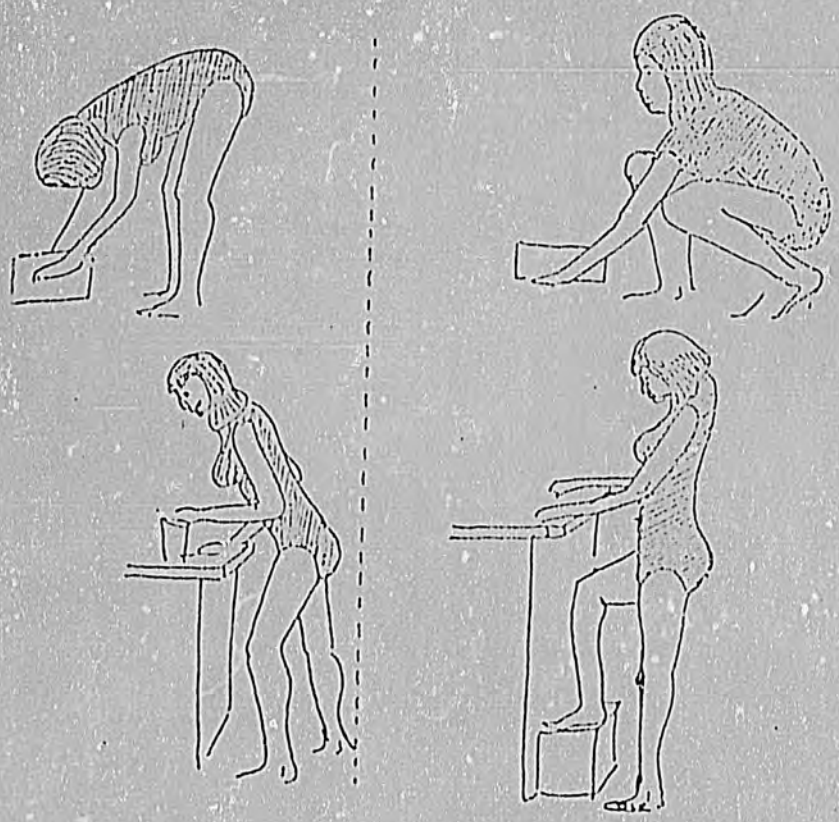
* USE A STRAIGHT CHAIR to sit on.



* Exercise regularly to straighten the spinal and abdominal muscles e.g. sit-ups and leg lifts.

* AVOID BENDING DOWN IF POSSIBLE

WRONG RIGHT



Muscle-strengthening exercises and a physical conditioning programme can also help prevent or aleviate postural backache.

Front of postural instruction sheet. Patient is instructed as follows:

Exercises should be taken on a padded floor. Exercise 4 should be omitted unless otherwise instructed. Start exercises by doing each one ——— times morning and evening, increasing the series one a day until you are doing each one ——— times morning and evening. Exercises are essential in obtaining a proper muscular balance, but a correct posture is acquired only through conscious effort.

MENTAL STRESS AND ILLNESS

It is well to remember that anxiety, depression or mental illness may cause or be manifested as pain in the back. Thus you should look for these types of problems if no other diagnosis is evident.

Summary

While most patients with back pain can be cared for in the clinic, the patient with severe back pain without evident cause or that persists should be referred to a physician.

REVIEW QUESTIONS

1. What are five (5) common causes of backache?

   a)

   b)

   c)

   d)

   e)

2. When should you refer a patient with backache?

3. Outline briefly the treatment of acute backache.

STUDENT GUIDE

THYROID DISEASE

I. Entry Level Skills and Knowledge

Before starting this unit, you should be able to:

1. Describe the anatomy and physiology of the thyroid gland.

2. Explain the effects of the thyroid on the conversion of food stores into energy.

II. Objectives

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

1. Describe signs and symptoms associated with hyperthyroidism.
2. Differentiate between a patient with simple goiter and a person with hyperthyroidism.
3. On physical examination, recognize the following:
   -enlarged thyroid
   -bulging eyeballs
4. Explain the usual course and complications associated with hyperthyroidism.
5. Develop a management plan for a patient with hyperthyroidism.
6. Identify a patient with hyperthyroidism using the protocol for weight loss.
7. Describe the signs and symptoms associated with hypothyroidism.
8. Explain the usual course and complications of hypothyroidism.
9. Identify a patient with hypothyroidism using protocols.

III. Evaluation

MODULE PHASE

Upon completion of the module you will be assessed on:

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

2. Skills: Examination of the tyroid gland, use of weight loss protocol, bulging eyes.

ROTATION

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

1. Your ability to diagnose and manage the following problems:
   -hyperthyroidism
   -hypothyroidism
   -simple goiter

IV. Activities you will be using to accomplish the objectives are:

1. Read module text and answer review questions.

2. Discussion with instructor on any questions or problems.

3. Student-lead discussion on examination of thyroid and eye for bulging.

4. Discussion with instructor of discriminators of thyroid disease.

THYROID DISEASE

Review of Physiology Related to the Thyroid Gland

As you recall, a gland is a body organ which uses chemicals within the body to produce hormones. These hormones are chemical messengers. Once released by the gland, they circulate through the body in the blood stream until they reach their target - another organ. These hormones give a message to that organ to start or increase its own functions. Hormones, then, help regulate the functions of other organs.

The thyroid gland, located in the front of the neck, uses iodine (obtained in food) to produce a thyroid hormone which then circulates through the bloodstream. Thyroid hormone is particularly important because it regulates several different organs responsible for heartbeat, body temperature, and how much food or fat is "burned up" to make energy.

In hyperthyroidism, the thyroid gland produces too much hormone, so those organs are overstimulated and the heart beats too fast, and too much food and fat are burned up, making too much energy (the person gets thin and feels very anxious or overactive).

Hyperthyroidism is a serious disease because (1) a very fast pulse means the heart is working too hard, (2) one can die if his body temperature gets too high, and (3) the body uses up so much fuel (food and fat) in producing excess energy that the person uses up all his fat stores and starts burning up muscle and essential body tissues.

The cause of hyperthyroidism is not well understood. In most people, the thyroid gland just begins getting larger and larger (hyperplasia), it produces more and more thyroid hormone, and the complications of hyperthyroidism result. It is important to realize that a large thyroid gland does not always mean hyperthyroidism. In Lesotho where iodine isn't found in the food because it's not found in the soil, people's thyroids get larger because they thyroid gland works harder to produce more hormone with less iodine (the same way muscles get larger if used a lot). These people have simple goiter, a larger than usual thyroid gland which only produces normal amount of hormone.

In hypothyroidism, the thyroid gland doesn't produce enough hormone so the organs are understimulated; the heart beats slowly, and body metabolism is slow. (The person looks puffy, slow, and dull.) Hypothyroidism is also a serious disease. The cause is often unknown.

See Diagnostic Skills - Examination of the Thyroid and
Examination of the Eyes for Bulging

DIAGNOSTIC SKILL

Examination of the Thyroid

Supplies

A glass of water

Purpose of Procedure

The purpose of this examination is to determine enlargement or abnormal lumps on the thyroid.

Steps in Procedure

The thyroid is normally too small to be seen or easily felt. It lies at the base of the front of the neck below the lowest piece of large, firm cartilage you can feel (the thyroid cartilage). The thyroid is shaped almost like a butterfly, with a thin central body crossing the centre part of the neck and two large "lobes" on either side. (See Figure CM 3.)

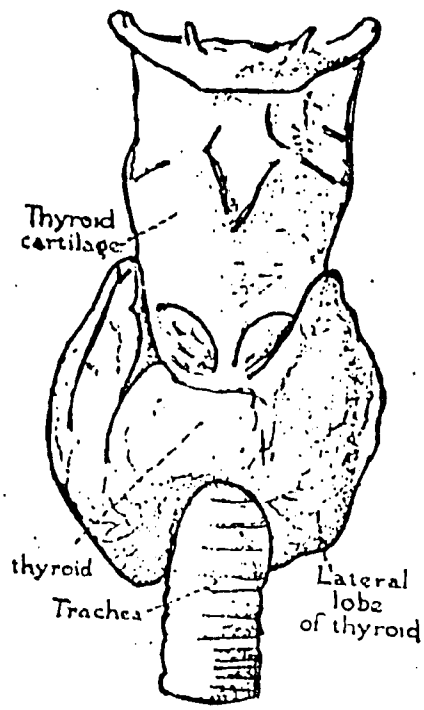


Figure CM 3 - Locations of the Thyroid Gland.

When the gland becomes enlarged, you can see and feel a diffuse puffiness in the lower neck. Also, because the thyroid is below the thyroid cartilage which moves up and down with swallowing, the thyroid gland itself can be seen and felt moving up slightly with swallowing. The patient can usually tell you if his or her neck has recently become more puffy.

1. With the patient sitting, stand in front and look at the neck for diffuse puffiness.

2. Have the patient sip and swallow a small amount of water: see if the puffiness glides upwards briefly during swallowing.

3. With examiner now standing behind the patient, place your fingers gently on each side, just below and to the sides of the firm thyroid cartilage. Have the patient sip and swallow a small amount of water; see if you feel soft puffiness glide upward briefly with swallowing. (See Figure CM 4.)

Figure CM 4 - Thyroid examination.

4. Then move to the front of the patient and place fingers of one hand over the thyroid. Ask the patient to swallow again with the examining hand in place.

Results

A normal thyroid should be firm and symmetrical. It should be small and not visible. An enlarged thyroid such as seen in hyperthyroidism will be diffusely enlarged, usually symmetrical and soft or boggy feeling. Lumps or irregularities of the thyroid indicate nodules that should be referred to a physician.

DIAGNOSTIC SKILL

Examination of the Eyes for Bulging

Supplies

None

Purpose of the Procedure

The purpose of this examination is to determine whether the eyes are protruding more than normal as is often seen related to hyperthyroidism.

Steps in the Procedure

1. Observe the patient's face for a wide-eyed staring expression and protruding eyeballs.

2. Observe the eye closely to see if you can see white areas all around the coloured iris.

Results

Normally, the upper eyelids would cover a small part of the upper iris, so no white would be visible over the iris and the eye would be normally set in its socket.

With hyperthyroidism, the face may have a wide-eyed staring expression with protruding eyeballs and white areas of the cornea may be seen all around the iris.

SIMPLE GOITER

General Considerations

A general enlargement of the thyroid gland which is not associated with other symptoms is called a simple goiter. It is usually due to iodine deficiency. The swelling usually becomes visible at puberty but may appear during pregnancy.

This form of goiter is found all over Lesotho (goiter belts) where soil and water lack iodine. Certain foods such as cabbage, and kohlrobi will promote goiter.

Clinical Picture

A soft symmetrical smooth goiter with no symptoms of hyper- or hypothyroidism.

Complications

Rarely the goiter may become large enough to obstruct breathing - then an operation may be necessary.

More commonly, people may have children who are deaf and dumb or are born with decreased thyroid function. Those children born with decreased to absent thyroid function are called cretins. They need thyroid supplements early in life or they will become mentally retarded. This can be prevented by encouraging all pregnant women to use only iodized salt.

Management

Promote the use of iodized salt.

Prevention

1. Those women with goiters should receive iodine supplements to prevent abnormalities in their children.

2. Iodized salt and avoidance of goitrogenic foods will prevent simple goiter due to iodine deficiency.

HYPERTHYROIDISM

General Considerations

Hyperthyroidism means the thyroid is too active. Hyperthyroidism can occur in any person at any age, but it is most common in females, and especially between the ages of 30 and 50. It is not communicable, nor does it seem to occur repeatedly in different generations of one family.

Clinical Picture

The signs that usually bring the patient to clinic are feelings of jitteriness, nervousness and weight loss. One major function of the thyroid gland's hormone is to regulate the conversion of "fuel" to energy. As you know, the body produces energy by "burning up" (1) food which has been eaten and then (2) fat, which is stored "fuel". In hyperthyroidism, the thyroid produces too many hormones, which then stimulate the body to produce much more energy than usual. The person always feels hungry, because food is "burned up" as quickly as it is eaten, and the person loses weight because fat stores are also burned up. (Note: this weight loss is unintentional: the person wants to eat more than usual but still loses weight.) Also because of the excess energy produced, the person feels "jittery" nervous, anxious, and often has quick emotional changes (e.g.sudden anger). The patient may also complain of feeling very hot, and feeling his or her heart pounding or "fluttering" in the chest.

In hyperthyroidism, the thyroid gland becomes diffusely enlarged. The person will probably have noticed gradually increasing puffiness in the front of his or her neck. On examination, you may observe and feel an enlarged thyroid gland, and bulging eyes.

The symptoms of fast and perhaps irregular heartbeat, nervousness, high body temperature and heat intolerance, bulging eyes, hyper-reflexes and weight loss get steadily worse over months or even years. The patient will die of complications from those symptoms, unless treated.

Complications

One of the most common and serious complications is heart disease. If the heart constantly beats very fast and very hard over a long period of time, it eventually becomes weaker and can't pump effectively, leading to Congestive Coronary Failure (CCF). Also the heartbeat may become very irregular. The patient will die of CCF and/or the irregular heartbeat, unless treated for the hyperthyroidism.

The second common complication is that the person suffers severe malnutrition and wasting as his body burns up all food, fat and even muscles to produce excess energy. Even with adequate food intake, the patient can die of malnutrition and severe weakness, unless the hyperthyroidism is treated.

Management

All patients with hyperthyroidism should be referred to a hospital for treatment of the hyperthyroidism and any complications. The patient will be given a special diet (great quantities of food rich in protein, vitamins, and calories), antithyroid medication, sedation if necessary (phenobarbitol), and will be kept at bed rest to hasten recovery.

If patient already has complications when you refer, you may have to treat to alleviate symptoms during the trip to the hospital such as heart failure which you treat as with any patient having congestive heart failure.

When the patient returns home, he or she will probably be on a specific dose of antithyroid medication; you may need to remind the patient that the medicine must be taken regularly throughout and day as prescribed because it is used up quickly in the body. Most patients will take the medicine for 18 to 24 months, and then, under physician supervision, may gradually decrease the dosage to a "maintenance level". About half of the patients will have no recurrence, but half will have another episode of hyperthyroidism. Some patients may have to have part of the thyroid gland removed surgically, and then will need to take thyroid hormone to prevent hypothyroidism.

Prevention

There is no prevention for hyperthyroidism.

HYPOTHYROIDISM

General Considerations

Hypothyroidism means the thyroid gland is not active enough. Hypthyroidism may occur at any age but is most commonly seen in women at the time of menopause. When an infant is born without thyroid function it is called a cretin. (See Simple Goiter.)

Clinical Picture

There is a gradual change in the patient's personality along with a puffiness of the face, deepened and slowed speech, thickened skin, and puffiness of the hands and feet. Cold sensitivity occurs and the patient is often sleepy. The patient is usually brought in by a relative who has noticed the changes. The patient himself may have noticed the changes but doesn't have the energy or motivation to do anything about them. He sleeps a lot and is depressed.

The heart is often enlarged with muffled heart sounds. The deep tendon reflexes have a slow relaxation time. Anaemia is common. If not treated, this patient will proceed on to death.

Management

All patients with hypothyroidism should be referred to a hospital for treatment. The patient will be given small doses of thyroid gradually increasing the dose while monitoring the heart. Heart rhythm problems or severe angina pectoris may occur during treatment. A patient with hypothyroidism must take thyroid all his life. Patients should be warned not to abruptly stop their thyroid tablets. Thyroid tablets supplress the normal functioning of the thyroid, so that the thyroid gland no longer produces its own hormone. If the patient stops his tablets, he will be entirely without thyroid hormone, and will die.

Prevention

There is no way to prevent hypothyroidism except that associated with iodine deficient goiter.

REVIEW QUESTIONS

1. Hormones are produced by glands, such as the thyroid. Explain how the thyroid hormone affects body functions.

2. What is the effect on the body if too much thyroid hormone is produced?

3. Some people will have an enlarged thyroid gland but will not have an increase in the amount of thyroid produced. As a result, they have no sign and symptoms of hyperthyroidism. What is the most common cause of an enlarged thyroid gland in these cases?

4. Explain how you would examine a patient's thyroid gland. Include the following: your position, patient's position, steps in examination and equipment.

5. What are the symptoms and signs of hypothyroidism in an adult?

6. What will be the probable course of treatment for a hyperthyroid patient?

STUDENT GUIDE

HYPERTENSION AND CVA (STROKE)

I. Entry Level Knowledge and Skills

Before starting this unit, you should be able to:

1. Obtain blood pressure readings.
2. Determine drug dosages.
3. Explain normal anatomy and physiology of the circulatory system.
4. Describe techniques for physical examination of the circulatory system.

II. Objectives

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

1. Diagnose hypertension based on blood pressure readings.
2. Differentiate mild, moderate and severe hypertension.
3. Identify the population most likely to develop hypertension.
4. Identify those causes of hypertension which can be prevented, cured, or improved.
5. Identify the signs and symptoms of hypertension.
6. Identify the complications of hypertension.
7. Manage hypertension with drug therapy and patient education.
8. Provide follow up management for moderate and severe hypertension.
9. Identify the means of preventing hypertension
10. Identify the physical signs associated with CVA.
11. Describe the general characteristics and course of severe and less severe CVA's.
12. Describe the management for CVA including drug treatment, stroke rehabilitation, and prevention.

III. Evaluation

MODULE PHASE

Upon completion of the module you will be assessed on:

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

2. Skills: Demonstrate physical therapy techniques for CVA.

ROTATION

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

1. Your ability to diagnose and manage CVA and hypertension.

2. Your ability to perform stroke rehabilitation.

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 stroke rehabilitation.

4. Participate in practice session on stroke rehabilitation.

5. Case studies for follow up, initial, and educational therapy.

6. Student presentation of the prevention of hypertension.

7. Discussion of dietary recommendations for the hypertensive patient.

HYPERTENSION

General Considerations

Hypertension is that condition in which an individual's blood pressure is constantly abnormally high. Hypertension can range from very mild to very severe. There are no definite cut-off points, but for our purposes we shall divide hypertension as follows:

mild - 150/100 to 160/110
moderate - 160/110 to 180/120
severe - over 180/120

NOTE: The diastolic value is the more important value.

Hypertension is found world-wide, but is more common in some areas and among some peoples than others. Hypertension rarely develops in childhood unless it is associated with kidney disease. It can occur in young adults, but it most often occurs in adults over 40.

Physiologically a high blood pressure can be caused by the heart pumping blood into the arteries at a rate faster than normal, by increased fluid in the cardiovascular system or by constriction of the small arteries. Sustained high blood pressure (hypertension) has many possible causes - but in most cases the cause cannot be discovered even after exhaustive examinations and tests. This type of hypertension is called "essential hypertension". Kidney disease, Diabetes, toxaemia of pregnancy, obesity and excessive ingestion of salt are causes of hypertension that can be determined, prevented, and improved.

Clinical Picture

Many people with proven hypertension even of severe degree have neither symptoms nor signs. However, symptoms such as headache, dizziness and nosebleed may be associated with hypertension. All patients with one or all of these symptoms should be examined for hypertension.

One elevated blood pressure reading does not prove hypertension. If the blood pressure is elevated, repeat the blood pressure on three occasions. The patient's blood pressure must be elevated on each occasion to diagnose hypertension.

Patients who present with stroke, nosebleed, congestive coronary failure, kidney disease, should be examined for hypertension and treated if present.

A mild case of hypertension without treatment may develop into severe hypertension. Hypertension shortens life and the higher the pressure, the greater the chance that the person will die soon. Controlling the pressure lengthens the life of the patient and prevents complications. Some cases of severe hypertension do not respond to treatment. This form is called malignant hypertension. The patient with malignant hypertension often has warning headaches and may be expected to die soon in spite of treatment.

Complications

Hypertension damages the arteries. The small arteries (arterioles) become thickened and narrowed. Larger cerebral arteries may burst from the increased pressure. Damaged arteries damage the organs they supply. Almost all organs are affected with hypertension, but most complications and deaths come from its effects on 3 organs - the brain, heart, and kidneys.

Brain - Seizures, minor strokes, TIA (Transient Ischemic Attacks), personality changes, and mental deterioration are signs of severe hypertension affecting the smaller arteries of the brain.

The most severe cerebral symptom is stroke, caused by a cerebral artery breaking from the increased blood pressure with bleeding occuring into the brain. It causes the body to be paralyzed on the opposite side from which it occurs, and may cause coma, or even death.

Heart - The heart tires from the constant work of pumping blood to such a high pressure and congestive heart failure develops, often causing death.

Signs of damage to the heart include:

- Angina pectoris
- Shortness-of-breath with exertion)
- Cardiac asthma) Signs of congestive
- Lower leg and ankle oedema) heart failure
- Neck vein distention
- Myocardial infarcts

Kidneys - Kidney damage may progress to renal insufficiency causing uremia and death.

Hypertensive Crisis

A full blown picture of malignant hypertension includes symptoms of severe headache, vomiting, visual disturbances, convulsions, stupor and coma. This is a medical emergency and must be treated at once because a stroke or death may occur.

Management

1. Initially all patients who have any form of hypertension should be instructed to decrease the salt in their diet by avoiding salty food, refraining from adding table salt to their food and restricting the amount of salt used in cooking. See diet list attached.

2. All patients who are obese should be encouraged to lose weight by reducing their total caloric intake and by exercising more. See diet list.

3. Mild hypertension (90-110 diastolic)
   a. Instruct in low salt diet and weight loss. Encourage the patient to maintain his diet and repeat the blood pressure every 3 - 6 months.

4. Moderate hypertension (110-120 diastolic)
   a. Instruct in low salt diet and weight loss.
   b. Give hydrochlorthiazide - 1 tab.(50 mg) daily.
   c. Check the blood pressure every
      -if the blood pressure is below 80, stop the medication while maintaining the diet.
      -If the diastolic blood pressure has not fallen, increase the hydrochlorothiazide to 2 tabs (50 mg) 2 times a day.
      -If after an additional two weeks the blood pressure has not fallen, add Reserpine 1 tab. (0.25 mg) daily. If side effects occur, discontinue Reserpine and add Methydopa 1 tab. (250 mg) daily. Then if no change in 8 weeks, refer to a physician.
   d. When the diastolic blood pressure is controlled between 80-95 give 1 month's medication at a time.
   e. Any patient on thiazides should eat a banana or orange once or twice a day - because thiazides deplete the body's potassium. If these are unavailable, give Potassium chloride solution 15 cc per day (3 teaspoons).

5. Severe hypertension (over 120 diastolic)
   Most of these patients will not be controlled with diet and hydrochlorothiazide. SEND THESE PATIENTS TO THE HOSPITAL TO START TREATMENT WITH STRONGER MEDICATIONS AND TO ADJUST THE DOSE. Although most of the stronger medications will only be stocked in the hospital, a clinic may on occasion be given a supply by the physician to use for some specific patient. It is important, therefore, for the nurse clinician to know the most common medications and the correct methods for following moderate or severe hypertensive patients. Thiaziades are usually given with these more potent drugs. The doctor will send specific directions for each patient. See chart 1.

6. Follow up Management for Moderate and Severe Hypertension

   a. Let the patient rest 15 minutes after arriving, then take his blood pressure.
   b. Ideally his B.P.should be 140/90 or slightly less. With severe hypertension 160/105 is acceptable. Sometimes 170/110 is the best that can be achieved (but not really satisfactory).
   c. If the B.P.is too high let the patient rest 15 minutes more and repeat it. If still too high, refer to a physician.
   d. If the blood pressure falls below 130/80 and the patient feels weak or faint, reduce the medications slightly.
   e. If the blood pressure is satisfactory, continue the same medications - give a month's supply.
   f. Always review the patient's low salt diet and weight loss schedule on each visit.

7. Hypertensive Crisis (diastolic pressure may be above 140). In this condition it is very important to lower the blood pressure quickly. The patient should be quickly transferred to a hospital while being accompanied by you, the nurse clinician.
   One injection of 0.1 mg IM reserpine should be given before transferring. Monitor the blood pressure during the transfer period.

Prevention

The prevention of hypertension is difficult but there are 4 useful points to recommend:

1. Control hypertension at an early stage to prevent it from becoming severe.

2. Avoid obesity - hypertension more frequently develops in overweight people.

3. Urinary tract infections should be treated promptly and adequately because untreated infections will damage the kidneys which will result in hypertension.

4. Avoid eating much salt.

Chart 1 COMMON POTENT ANTIHYPERTENSIVE MEDICATIONS

METHYLDOPA (Aldomet) 250 mg tablets

Usual dose: 1 to 3 tablets, three times a day
Common side effects: Diarrhoea or constipation, drowsiness.
Contraindications: Hepatitis or cirrhosis

RESERPINE (Serpasil) 0.25 mg tablets

Usual dose: 1 to 2 tablets daily
Common side effects: Depression, nightmares, nasal stuffiness, GI disturbances, impotence
Contraindications: History of depression, asthma

HYDRALAZINE (Apresoline) 10, 50 mg tablets

Usual dose: 1 to 2 tabs (10 to 50 mg) four times a day with food
Common side effects: Anorexia, nausea and diarrhoea, headache
Contraindications: Rheumatic heart disease or coronary artery disease

LOW SALT DIET

Avoid

- Salt
- Soya
- Soda
- Salted peanuts, crackers, cheese
- Prepared soups
- Salted, dried fish or meats
- Pickles preserved in salt

Foods that can be eaten

- Naturally occuring
  - fruits
  - vegetables
  - meat
- Milk
- Breads

LOW CALORIC DIET

Avoid

- Candies
- Cakes, cookies, sweet desserts
- Sugar
- Butter and cooking oils
- Sweet drinks and juices

Foods that can be eaten

- Beans, peas, lettuce, tomatoes, cabbage
- Fish, chicken
- Skim milk

Foods to be eaten in moderation

- Breads
- Rice
- Potatoes
- Corn
- Sweet Potatoes
- Red meats
- Cheese
- Mealie Meal

REVIEW QUESTIONS

1. Place a "√" in front of the following which correctly describe hypertension.

_____acute	_____rare disease
_____chronic	_____most common in infants
_____infectious	_____most common in adolescents
_____non-infectious	_____most common in young adults
_____fairly common disease	_____most common in elderly

2. What is meant by "Essential Hypertension"?

3. List four (4) causes of hypertension which can be prevented, improved or cured.

   1)

   2)

   3)

   4)

4. In evaluating a patient's blood pressure, which value is more important:

   _____systolic _____diastolic

Place a "T" or "F" in front of the following statements, indicating whether they are TRUE or FALSE.

_____5. Hypertension has no effect of life expectancy.

_____6. Controlling hypertension lengthens the patient's life and helps prevent complications.

_____7. Without treatment, moderate hypertension may develop into more severe hypertension.

_____8. Hypertension damages the arteries by stretching them and making them larger.

9. Hypertensive complications and death result from the effects on what three organs?

   1)

   2)

   3)

10. A nosebleed should make the nurse clinician suspect hypertension as a possible cause. For definitive diagnosis, the nurse clinician should:

    _____Refer to hospital for definitive diagnosis.

    _____Use protocol under "nosebleed".

    _____Take blood pressure, repeat in 15 minutes - on three different occasions.

11. Place a "✓" in front of the statement which most completely and accurately defines hypertension.

    _____High blood pressure

    _____A mental disorder causing the patient to be overly anxious

    _____Continually, abnormally elevated blood pressure

12. A patient comes to see you with complaints or headache. Your examination reveals that the patient weighs 95 kilo, is 1.7 metres tall. You determine that his is mildly hypertensive. Discuss the major points in your management of this patient.

13. Discuss the initial management of a patient whose blood pressure is continually elevated to 170/115.

    Patient education -

    Drug therapy -

14. The severely hypertensive patient is usually referred to the hospital for initial therapy. The nurse clinician may, however, be responsible for follow up management of this patient. Complete the discussion of follow up management for severe hypertension:

Take patient's B.P. after he has rested for 15 minutes.

If B.P.greater than 110 diastolic: _____

_____

If B.P.is less than 80 diastolic: _____

_____

If B.P.is satisfactory, 80-105 diastolic: _____

_____

15. Although hypertension is difficult to prevent, there are four (4) useful points to be remembered. Discuss each one.

1)

2)

3)

4)

16. List 5 foods a thin hypertensive patient should avoid.

17. List 5 additional foods an obese hypertensive patient should avoid.

CEREBRAL VASCULAR ACCIDENT (STROKE)

General Considerations

Cerebral vascular accidents (CVA or stroke) are caused by blockage of or haemorrhage from the blood vessels of the brain. The specific neurological signs are caused by the blocking of the blood supply (oxygen supply) of that part of the brain controlling the function lost.

There are four processes that occur in the blood supply of the brain causing CVA:

1. Clots can be formed in the vessels of the brain blocking the blood supply.
2. A moving clot (embolus) can flow through the blood-stream and lodge in a vessel of the brain blocking the blood supply.
3. A vessel can rupture causing bleeding inside the brain.
4. Space occupying lesions; e.g.tumours, abscesses, haematomas.

Epidemiology

The patient at risk for CVA are those with problems that affect the vascular system like hypertension, arteriosclerosis (narrowing of the arteries), weak blood vessels of the brain, and past head trauma damaging vessels in the brain. CVA is rare in patients less than 40 years old.

Clinical Picture

CVA can occur to varying degrees in different areas in the brain. Therefore there are varying signs and symptoms. There are two classic pictures of CVA.

More severe CVAs may begin with dizziness, drowsiness, headaches and/or mental confusion. The onset of neurological signs and symptoms is relatively sudden. The patient can fall to the ground suddenly, lying sleep-like with one arm and one leg limp. Respirations may be irregular and the pulse slow. Some patients may die of a severe CVA. Most patients regain consciousness with some neurological loss, such as speech loss, and decreased mental function or disorientation.

In the less severe CVA a patient may not lose consciousness completely but there may be a sudden problem of speech - such as slurring words and loss of memory together with confusion. Movements may be impaired with initially one-sided weakness and numbness. Vision loss in part of a patient's normal visual field may also occur.

For both types of CVA, the most common finding on examination is one-sided muscle weakness without wasting of the muscles. Other signs associated with CVA or cerebral haemorrhage include vomiting, headache, convulsions, and stiff neck. It is important to rule out other causes or these signs such as meningitis. CVAs can progress on to death. This depends on the extent of the damage to the brain. Others will recover with little or no paralysis or problems. Still others will have more serious disabilities such as complete paralysis of one side or difficulty speaking.

Management

The acute patient should be supported until the findings stop progressing.

1. If unconscious, the airway must be maintained. (See Coma section of Trauma and Emergency module.)

2. Bed rest.

3. Blood pressure should be monitored and if elevated treated. (See Hypertension in this module.)

4. Patient may need help in eating. Liquid or soft foods are recommended during the acute phase.

5. If unable to take adequate fluids IVs may be given for a few days.

   1000 5% D/W
   1000 Lactated Ringers } every 24 hours

6. If unconscious or convulsing, the patient should be referred.

After the initial symptoms reach a peak, in a few minutes to a few hours, those who survive stabilize with some neurological loss of function. Recovery in some degree occurs with most CVA cases. The key to treatment is rehabilitation after the CVA and resulting loss of function. The goals of rehabilitation are:

1) being able to walk alone,
2) self-care,
3) adjustment to disability, and
4) prevention of secondary disability.

CVA patients have varying degrees of disability and therefore the rehabilitation programme should be matched to the loss.

When the patient is stable, a programme of exercise and self-care teaching should begin. Special equipment such as slings and braces for paralyzed extremities may be used. Special teaching may be needed for the patient to learn again how to dress, feed, and care for themselves with one hand because the other may now be paralyzed. This exercise and teaching programme will need to be continued when the patient returns home. The family will also need teaching in the care of the post-CVA. Specific materials on exercise and self-care teaching are attached to this module.

Prevention

Prevention of CVA is based on the early detection and treatment of diseases of the cardiovascular system. Most detectable and most treatable among this is hypertension. Studies have proven that early detection and control of hypertension can prevent CVAs in hypertensive patients.

REVIEW QUESTIONS

1. Cerebral vascular accidents (CVA-stroke) are caused by blockage or haemorrhage of blood vessels in the brain. Explain why this causes paralysis.

2. Of the risk factors which are associated with CVA, which would be most easy for you to identify?

3. In both severe and less severe CVAs, there are common physical exam findings. List them:

4. Describe the initial management of a patient who has had a CVA.

5. Describe the management of a patient who has had a CVA and has survived the initial symptoms.

STUDENT GUIDE

SEIZURES

I. Entry Level Skills and Knowledge

Before starting this unit, you should be able to:

1. Obtain a history and perform a complete physical examination.

2. Determine drug dosages.

3. Give injections IV and intramuscularly.

II. Objectives

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

1. Identify the main causes of seizures in Lesotho.

2. Describe and manage a grand mal seizure. (See Emergency Module.)

3. Differentiate the various types of epilepsy.

4. Identify the complications of epilepsy.

5. Diagnose epilepsy, using diagnostic protocols.

6. Manage epilepsy with drug therapy and patient education.

7. Manage status epilepticus.

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: Your ability to identify signs associated with epilepsy included in this unit.

ROTATION

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

1. Your ability to diagnose and manage problems identified in this unit.

2. Your ability to perform first aid for seizure patient.

IV. Activities you will be using to accomplish objectives includes:

1. Read module text and answer review questions.

2. Discussion with instructor on any questions from text or review questions.

3. Case studies on diagnosing and managing epilepsy.

4. Student presentation on the major points of patient education for the epileptic patient.

SEIZURES

General Considerations

A person who has repeated episodes of seizures (fits or convulsions) with no known cause, is said to have epilepsy. The seizures occur when certain brain cells begin to have abnormal excessive "electrical" activity which spreads to other parts of the brain. The spread may be slow or extremely rapid, and may involve most of the brain or only a part.

In most cases there is no definite cause for epilepsy. Among these cases there seems to be a genetic tendency since they often have relatives with epilepsy. About one fourth of all cases of epilepsy have a known cause which has caused some brain injury. Some of these causes include:

- Birth trauma to the brain and lack of oxygen during birth.
- Various congenital malformations of the brain.
- Infections of the brain before birth - rubella.
- Infections of the meninges or brain after birth.
- Brain tumour.
- Head injuries.
- Arteriosclerosis involving arterioles and arteries of the brain.
- Sepsis.
- Febrile seizures in Childhood

In addition, there are certain conditions that may trigger a seizure in patients with known epilepsy such as an emotional problem, flashing lights, certain long, prolonged sounds or drinking alcohol.

Clinical Picture

Epileptic seizures can be divided into generalized seizures in which most of the body becomes involved, and localized seizures in which only one area such as an arm, leg or one side of the face is involved.

Grand mal - The most common type of epilepsy is the generalized seizure called a grand mal seizure. These seizures usually begin between 5 to 20 years of age. They can almost always be well controlled with medications.

Often before a grand mal seizure the patient may experience a warning sensation that the seizure is about to happen. This is known as an aura. It may be a bad smell, a light or spots before the eyes, an imagined sound, a strange feeling in the abdomen, a feeling of fear, or a strange sensation in the arm or leg.

This may happen from minutes to hours before the seizure occurs, and the exact same aura usually happens to the patient each time.

The convulsion itself often begins with the patient suddenly crying out as he becomes unconscious. If standing he will fall. The unconscious patient first becomes very stiff and then all his muscles begin to jerk. He breathes with difficulty, then stops breathing for a few moments and may become cyanotic. The jerking decreases and usually after not breathing for a moment or two he starts to breathe again with noisy, deep respirations. The jerking soon stops altogether and he begins to breathe more normally and gradually regains consciousness. During the seizure he may be incontinent of stool or urine and sometimes bites his tongue or cheek. He may choke on his tongue during a seizure.

As the patient recovers consciousness after the seizure he is often confused, has difficulty remembering recent happenings, is weak and tired, and has a headache. He usually sleeps for an hour or 2 after a seizure and may have a weekness or **paresis** for up to 24 hours. Gradually his memory improves and confusion clears.

Psychomotor seizure - This is another type of generalized seizure and it begins with a feeling of fear or anxiety. The patient then stops what he is doing and may make simple movements like sucking or chewing. He begins some purposeless or inappropriate activity and appears to be in a dream. He soon regains normal consciousness and has no memory of the seizure or what he did. This form is much less common that the grand mal seizure.

Petit mal seizures - usually develops between the age of 3 to 10 years and often stops after puberty. It almost never continues to occur after age 30. The patient may have 100 or more episodes per day or only one every few days.

These seizures usually last only 30-60 seconds. The patient suddenly stops whatever he is doing and stares. He may blink or move his eyes, head, lips, or hands slightly. He is unconscious but does not fall. The petit mal seizure then ends as suddenly as it began, and the patient is normally conscious again. There is usually no aura nor after effect. He has memory loss for the time of the seizure.

Localized seizures - are often acquired through trauma. The seizures begin with jerking of one muscle area of the arm, head or leg and may spread so that the whole limb or the entire side of the body herks. If the seizure does not spread to the other side of the body and become generalized, the patient may remain conscious.

A patient may have more than one type of seizure. Grand mal seizures are very common and can be treated very effectively. Petit mal seizures are present in children most commonly. Localized and psychomotor seizures are less common.

The diagnosis of epilepsy depends on a history of more than one seizure and exclusion of other possible conditions as a cause. It is important to consider meningitis (especially in children), tetanus, hypoglycemic shock, cerebral trauma or tumours. (A seizure in a child always means meningitis until proven otherwise.)

Complications

The most common complication is an injury occuring from falling during the seizure. Epileptic patients sometimes fall into open cooking fires and are burned.

Occasionally a patient may aspirate or not start breathing by himself after a seizure and die from lack of oxygen.

Socially, epileptic patients are often not well-accepted by society. They may have a difficult time finding employment. As a result of social pressures and non-acceptance by society, they may develop personality changes.

Status Epilepticus is a very serious complication of grand mal epilepsy, in which the patient has continued seizures one after another without regaining consciousness. He may suffer brain damage from lack of oxygen or even die.

Management

1. Immediate treatment

If you are present during a seizure, the patient should be prevented from hurting himself by falling, hitting something or biting his tongue. Gentle guidance of limbs and head during the seizure will prevent serious injury during the active phase of the seizure.
A tongue depressor or a spoon may be used to prevent the patient from choking on his tongue. Fingers should not be used for this since they can be badly bitten by a person having a seizure.

2. Drug therapy

Grand mal seizures can usually be effectively managed with drug therapy - phenobarbital and phenytoin.
The other kinds of seizures should be referred to a physician. In all cases of epilepsy, drug therapy must be continuous to be effective, therefore a continuous supply of drugs must be assured.

- Phenobarbital - alone is satisfactory for most patients.

  Adults: Begin with 30 mg two times a day. Increase by 30 mg two times a day each week until seizures are controlled. Maximum 180 mg two times a day. Side effects are drowsiness and rarely rash.

- Phenytoin - If seizures are not well controlled with phenobarbital than Phenytoin should be added. It can also be used alone when patients have problems taking phenobarbital.

  Adults: Begin with 200 mg daily. Increase by 100 mg daily after each week until seizures controlled. Maximum 400 mg.

  Children: Begin with 5 mg/Kg/day divided into 2 or 3 doses. Usual maintenance dose is 4-8 mg/Kg/day. Side effects gum swelling and rarely rash, iron and folic acid deficiency anaemia.

If severe gum swelling occurs because of phenytoin the patient should be referred to a doctor.

If the patient is seizure-free for five years on medication, refer him to a doctor for consideration of reduction of the medication.. Never abruptly discontinue an epileptic's medication because it may initiate status epilepticus.

3. Status epilepticus is life threatening.

<u>Diazepam should be injected very slowly IV.</u>

Diazepam - 5-10 mg IV (may be repeated 2-3 times at 20 minute intervals if necessary).

If diazepam not available, use:

Phenobarb 100-400 mgm IV <u>very slowly</u>.

If it is impossible to inject the drug intravenously, an intramuscular injection may be given but this takes longer to take its effect.

Use caution when giving IV diazepam as patient may have a respiratory arrest. Be sure to start the patient on Phenobarbital (oral) or phenytoin as soon as possible.

4. Patient and family education

Family members should learn how to protect the patient from harming himself during a convulsion. They should know that epilepsy is usually a life-long disease and that controlling seizures can be done if medications are taken regularly and continuously.

Epilepsy is a physical illness, not a mental illness and a person with epilepsy which is well controlled can live a nearly normal life. When seizures are uncontrolled, swimming alone, climbing, driving, etc. are dangerous and should be avoided.

The longer a patient goes without a seizure the less likely he is to have another one.

REVIEW QUESTIONS

1. For about one out of four cases of seizures, we can identify a cause which had caused brain damage. These are called "acquired" cases. Give 5 examples.

   1)

   2)

   3)

   4)

   5)

2. In epileptic patients, certain conditions seem to start seizures. Indicate these with a "√" on the following list.

   ____emotional crisis ____drinking alcohol

   ____over eating ____too much exercise

   ____flashing lights ____loud, prolonged sounds

3. Draw a line from name of seizure to proper description.

1. Grand Mal	A. Begins with jerking of one muscle area of the arm, head or leg. May spread to entire limb or half of body. Patient may remain conscious. Occur infrequently. Often acquired.
2. Psychomotor	B. Very common generalized seizure, appearing in persons aged 5-20. Often patient experiences an aura and falls unconscious during convulsion of jerking and irregular breathing. Well controlled with medication.
3. Petit mal	C. Patient has aura and stops what he is doing and begins some simple movement such as sucking. Patient will not remember seizure. Occur infrequently.
4. Localized	D. Commonly occurs in young children. Very brief seizures in which patient stops and stares. No aura or post state.

4. Name and discuss four (4) complications of epilepsy.

   1)

   2)

   3)

   4)

5. As with all chronic diseases, it is important to enlist the cooperation of the family and epileptic patient. List five (5) points to be stressed in patient/family education.

   1)

   2)

   3)

   4)

   5)

6. Describe the usual drug therapy for an adult suffering grand mal seizures.

7. You have been treating a 20-year old man for epilepsy. Despite increasing of phenobarbital to 180 mg bid, the seizures are not controlled. Discuss additional management.

8. You have been called to the home of an epileptic child. The parents say the child had a convulsion and it has been continuing for ½ hour. What complication of epilepsy is this and how will you treat it?

STUDENT GUIDE

CANCER

I. Entry Level Knowledge and Skills

Before starting this unit you should be able to:

1. Obtain a medical history.

2. Perform appropriate physical examination according to the patient's complaints.

II. Objectives

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

1. Describe factors that increase the frequency of cancer.

2. Identify the signs and symptoms that suggest cancer.

3. Recognize the course and complications of cancer.

4. List the major presenting complaints of cancer.

5. Provide management for a patient with suspected cancer.

6. Provide patient education including prevention, early detection and prompt treatment.

III. Evaluation

MODULE PHASE

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

1. Knowledge: Written test based on the content of the module text. (Acceptable performance, 80%.)

2. Skills: - Your ability to perform appropriate physical examination according to patient's complaints.

-Your ability to make the following physical examination discriminations of suspected cancer:

-nontender lumps/nodes
-ulcer/sores not healing
-unusual bleeding
-hard, irregular liver

ROTATION PHASE

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

1. Your ability to diagnose and manage cancer (according to management guide).

2. Your ability to describe factors that increase the frequency of cancer.

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 covering text material.

3. Participate in role playing activity in which trainees will practice patient education.

CANCER

General Considerations

There are many different types of cancer, and cancer can occur in any tissue or system of the body. All cancers have similar biological characteristics: normal tissue is invaded and changed by abnormal cancer cells that continue to grow uncontrollably. After local tissue is invaded, the cancer cells spread to other sites and tissues. Different cancers grow at different rates and spread to different body systems.

Epidemiology

The specific cause of most cancers is not yet known. However, we do know certain factors that increase the frequency of cancers.

A. Inherited Risk

Certain families have much higher than normal frequency of cancers. It cannot be predicted exactly who will get cancer. But patients with cancer in their family are at greater risk of having it themselves.

B. Age and Sex Factors

Some types of cancers seem to appear most frequently at different ages or are most frequent in one sex than the other. Some examples are:

1) acute leukemia (cancer of the white blood cells) is most often seen in children;
2) cancer of the testicles is most common in young men rather than older men;
3) breast cancer is far more frequent in women than in men;
4) most importantly, the risk of most cancers in both sexes increases with age: older men and women have much higher risk of having most cancers.

C. Environmental Factors

Exposure to certain substances is known to have a clear association with a high risk of cancer. The more intense and prolonged the exposure, the greater the risk. Some examples are:

1) cigarette smoking and air pollution are major risks in lung cancer;
2) people exposed in their work to certain chemicals like petroleum and asbestos are at more risk to get cancer of the skin and cancer of the lungs.
3) Mining.

Clinical Picture

There is not a single clinical picture for cancer because the signs and symptoms are so varied. As we have discussed, different cancers can begin in any kind of tissue, and then grow and spread at different rates. If a cancer is detected and treated while it is still localized (that is, before it has spread to involve other tissue), it has the best chance for cure. However, some cancers may not present any signs or symptoms until it has spread to involve other tissues. The sooner the cancer is detected, the greater the possibility for cure is.

Signs and Symptoms:

The signs and symptoms below suggest cancer:

1. Bleeding from the vagina with sexual intercourse or daily bleeding between periods for more than two (2) weeks, or any bleeding after a woman's menstrual periods have stopped (menopause). These could be signs of cancer of the cervix or uterus. If detected early, there can be a high cure rate.

2. Enlarged, hard nontender lymph nodes. These nodes can be found:
   a. generalized (in all lymph node areas of the body) but with no fever, or
   b. in the cervical and/or supraclavicular areas (a common sign of cancer which has spread).
3. Any lump, especially a small, hard lump in the breast which can be felt with the flat of a hand. These lumps increase in size over weeks and months, and later become attached to the skin and muscles. It then becomes fixed or immobile, or causes dimpling of the skin (like the skin of an orange).

4. A skin ulcer that is raised, hard, and has a crater in its centre. An ulcer is particularly worrisome if it continues to grow larger, or does not heal in a normal amount of time. Skin cancer if detected early has a high cure rate.

5. A hard, enlarged irregular liver, or any other hard mass palpated in the abdomen.

6. Unexplained weight loss and loss of appetite. These symptoms can be caused by many serious diseases, but cancer is often one of the causes.

7. Ulcer on the tongue, lips or in the mouth that does not heal.

8. Enlargement of the spleen with anaemia or unknown cause.

9. Painless blood in the urine for which the cause is not known, especially in older people.

10. Slow onset of difficulty swallowing. In its early stages, liquids can be swallowed but solids are difficult.

Course and Complications:

Cancer without treatment will kill the patient. As the disease progresses and spreads, more and more body structures become affected. The complications of cancer are grave signs. Some of them include:

1. Chronic pain at the site of the cancer or from metastases. The growth presses on nerves, causing pain.

2. Bleeding, which can be chronic and/or acute in large amount. Bleeding comes from the surface of the tumour.

3. Bowel obstruction, caused by a growth blocking the intestines.

4. Paralysis of a limb or limbs, caused by cancer involving the nervous system.

5. Oedema and/or fluid in the lungs and abdomen.

The major presenting complaints or signs will be:

1. Unexplained weight loss
2. Lumps or enlargements of body tissues
3. Bleeding
4. Change in a skin lesion

Management

If cancer is suspected, the patient should be seen promptly by a physician for further evaluation. Patients will have the best chance of survival if the cancer is detected and treated early, while the disease is still localized. Their chances of survival decrease as the cancer progresses and spreads. The patient may initially be treated with surgery and medication, and and perhaps radiation, and then sent home. The physician should set guidelines for further management and for follow-up visits.

Prevention

We do not know the specific cause of most cancers so we cannot specifically prevent them. But we do know some of the risk factors and can educate patients about these. For example, you can explain the connection of smoking and lung cancer to patients.

Because we cannot prevent cancer in all people, early detection and prompt treatment are essential. Without treatment the cancer patient will die, and early treatment increases the patient's chance of survival.

REVIEW QUESTIONS

1. Name and explain three of the factors which are associated with an increased incidence of cancer.

   1)

   2)

   3)

2. Because there are many different types of cancer, the clinical picture may vary greatly between cases. List five signs or symptoms which possibly suggest cancer.

   1)

   2)

   3)

   4)

   5)

3. Explain how early diagnosis and prompt treatment increase the cancer patient's chance for survival.

4. You have suspected cancer in a patient. Using the management guide, what are your instructions for management?

5. Read the following statement. Determine which of the words in the parenthesis is correct and circle it.

   (Older, Younger) men and women have a much higher risk of having most cancers.

STUDENT GUIDE

DIABETES MELLITUS

I. Entry Level Skills and Knowledge

Before starting this unit, you should be able to:

1. Describe the normal anatomy and physiology of the pancreas.

2. Describe the normal process of metabolism.

3. Administer subcutaneous injections.

4. Give patient education.

II. Objectives

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

1. Define the term Diabetes Mellitus.

2. Explain the pathophysiology associated with Diabetes.

3. Describe the signs, symptoms, and course of illness of Diabetes.

4. Differenciate between juvenile and adult diabetes.

5. Identify physical examination discriminators associated with Diabetes:
   -excessive output of urine
   -drinking large amount of water
   -eating excessively, yet always hungry

6. Describe the complications and management of Diabetes.

7. Describe procedures of diagnosis and management (long-term) of Diabetes.

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. Skills: Your ability to perform or interpret laboratory tests for definitive diagnosis:

   -blood sugar in hospital
   -urine sugar

ROTATION PHASE

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

-Your abili to diagnose and manage diabetes mellitus (long term).
-Your ability to diagnose and manage insulin shock.
-Your ability to diagnose and manage diabetic coma.

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

1. Read module text and answer review questions.
2. Discussion with instructor on any questions or problems.
3. Student-lead discussion on the precipating factors of diabetes, including what they are and how that information is useful to the nurse clinician.
4. Student presentation on the major complications of diabetes, including signs, symptoms, diagnosing and management.
5. Case studies on the complications of diabetes.
6. Discussion with instructor.
7. Clinic experience - observation and participation.
8. Discussion and role playing exercises dealing with diet.
9. Student presentation and discussion of patient education for the diabetic patient.
10. Role playing activity for patient education on the injection of insulin and care of instruments.

DIABETES MELLITUS

Review of Physiology Related to Diabetes

1. Normal Metabolism

The process by which the body converts food into energy that can be used by the body is termed metabolism.

During digestion, much of the food we eat is converted into a form of sugar called glucose. This sugar is obtained primarily from carbohydrates (grains and sugars) and to a lesser degree from protein (meat, cheese, eggs) and fat. Glucose is carried to various parts of the body by the blood stream; therefore, a certain amount of glucose is present in the blood at all times. When more food is consumed than is needed for immediate use, the excess is changed into glycogen in the liver or stored as fat in the fat cells. Later when the body needs energy, glycogen and fat can be converted back to glucose.

The body cannot use and store glucose without the aid of insulin, a hormone produced by the pancreas. In the healthy person, whenever the glucose level in the blood rises, the pancreas releases insulin which acts in three ways to lower blood sugar.

a. Insulin causes glucose to move from the blood into the body cells where it is used for energy.

b. Insulin assists the liver to store glucose as glycogen.

c. Insulin assists fat cells to store glucose as fat.

2. Abnormal Metabolism of Diabetes

Diabetes mellitus is a chronic metabolic disease which affects the bodily use of food supply because of an insufficient or ineffective supply of insulin.

In diabetics without sufficient insulin (or with improper body use of insulin) the blood glucose level rises too high while the cells starve from their internal lack of glucose which is so plentiful in the blood all around them

In a non-diabetic person the kidney is able to put all the glucose that passes through it back into the blood. In diabetes, the amount of glucose in the blood passing through the kidney is so great that the kidney is unable to put it all back into the blood. This causes a large amount of glucose to be spilled out in the urine. The glucose in turn carries much water with it, causing a large amount of urine to be passed. This great loss of water causes much thirst. Weight loss, weakness, and hunger develop because so much of the food taken in by the patient is lost as glucose in the urine. In order to obtain sufficient energy, fat and protein are turned into additional glucose to make up for what is lost in the urine.

General Considerations

The tendency to develop diabetes is hereditary although not everyone who inherits the trait for diabetes develops the disease. Diabetes can develop at any age but the disease differs in severity depending on the age of onset; the younger it begins the more severe the disease. Child onset diabetes is more difficult to control and complications are more likely to occur. Adult onset diabetes can often be controlled by diet and exercise and complications can often be avoided.

Certain factors will make the disease worse, these include:

- Excessive intake of carbohydrates, especially sugar (sucrose).
- Infections
- Injury or surgery
- Emotional stress
- Obesity
- Pregnancy
- Thiazide diuretics - avoid hydroclorothiazide in diabetics
- Hormones which act to elevate blood sugar - thyroid hormone, cortisone

All these factors, in various ways, cause the body to require more insulin, which causes extra stress on the pancreas. As suggested by the list above, obese people tend to develop diabetes more often than those of normal weight. Pregnancy may cause a woman with a diabetic tendency to have sugar in her urine during her pregnancy. i.e. diabetes may appear in pregnancy, in which case is usually disappears when the woman delivers. These women often develop diabetes in later life.

Clinical Picture

The classic patient with undiagnosed diabetes enters with three important symptoms:

1. Excessive output of urine.
2. Drinking large amounts of water.
3. Eating excessively, yet always hungry.

Weakness, fatigue and weight loss are other important symptoms. The child without insulin fails to grow properly. In addition, the diabetic may first be seen in coma or another stage of ketoacidosis (see Complications below).

The onset of diabetes may occur very suddenly. The patient, who at first feels well, gradually develops severe increase in thirst, hunger, and passing large amounts of urine within a few days. On occasion, this may rapidly progress to diabetic coma. Or it may occur very slowly with symptoms developing gradually over a few years.

Diabetes may progress very little or not at all with good control being obtained by simple means for many years, or it may steadily become more difficult to control with larger and larger doses of insulin being required. In either case, complications may occur, but they seem to develop more rapidly in diabetics who are unstable or who require large doses of insulin.

One should suspect diabetes in a child or adult presenting in coma. Also, some patients present with weight loss associated with increased eating. Diabetes, TB, hyperthyroidism or cancer may present in patient with these symptoms.

Suspect preclinical diabetes in any woman who delivers an unusually large baby (above 4 Kg.). Suspect latent or preclinical diabetes in any person with a strong family history. If diagnosed early, development of clinical diabetes may be delayed with proper diet control and weight reduction.

The definitive diagnosis is made by the laboratory. Positive urine sugars or elevated blood sugars will make the diagnosis.

Complications

Complications can be divided into three main groups:
1) Poor regulation (hypoglycemia and ketoacidosis);
2) Infections; and
3) Vascular.

1. Poor Regulation

a. Ketoacidosis - When too little sugar is entering the body cells from the blood because of insufficient insulin, the body breaks down stored fat for the cells to use as energy. The burning of fats produces ketonic acids which ordinarily are used slowly by the body cells for energy. But when the body burns fats rapidly for long periods of time, more ketonic acids are produced than the body cells can burn, and they build up to high concentrations causing the body fluids to become acidic. This is known as Diabetic Ketoacidosis. The acidotic patient becomes nauseated and drowsy or even comatose (Diabetic Coma).

He may intermittantly take deep gasping breaths. His breath smells something like spoiling fruit. The same patient is usually also dehydrated from excessive loss of water through the urine and from vomiting. If severe, he usually dies unless admitted quickly to the hospital and treated vigorously with insulin and other measures.

b. Hypoglycemia (Insulin shock) - The patient who gets too much insulin or oral hypoglycemic medications or too little food after taking insulin drives too much glucose from the blood into the body cells. As his blood sugar level begins to fall too low he usually feels shaky and hungry and sweats. If he eats at this point he improves, but if instead the blood sugar level continues to fall his brain cells (which cannot burn fat) run short of glucose for energy and he becomes drowsy and then comatose. This is known as insulin shock. Seizures may occur, and the patient must be given glucose intravenously. This patient will not be dehydrated, will have no fruity breath nor take deep gasping breaths. If given 20 cc or 50% glucose solution by IV push, he usually wakes up within 2 minutes.

2. Infections

Diabetics resist infections poorly and infections usually increase the amount of insulin the patient requires.

Abscesses, cellulitis, and pyelonephritis are common and often unusually severe leading to septicemia.

Tuberculosis may be associated with diabetes and is especially difficult to control or cure. Thrush and other yeast or fungal infections are often troublesome in the vagina and moist areas of the skin such as places where skin rubs on skin, e.g.groin, axillae, beneath the breasts.

3. Vascular complications

The diabetic who eats many saturated fats easily develops atherosclerosis (cholesterol deposits in the artery walls narrowing them). This reduces or sometimes even completely stops, blood flow through important arteries. When such arteries are blocked in the brain the patient develops a stroke. In the heart, atherosclerosis causes myocardial infarctions (heart attacks), and in the legs blocked blood flow may cause gangrene. Congestive heart failure may be associated with these vascular complications.

Arterioles (small arteries) in diabetics become gradually thickened and narrowed, damaging the organs to which they supply blood. Some evidence of this complication seems to occur in all diabetics. Such damage is especially important in the kidneys, retina of the eye, nervous system, and skin.

About one half of all diabetics develop some kidney damage and some progress on to kidney failure. Hypertension is often associated with the kidney involvement.

Damage to the motor nerves may cause some muscle weakness. Damage to the sensory nerves may cause neuritic pains, increased or decreased sensation.

Gangrene of the foot may occur because of decreased blood supply to the legs. Causes of death in areas where insulin and antibiotics are hard to obtain and medical facilities are few are associated with diabetic coma and uncontrolled infections. Causes of death in areas where insulin and antibiotics are easily obtainable are due to the vascular complications - kidney failure, congestive heart failure, stroke, myocardial infarctions or gangrene.

Management

If a patient is suspected of having diabetes, refer him to a hospital for diagnosis. The doctor will begin the treatment required.

There are four critical factors in the management of diabetes that are closely interrelated and interdependent; weight control, diet, exercise and drugs. All of which are important to achieve optimal management of the patient.

1. Weight control - If a patient is over-weight, the first step in treatment is to lower the weight to a normal level. This is done by explaining its importance to the patient and instructing him to eat less. In some cases of diabetes, this alone will control the disease.

2. Diet - Since the amount and type of food eaten determines the amount of insulin required for metabolism, the amount and type of food eaten and the times it is eaten become important. Simple sugars and sweets should be avoided. Meals should be balanced and regularly spaced throughout the day. Three meals and two snacks are recommended - each of these should contain a balance of protein, carbohydrate and fat. For example:

Meal	- 7:00 AM
Meal	-11:30 AM
Snack	- 3:00 PM
Meal	- 6:00 PM
Snack	- 9:00 PM

See Diabetic Diet following this section.

3. Exercise - Since exercise uses energy and increases the rate of metabolism, it must be regulated in the same way as food and drugs. A diabetic patient should exercise regularly, but it must be done at the same time each day - so that he can modify his food and drugs required for diabetes control. Exercise increases the amount of food required. For example, regular exercise throughout the day in the form of farm work is fine - but on a holiday, resting the whole day may cause the diabetes to become uncontrolled. A daily walk of two km. in the evening if changed to morning may disturb the control of diabetes. Exercise should be regular and taken at the same time of day.

4. Drug therapy -

Tolbutamide

For those adult patients not controlled by weight reduction, diet and exercise, tolbutamide may be added to the regime. Tolbutamide causes the pancreas to release more insulin.

The usual starting dose of tolbutamide is 1 tablet (0.5 gm) twice a day. It may be increased gradually as high as 1 tablet four times a day, or reduced ½ tablet twice a day according to the patient's response.

Insulin

For young patients with diabetes, insulin is always necessary. Insulin is injected subcutaneously daily by the patient or a family member. Refrigeration is recommended for the insulin but it can be kept at room temperature for 30 days. Therefore, patients requiring insulin but living in areas without refrigeration and regular monthly supplies should be encouraged to move to communities with refrigeration and hospital laboratory services. (This is a difficult decision for any family to make, but it is life saving for the patient.)

A patient requiring insulin for the first time should be referred to a doctor at a hospital with laboratory facilities for measuring blood sugar so as to determine the amount of insulin the person requires. Regulation of that amount should be done at the hospital.

Insulin comes in different types and their length of action and their peak actions in the blood vary.

Regular insulin peaks in 1-2 hours and lasts 4 hours. Regular insulin is used for the treatment of ketoacidosis.

Lente insulin (Insulin zinc suspension) peaks in 8-12 hours and lasts 24 hours.

Peak action means the length of time between injecting the insulin and when the blood sugar will be the lowest. A patient on insulin usually receives one injection of either Lente insulin alone or a mixture of Lente and regular insulin daily in the morning. If Lente alone is used, the peak action is at 4:00 p.m. - 8:00 p.m. Ideally, all patients on insulin should check their urine for sugar daily with a dip stick and a record is kept of this. If sugar is passed, a blood sugar should be taken and the diet, exercise or amount of insulin regulated by a doctor.

Management of Ketoacidosis

Without insulin

In a facility without refrigeration and insulin, this patient should be referred as quickly as possible to a hospital where insulin and laboratory facilities are available. During the transfer,

IV should be given intravenously.
1000 cc half strength Darrows in 5% Dextrose.

With insulin

In a facility with refrigeration or regular monthly supplies that has insulin, the patient still should be referred as quickly as possible to a hospital where insulin and laboratory facilites are available. Prior to transfer start 1000 cc half strength Darrows in 5% Dextrose solution. In a known diabetic who has stopped his insulin or tolbutamide and comes in with symptoms of ketoacidosis - give 50 units of regular insulin IV and 50 units subcutaneously prior to transfer.

Management of Hypoglycemia

This patient needs more sugar in the blood. If the patient is able to take oral liquids, give a glass of sweet liquid such as orange juice and sugar, squash, or soft drinks every 15 minutes until the symptoms improve. If the patient is unconscious, give 20 cc of 50% glucose solution by IV push. If the diagnosis is correct the patient will wake up in 1-2 minutes.

Management of Infections

Meticulous attention to good treatment for infection is necessary.

See TB - Infectious Disease Module

Abscesses, Cellulitis - Skin Disease Module

Pyelonephritis - GU Module

Candida Vaginitis - Problems of Women Module

Management of Vascular Complications

Good diabetic control will improve some of these complications. Others will have to be referred to a physician.

Congestive heart failure - See C-R Module

Hypertension - See this module page

Foot care - foot care in the elderly diabetic is similar to foot care in the patient with leprosy. The feet should be protected from injury, kept dry and clean. In the case of a sore, or breakdown in the skin, the foot should be elevated and dressed daily with sterile dressings. Early treatment with antibiotics is necessary if infection sets in, since infection spreads rapidly in a diabetic patient.

Following Diabetic Patients

Weight - check weight and direct the patient towards a normal weight

Diet - Review diet - amount
times
balance

Exercise - Review amount and timing of exercise

Symptoms - Review general symptoms

amount of urination
amount of hunger
amount of thirst
hypoglycemic symptoms

If on insulin - urine sugar
blood sugar at a hospital
amount of insulin

If there is any reason to suspect poor regulation, refer to a hospital for regulation.

Patient Education

This is extremely important. In diabetes the patient's need for insulin constantly changes with stress, food intake, and exercise. He may begin to become either hyper- or hypoglycemic. Constant supervision and changes in food or insulin are essential. It is impossible for medical personnel to give such close supervision. Therefore, it is absolutely necessary to teach the patient how to supervise and treat himself. The relatives also must be taught about diabetes so they will encourage the patient to follow his diet properly, to take the correct amount of medicine and to come for regular checkups.

All patients and relatives must know:

1. that diabetes is caused by the body not being able to handle carbohydrates correctly.

2. that diabetes is present for life - it can be controlled but not completely cured.

3. that foods containing much sugar must be avoided.

4. that food must be spread out in smaller amounts during the day rather than eaten all in one meal.

5. that if the patient is overweight, weight reduction helps to control diabetes.

6. that excessive urine means poor control and indicates that medical attention is needed.

7. that excessive urine with nausea and drowsiness means ketoacidosis is developing and immediate medical attention is required.

8. cuts and infections, particularly on the legs and feet may be very slow in healing and should receive medical attention if they fail to heal.

All patients taking insulin or Tolbutamide and their relatives must know:

9. that exercise reduces the need for medication.

10. that heart palpitation, nervousness, shakiness and sweating are signs of early hypoglycemia and the patient must eat something immediately. This will prevent coma from insulin shock.

11. that any unconscious patient must be taken for medical help immediately.

All patients taking insulin and their relatives must know: (See Patient Education Skill for Insulin Injection).

12. how insulin acts (it causes the sugar in the blood to be used correctly by the body but too much insulin causes insulin shock).
13. how to correctly measure insulin and how much to inject.

14. how to give themselves insulin injections.

15. how to care for the syringe and needle and keep them sterile (boiling is required).

16. how to rotate injection sites.

17. what time of the day to take insulin.

18. how to store insulin.

Prevention

There is no way of preventing diabetes, although its onset may be postponed by weight control and diet modifications. There are ways of preventing some of the complications and their severity. These are done by good management of the disease by the patient with assistance by the health team.

Diabetic Diet

Avoid:

Candy

Sweet cookies, cakes, pies

Sugar, honey

Soft drinks

Ice cream

Large amounts of fruits

Eat small balanced meals several times a day, always including some protein.

Examples:

a. Brown rice, beans and vegetables, mealie meal

b. Meat, bread, vegetables

c. Cheese, bread, orange, papa, metoho, lesheleshele, pumpkin leaves, spinach

d. Egg, potato, salad

Snacks are small amounts of food eaten between meals, such as -

Milk and bread, nuts

PATIENT EDUCATION SKILL

for

Insulin Injection

Supplies

2 syringes
5 needles - 25 gauge
cloth
pan
insulin vials

Purpose of Procedure

The purpose of this procedure is to teach the diabetic patient how to give himself injections of insulin.

Steps in Procedure

First demonstrate the steps below to the patient. Then ask the patient to go through the steps using an orange or apple as the site for injection until he gets all the steps correctly. When he understands the whole procedure and can perform it, then have the patient inject himself. Check his technique at regular intervals.

Sterilization and Assembly of Insulin Syringe

1. Place syringe (with plunger removed) and needle on folded, clean cloth on the bottom of a pan or pot. Add water and boil over fire for 5 minutes.

2. Wash hands thoroughly.

3. Remove articles from water. In assembling syringe and needle, be sure to touch only the knob of the plunger, side of the syringe and the hub of the needle.

4. Fasten needle to syringe with slight twist.

5. Work plunger back and forth several times until water is completely ejected.

Preparing the Insulin Dose

1. Mix the insulin by gently rotating the vial between your hands. Remove the cap.

2. Draw air into syringe equal to insulin dose to be withdrawn

3. Insert the needle through centre of rubber stopper. Inject air into vial.

4. Turn bottle and syringe up-side down. Withdraw specific dose. Be sure to remove any air from syringe by holding the point up and depressing the plunger slightly.

Where to Inject

1. Change the site of injection daily.

2. Possible sites for injections include: front thighs, upper arm, buttocks and pelvic area. (See Figure CM 5.)

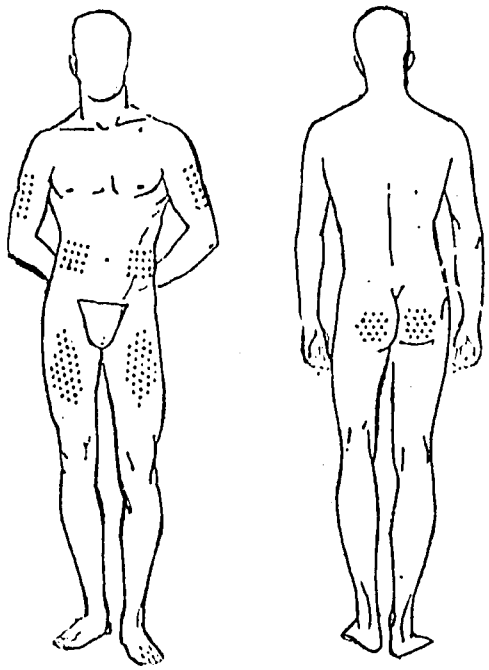


Figure CM 5 - Possible sites for daily insulin injections.

Injection of Insulin

1. Wash site of injection with soap and water.

2. With one hand, pinch up the skin at injection site. Place syringe at a 45° angle to the skin, quickly inject needle for its entire length. The more rapidly the needle is inserted, the less will be the pain.

3. Withdraw the plunger slightly to be sure that the needle is not in a blood vessel. If blood appears, remove the needle, discard the dose and start over.

4. Inject insulin dose.

After Injection

1. Hold skin firmly near the site of the injection. Withdraw needle, maintaining original position of syringe.

2. Gently wipe site of injection.

REVIEW QUESTIONS

Place a "T" or "F" in front of each statement to indicate whether is is TRUE or FALSE.

_____1. In uncontrolled diabetics, the level of glucose inside the cells rises too high while the blood is starved for glucose.

_____2. In diabetes large amounts of sugar may be spilled out in the urine.

_____3. Diabetes can develop at any age.

_____4. Diabetes is spread from person to person via droplet spread from the respiratory track.

_____5. Hypoglycemia may result from a patient taking too much insulin or not eating enouth.

_____6. Exercise increases a diabetic's needs for insulin.

7. List 5 factors that will make diabetes worse.

1)

2)

3)

4)

5)

8. List the three classic symptoms of diabetes.

1)

2)

3)

9. Complications of diabetes may be a result of poor regulation. Describe ketoacidosis and hypoglycemia.

-Ketoacidosis:

-Hypoglycemia:

10. Describe the diet recommended for diabetic patients.

11. If a patient feels like he is becoming hypoglycemic, what food(s) could you suggest he eat.

12. List 5 responsibilities of the nurse clinician at each follow-up visit with diabetic patients.

    1)

    2)

    3)

    4)

    5)

13. List 5 patient education points that all patients with diabetes should understand:

    1)

    2)

    3)

    4)

    5)

STUDENT GUIDE

HEADACHE

I. Entry Level Skills and Knowledge

Before starting this unit, you should be able to:

1. Describe the normal anatomy and physiology of the head.
2. Know the historical questions to ask concerning the head, eyes, ears, nose.
3. Do a physical exam of the head, eyes, ears, nose.

II. Objectives

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

1. Describe the signs and symptoms associated with headache.
2. On physical exam recognize:
   a. Neurological changes including:
      1) altered levels of consciousness
      2) abnormal sensory or motor findings
   b. Head - changes including:
      1) sinus tenderness
   c. Eyes - changes including:
      1) visual acuity
      2) visual fields
      3) pupils
      4) extra-occular movements
   d. Ears - changes including:
      1) hearing
      2) balance

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. Skills: Your ability to perform a complete history and physical examination of the head, eyes, ears, neurological systems.

ROTATION PHASE

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

1) Your ability to diagnose and manage the common causes of headache.

HEADACHE

Headache is not a specific disease, it is a very common symptom that can be caused by a wide variety of diseases and conditions. Most headaches are mild and self-limited or easily relieved, but headaches can be caused by serious illnesses. It is important to consider the cause of the headache before simply treating the symptom of pain.

Some types of headache are more often associated with specific causes. Thus, determining the type of headache may help determine the cause. Throbbing, pulsating headaches are more often associated with vascular causes such as migraine and hypertension. A sensation of tightness with a band-like feeling around the head is often due to psychological or emotional stress. A steady dull headache is more often associated with head injuries and tumours. However, these guidelines are not specific and it is often not possible, even with the best of hospital, lab. and x-ray examinations, to determine the specific cause of the headache.

Trauma to the head or neck causes headaches. These may be caused by injury to the skull or the brain and its lining or to the muscles, ligaments, fascia or intervertebral discs. Neurological signs or unconsciousness occuring in the patient usually indicates more serious injury to the brain. If there has been injury to the neck, the possibility that there is damage to the spinal cord in the neck must be assumed and appropriate care given. It is not unusual, however, for them to be headaches in the patient who has had head or neck trauma even if there is no serious brain damage.

Many illnesses that cause fever can also cause headaches. Among the most serious of these are those caused by meningitis. In most cases there will be severe pain and associated stiff neck - meningeal sign. These are treated with antibiotics and pain medicine (see section on Meningitis in the Communicable Diseases Module).

Another cause of headache with fever is Typhoid. There is usually also abdominal pain and often a cough. These also need antibiotics to treat the cause of the headache. (See section on typhoid in the Gastro-Intestinal Problems module.)

Other causes of fever can also cause headaches, so if fever is present with a headache, try to determine the cause of the fever to determine the cause of the headache.

High blood pressure can cause severe headaches. During pregnancy this may be a sign of Toxaemia of Pregnancy. At other times it is just associated with very high blood pressure. In these cases it is most important to treat the high blood pressure. The headache will disappear as the blood pressure returns towards normal. (See Hypertension section in this module and Toxaemia section in Problems of Women.)

Headaches can be caused by eye problems. This can be as simple as a refractive error causing eye strain - the patient needs glasses or as serious as glaucoma with associated loss of vision. (See eye section of EENT module.)

Acute dental lesions such as tooth decay or abscess or broken tooth or jaw can cause headache. Again, the specific cause should be found and treated. (See Dental Module).

One of the most common causes of headache is the so-called "common cold" or Upper Respiratory Infection. There are usually associated respiratory symptoms such as nasal discharge, cough or sneeze, often fever and usually generalized body aches and pains. Since these are caused by one of a number of viruses, antibiotics are of no value in the treatment. (See section on URI in Respiratory and Heart Problems Module.)

Headache can be one of the side effects that can occur in women using hormone Birth Control Methods such as the Birth Control Pill and the Depo Provera injection. These can be severe and often indicate the need to change to another method of birth control. (See Child Spacing Module.)

Muscle contraction or spasm of muscles of the head and neck often causes headache. This may be because of injury to the muscle itself, because of muscle strain, because of excessive fatigue or because of psychological or emotional stress. The muscles most often involved are those of the back of the head and neck. These are probably the most common causes of headache. However, you must remember that not all headaches in people with emotional stress are caused by that stress - they can also have any other type of headache - and that the stress itself can be caused by some other disease.

In headaches that are caused by psychological or emotional stress, helping to deal with the cause of the stress is an important way of treating the headache. If muscle spasm is present, rest, heat, massage to the affected muscle and Methyl Salicylate ointment to the sore muscle may help relieve the headache.

When there are no apparent serious causes of the headache, symptomatic treatment with Aspirin, or Paracetamol is usually indicated. In adults, one or two tablets every four hours is the usual dose, and in children, it is 60 mg/year of age every four to six hours. If these medications do not relieve the headache, or if you suspect any more serious cause for the headache, refer the patient to the doctor, or, if it is severe, to the hospital.

STUDENT GUIDE

AVITAMINOSIS

(Vitamin C, Nicotinic Acid)

I. Entry Level Skills and Knowledge

1. Explain the effects that vitamin C and nicotinic acid have on the body.

II. Objectives

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

1. Describe the signs and symptoms of scurvy and pellegra.
2. On physical exam, recognize the signs of scurvy and pellegra.
3. Explain the usual course and complications associated with hyperthyroidism.
4. Develop a management plan for a patient with scurvy and pellegra.

III. Evaluation

MODULE PHASE

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

1. Knowledge: Written test based upon contents of unit in module text. Acceptable performance, 80%.)
2. Skill: Your ability to identify signs associated with scurvy and pellegra.

ROTATION PHASE

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

1. Your ability to diagnose and manage scurvy and pellegra.

IV. Activities

Activities you will be using to accomplish objectives include:

1. Read module text and answer review questions.
2. Discuss with instructor on any from text or review questions.

PELLEGRA

Pellegra is caused by a deficiency of a variety of specific factors, with nicotinic acid (Niacin) as the most important. The name Pellegra comes from pelle (skin) agra (rough). It is found where people eat a lot of maize, sorghum, or starchy foods and not enough green vegetables, meat, eggs, fish or wheat germ (body building foods).

Skin lesions may begin by looking like a sunburn with severe itching or burning and then progresses to become scaly and rough. Sometimes the skin becomes a darker brown/black colour and then becomes rough and scaly. Usually the skin lesions are symmetrical and appear over areas exposed to the sun. In adults the lesions are seen on the back o the hands and lower arms, while in children they are found on the arms, back of legs and in a "V" shape on the front of the neck where the shirt is open to the sun, as well as on the face, elbows and knees. A sore mouth is common with a sore tongue and small sores over the whole mouth. Infection of the lesions is common. Painful swallowing and loss of appetite with epigastric pain are frequent complaints. Diarrhoea stools are small, frequent, and watery. Mental disturbance is most commonly seen as confusion. The four "D's" for diagnosis of pellagra are dermititis, diarrhoea, dementia and death.

Pellegra can occur in children and skin lesions are the most common finding. Involvement of the G.I.tract or mental disorders are rare in children. Pellegra and kwashiorkor may occur at the same time. Pellegra tends to affect older children who do not appear as ill as those with kwashiorker. The child is usually underweight because he lacks proteins as well as nicotinic acid.

Dietary history is very important in diagnosing pellegra. Ask about the patient's diet and keep in mind that the chronic alcoholic frequently drinks and eats snacks which are high in carbohydrates and calories but have no nutritive value. Ask about specific foods.

TREATMENT

A high calorie, high protein diet - 3000 to 4000 calories with adequate amounts of fresh meat, liver, milk, eggs or yeast.

OR

Nicotinic Acid 100 mgms 3 times per day for 10-14 days with the diet. There is usually a reaction with warmth and tingling over the cheeks and neck. A multi-vitamin with Vitamin B is required.

PREVENTION

Teaching the patients to eat a well balanced diet, and which foods should be in their diet daily is important, fresh fruits and vegetables are as important as the protein foods. Prevention of alcoholism would prevent some pellegra.

SCURVY

Scurvy is a vitamin deficiency disease caused by a lack of Vitamin C (Ascorbic Acid) in the diet. Fresh fruits and vegetables, including leafy vegetables and sprouting plants, are the best source of Vitamin C. In Lesotho, scurvy is found when people go and stay in the mountains for months and do not get any fresh fruits or vegetables.

The feeding and dietary history is very important in both infants and adults. Scurvy is virtually unheard of in breast-fed children even though the Vitamin content of breast milk varies with the mother's diet. If an infant has stopped breast feeding and is not on a fruit or vegetable supplement, you should be suspicious of scurvy. In children the peak incidence is at 8 months and the most prominent sign found when examining the child is tenderness and swelling of the lower extremities. The legs are partially flexed and very painful to touch. You may find crepitus of the ankles or wrists and enlargement of the costochondral junctions (Scurvy Rosary). Bruising may be seen. If the child has teeth, there may be oedema and haemorrhage around the gums but there will be no changes if there are no teeth.

In adults the onset of signs and symptoms is slow, with loss of weight, progressive weakness and stiffness in the legs. Haematomas forming in the leg muscles and around the joints may be the first sign, and the patient will come in complaining of weakness and stiffness in the legs and knees. These symptoms are frequently brought out by hard physical exertion. The gums may become swollen and spongy with masses around the teeth. The teeth usually loosen and fall out. The degree of gum changes is related to how good the oral hygiene is. If there is no oral hygiene, then the gums become worse faster and the teeth fall out faster. Pin-point haemorrhages can be found on the limbs and trunk of the body.

One of the ways of diagnosing scurvy is to put a blood pressure cuff on the upper arm and pump it up to 180-200 so that you stop the blood return from the arm. Leave the blood pressure cuff inflated for one to two minutes. Then you will see petechiae (pin-point haemorrhages) form on the lower arm and top of the hand if the patient does have scurvy.

TREATMENT

Fresh orange juice daily plus a diet with Vitamin C may be curative or else Ascorbic Acid for 1 month plus the diet with Vitamin C. Teaching the patient which foods are high in Vitamin C is very important.

ADULT: Fresh oranges (2) 6 ounces daily plus a diet high in Vitamin C is curative. You can also give Ascorbic Acid 200-500 mgms daily for 1 month plus diet containing Vitamin C.

CHILD: Fresh oranges (1) 3 ounces daily plus high Vitamin C diet
OR
oral Ascorbic Acid 100-300 mgms daily plus diet for 1 month.

SOURCES OF VITAMIN C

In Lesotho you will find plant products such as turnip greens, cabbage, cauliflower, horseradish, orange and lemon pulp, spinach, potatoes, turnips, tomatoes, carrots, beetroot, sepaile, peaches, apricots and watermelon.

PREVENTION

Give 30 mgm of Ascorbic Acid daily when going where there will be no fresh foods to eat for weeks or months at a time.

REVIEW QUESTIONS.

1. A deficiency of _____ is the most important cause of pellegra.

2. Describe the skin lesions of pellegra and where they are usually found on the patient's body.

3. List 5 signs and symptoms of pellegra.

4. What is the treatment for pellegra?

5. Scurvy is a deficiency of _____ caused from not eating _____ in their diet.

6. What is the most common sign of scurvy in a child?

7. List the signs and symptoms of scurvy.

8. What is the treatment for scurvy?

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.