UNIT 6 HIV TESTING AND ISSUES INVOLVED

Structure

6.1 INTRODUCTION

The only way to confirm whether one has HIV infection is to do an HIV test. Mere symptoms of the disease in a person alone are not enough to conclude that one is an AIDS patient. People who have exposed themselves to high risk behaviour or such situations may go for HIV testing that requires a series of blood samples to be examined.

There are various ways one can get infected. Similarly, all the body fluids also contain HIV virus. However, the test that is used to diagnose HIV infection detects the antibodies to the virus in the blood. It is mandatory for a hospital to seek the consent of a person for testing his / her blood for HIV. At the same time maintaining strict confidentialiy regarding test result is very important because of the stigma and taboo attached to HIV and AIDS.

Let us try to learn details regarding HIV tests, testing procedure, need for pre test and post-test counselling and testing strategies in this unit.

6.2 OBJECTIVES

In the previous unit we have studied about the various routes of transmission of HIV from one person to another. It is however, essential that we also learn about the ways and means of finding out whether one is infected or not. Physicians across the world use certain established and approved ways of testing people to find out details about various diseases. Similarly, for HIV and AIDS too, there are certain tests which will help us to identify the HIV status of a person. After studying this unit, you will be able to:

- understand how HIV can be detected in a human body,
- understand the various types of tests used for detecting HIV;
- know the importance of pre-test and post-test counselling; and
- know the types of testing and strategies involved in HIV testing.

6.3 HIV VIRUS AND HIV TESTS

Viruses are the smallest living beings known to man. Living matter consist of two nucleic acids known as DNA (Dioxy Ribo nucleic acid) and RNA (Ribo nucleic acids). Viruses are an exception. They contain only a single nucleic acid. Human Immuno Deficiency Virus (HIV) is an RNA virus. A protective coat covers the nucleic acid. It is made up of chemical substances that are called glycoprotein or polyproteins. This cover is called as the envelope (eve). The HIV also contains an enzyme known as the reverse transcriptase (pol). Reverse transcriptase synthesizes DNA from RNA. The genes that control these functions are known as gag **pole** and **eve Genes.**

If you recall your biology classes, you will remember that protein synthesis takes place in the cell. DNA present in the nucleus of the cell activates RNA. RNA assembles the amino acids to form proteins. Reverse transcriptase enzyme, that is present in the HIV, produces DNA from RNA. It goes one step backward in protein synthesis i.e. DNA from RNA. Hence it is called a 'Retrovirus'.

Detection of HIV infection

It is very difficult to grow (culture) the virus under laboratory conditions. In the laboratory the virus is grown in a suitable growth media. This process is called as viral culture. It takes about six weeks for the culture to become positive and it is costly. Hence, HIV virus is not cultured. There are other tests to directly detect the virus in the blood. However, these too are very expensive. A simple and effective test is necessary to detect the presence of HIV in the body.

Reactions of the virus in the body

When a micro-organism enters the body, the immune cells recognize the proteins present in the micro-organism as a foreign protein. This foreign protein is known as the antigen. To neutralize this protein the body produces chemical substances. These substances are known as antibodies. Antibodies interact with the antigens to form complexes that neutralize the antigens. The body takes about four to six weeks to form the antibodies against infecting micro-organisms. The same process takes place when a person becomes infected with HIV virus. We use the presence of antibodies against the HIV virus to detect its existence.

Window period

Once the virus enters the body, it starts to multiply. During this process the test does not detect the virus. The patient is highly infectious. After six to eight weeks the body produces antibodies. The tests become positive. This period when the patient has the infection and the test is negative is known as the **"window period".** A similar situation may occur in a terminally ill patient, when his body cannot produce antibodies. The test will be negative while the patient will have severe infection. In the window period the test turns out negative because it takes six weeks for the antibodies to form. In the terminal stages the immune system may be destroyed so that there are no antibodies produced by the body.

Types of Test to Detect Antibodies

To test for the antibodies, two different types of tests are used. They are the ELISA (Enzyme Linked Immuno Sorbent Assay) test and the Western Blot test.

i) ELISA test

ELISA is easy to perform, is .the least in cost and is sensitive. The basic principle of the test is to detect the antibodies against HIV that are present in the blood of an infected person.

Method

Micro plates with viral antigens are used. Serum from the patient's blood is added to the viral antigens. If the serum contains antibodies against the virus, an antigen-antibody complex will be formed. The presence of this antigen antibody complex leads to change of color of a chemical added to the test. Depending on the colour changes the reaction is reported as positive or negative.

Types of ELISA

Different types of ELISA are in use. They are based on the ways in which viral antigens are obtained. Viral antigens can be obtained by three different methods: namely, whole viral lysate, recombination DNA and by synthetic polypeptide. At present only synthetic polypeptide is available in the market.

ii) Western Blot test

This test is also based on the same principle. Viral antigens are layered on to a nitro cellulose paper. Patient's serum is placed at one end of the strip. The paper is charged with electricity for 24 hours. Antibodies move along the paper and interact with the antigens. Depending upon the molecular size the antigen antibody complexes move to different areas. These patterns are compared with the standard pattern produced by the HIV. To declare the test as positive, antigen-antibody reactions should occur at all the three region i.e, gag, pol, and eve. If there is reaction only in one or two regions then the test is considered to have shown an indeterminate result. The test has to be repeated after six weeks. It is less sensitive than the ELISA, but much more specific.

Sensitivity and specificity

What do sensitivity and specificity mean? Any test that is done to detect a disease does not always correctly detect the disease at all times. Similarly, it does not always rule out the disease. This is an inherent property of the test. Sometimes the test may be positive even when the person does not have the disease. This is known as a **false positive test.** Similarly, the test can be negative even when the patient does have the disease. This is known as a **false negative test.**

Sensitive test

A sensitive test will detect all the cases that have a remote possibility of having the disease. To use a test for screening for a disease it should be very sensitive. A sensitive test showing a negative result confirms the non-existence of the disease. Whereas a positive test result will NOT confirm the diagnosis. It will give a very high rate of false positives. ELISA is one such test.

Specific test

A specific test is a confirmatory test to eliminate the false cases declared positive by the screening test. It will detect all the cases that do NOT have the disease. But, it will detect a high number of false negative tests i.e., it will not be able to detect all those who really have the infection. The Western Blot is one such test. The tests that are used to detect HIV should have a high sensitivity and high specificity. Therefore, a combination of tests is used. If one ELISA is found positive, it should be followed by two more tests-either two ELISAs or one ELISA and one Western Blot. Only then should any person be diagnosed as HIV positive.

A false positive ELISA may be due to liver disease, pregnancy, recent influenza vaccination and several other such conditions of the body. We have to be careful while interpreting a test to detect HIV.

Check Your Progress

Notes: a) Use the space provided for your answer.

b) Check your answer with those provided at the end of this unit.

1. What are the types of tests used to detect HIV antibodies?

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6.4 PRE-TEST AND POST-TEST COUNSELLING

Need for counselling

Conveying a positive HIV result to an affected person is a very serious matter. As you are already aware, a positive test result is seen as passing a death sentence on that person. It is also like passing a moral judgment on that person. As the commonest mode of acquiring this infection is through the sexual route, morality of the affected person is very often judged. There is stigma attached to this disease in the society. Hence, the test results may upset the patient.

A patient may have varied reactions to a positive test result. He may be shocked. He may not believe the report (denial). He may become anxious about his future, become scared, depressed or angry. Sometimes these reactions can have bad consequences, so that he/she may decide to end his life or become careless and spread the disease to other persons. A patient will have different coping mechanisms to counter the shock. He/she may like his/her family and friends to know about the disease or he / she may like to hide the fact. Before the test is conducted the mind set of the patient has to be tuned such that he/she is able to cope up with the test result.

HIV disease can also be termed as a disease of behaviour. A person's behaviour puts him/her at risk to get infected. If the disease has to be controlled then a person's behaviour needs to be changed. To achieve all these objectives, a person has to be counselled.

Areas to counselling

Counselling is the major tool that is used to help HIV infected patients to cope with their disease. It is also a continuous process. The three situations in which counselling is done are:

1. before doing the test (Pre-test);
2. after the test (Post-test);
3. crisis counselling. A person who is HIV positive will face many crises in life. He/she needs to be counseled; and
4. adherence counselling.

Pre-test counselling

Among all the types of counselling, pre-test counselling is the most important. It helps to establish a rapport between the patient and the counsellor. It also helps the counsellor to gauge the patient. It may be the only contact that a person will make with the health system and it may be the only opportunity to educate the patient about HIV. In the long run it will help the counsellor to build a rapport with the client.

Steps in Pre-test Counselling

a) Making the patient comfortable

It is essential to establish a good contact with the patient. During this process, try to make the patient comfortable. Try to explore the patient's family, occupational, educational and social background.

b) Reason for testing

It is good to find out the reason for that person seeking an HIV test. Many patients who are anxious will try to get the test done. It is also essential to enquire about the practices that may make the person prone to get the infection (high-risk behaviour). Inquiries must be made about blood transfusions and IV drug abuse. Preliminary inquiries should be made about sexual practices. Sexual practice of a person is a very private and personal matter. Unless the patient trusts the counsellor, he/she will not reveal it. These inquires should be made so that risk practices can be identified and the patient can be helped.

c) Concepts and misconceptions

The patient may already have some ideas about HIV/AIDS. Try to explore them. Many times they may be wrong and misleading.

d) Clarifications about HIV and AIDS

Tell the patient about HIV and AIDS. It is essential for them to know the differences between being HIV positive and having AIDS. It is helpful to draw a line diagram of the natural history of HIV disease. This gives them the hope that all is not lost and that they have some years of life left which can be used productively.

It is necessary also to tell the patients about HIV and what it does to the human body. Patients may not know about the immune system. To understand the immune system, simple examples from day to day life must be used. The examples could be tailored to meet the occupation of the person. If the patient is a farmer then the example of protecting the crops can effectively be used. Ask the patient to imagine that he/she is guarding his/her field. Ask him/her as to what he / she will do if somebody tries to rob the crop or destroy the crop. Then ask the patient as to what will happen if the person becomes progressively blind, deaf and lame etc., in the process of fighting the enemy. Then tell him / her that similar things occur in the human body.

To explain about the HIV in the body, examples of common symptoms and common diseases can be used. A normal person will experience symptoms of fever or loose stools for a few days (3-4 days). An HIV infected person who is asymptomatic will also have the same duration of illness. When the person becomes symptomatic the duration of the disease will be longer i.e., 2-3 weeks. If the person develops AIDS, the symptoms will last for a longer time (1-2 months). Patients will have some knowledge of the symptoms of common diseases. Cough, sputum which contains blood, fever and weight loss is commonly seen in patients with pulmonary tuberculosis. You can use the patient's knowledge to illustrate tuberculosis in HIV infected patients.

e) Health education

Pre-test counselling may be the first and the only time when a person may come in contact with the health care system. A physician must not miss this opportunity to educate the patient about the preventive aspects of the disease.

f) Clarify about the test

During the Pre-test counselling it is essential to tell the patient that ELISA test is a test for antibodies that are present in the body. A negative test will not rule out disease. The test has to be repeated after a few weeks. You can explain details about the window period and the need for protecting self and others from getting infected. Similarly, you must tell that one ELISA positive test may be wrong and that two repeats must be done to confirm or reject the diagnosis.

g) Practicalities of the test

A person should also be told some practical details of the test like the cost, location of the laboratory and the time taken for obtaining the result. You have to find these details from the laboratory where you will send your patients for the test.

h) Coping mechanisms

As the counselling proceeds, you will be able to assess your patient better about the coping capability of the patient with bad news. This can become very valuable at the time of post-test counselling. It is also necessary to find out from the patient about the people to whom the result can be revealed.

i) Confidentiality

Assure the patient that the test result will be kept confidential and will not be revealed to any other person without his / her expressed consent. If the patient does not want his / her test to be revealed, then it should not be revealed to any unauthorized person. Find out the persons to whom he wishes to reveal the test result. Very often a close family member or a friend becomes the first choice of the patient. It is always better to motivate the patient to reveal his / her status to some one close to him / her.

j) Consent

Ideally, after this session of counselling, a written consent should be obtained. This often does not occur in practice. A return appointment for the test result should be made. The patient should be made to understand the need for a return visit even if there are chances that the result can be negative.

Post-test counselling (Negative)

When the patient comes for the result, he/she may get a negative result. If the result is negative, then the patient has to be reminded about the window period. If the patient has some high-risk behaviour, he / she must be asked to repeat the test after six months. He/she must also be told about the ways in which he / she can reduce the risk of acquiring the infection.

While talking about the negative test result, it should be explained that the test is for antibodies. A negative test does not to rule out the disease. If there is a definite high-risk behaviour involved, the test has to be repeated.

Post-test counselling (Positive)

a) Breaking the news

Where the test is positive, the news should be broken gently to the patient after adequate counselling. You should be sure and definite about the result. Get repeat

tests done for confirmation and explain the necessity of these to ensure that they return for them. Give time to react to the news. Many patients will be shocked and will take time to react. They may manifest the various psychological reactions as already mentioned. As a counsellor, you need to support the patient through all these reactions. When the person accepts the diagnosis, you have to help him/her to face life.

b) Medical plan

The patient may have medical problems. Try to assist him/her to seek medical help.

Not all hospitals will be willing to treat HIV patients. You as his/her counsellor will have to identify those hospitals and doctors who are willing to treat HIV patients. Do you know about the facilities available in your community?

c) Social support

The patient may be worried about the social consequences of being infected. Every problem should be assessed and a solution should be found. Social problems may begin with the family. The patient may be afraid to tell his family. Family members may want to isolate the patient. The patient may shun other family members out of fear of infecting them. Similar fears may be faced in the work place. As you and the patient explore various possibilities you will be able to find solutions to these problems. Perhaps you may have to organize a meeting with his/her employers/ colleagues or with the family to sort out these problems.

The patient may need help to organize his/her financial and legal affairs. Try to find out about various people or organizations that can help in these areas.

d) Plan for the future

The patient may like to make a decision as to how he/she should be cared for at the time of terminal illness (advanced directives). Help him/her to make those decisions.

e) Reduction of high risk behaviour

The patient needs to know the ways in which he/she can reduce high-risk behaviour. He/she will be more receptive to avoiding those behaviours if he/she knows that he/she is positive. If the patient is a drug addict, try to find facilities that will help him/her to give up drug addiction. If that is not possible, try to get clean needles and syringes for his use (needle exchange programmes). If a person has multiple sex partners as a risk factor, then try to advise him / her against that practice. The patient also needs to be told about the protective effects of condoms. Patients also have to be told about the correct use of condoms.

f) Networking

In your area, there may be groups of HIV infected people. They may be helped to organize themselves into a support group. Try to help the patient to become a part of that group. It helps the patient to know that many like him / her have the disease and they can support one another. Patients who suffer from HIV infection often seek spiritual solace. Try to identify various spiritual organizations in your areas and try to make these organizations help your patients.

g) Support the patient

Assure the patient that you will always be there to help at the hour of his / her need. This calls for total commitment from your part. You may have to give him /

her contact address so that he / she can contact you at the time of need. Can you do all these things in a single session? Obviously, it is not possible to do so in a single session. Post-test counselling is a process that involves many sessions.

Crisis counselling

Patients may have acute problems that may threaten their social well being. The parents may force the patient to marry. He/she needs counselling to face such a situations. Can you suggest solutions to this problem?

There are different ways of tackling this problem. He / she can inform the parents about his / her HIV positive status and its consequences. He / she may say that he / she is suffering from a serious disease and would like to avoid marriage. He / she may talk to his / her fiancee and tell him / her about the disease and marry him / her if he / she is willing. He / she may find an HIV positive person and may marry him / her. These are some of the options that are available and being practiced. All these possible options need to be discussed. The patient should decide the best option for his / her situation. After the best option is selected, a plan should be made to implement it. If he / she decides to tell his / her parents about the disease, then he / she should inform his / her family doctor to say the same. All these details have to be worked out. The patient should report back to you and tell you about the progress that he / she is making. This type of counselling is called **crisis counselling.**

Adherence counselling

Today there is treatment available for HIV infected persons. This treatment is known as Highly Active Antiretroviral Therapy (HAART). Combinations of three different drugs are used. These drugs may be given as individual drugs or may be formulated into a single tablet. The drugs suppress the virus, improve the quality and prolong the life of HIV infected patients. These drugs have to be started at an opportune time and have to be taken life long. If these drugs are taken irregularly the virus will become drug resistant and the disease will progress faster. Resistant strains will be seen in the community. While for other chronic diseases 80% adherence may prevent the progression of the disease, HIV requires more than 95% adherence. Even missing a single dose in a month can be deleterious to the patient. Hence adherence is very important.

Adherence involves change in behaviour so that the patient is disciplined and conditioned to take medication. Adherence counselling should start from the time the diagnosis of HIV is made. Patients should be told about the availability of HAART, the cost of treatment and that it will be started at an appropriate time. The Government of India has set up free antiretroviral treatment (ART) centers. Find a centre in your area. Patients taking HAART must always be monitored by a physician to see the effect of the drug. Hence constant and regular attendance at medical centre is needed All these aspects have to be stressed during the post test counselling.

Once the patient has been started on treatment, check about the drug intake during every counselling session. Enquire about the side effects. Find out if the patient has any difficulties in procuring the drug supply. Encourage the patient to continue the drug therapy.

If patients have missed their drugs, ask about the reasons for missing the drugs. Very often patients may forget to take the drug. Help them to overcome this difficulty by using pill organizer, reminders or by using other family members to remind them to take the medication. In every encounter with the patient, talk about adherence.

Groups to be Tested

Who are the people who need to be tested for HIV?

High risk behaviours

People, who have a history of high-risk behaviour, need to be checked. People may have multiple sex-partners. Under this category, sex workers and their customers can be included. Men who are away from their families for a long period of time like truck drivers, migrant labourers, traveling salesmen and security personnel etc., are likely to indulge in sex with unknown persons or with different partners and are at risk of contracting the disease.

Men who have sex with other men are likely to get the infection and they need to be checked for the infection.

Spouses of HIV infected patients should also be offered the test. National AIDS Control Organization guidelines for AIDS should be followed. Some medical conditions may make the doctor think of HIV infection and an HIV test will be sought for by the doctor.

People who have received untested blood or blood products are at risk of acquiring the infection. Similarly organ recipients are at a high risk if the organs have not been tested before being transplanted.

Consent

All testing that is done should be voluntary and with informed consent. Informed consent means that the patient will have to undergo a pre-test counselling. No test should be done without a per-test counselling. In practice, very often it is not done. This leads to lots of difficulties for the patients as well the health care workers who subsequently have to deal with the patient. All clinical testing should be voluntary. The advantages of voluntary testing are many.

If the patient gives an informed consent (pre-test), then we can expect that he / she, is prepared to face the test result. He / she will trust you since he / she gives the consent. He / she has control over his / her affairs. He / she will be more receptive to change his / her behaviour. Hence, the spread of the infection can be reduced to a great extent.

Check Your Progress

Notes: a) Use the space provided for your answer.

b) Check your answer with those provided at the end of this unit.

2. What are the three situations in which counselling is done?

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6.5 TYPES OF TESTING AND STRATEGIES

Response for Testing

There are various reasons for testing.

1. Voluntary
2. Referral
3. Surveillance
4. Mandatory

1) Voluntary testing

This has already been described earlier in this unit. Here the patient considers himself or herself at risk and so goes for testing on his/her own.

2) Referral

When a health care provider-doctor, nurse, health worker considers the condition of a patient to be suggestive of HIV infection, he/she refers the 'suspected case' for testing. It must be done with informed consent of the patient.

3) Surveillance

Sometimes it is essential to know the prevalence of disease in a community. This helps in planning for the health care of the community, as well as in finding effective control measures for the disease. Voluntary testing may not give true picture. A method known as *Unlinked Anonymous* testing is used. In this method blood that is collected in the laboratories is used. After the test that has been requested is performed, a sample of the discarded blood is used for testing for HIV. This sample will not have any patient identification on it i.e., patient's name or number will not be written on the sample. The person doing the test will not be able to identify the patient. Hence, it is called Unlinked Anonymous Test.

In the STD clinics, blood is usually collected to test for syphilis or other STDs. After the test is done, the remaining sample is sent to the surveillance centers without any patient identification. This survey gives an idea about the prevalence of HIV in high-risk groups. Similar study has been done on antenatal mothers to find the extent of risk involved in the community (low risk groups). Most of the reported cases of HIV in the country are based on such surveillance.

4) Mandatory

HIV testing that is done compulsorily for a specified group of people with or without their consent is known as *Mandatory Testing*. This method of testing is not recommended. It is against human rights and the fundamental rights of the individual. Testing against the will of the person leads to many problems. Patients will not come to the health care system if they know that they will be checked for HIV. The fear and stigma of the disease is enough to prevent from going to a hospital. Mandatory testing involves a huge expenditure for the health care system. It is not justified to spend huge amounts on a program that will not eradicate the disease. There is no situation that can justify doing an HIV test on a person compulsorily. Our country also follows this principle when dealing with Indian citizens. According to NACO the only condition where a HIV testing is done mandatory is in relation to requirement to armed forces. Even then it insists that the clients should be counselled.

In some countries, foreigners sometime need to get an HIV test done. Mandatory testing is justified only in blood banks, where the donated blood is tested. An individual is not tested. The donor is not informed of the test. The blood that is collected is discarded. This is done because the recipient should always receive only uninfected blood.

Testing Strategies

Since HIV is such a serious disease, much care should be taken to make a diagnosis. You have already learnt about the sensitivity and the specificity of the various tests. Do you remember them? Emphasis should be laid on confidentiality. Considering all these facts, the World Health Organization (WHO) formulated a testing strategy for testing HIV. The National AIDS Control Organization (NACO) has adopted the same guidelines for India. It makes use of the ELISA test and the Western Blot test. Recollect these tests. Accordingly, WHO has three strategies?

Strategy I

Only a **single ELISA test is done.** This is used only for testing blood or blood products. A single positive ELISA is enough to discard the blood. The reason why this is done is to provide only safe and healthy blood to the patient who receives it. Even if there is slight doubt, the blood is rejected. The donor is not informed about the result. Usually all blood banks use a single ELISA to screen their blood stores. This testing has eliminated blood transfusions as a means of transmitting HIV.

Strategy II

In this strategy **two ELISA tests are done** if a patient manifests clinical symptoms of AIDS. A sample of blood is tested by one particular method of ELISA. If the sample is found positive, then a second ELISA is repeated using a different method. If the sample is positive even with the second test, the patient is declared as positive. If the second test is negative it is reported as negative; some laboratories report it as indeterminate. If the test is being done for surveillance purposes, only strategy II is applied.

Strategy III

In this strategy **three ELISA tests are done** or **two ELISA and a Western Blot test is done.** It is done in patients who do not have any symptoms of AIDS illness. If the blood sample is positive to two ELISA tests, a Western Blot test is done. If all are positive then the patient is declared as positive. If you are working with HIV positive people, it is essential to know the type of tests that are being done in your laboratory. If the lab is not doing all the three tests, then you have to see that your patient's results are confirmed by another laboratory using a different method.

Confidentiality

Once a result is known, confidentiality has to be maintained. The lab should release all the results in a cover, which is marked as confidential. The result should not be released to friends and relatives. How do labs in your area release the reports? You need to know in your locality how test results are treated by people involved in the health care system.

Certain Situations of HIV Testing

a) Can an HIV test be done on a person before he / she is employed?

As already stated, no mandatory testing can be done. There is no formal occupation in which HIV can be spread to the co-workers through working conditions. The

employers cannot refuse to offer employment or terminate the workers on the basis of HIV reports. Even if the employer is paying for the test, the employer should not be given the test result. An employee gives consent for the testing.

b) Should HIV test be made compulsory before marriage?

In India arranged marriages are common. Many people have felt that an HIV test should be made compulsory for both the parties. Do you think it is right? It may be healthy to leave the choice to the partner whether to opt for an HIV test or not.

Check Your Progress

Notes: a) Use the space provided for your answer.

b) Check your answer with those provided at the end of this unit.

3. Can an HIV test be done on a person before he/she is employed?

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6.6 LET US SUM UP

In this unit we have gone through various issues related to HIV testing. This unit has outlined the HIV virus, reaction of the virus in the body and how to detect HIV infection. We have also studied about various HIV tests, the need for pre-test and post-test counselling and the types of HIV testing. Towards the end of the unit we also examined the strategies involved in HIV testing and briefly discussed some of the situations where a demand for conducting HIV test can be made.

6.7 UNIT-END EXERCISE

1. What strategy a teacher should adopt if he comes to know about a student in his/her class who is HIV positive? How can he/she help in future life?

6.8 SUGGESTED READINGS

Thomas, Gracious (1995): *AIDS and Family Education,* Rawat Publications: New Delhi.

Thomas, Gracious (1994): *AIDS in India: Myth and Reality,* Rawat Publications: New Delhi.

NACO (1999): *Country Scenario 1997-98,* Ministry of Health and Family Welfare, Govt. of India: New Delhi.

Thomas, Gracious (2001): *HIV Education and Prevention: Looking Beyond the Present,* Shipra Publications: New Delhi.

Thomas, Gracious (2005): *Prevention of AIDS: In Search of Answers,* Shipra Publications: New Delhi.

6.9 ANSWERS TO CHECK YOUR PROGRESS

1. To test for the antibodies different types of tests are used. They are the ELISA (Enzyme linked immuno sorbent assay) test and the Western Blot test.

   i) ELISA test

   ELISA is easy to perform and it is cost effective. It is also reliable and sensitive. The basic principle of the test is to detect the antibodies against HIV virus that are present in the blood of an infected person.

   ii) Western Blot test

   Vital antigens are layered on to a nitro cellulose paper. Patient's serum is placed at one end of the strip. The paper is charged with electricity for 24 hours. Antibodies move along the paper and interact with the antigens. Depending upon the molecular size the antigen - antibody complexes move to different areas. These patterns are compared with the standard pattern produced by the HIV. To declare the test, as positive antigen-antibody reactions should occur at all the three regions i.e. gag, pol, and eve regions.

2. Counselling is the major tool that is used to help HIV infected patients to cope with their disease. It is also a continuous process. Various situations in which counselling is done are:

   a) before doing the test (pre-test)

   b) after the test (post-test); and

   c) crisis counselling. A person who is HIV positive will face many crises in life. He/she needs to be counseling during those times.

3. No mandatory testing can be done. There is no occupation in which HIV can be spread to the co-workers through working conditions. The employers cannot refuse to offer employment or terminate the workers on the basis of HIV reports. Even if the employer is paying for the test, the employer should not be given the test result. An employee should not be tested even if the employer orders the test unless the employee consents for the testing.