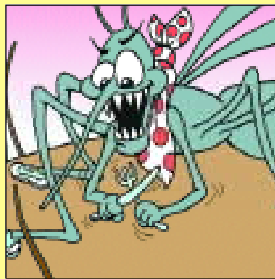




# Understanding how HIV is transmitted



## Where in the body is HIV found?

Understanding  
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### INFORMATION

1. HIV is **most commonly found** in blood and semen.
2. HIV is present in vaginal secretions and breast milk in **sufficient quantities to cause infection.**
3. HIV is **seldom found** in saliva, tears and urine.
4. Until today, HIV has **never been found** in sweat.

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**Objective:** To create an understanding of body fluids, and also which ones may contain HIV.

### GUIDELINES

1. **Ask:** Where in the body would you expect to find HIV? Note answers on a flip chart sheet without comment. If a participant says **body fluids**, ask for a list of body fluids. If the phrase 'body fluids' does not come up, then introduce the phrase. The list may include –

- Semen
- Saliva
- Blood
- Vaginal secretions
- Sweat
- Tears
- Breast milk
- Spinal fluid
- Mucus
- Pus
- Amniotic fluid
- Urine

Ask participants what the difference is between sperm and semen. (**Answer:** Semen is like the water in a swimming pool; sperm is the swimmer.)

2. **Ask** if HIV is equally present in all these

body fluids. Allow opinions to emerge.

3. **Explain** that the understanding of where HIV is found has been growing and changing over the years, and will continue to do so. A good facilitator should always be sure to say, "**Until today**, HIV has been found or not been found in. . ."
4. **Explain** that HIV is found in greater or lesser numbers in different fluids, and it is important to choose words with care while replying.

HIV is **most commonly found** in blood and semen.

HIV is present in vaginal secretions and breast milk in **sufficient quantities to cause infection.**

HIV is **seldom found** in saliva, tears and urine.

Until today, HIV has **never been found** in sweat.

# What are the main modes of HIV transmission from person to person?

DG4

## INFORMATION

### 1. The three main modes of HIV transmission are:

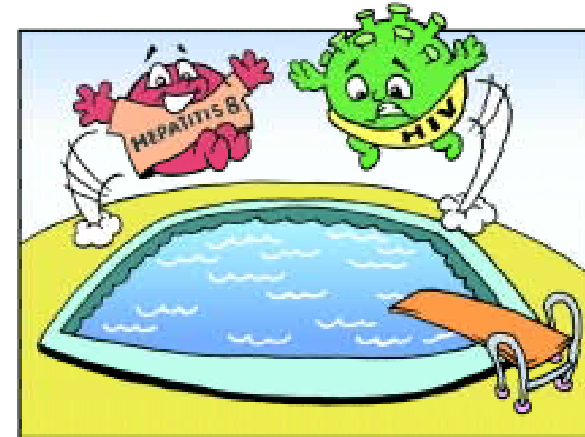
- Unprotected sexual intercourse with an HIV infected person;
- Direct injection or transfusion with HIV-contaminated syringes, needles, blood or blood products;
- From an HIV-infected mother to her child during pregnancy, childbirth or breastfeeding.

**Objective:** To create an understanding of the three major modes of HIV transmission.

## GUIDELINES

### 1. The three major routes of transmission of HIV are:

- **Unprotected sexual intercourse with an HIV infected person**, when semen or vaginal secretions containing the virus come into contact with the soft internal surfaces of the vagina, anus or penis. Sometimes there are very small tears and cuts on these surfaces, which give HIV a chance to mix with the blood or attach itself to white blood cells;
- **Direct injection or transfusion** with HIV-contaminated needles, syringes, and infected blood or blood products;
- **From an HIV-infected mother** to her child during pregnancy, childbirth, or breastfeeding.



Understanding how HIV is transmitted

## How HIV spreads

UNSAFE SEX  
Man and woman



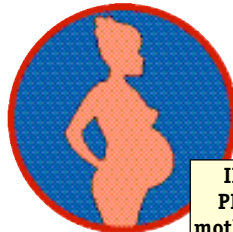
CONTAMINATED  
needles



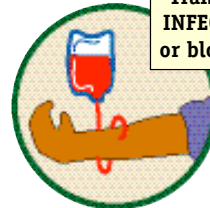
UNSAFE SEX  
Man and man



INFECTED  
PREGNANT  
mother to child



Transfusions of  
INFECTED BLOOD  
or blood products



## WHAT'S MORE INFECTIOUS THAN HIV?

If 1 ml of blood carrying the Hepatitis B virus were mixed with 24,000 gallons of water, and if 1 ml of that solution were injected into an individual, there is a nearly 100 percent chance of that person developing Hepatitis B.

In contrast, if 1 ml of blood containing HIV were dropped into 1 quart of water, and if 1 ml of that solution were injected into an individual, there is only a 10 percent chance of that person developing HIV infection.

## How can you tell whether a person is infected with HIV?

Understanding  
how HIV is  
transmitted

### INFORMATION

1. There are no distinct symptoms that are unique to HIV infection. However, 70 percent of infected people go through a brief period of flu-like illness between two and eight weeks after HIV infection. The illness goes away by itself.
2. A person should consider going for VCT if he or she has been in a high-risk situation recently, whether or not that person has experienced flu-like symptoms.

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**Objective:** To help participants understand that HIV infection has no unique or distinct symptoms.

### GUIDELINES

1. **Ask:** How can you tell whether a person is infected with HIV? What, if any, are the symptoms? Allow answers to emerge and record them on a flip chart sheet.
2. **Explain:** There are no distinct symptoms that are unique to HIV infection. However, 70 percent of infected people go through a brief period of flu-like illness anywhere between two and eight weeks after HIV infection. The illness goes away by itself.
3. **Ask:** When should a person consider going for an HIV test with counseling (known as **VCT**, or **Voluntary Counseling and Testing**)? Allow participants to express their opinions.
4. **Explain:** If a person has recently been in a high-risk situation (such as unprotected sexual intercourse with a person of unknown HIV status, an injection from an improperly sterilized syringe, or a transfusion of untested blood or blood products), then that person should consider going for VCT, whether or not that person has had a flu-like illness.

## What is the difference between exposure to HIV and infection by HIV?

DG 4

**Objective:** To create a clear understanding of the difference between **exposure** to HIV and **infection** by HIV.

### GUIDELINES

1. **Ask:** What is the difference between exposure to HIV and infection by HIV? Let participants express their opinions.
2. **Ask:** When one member of a household is infected by the common cold, does it mean that everyone in the house will get infected by the cold virus? Use this discussion to make the point that **when a family member has a cold, everyone is exposed, but not everyone will get infected.**
3. **Explain** the difference between exposure and infection by using other examples.
  - If a soldier steps out of his trench on to the battle-field, then he is **exposed**. However, he may not be **shot** unless there are enemy soldiers who can see him, and decide to shoot at him.
  - Ask participants to cite other examples.
4. **Ask:** When is a person exposed to HIV? Allow participants to discuss their views.

(**Answer:** For example, a person may be exposed to HIV when he or she has unprotected sexual intercourse with a person of unknown HIV status.)

5. **Ask:** How can you tell whether a person has been exposed to HIV? Allow participants to discuss their views. (**Answer:** It is not possible to tell by a person's looks whether he or she has been exposed to HIV.)
6. **Ask:** What is the interval between exposure to HIV and infection by HIV? Allow participants to discuss views. (**Answer:** There is no 'interval'. When a person is exposed, he or she is either infected at the same time, or not infected at all.)
7. **Ask:** Why should a person know the difference between exposure and infection? (**Answer:** The surviving partner of someone who has died of AIDS has been exposed, but may not be infected. Knowing this can help prevent needless stigma. Many people who are exposed wrongly assume they are infected.)

### INFORMATION

1. A person may be exposed to HIV when he or she has unprotected sexual intercourse with someone of unknown HIV status.
2. Being exposed to HIV does not mean the person is infected. Only proper testing for HIV can reveal whether a person is infected or not.
3. If exposure is assumed to mean infection, it can lead to needless stigmatization and wasted lives.

Understanding  
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transmitted

# Which is the most efficient mode of transmission of HIV?

**CAUTION:** This page should be omitted with groups of low literacy.

Understanding how HIV is transmitted

## INFORMATION

1. The most efficient mode of HIV transmission is a transfusion of infected blood or blood products. The efficiency is over 90 percent.
2. HIV transmission through unprotected sexual intercourse has an efficiency of less than 1 percent.
3. However, 70–80 percent of HIV infections worldwide are caused by unprotected sexual intercourse, because this is much more common among human beings than blood transfusions.

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Exposure	Efficiency	% of total
Blood transfusion or blood products	Over 90 percent	5–10 percent
From infected mother to child during pregnancy, childbirth or breastfeeding	25–40 percent	2–3 percent
Unprotected sexual intercourse with an infected person	0.1–1 percent	70–80 percent
Injection with needles carrying infected blood	0.5–1 percent	5–10 percent

**Objective:** To create an understanding of the commonest mode of HIV transmission.

## GUIDELINES

1. **Ask:** Which is the most efficient mode of transmission of HIV? Be aware that many participants may not understand the term 'efficient' well. Allow a brief discussion.
2. **Explain:** When a person receives a transfusion of HIV contaminated blood, there is a nearly 100 percent chance of the virus directly entering the bloodstream. Researchers say that the transmission of HIV through blood transfusion or blood products is over 90 percent efficient.
3. **Ask:** What is the efficiency of HIV transmission through unprotected sexual intercourse with an infected person? Allow discussion for a few minutes.
4. **Explain:** Based on studies of HIV positive individuals who have been living and having sex with uninfected partners, the current **efficiency** of HIV transmission through a single act of

unprotected sexual intercourse appears to be about 1 in 580. This can be understood as meaning infection is likely to occur in 1 out 580 acts of unprotected sexual intercourse between discordant couples.

5. **Ask:** Does this mean that unprotected sexual intercourse is not as risky as believed? Allow a brief discussion and then **explain** that unprotected sexual intercourse is responsible for 70 to 80 percent of HIV infections worldwide, even though it is less than 1 percent efficient. Blood transfusions account for only 5 to 10 percent of worldwide HIV infections.

6. **Explain** that every act of unprotected sexual intercourse carries the same risk of infection. No act of unprotected sexual intercourse is safer than another. Give the example of a revolver with only one bullet and five empty chambers. Any of the next six shots could be fatal. Would any participant be willing to volunteer to take the next shot?

## Which is the most common mode of HIV transmission?

DG 4

**Objective:** To create an understanding of the commonest mode of HIV transmission.

### GUIDELINES

1. **Ask:** Which is the most common mode of HIV transmission? Allow participants to share their perceptions and list them on a flip chart sheet.
2. **Ask:** Which is the least common of the three major modes of HIV transmission? Allow participants to share their perceptions and list them on a flip chart sheet.
3. **Explain** that a transfusion of contaminated blood or blood products is the least common of the major modes of transmission worldwide. Only about **5 to 10 percent** of HIV infections in the world have been caused by this.
4. **Explain** that **70 to 80 percent** of HIV infections worldwide have been caused by unprotected vaginal or anal sexual intercourse between individuals.
5. **Ask:** Why is infection through transfu-

sions of infected blood or blood products so rare? (**Answer:** Because very few people have blood transfusions compared to those who have sexual intercourse.)

6. **Ask:** Why is infection through unprotected vaginal and anal sexual intercourse between individuals so common? (**Answer:** Because sexual intercourse is one of the most popular pastimes among human beings.)
7. **Explain** that about **2 to 3 percent** of all HIV infections worldwide come from infected mother to child during pregnancy, childbirth or breastfeeding.
8. **Explain** that about **5 to 10 percent** of HIV infections worldwide come from injection from needles and syringes carrying infected blood.

### INFORMATION

1. About 70-80 percent of HIV infections worldwide have been caused by unprotected vaginal or anal sexual intercourse.
2. About 5-10 percent of HIV infections worldwide have been caused by transfusions of contaminated blood or blood products; 2-3 percent are from infected mother to child during pregnancy, childbirth or breastfeeding; and about 5-10 percent are from injections with needles carrying infected blood.

Understanding how HIV is transmitted

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Exposure	% of total
Blood transfusion or blood products	5-10 percent
From infected mother to child during pregnancy, childbirth or breastfeeding	2-3 percent
Unprotected sexual intercourse with an infected person	70-80 percent
Injection with needles carrying infected blood	5-10 percent

## Can you get infected if only one HIV particle enters your body?

Understanding  
how HIV is  
transmitted

### INFORMATION

1. It takes about 1,000 HIV particles to cause an infection in a laboratory setting. This is known as one 'infective dose'.
2. It takes at least 15 infective doses, or about 15,000 HIV particles, to make a person HIV positive.
3. A single very small drop of blood from an infected person could contain as many as 4.2 million HIV particles.

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**Objective:** To create an understanding of the **infective dose**.

### GUIDELINES

1. **Ask:** Can you get infected if only one HIV particle enters your body? Allow participants to share their perceptions.
2. **Explain:** A single virus cannot cause HIV infection in a person. Moreover, it is very unlikely that a single virus would ever enter your body. A study in 1989 established that just one pint of blood from an HIV positive person could have about two billion HIV particles — or about 4.2 million HIV particles in a very small drop.
3. **Explain:** It has been found that it takes about 1,000 HIV particles to establish an infection in a laboratory setting. This is called an **infective dose**. In real life, when a person has unprotected sexual intercourse with an infected person, several hundred thousand infective doses of HIV can easily enter that per-

son's body through small breaks in the skin, mucous membranes, open wounds or other tissue.

4. **Explain:** It takes a mere 15 infective doses (or about 15,000 viruses) to make a person HIV positive.

# Can a person get HIV infection from a mosquito bite?

DG4

**Objective:** To create an understanding of the reasons why mosquitoes cannot spread HIV.

## GUIDELINES

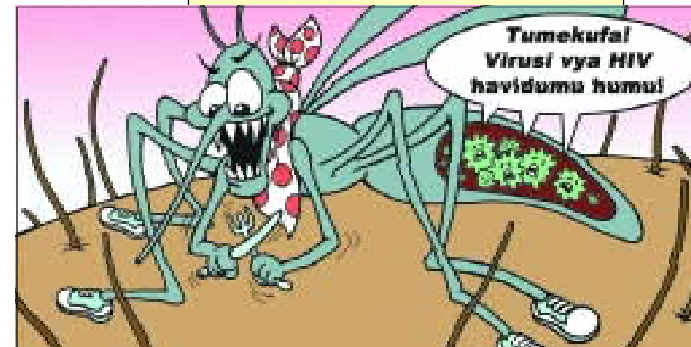
1. **Ask:** Can a person get HIV from a mosquito bite? Let participants share their opinions. Challenge them by asking why mosquitoes can spread malaria but not HIV.
2. **Explain:** When mosquitoes bite someone, they do not inject their own blood or previously bitten person's blood into the next person. Rather, they use their saliva as a lubricant so that the insect can suck blood efficiently. Diseases like yellow fever and malaria are transmitted through the saliva of specific types of mosquitoes.
3. **Explain:** HIV lives for only a short time inside a mosquito, and does not reproduce or survive inside them. A study conducted by Jerome Goddard in 1997 showed that HIV gets digested before it can escape from the mosquito's stomach, reproduce itself and somehow find its way into the saliva of the insect.
4. **Explain:** In 1989, some scientists injected HIV directly into the abdomen of bedbugs and the chest of mosquitoes to see how they would fare if they could avoid getting digested in the stomach. Even when given such an opportunity, HIV could not survive and pass from the mosquito to a human being.
5. **Explain:** If HIV were transmitted through insect bites, we should expect to see many more cases of infection within families where one person had HIV. This has never been the case. In a study of household contacts of AIDS patients conducted at Kinshasa, Democratic Republic of Congo, in a settlement where insect bites were common, **not a single child over age 1 had become infected with HIV, while more than 60 percent of the spouses of the AIDS patients had become infected.** If mosquitoes could transmit the virus, the infection should have spread to children in the community as well.

## INFORMATION

1. When mosquitoes bite someone they do not inject the blood of the previously bitten person into the next person. They use their saliva as a lubricant. Diseases like malaria are spread through mosquito saliva.
2. HIV gets digested in the mosquito's stomach before it can find its way to the saliva.
3. In a mosquito-infested village in Kinshasa, Democratic Republic of Congo, not a single child over age 1 had become infected with HIV while more than 60 per cent of the spouses of AIDS patients had become infected. If mosquitoes spread HIV, even children would have become infected.

Understanding how HIV is transmitted

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## Can HIV spread through an exchange of saliva during kissing?

Understanding  
how HIV is  
transmitted

### INFORMATION

1. Human saliva contains a chemical which prevents HIV from infecting human cells even inside a test tube.
2. When there is blood, semen or breast milk mixed with the saliva, they protect HIV from being affected by the saliva and make infection possible. This is why HIV infection can occur through breastfeeding or oral sex.
3. There has so far been only one documented case of HIV infection through deep kissing. However, even in this one case, transmission through saliva cannot be proven as both people had serious gum disease and ulcers in their mouths, and blood was mixed with their saliva.

**Objective:** To increase understanding of why HIV does not spread through kissing.

### GUIDELINES

1. **Ask:** Can HIV spread through an exchange of saliva, as in kissing? Allow participants to share their opinions. Provoke the discussion by asking them to remember how commonly HIV is found in saliva. (**Answer:** HIV is seldom found in saliva and tears.)
2. **Explain:** Studies in 1990 and 1991 showed that human saliva contains a chemical that prevents HIV from being infectious. In 1998, lab tests found a chemical called **thrombospondin**, which is concentrated in saliva, and which prevented HIV from infecting human cells even inside a test tube.

Saliva does not protect people during oral sex or breastfeeding because when blood, semen or breast milk are present in saliva, they protect HIV from being affected by saliva. In such cases, HIV infection can occur, not because of sali-

va, but because of blood, semen, or breast milk in saliva.

3. **Explain:** There has been only one verified case of HIV transmission by deep kissing. The case was reported to the Centers for Disease Control (CDC) in the USA in 1994-95. The man had been infected by HIV through an injection needle earlier. Both he and his female partner had serious gum disease. His gums bled routinely whenever he brushed his teeth. Investigators at the CDC believe that the HIV was transmitted when blood within the man's mouth came into contact with open sores in the woman's mouth. **Even in this single case of transmission via deep kissing, the role of saliva in HIV transmission cannot be proven.**

# Can a person get infected by HIV while handling the body of a person who has died of AIDS?

DG4

**Objective:** To create an understanding of how fragile HIV is.

## GUIDELINES

1. **Ask:** Can a person get infected while washing the body of a person who has died of AIDS? Allow participants to express their views. Stimulate the discussion by asking:

1. How long can the virus survive in a dead person's body?
2. How long can the virus survive at the freezing temperature of a municipal morgue?

2. **Explain:** HIV is sometimes wrongly described as a fragile virus that perishes easily. Some people believe that HIV cannot survive outside the human body, or that it needs to be in a fluid like blood where there are white blood cells, or that it dies in contact with air. All these are now known to be incorrect; HIV is much more durable than previously believed.

– HIV can survive 7 days storage at room temperature, and 11 days at

37°C (1995 study).

– The virus can remain active and infectious for between 6 and 14 days even in a body that has been refrigerated in a morgue.

– HIV remains active for up to 5 days in dried blood, although the number of virus particles drops dramatically.

– It is dangerous to assume that there is no HIV in dried blood or stored body fluids from an HIV or AIDS patient. In 1999, a study reported that HIV recovered in the blood from used syringes can remain active up to at least 4 weeks.

– HIV is destroyed after 10 minutes at 56°C.

3. **Explain:** There are no documented cases of a person getting infected by HIV while handling the body of a person who has died of AIDS. However, this does not mean that the risk is zero.

## INFORMATION

1. HIV can survive 7 days storage at room temperature, and 11 days at 37°C.

2. The virus can remain active and infectious for between 6 and 14 days even in a body that has been refrigerated in a morgue.

3. HIV remains active for up to 5 days in dried blood, although the number of virus particles drops dramatically.

4. HIV recovered in the blood from used syringes can remain active up to at least 4 weeks.

5. HIV is destroyed after 10 minutes at 56°C.

Understanding how HIV is transmitted

## What is the Window Period?

Understanding  
how HIV is  
transmitted

### INFORMATION

1. **Most common HIV tests do not detect HIV but the HIV antibodies produced by the human immune system. It is assumed that if a person has the HIV antibody, then the virus itself must be present.**
2. **It can take as little as 6 weeks and as many as 18 weeks before the body has enough HIV antibodies to be detected by an HIV test. Until this time, tests will give a false negative result.**
3. **The period between infection by HIV and the presence of enough HIV antibodies to be detected by an HIV test is known as the Window Period.**
4. **Between 56 per cent and 92 percent of HIV infections are believed to be transmitted during the Window Period.**

**Objective:** To create an understanding of the interval between HIV infection and the presence of detectable HIV antibodies in the blood.

### GUIDELINES

1. **Ask:** If a person gets infected by HIV today, and goes for an HIV test tomorrow, will the test be negative or positive? If anyone answers, "negative," probe why they think it will be negative.
2. **Explain:** Most common tests for HIV do not detect HIV directly but rather detect the antibodies that are produced by the immune system after HIV infection. It is assumed that if a person has HIV antibodies, then the virus itself must be present.

However, it can take **from as little as 6 weeks to as many as 18 weeks** before the immune system produces enough HIV antibodies to be detected by an HIV test. This interval, when the person is HIV positive but does not yet have detectable antibodies, is known as the **Window Period**. Between 56 percent and 92 percent of

infections are believed to occur during the Window Period.

3. **Ask:** If a person gets infected by HIV today, can he or she infect other people immediately? Allow participants to express their views.
4. **Explain:** A person can infect others as soon as he or she is infected, even though the HIV test will only give a positive result after the Window Period.
5. **Ask:** What could be the result if a person goes for an HIV test too early and gets a false negative result, but does not go for a second test? Let participants express their views.
6. **Explain:** A person who has taken an HIV test without counseling before and after may not realize the importance of a second test after the Window Period. Such a person may feel a false sense of security, and may infect others through carelessness.

# What kinds of HIV tests are available in Kenya?

DG4

## INFORMATION

1. Within the Kenya IMPACT project currently, simple, rapid, approved HIV antibody tests are used. The test results are usually ready within 30 minutes.

- Two separate HIV antibody tests are done in parallel.
- Two blood samples are drawn from fingerpricks for these tests.
- If both tests are positive, the result is taken as final.
- If the two tests show different results, and there has not been any recent risk behavior, then the result is taken as final.
- If both tests show a negative result, and there has been recent risk behavior, then the client is asked to return for a second test after the Window Period.
- If both tests show discordant results, then the blood samples are sent for an ELISA test, either within the same testing centre or elsewhere. In such a case, the result may not be given out on the same day.

**Objective:** To create an understanding of currently available tests and testing procedures.

## GUIDELINES

1. **Ask:** What kind of HIV tests are currently available within the Kenya IMPACT project? Invite participants who have first hand experience or knowledge of VCT procedures to share them.

2. **Explain:** Within the IMPACT project, the following procedures are followed for VCT :

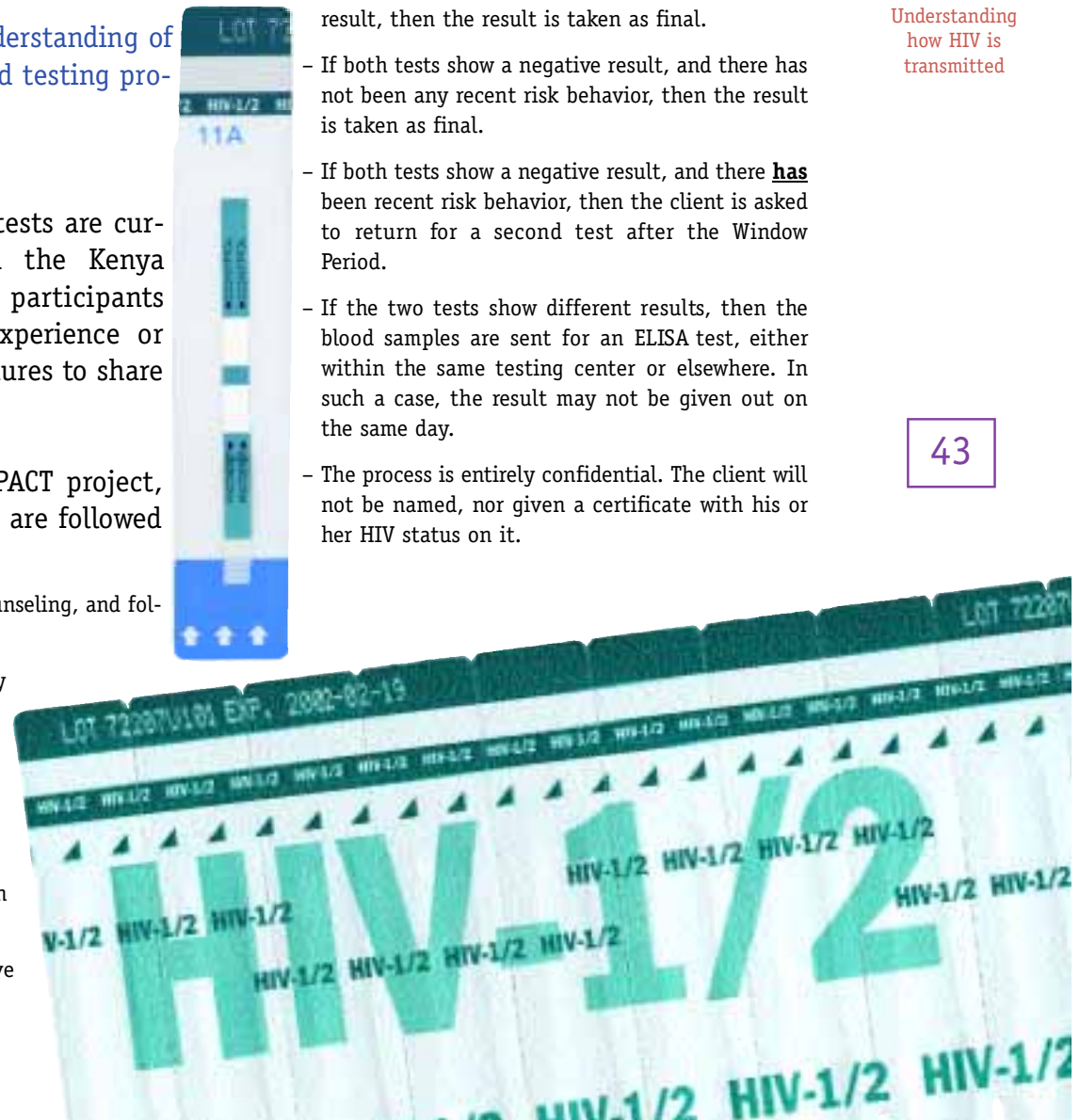
- All tests are preceded by counseling, and followed by counseling.
- Simple, rapid HIV antibody tests are used. The test result is usually ready within 30 minutes.
- Two separate HIV antibody tests are done in parallel
- **Two** blood samples are drawn from fingers for these tests.
- If both tests show a positive

result, then the result is taken as final.

- If both tests show a negative result, and there has not been any recent risk behavior, then the result is taken as final.
- If both tests show a negative result, and there has been recent risk behavior, then the client is asked to return for a second test after the Window Period.
- If the two tests show different results, then the blood samples are sent for an ELISA test, either within the same testing center or elsewhere. In such a case, the result may not be given out on the same day.
- The process is entirely confidential. The client will not be named, nor given a certificate with his or her HIV status on it.

Understanding how HIV is transmitted

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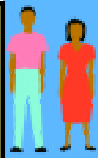


# Understanding the Window Period

Understanding  
how HIV is  
transmitted

## EXPOSED!

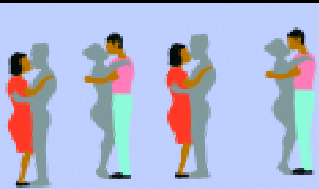
One of them is HIV positive and has exposed the other one to HIV.



One of them is infected with HIV. Now the other person has been exposed to HIV through unprotected sexual intercourse, and could be infected. If that person goes for VCT now, the test will show a **false negative**, even though the person may be infected.

## WINDOW PERIOD

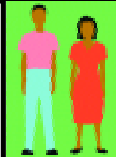
Can be as little as 6 weeks or as many as 18 weeks. An ELISA test in this period will show a false negative



Unaware that they may be infected with HIV, they could infect many others through casual sex in the Window Period. At the end of the Window Period, there will be enough HIV antibodies in the blood to be detected by a test.

## HIV+

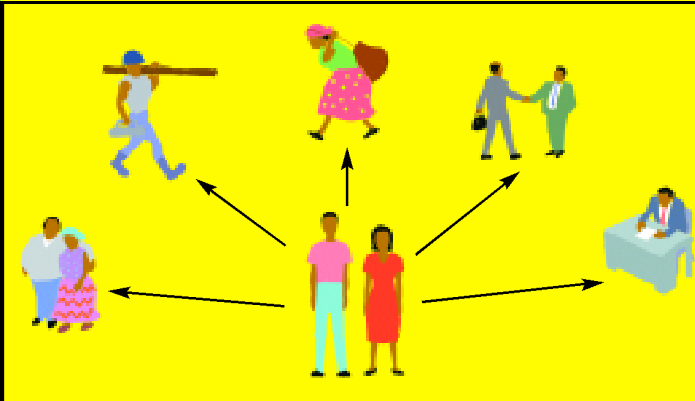
They both test positive for HIV. Their blood has enough antibodies to be detected by an HIV antibody test.



Though both of them have tested HIV positive, with proper counseling, the two people may learn to cope positively with their infection.

## LIVING WITH HIV (2 to 15 years)

Though they have HIV, they can live without symptoms or illness for as long as 15 years by paying attention to their mental and physical health and nutrition. Must take care not to infect others.



People wrongly believe that HIV is AIDS, and lose hope. But a person can decide to improve his or her chances of staying alive for a very long time even with HIV infection by paying attention to health. This can become a time of greater closeness and caring with loved ones, as well as a time to work hard, be productive and plan for the future.

## AIDS

Their immune systems begin to collapse, causing various infections and diseases which will lead to death.

There is no vaccine against HIV infection and no cure for AIDS. But a person who copes with HIV infection with hope, strength, optimism and courage can live life with new meaning, and die with dignity.