The Truth About AIDS - free book

[youtube:http://www.youtube.com/watch?v=-QvXDUUULMg]

Symptoms of HIV and AIDS - worried about yourself or someone you love?

Q. ´How is AIDS caught?

You cannot catch AIDS. You acquire infection with HIV, the virus which after several years can produce the condition we call AIDS. The virus is spread almost entirely through sex and sharing

needles or syringes. Other routes are extremely rare, except infection through untested blood in some developing countries, broken or faulty equipment, or inadequate supplies of reagents. Spreading the virus through normal social contact is unknown. The risk from kissing is very, very low indeed.

Vaginal, oral, or anal sex can transmit the virus from a man to a woman and a woman to a man. Oral (orogenital) or anal sex also transmits in both directions from man to man, and oral sex from woman to woman. Other sexually-transmitted diseases will make infection more likely. Wherever sores (which may be hidden and painless) or pus are, there the virus will be in large amounts. These areas are also entry points.

Tears, saliva and urine do contain virus, but almost always in tiny amounts. The amount is greatly increased by eye, mouth, or urine infection. White cells in saliva carry the virus in up to nine out of ten people with AIDS. The virus needs to enter the body to cause infection. Swallowed virus particles are kept first in the mouth by gum and cheek linings, and do not enter the blood unless you have mouth sores or cracked lips, then in the continuous pipe we call the gut. They are destroyed by stomach acid. They cannot enter the blood once they enter the stomach. Virus particles inside your gut tubing are no more a part of your body than a plastic bead pushed up your nose. (See question on communion cup below.) Urine will not usually contain much virus unless there is a urine infection.

With the exception of sweat, all other secretions from the body may contain virus---especially from wounds. The virus cannot enter the body through the skin unless you have a wound, a rash, or some other cracked area on your skin. The most vulnerable place for this is your hands. Gloves are the best protection.

If you are going to `take a risk', a condom will reduce the risk. Condoms do not give you safe sex. It is safer, true, and condom use reduces your risk enormously if properly carried out. Injecting drugs with a shared needle is dangerous. Non-injected drugs including alcohol may impair judgement and make risks more likely. Poppers may directly damage the immune system, as may other drugs.

Safe sex means one thing: for two people who are currently uninfected to enter into an exclusive faithful relationship for life, with neither injecting drugs with shared needles. The trouble is you may never know. If someone wants to sleep with you that badly he or she may never tell you about previous risks or a drug habit.

Q. ´Should I take the test?

Remember that it is no good turning up at the STD clinic or your family doctor the day after you have taken a risk. You need to wait at least six weeks, ideally three months, for your blood to have time to become positive if you are infected. During this time you must not be in any further risky situations.

Why are you wanting the test? Are you ready for a positive result and all that could mean? Who would you tell? Could you keep it a secret? Remember it could result in a strong reaction against you from people who know. Will you be able to live with that? Are you sure your family doctor will be able to prevent the result from leaking out? It has happened before. Is the receptionist going to know? Are they discreet? A positive result could prevent you from getting a mortgage and will prevent you getting life insurance cover. People should think through these issues, with professional help. It is often easier to change behaviour after a test result. Tests save lives and allow treatment. We should encourage people to get tested.

Some church leaders in high incidence nations are insisting that engaged couples get tested before they can be married. This seems to me to go beyond traditional Christian teaching. But the fact is that tests save lives. And anyone who loves his or her partner will want to be tested if they have been at risk. How terrible to kill the one you love, through fear of finding out the truth. A positive result carries huge implications for life.

Q. ´How accurate is testing for HIV?

HIV testing is now very accurate, but it is important to realise that HIV tests need repeating and can occasionally be wrong. There are two main ways of testing for HIV: indirect and direct. Because HIV is so small and difficult to find in the body, the cheapest and simplest way to detect infection is to look for antibodies that people make to fight the virus. These are very specific to HIV, like a spanner shaped to fit a nut.

The most widely-used test is called ELISA. Results are usually confirmed using a second test called Western Blot, but can be confirmed in some cases by a second slightly different ELISA test. In most cases the antibodies can be detected after about six to eight weeks from the time of infection. In newborn babies there is an added difficulty because the test is confused by the presence of maternal antibodies until around the first year of life. That's why all babies of mothers with HIV test positive for several months - even though most do not have HIV.

The first ELISA tests were not as accurate as the ones today, with higher false positive results. There is some evidence that malaria antibodies may have produced a significant number of false positives in some African countries in the mid-1980s, and that the tests were also muddled by other infections. However, the tests are now much more specific, although it is true that if someone has HIV infection, the antibodies against HIV can produce a false positive result when testing for malaria.

ELISA is designed to be ultra-sensitive, picking up every person with HIV antibodies, but the more sensitive the test, the more likely it is to react positively to other things. In a population where the level of infection is very low, up to 70% of all those testing positive with the ELISA tests will turn out to be negative when the ELISA is repeated. Proportions vary with the exact tests used.

An initial false positive result can be caused by many things. For example, recent vaccination against influenza will produce a positive ELISA test in around 1% of uninfected people. Hepatitis B vaccine can also confuse the test. In almost every case, these incorrect results are sorted out by a Western Blot, which is highly specific to HIV. In many countries second or even third tests are carried out on the same sample so that false positives are eliminated immediately. If you wish further technical detail, read on, otherwise skip to the next question.

In the Western Blot test, virus building blocks are made in the laboratory. A number of different fragments of viruses are separated and `blotted' onto a special surface which is then cut into strips and exposed to the serum sample. Core proteins (p24, p55 and p17) and envelope proteins (gp120, gp160 and gp41) are used. People with HIV tend to produce antibodies to all these bits of HIV. When serum is added to the membrane, together with special markers, you can see a series of colour bands where anti-HIV antibodies have reacted.

A person is only diagnosed as HIV-infected using Western Blot if antibodies are found to at least two of the bands p24, gp41 and gp120/160. Depending on the population group, between 20% and 70% of repeatedly positive ELISA tests are confirmed using Western Blot.

ELISA

99.3% of infected people are identified (very sensitive)

99.7% of uninfected people correctly test negative (specific)

Western Blot

98.9% of infected people are identified (sensitive)

97.8% of uninfected people correctly test negative (very specific)

Combining the results of both tests increases accuracy. However, it can be seen that if 10,000 people are tested with ELISA, we can expect that 0.3%, or thirty people, will test positive even if none of the 10,000 is infected. The proportion could be higher if the test was carried out only once, and if testing facilities are poor, as is the case in some countries.

Some samples show a slight reaction to one or two bands. These are called `indeterminate results'. There are three reasons for this. First, some people may be in the very early stages of infection, so antibodies are not yet fully present. A repeat test a few weeks later will sort that out.

Secondly, some may be infected with HIV-2, which is similar enough for antibodies to cross-react against HIV-1 to some extent.

Thirdly, it may be a true false-positive result: the person may be completely healthy and not infected with any kind of HIV strain. This is very rare.

People with very early infection, or infection with HIV-2, usually show a reaction to the viral core protein p24 first. Between 60% and 90% of HIV-2 infection is picked up with an HIV-1 ELISA

test.

Although the `window period' between infection and antibody detection is usually regarded as about six to eight weeks, at least 95% will test positive after twelve weeks (usually a lot more) and 99% by six months. International standards are maintained at a very high level by the World Health Organisation which regularly sends out test samples to over 100 laboratories.

Some can be ill or dying with AIDS and test negative. The reason here is that their immune systems are so severely damaged that they have lost the ability to form antibodies. The diagnosis is usually obvious from symptoms and other laboratory tests looking at their white cells.

It is possible to test for HIV directly, not waiting for antibodies to develop. This method looks for viral genes---the DNA instructions that the virus inserts into white cells to hijack them into virus factories.

A special chemical reaction is used called PCR (polymerase chain reaction), which can multiply a million copies of viral DNA in three hours, and combined with other equipment can detect as little as one piece of viral DNA in ten microlitres of blood. The test has been useful in some situations to detect possible infection far earlier than antibody tests. More than 90% of antibody positive people also test positive by PCR, but not all. The technique is extremely sensitive to cross-contamination from previous samples. It is very easy to get false positive results.

Viral culture is another method of testing, where attempts are made to obtain HIV from white cells. It can detect 50% of HIV-infected children at birth, unlike antibody testing.

In conclusion then, HIV testing is now very accurate indeed, although the initial test result always needs to be confirmed.

Q. ´Can saliva be used instead of blood to test for HIV?

Saliva testing is convenient and fast, and depends on finding antibodies to HIV in the mouth. A few drops of saliva are absorbed onto a special pad inserted into the mouth for a few minutes.

The length of collection time is important. The fluid can then be tested using exactly the same equipment as for testing blood. Saliva collection has been used to screen prisoners, drug injectors, and now applicants for life insurance. However, studies show the results are not yet quite as accurate as for blood, for two reasons. First, the collection method may not adequately collect antibodies, particularly if the collection period is too brief. Secondly, food residues and other proteins in the mouth may confuse the test, although this is less of a problem as testing methods improve.

By packaging a simple saliva collection device with one of the latest `instant' testing kits, the technology now exists to market a do-it-yourself home test for HIV, available from chemists. However, there are grave concerns about this. While there may be a market from people who do not want anyone else to know their result, or from people wanting to test new partners or prostitutes in the bedroom, there is a real danger that people will misunderstand the implications of the result, or even take their own lives if the test result is positive and they are not given adequate counselling.

Q. ´Are all those with HIV going to develop AIDS?

We do not know whether all with HIV will develop AIDS because we have not been following people with HIV long enough. As we have seen, in Western countries where anti-viral treatments are not used half are ill within ten years and 70% in fourteen years. Progression is often more rapid in the poorest nations. Long-term survivors are an interesting and important group because they may have within their genetic makeup some kind of enhanced ability---complete or not---to contain HIV infection. Unfortunately, when we study the immune systems of long-term survivors who are well, we find the majority show some signs of immune damage. Of course, the longer people survive, the more likely it is that they will die of some other cause in the meantime before AIDS develops.

Q. ´Is it possible for people to get rid of HIV once infected?

There have been possibly one or two cases where there has been good evidence of HIV infection, but after a year or two, no trace of virus anywhere in the body can be found. Although it is still too early to be sure, some experts believe that these individuals may have succeeded in eliminating HIV.

It also seems possible that a certain group in the population with particular genes may have some kind of constitutional protection against HIV infection. This should not surprise us. Just like bacteria develop resistance to antibiotics because susceptible bacteria die, leaving one or two variants with natural protection, so we would expect to find among millions of different

human beings, a few with gene variations which protect.

By focusing on how the genes work, we may be able to find a way of protecting the rest of the population. By analysing people's genes we may also be able to predict in the future what treatments will be most appropriate and at what stage.

Some individuals exposed to HIV show no sign of HIV infection by antibody tests or by PCR viral antigen testing (see previous question on test reliability). However, their white cells show signs of sensitisation to HIV, suggesting that their immune systems have encountered HIV but have eliminated it within days of exposure.

As we will see later (questions on mosquitoes and kissing), it may be that one reason why HIV seems not to be very infectious might be that many people have an ability to destroy a limited number of HIV particles. A small exposure would then fail to infect many people. One US study has suggested that up to 65% of HIV-negative gay men, 45% of negative drug users and 75% of health care workers accidentally exposed, all show evidence of sensitisation, but not infection. The same research workers found strong evidence of HIV sensitisation in around 2% of the US population---not surprising if the official figure of 1 million HIV-infected is correct.

Q. ´Are some types of condom safer than others?

There are hundreds of different brands available, ranging from latex to animal membrane. The ultra-thin/sensitive varieties are most likely to tear, although any condom may tear during anal sex. All latex condoms will rot rapidly if oil-based lubricants are used, and will deteriorate with storage in high temperatures. Animal membrane condoms may permit virus to pass through more easily.

In summary, if you are taking a risk you need to use a thick latex condom. This will reduce your risk enormously if the condom is correctly and carefully used. (See next chapter for further details on condoms.)

Q. ´Do the results of an HIV antibody test go on my medical record?

In many countries you can go to a clinic and get a completely anonymous test done. However, the results of named tests are very likely to go on your medical records.

Q. ´I have heard some say HIV does not cause AIDS and that AIDS in Africa is a myth. What is the evidence?

There have been suggestions that HIV may not be the cause of AIDS, and that the AIDS epidemic in Africa is a myth. This has in part been due to the claims of a US scientist, Professor Duesberg, who has promoted the view that HIV is relatively harmless, and that AIDS is caused by recreational drugs or other causes of immune damage. Connected with this has been the claim that anti-viral drugs are useless, even in those with AIDS---indeed that they actually causes AIDS.

Considering how poorly these claims are supported by scientific data, how very few other scientists take them seriously and how damaging the claims are to the health campaign, it is surprising they have been given such sympathetic reaction by some people. Underlying most of these claims is a conspiracy theory involving alleged multinational fraud by research workers and drug companies, with the collusion of governments and the World Health Organisation. Trying to discuss the issues with some of these people is hard work. They rarely have scientific credentials themselves of any note, and have an almost messianic fervour in devotion to their cause.

Remember you can write an apparently well-researched book to make a case for almost any bizarre theory by selective quoting of scientific papers, just as you can make a bizarre religion out of twisting bible sayings out of context. Even more so with scientific literature since it so vast each month, so variable in quality and in results. 50 scientists conducting similar studies over a decade do NOT report the same results. There are a hundred reasons for variations. The truth is gained by studying the consensus, although media headlines are almost always built out of single findings which suggest something different from most studies. Much of the scientific literature is complex and easy to misunderstand.

I am asked for clarification almost every week by well-informed people who are deeply puzzled. The confusion is dangerous too. At a recent International AIDS Conference I was handed a leaflet by an AIDS activist titled `HIV is good for you'.

Here is a brief summary of some of the reasons why almost all scientists working in the AIDS field are totally convinced that HIV is a highly dangerous infectious virus causing AIDS.

1. The appearance of AIDS always follows HIV spread. In every group studied we have seen the rise in numbers ill with AIDS closely linked to the increasing spread of HIV infection some years earlier.

Example: In Edinburgh rapid spread of HIV among drug users was followed by a steady rise in those ill or dying. In Glasgow, drug users of similar age, background and lifestyle were much less affected by HIV (HIV hit Glasgow later and behaviour changed in time) and death rates have been much lower. Incidentally, scientific studies have shown that nitrites and other recreational drugs do not cause AIDS.

Example: In many parts of Africa people have died from illnesses such as tuberculosis in large numbers for decades. However, a large rise in deaths in the sexually-active age group has followed spread of HIV into this group, with death rates in two years sixty times higher in those with HIV.

Some have claimed that HIV has been present at similar levels for decades. This is nonsense. HIV levels in most towns and cities in many nations show rapid year-on-year rises took place during the 1980s and early 1990s. Indeed, one study in 1986 found HIV levels as low as 1 in 1,000 in some groups, rising since.

Some have claimed that there is no massive AIDS epidemic in Africa and that HIV is being blamed for deaths of people who would have been dying anyway. It is true that diagnosis of AIDS in an individual in Africa can be difficult, as we saw in Chapter 3, but the fact is that death rates in the younger age groups are unexpectedly high---and among babies of those infected too. Babies testing positive a year after birth become ill later with AIDS. Those testing negative do not.

Many Africans arriving in countries like the UK with HIV, who become ill and die, clearly have an identical illness to those with AIDS infected in industrialised nations.

Some say there is a cross-reaction between malaria antibodies and HIV tests. As we saw in the earlier question on test accuracy, this was a problem in the mid-1980s, but not today. It is obvious anyway that malaria confusion is not taking place on a wide scale. The numbers in the population with malaria antibodies have remained relatively constant, while the numbers testing

positive for HIV have soared. And HIV is found in many areas where there is no malaria.

Great weight has sometimes been placed on comments by some African specialists and politicians that the AIDS problem has been exaggerated by the West and that the actual size of the epidemic is far less significant than has been made out. Unfortunately, almost all doctors and nurses from European and other nations working in government and mission hospitals give a different story, based on first-hand experience of the unfolding catastrophe. Many African experts are not free to talk about AIDS, for reasons we saw in Chapter 1. Indeed, many Western doctors in these nations may also find it difficult to talk until they go home on leave.

Example: Those with haemophilia have received blood extracts for many years without problems. However, once HIV contaminated their supplies those testing positive for HIV began to grow ill and die - as did in some cases their wives and children. Some have claimed that these haemophiliacs are only ill because the blood extracts of Factor VIII are rejected as foreign to the body and damage their immune systems. Evidence quoted in favour of this is from unpublished early reports that haemophiliacs with HIV are progressing more slowly to AIDS when converted to pure genetically-engineered Factor VIII. However, if Factor VIII is the sole explanation, why are uninfected people who have been receiving impure blood extracts for years not developing AIDS? We would also expect those receiving HIV in a blood transfusion to remain perfectly well when the fact is that they become ill and die too.

Anyone can see the links: a woman receives a pint of infected blood and becomes infected. Six years later she is unwell. Her baby is infected and develops AIDS and so does her husband. But no one else in her family dies. Why? Because a lethal infectious agent which we call HIV has been transmitted from blood to person, to partner and to baby. In fact these facts are so obvious and so simple to understand that it is extraordinary to me that anyone of even moderate intelligence should insist that there are other explanations.

Example: As we have seen, mothers can transmit HIV to their babies through the womb, during birth and in breast milk. These babies get ill and die of AIDS. Those who do not become infected remain well throughout life. Remember of course that we are not talking here about babies falsely testing positive to HIV because the result is confused by maternal antibodies.

2. The pattern of HIV spread fits AIDS pattern. If HIV is the cause of AIDS, we should expect to find that HIV shows evidence of spread through sexual activity and through the blood, since we know people with AIDS are linked by such contact. This is indeed what we find, with

overwhelming evidence of person-to-person spread of HIV by these routes.

3. HIV targets the cells which are damaged in AIDS. Some have tried to make a case that HIV is just an innocent passenger, not causing illness but just travelling with whatever does do the damage. However, the more we study HIV the more we understand how dangerous it is.

We know that HIV gets inside the same white cells whose death results in AIDS. We know that after an initial brief illness, HIV goes on multiplying in lymph nodes, where large numbers of infected cells can be found throughout the symptom-free period. We know that as virus levels rise, the person becomes more ill. We know that HIV attacks some cells in the brain and in the gut directly, explaining why people with AIDS can have damage to both organs. Although early studies have suggested that only one target white cell in 10,000 becomes infected, more sensitive tests have now detected HIV infection in one in ten cells.

4. Anti-HIV treatments benefit those with AIDS. If HIV is the cause of AIDS, then we would expect drugs used to fight HIV to produce an improvement in those who are ill. As we have seen in Chapter 2, there are a great number of independent studies which show that the anti-viral drugs improve the condition and survival of those with AIDS when used appropriately. It is true that they have side effects, and it is also true that resistance to the drugs can make treatment less effective after a while. As this happens, CD4 cell levels fall, virus levels rise and the person often begins to deteriorate. This is all evidence of linkage.

The simple fact is that babies of mothers with HIV are far less likely to die of immune deficiency if their mothers have been given anti-virals during late pregnancy. Why? Because anti-virals lower the levels of HIV in the mother's blood and this helps save baby's lives. The HIV-does-not-cause-AIDS groups say that anti-virals actually CAUSE AIDS, and do not prevent it. This is a ridiculous conclusion to draw from our experience of caring for babies. It is also equally absurd when it comes to adults. These people fail to recognise that all over the world there are people dying with AIDS who have never had the luxury of anti-viral treatment, and even in wealthy nations there are people who have been diagnosed late so not treated before becoming very ill, or who for one reason or another were unwilling at any stage to be treated. They still get ill and die.

Great play has been made by a minority on the discovery of a very small number of people who seem to have an AIDS-like illness with no evidence of HIV infection. I am not referring here to those who for various reasons lose or never develop an antibody response, but those in whom

HIV is never found, even with many different detection methods.

There are two explanations for this, neither of which destroys the HIV basis for AIDS. First, we sometimes fail to look hard enough. Even in an illness like TB, it is not always possible to find the organisms. In other very rare cases it appears we are looking at a very rare form of immune problem that has probably been around for centuries, and is nothing to do with AIDS. Such cases account for only a few in a million of what gets diagnosed as AIDS. As we have seen in earlier chapters there are undoubtedly other factors which can cause acceleration or slowing of disease which might include other infections such as mycoplasma and the genetic makeup of the individual.

In summary then, there is overwhelming evidence that HIV causes AIDS, although, as with the link between smoking and lung cancer, much of it is circumstantial, based on large-scale studies of disease patterns. Just as you cannot PROVE that smoking causes lung cancer, or that a cancer in a particular person was caused by smoking, you cannot PROVE that HIV causes damage to the immune system or that a particular person dying with TB is dying because HIV has weakened their defences. The nature of medical research is to look for patterns that fit everything else we understand about illnesses. If we accept (as most people do without question) that smoking is dangerous, then exactly the same logical process forces us to conclude that HIV causes AIDS. The evidence is before the jury, and the result is conviction. The evidence is beyond all reasonable doubt.

Q. ´Is it safe to share pierced earrings?

No. Inserting an earring can cause a tiny amount of bleeding and the earring can accumulate dried debris. Earrings should not be shared. They should be regarded in the same way as needles. Clip-on earrings are safe.

Q. ´Is a communal bucket and sponge safe for athletes to wash bloody injuries?

The sponge could transmit the virus by allowing blood from one player into another player's wound. Clean the bucket and sponge with antiseptic between players. The virus can survive in water for several days

Q. ´Are contact sports safe?

You are far more likely to die from a broken neck or be paralysed for life during rough contact

sports than catch HIV. For this to happen, blood from an infected player's body would have to be rubbed into a wound on your body. This is extremely unlikely.

Q. ´Are swimming pools or rivers or lakes safe?

Swimming pools, rivers and lakes are safe (at least as far as catching HIV).

The only way you could possibly catch HIV at a swimming pool would be if someone carrying the virus cut themselves---say on glass at the side of a pool---and left a puddle of blood which you stepped in, cutting yourself on the same piece of glass. In the pool itself the dilutions are so enormous that I am sure that even if you poured ten fresh pints of blood full of virus into the pool scientists would be hard pushed to find a single blood cell, let alone a virus particle. My wife and I go swimming regularly with our children and we have no intention of stopping. There are many health risks from swimming in lakes or rivers but HIV is not one of them.

Q. ´What about going to the barber?

This is safe as long as disposable razor blades are used---and preferably disposable razors as well. Shaving tends to draw tiny amounts of blood---maybe too small to see. The old cut-throat razor blade could transmit virus from one client to another. For the same reason, razors should never be shared in a household.

Q. ´Can the virus survive outside the human body?

People used to think that all the HIV particles became severely damaged after only twenty minutes outside the body. If this were the case, surgeons would only need to hang up their instruments in the sun for an hour before safely carrying on with the next operation. Infection control guidelines are several centimetres thick in many countries. Sterilisation is vitally important. An important paper shows that although most virus particles do become damaged after a few hours, a few may survive after three to seven days in dry dust, and over two weeks in water, although only under unusual conditions. In freeze dried Factor VIII, HIV survives undamaged for months, hence the problems for those with haemophilia before heat treatment began in 1985.

Q. ´Does the virus survive in someone who has died?

As HIV survives reasonably well outside the body, it is not surprising to find that it also survives in those who have died. A recent survey of post-mortem blood examinations showed that HIV could be found in half of those who died, depending on the length of time between death and

the examination.

Normal infection control measures used while the person was alive should therefore be continued---for example, wearing gloves to prevent contact with body secretions.

Q. ´How can we disinfect things?

The most important thing is to make sure that instruments and equipment are washed clean of blood and other body fluids before disinfection, as blood residue is a powerful neutraliser of almost all disinfectants. People used to think that a temperature of 56 ²C for half an hour or so would destroy the virus. This has now been questioned. One study shows that some virus may remain infectious for up to three hours at this temperature.

A solution of one part bleach to nine parts of water (10%) will destroy all virus in sixty seconds unless there are thick deposits of blood or dirt. These may inactivate the bleach, or require longer for the bleach to work.

For some medical purposes 70% isopropyl alcohol destroys virus very quickly, as does a 2% solution of glutaraldehyde or betadine (povidone-iodine 7.5%). The virus is not destroyed by gamma irradiation or ultraviolet light---both used to sterilise.

Although it is alarming to think that HIV may sometimes remain active outside the body, cases where this has resulted in infection are almost unknown and are confined entirely to puncturing of the skin with blood-covered medical instruments and other accidents.

The general rule still holds true that outside of sex and shared needles, HIV does not spread.

Q. ´If I scratch myself with a needle, after it has been used to take blood from someone who is infected with HIV, what are my chances of becoming infected?

Probably much less than one in two hundred from one accidental needle stick injury exposure. We know this from following up the results of a large number of such accidents. You are far

more likely to get hepatitis B (up to one in five chance) for which you may need a protective injection within the next few hours, unless you have been vaccinated previously. This risk can be reduced further by giving anti-viral drugs to someone who has been accidentally injured, soon after the event.

Q. ´Is it safe to go to the dentist?

Yes---assuming your dentist sterilises or disinfects equipment after each consultation. The risk is not to you, the risk is to the dentist. Every time dentists give an injection or draw teeth there is a slight risk that they will puncture their own skin. If the patient is carrying the virus there is a slight possibility the dentist could become infected. This has already happened. For this reason dentists are now using gloves, masks and glasses when treating people known to be infected. Some dentists are using gloves and masks when treating all their patients. There has been one well-publicised case where a dentist with HIV infected several patients. Despite intensive investigations, we are still no nearer understanding how this occurred.

Some pieces of dental equipment are very delicate, containing fibreoptic cables as light sources and are difficult to sterilise. They should be cleaned carefully, then disinfected, following normal infection control guidelines---eg 70% alcohol or 2% glutaraldehyde for four minutes (although glutaraldehyde can cause tissue reactions and fumes can be unpleasant).

There is some evidence that the internal air chambers of high-speed dental drills can become contaminated, with material slowly dislodged by air during subsequent procedures. Like many of the other risks we consider such as kissing, the risk must be very small indeed since a case has never been described of infection by this route (patient to patient transfer at a dentist using such a device). Equipment needs to be well maintained and thoroughly cleaned before disinfection or sterilisation between patients.

Q. ´What about the risk to doctors and nurses?

Doctors are particularly at risk when they take blood. I have accidentally jabbed myself with a needle many times when trying to fill a blood bottle. Needles should never have their sleeves replaced before being disposed of. A third of accidents occur this way. Casualty doctors are in the frontline when sewing up wounds. Again I have scratched myself with needles several times while stitching injuries---gloves give only partial protection. At risk most of all are surgeons whose hands may be deep inside a patient with a lot of bleeding, sharp needles, and poor visibility. A friend of mine who is an experienced surgeon at a leading London teaching hospital tells me that he frequently tears his gloves during operations. Blood can also spurt from a small artery into the eye. More than thirty occupational infections have already been

reported, but the real numbers must be much greater---not yet detected .

Ideally surgeons would like to know before starting an operation whether the patient is a virus carrier or not so that they can be especially careful during the operation and in cleaning up afterwards. At present doctors are often denied this information for ethical reasons. As a result a number of surgeons may die over the next decade.

There are very few cases recorded so far of nurses contracting the infection from dirty needles or blood contaminated `sharps'. One case has occurred where the virus is thought to have entered through cracks in a nurse's hands caused by severe eczema. She was attending a patient with AIDS, without using gloves, and her hands were regularly covered in the patient's secretions.

There are several reports of people who have become infected from blood or secretions coming into contact with their skin---usually on the hands, face and mouth. It is certain that many such incidents have resulted in infections which have not yet been detected. Some of these reports were of people who had no reason to suspect a risk from their patients and were unaware of any accident until they went to give blood and were found by routine testing to be infected. This is quite different from the situation where a doctor pricks his finger with a needle used on a patient in an AIDS ward. In this situation a report is made out and the doctor is tested. Few such incidents are missed.

In the normal course of nursing or doctoring, the risk of HIV infection is minimal. Care should be taken with needles, and good quality gloves should be worn if there are cuts or abrasions on the hands. It is true that a growing number of medical staff have been infected through caring for patients, but this is a tiny number out of the vast numbers involved in looking after these individuals. (See Chapter 7 for further discussions of ethics and risks.)

Q. ´Can artificial insemination transmit HIV?

Yes. Artificial insemination carries a risk. To help reduce this, donated semen is usually frozen and stored for several weeks---not used until the donor has returned for a blood test to make sure he was not infected at the time of donation. As we have seen, normal HIV antibody tests only detect infection after a `window period' of a few weeks. There are special techniques for reducing the risk of infection during artificial semination or IVF.

Q. ´Can I get HIV infection from a human bite?

Bites can probably pass on the infection, but the risk is almost certainly very low. I have before me a report where a boy infected his brother. It is thought that he bit him and that was the method of transmission. There is a small but variable amount of the virus in saliva which, it has been suggested, entered through the teethmarks of the bite. I

Q. ´Where did HIV come from?

Scientists cannot agree on the origin of HIV, and any discussion of the subject generates great heat in those who fear a backlash against certain groups or nations---particularly those in Africa, if it is suggested that HIV originated there. This is unfortunate. The question of origins is a purely scientific one of the greatest importance in preventing the emergence of further plagues like AIDS.

We know HIV has been in existence since at least the 1950s because we find antibodies to HIV in serum samples going back this far. We know HIV is very similar to SIV in monkeys. These animal viruses have probably been around for centuries, particularly in Africa. In the light of this, many scientists have suggested that HIV mutated at some stage from an animal form. However, the animal viruses are equally different from HIV-1 and HIV-2, indicating that if HIV strains are derived from monkey SIV, then the mutations must have happened many decades ago. If the mutation were recent, we would expect HIV-1 and HIV-2 to be much more similar to each other than to SIV.

A form of SIV would need to have entered a human being at the same moment as mutating---not inconceivable if humans were regularly exposed to these animal viruses. Exposure could have taken place in a variety of ways: fertility rites or rituals involving monkey blood, bestiality, laboratory accidents or germ warfare research (a KGB theory used to try and discredit the US), contamination of vaccine preparations using animal or human cells, transplantation of monkey tissues, or even conceivably insect transmission.

Each of these possibilities has been thoroughly explored. While we have the technology to make viruses like HIV today, we did not in the 1950s. A special investigation has failed to find a firm link with vaccine programmes, and insect transmission seems extremely unlikely. Rites using animal blood, or accidental contamination of a laboratory worker both remain possibilities.

Q. ´Can you get HIV from mosquitoes?

This suggestion is worrying people all over the world---especially in Africa where the number of people infected with HIV is large and people are used to catching another disease, malaria, from the Anopheles mosquito. This is one of the most common questions I have been asked at education meetings in places like Uganda, Burundi and India from 1988 to 2002.

It is almost certain that no one will ever get HIV from a mosquito. The needle-like mouth of the insect is so fine that white cells carrying the virus cannot be carried in it or on it from one person to another. Scientists have studied outbreaks of AIDS and malaria: malaria is no respecter of age or sex. If you are bitten, you can get malaria. However, there are particular age groups that rarely get infected with HIV---older men and women and older children. These people are not immune to HIV---they simply have never been exposed to the virus. They have often been bitten by mosquitoes and may have developed malaria. Tests on a variety of insects show that HIV cannot multiply inside them.

It is likely that several virus particles need to be transmitted simultaneously for there to be any significant risk of infection---something unlikely to happen from a bite. In summary, it does not seem to be happening, and given the very low risk of transmission, even from a medical needlestick injury, we can see why.

Q. ´What is the risk from a single episode of unprotected sex?

We are unsure. Various attempts have been made to quantify the risk. It may be as low as one in 200 for non-traumatic heterosexual vaginal intercourse without a condom (see next chapter). Risk is higher for male to female, anal intercourse, first vaginal intercourse in a woman (bleeding), higher during menstruation (for a man), higher if other sex diseases are present.

A calculation can be made that in a low-incidence area where one in 30 heterosexuals are infected, the chance of infection from a single encounter could be as low as 200 multiplied by 30, or one in 600 against. `Not a lot to worry about,' many heterosexuals might say. In practice, the risk may be higher because someone willing to have sex in a one-off encounter may have had sex with many others before in similar situations.

These estimates might seem very low, but the lifetime risk becomes very significant when you add up the total number of risk exposures. (See next chapter for condom risk calculations.)

We also need to remember population size. Ten million people taking a risk on average twenty times a year gives 200 millions potential risk episodes---and HIV spreads.

The overall message is that HIV is relatively uninfectious compared to many other disease-causing organisms. This helps us put the even lower non-sexual, non-injecting risks into context. The biggest danger can come not perhaps from a chance one-off encounter through sex or needle sharing, but through regular day-in, day-out exposure from someone who is not known to be HIV-infected. Hence the situation in Malawi, where it is reported that a third of infected women in some groups were virgins before marriage and have been faithful since (see Chapter 14).

Q. ´If the risk to heterosexuals is so low in low-incidence countries, what is the point of general health campaigns?

Clearly it makes sense to target those most at risk---sexually-active gay men and drug injectors, for example---while also targeting those likely to be the risk-takers of the future: those still in school. Teenagers today are the AIDS generation. In their sexually-active lives they may well see one in fifty of the global adult population HIV-infected, with very high infection rates in many parts of the world.

Since it may take a generation to change the cultural expectations and behaviour of a generation, we have to start now. Surveys show it is harder to change established behaviour than to prevent it in the first place. However, it could be argued that, say, campaigns targeted at middle-aged heterosexuals in the UK are currently likely to be a waste of money, unless they are directed at business travellers and sexual tourists (see Chapter 12).

Q. ´What about tattoos or ear piercing?

Both of these procedures can be hazardous unless properly sterilised equipment is used. The hepatitis virus has been spread by these methods in the past. Always go to a reputable establishment.

Q. ´What about hot wax treatments and electrolysis?

The wax should be properly heated between treatments to destroy any virus. The electrolysis needles must be sterilised or discarded. Again, use a reputable establishment. If in doubt, ask

what they do to sterilise equipment.

Q. ´Can you get HIV from acupuncture?

Not if the needles are sterilised or discarded each time.

Q. ´Is it safe to kiss someone on the lips?

Yes. The risk of infection from a dry kiss is almost zero. A `French kiss' where tongue and saliva enter another person's mouth carries a higher risk, especially if one person has sores in the mouth, cracked lips, or bleeding gums. However, we have never yet seen a single case of `mouth to mouth' spread. Even if one or two cases are found, it would not alter the advice that the risk is infinitesimally small. Having said that, I am not sure I would be happy to give someone with HIV long intimate mouth-to-mouth kisses.

Q. ´Is the communion cup safe?

Yes! New Revised Anglican guidelines now permit the wafer to be dipped in the wine as a response to the fear. When I visited Uganda, I found many churches had abandoned the common cup. After some teaching we shared communion together---a very moving experience as it was the first time for over a year for many.

Fear, fear, fear---threatening to split congregations. But what are the facts?

---the virus can survive in water for up to two weeks under exceptional circumstances.

---the alcohol content in communion wine is not enough to damage the virus.

---the virus can sometimes be found in the saliva of an infected patient.

---the virus particles from one person could be swallowed by another member of the congregation.

BUT the number of virus particles in a sip of wine is likely to be extremely small and you are extremely unlikely to get an HIV infection, even if a number of virus particles do enter your mouth. This is because saliva itself inhibits HIV to some extent and because of an amazing protection your body possesses. It is called epithelium or gut lining.

Viruses or bacteria in your mouth are kept out of your blood by a continuous lining of internal skin which lines your tongue, gums, cheeks, back of your mouth and throat. Swallowed virus enters a continuous pipeline between your mouth and your anus. There is no break in the lining of the pipe. Nothing can enter your bloodstream from inside the pipe (gut, stomach, etc.) without being digested first. This breaks up what you eat into tiny fragments, and then into molecules of protein, fat and sugar. The first part of the pipe is stretched out into a bag full of deadly acid (the stomach) which kills the virus anyway in a few seconds. Even if the virus was made of steel it could not enter your blood---it would just pass out the other end.

So the communion cup is safe and I will continue to drink from it. We are not going to see a great epidemic of AIDS through church congregations because of the communion cup. It just will not and cannot happen. We would first need to see a serious outbreak of HIV through kissing before we began to worry about the communion cup.

Q. ´Can my children catch HIV from another child at school?

Playground knocks and scratches are extremely unlikely to spread HIV. To do so, blood from one child would have to be rubbed into the wound of another. (See earlier question on contact sports.) A `bloodpact' between two children could spread HIV and secondary school children could spread HIV if they are injecting drugs and sharing needles. This is much more common than parents or teachers often realise. My wife and I would be happy for our children to share a class with an infected child. We are not going to see an outbreak of AIDS spread by school children---except through teenagers injecting drugs or sleeping around.

Q. ´Can I get HIV from a discarded condom?

The first time many young people ever see a condom is in the street. There it is lying in the gutter, chucked out of a car window the previous night. There is a small but growing risk that the semen it contains is full of virus. However, it is not going to infect you unless its contents come into contact with your broken skin---hardly likely.

Q. ´Are female condoms safer than male ones?

Female condoms are made of tough vinyl held inside the woman by an inner and outer ring, so they might be expected to be safer. However, surveys have shown failure rates almost as high as with male condoms. The reason for failure can be that the condom is hard to keep in place. In a study of 106 women, only 29% completed six months' use. The devices slipped out, were accidentally pushed inside, the penis entered outside the condom, they were uncomfortable, the product rustled, was noisy and felt cold. A World Health Organisation spokesperson said at a recent AIDS conference: `It lurks, slurps, glucks and slicks.' However, half the study group said they enjoyed sex more when using them!

Q. ´Is it true that nonoxynol-9 spermicide cream protects against HIV when used with a condom?

Experts disagree about the use of spermicidal creams such as nonoxynol-9 in the fight against AIDS. While some preparations show anti-viral activity in the laboratory, this is difficult to test in practice. On the one hand they give added protection against pregnancy and sexually-transmitted diseases such as chlamydia or gonorrhoea. On the other, there are many reports of vaginal or cervical irritation, which could provide entry points for the virus.

The World Health Organisation has announced a major research effort to develop an anti-HIV spermicidal cream which could be an effective weapon against infection. However, it will have to be non-irritant to be safe.

Q. ´Can I get HIV from being raped?

Yes, it is possible. The risk can be higher because the violence used can make abrasions and bleeding more likely, creating entry points for the virus.

Q. ´Is it safe to have blood transfusions?

The risk is now very low in most countries due to excellent testing facilities.

However, the test does not pick up, for example, the man who gives blood five weeks after sleeping with an infected prostitute while on a business trip abroad. The test can take three months or more to become positive, during which time a donor could give lots of infected blood to the Red Cross. Very rarely it never becomes positive, even though the person is dying of AIDS. This is because it sometimes happens that people never produce antibodies. At the

moment the risk is very low in countries like the UK because gay men, drug addicts and other people who might have been exposed to HIV have been deliberately asked to stop giving blood, and almost all have ceased to do so. However, as the number of infected people in the general population rises, the number of infected units that pass through undetected also rises.

If I were about to have a major operation, I would ask for as few units of blood to be used as possible. Blood is not so essential as many people sometimes think. We have some excellent blood substitutes now which can replace the first two or three pints of blood lost unless you started off very anaemic. In the United States there are large numbers of Jehovah's Witnesses who refuse blood transfusions for religious reasons. Few die, however. Major surgery without the use of blood transfusions is now a well-practised art in the United States.

It is sometimes possible to arrange to give your own blood which can be stored before your planned operation. This makes you slightly anaemic, forcing your body to make a lot more blood cells.

By the time your operation takes place, your blood is normal again and two or three units of blood are ready for you in the blood bank. The shelf-life of stored fresh blood is only thirty-five days, which is one reason why not many hospitals yet offer this facility. The other reason is cost.

For a long time, people in some countries who are too embarrassed to go to a sex disease clinic for a test for HIV antibodies, have been going along to give blood. They know that all blood is tested there. This happened a lot until the Blood Transfusion Service woke up to what was happening and tried to stop it. It is terribly dangerous: someone infected last week who goes to give blood gives infected blood expecting it will be detected, but it isn't. The test will not be positive for weeks. The blood slips through and is used in a hospital.

Q. ´Can I get HIV by giving blood?

Not at all. Some people are afraid of infection and are staying away. But there is no danger at all in giving blood. There is no risk to you at all, so long as all the needles used are sterile.

Q. ´What about babies of infected mothers?

We know that a small minority of babies born to infected mothers may turn out to be infected themselves, although all will test positive for the first few months (see question on testing and Chapter 4). Breast-feeding significantly adds to the transmission risk, although advice in developing countries is toften o continue because of the dangers of death through gastroenteritis from bottle-feeding.

Q. ´What is the risk from oral sex?

The risk from oral sex is unclear. To be sure that orogenital contact is the route, it is necessary to find couples where other methods of intercourse have not taken place, and this can be difficult. Among gay men there can be a tendency for some to admit to oral sex, but not to anal sex, although both have taken place.

Studies available suggest orogenital contact can transmit HIV, so care should be taken. There is much we do not yet understand. For example, spread from saliva is unknown from kissing, although the virus is present in saliva. The lining of the mouth and gut of an adult seems to give some protection, yet a newborn baby is very much at risk from HIV in breast milk.

Q. ´Can I get HIV from a toilet seat?

For this to happen there would have to be fresh blood on the toilet seat in contact with breaks on the skin or genitalia of the next user. The more likely scenario might be an infection from one of the organisms causing diarrhoea in someone with HIV. This can be prevented by normal washing of hands after use.

Q. ´Can I get HIV from sharing a toothbrush?

This is theoretically possible, but we have never seen infection by this route despite careful studies of many families where one person is infected. Brushing causes tiny amounts of bleeding from the gums so a toothbrush should be used by only one person. Likewise, articles such as towels or razors (even electric razors) should not be shared.

Q. ´Can I get HIV from the skin of someone with AIDS?

If the patient has weeping boils or other skin problems causing the skin to crack, bleed, or produce secretions, then care should be taken. The secretions may carry virus. Remember, however, that virus on your own hands is not going to infect you unless there are breaks in your own skin. Hands are especially vulnerable, so cover cuts with waterproof bandages and if in doubt, use gloves. Several cases of infection have occurred following heavy contamination

of broken skin by blood or secretions. Infected blood on the face of a person with acne or a skin rash has been known to transmit the virus.

Q. ´Is HIV present in sweat?

Although HIV can be found in many body fluids including blood, tears, saliva, semen, cervical secretions and breast milk, extensive tests have failed to detect HIV in sweat. However, all other body secretions should be regarded as potentially infectious.

Q. ´Am I more likely to get HIV from an infected person if my hands are cut or sore?

People with eczema should be especially careful to wear gloves when likely to come into contact with secretions from someone with AIDS. The thousands of tiny cracks and itchy blisters are entry places for the virus. Cuts should be covered with a waterproof plaster. Gloves should be worn by all people whenever handling anything covered with secretions or when lifting or turning a person in bed. Obviously gloves are necessary for normal social contact, handling of crockery, or unsoiled clothing.

Q. ´Can I get HIV from mouth-to-mouth resuscitation?

The same principles apply as for French kissing or communion. I once found a man who had collapsed three minutes previously on the pavement outside Liverpool Street Station in London. I gave him mouth-to-mouth resuscitation for twenty-five minutes until the ambulance arrived. By the end I was covered with his saliva. It was over my face, in my eyes, in my mouth and in my lungs. Every time I lifted my mouth after giving a breath he spluttered back at me.

You can reduce the risk enormously by covering the mouth with a handkerchief and breathing through it. Hospitals and ambulances carry a special tube connecting your mouth to the dying person. It has a valve preventing air and secretions blowing back in your face. They should be standard issue but since they make resuscitation more difficult it probably would not make sense to use one unless you were already familiar with it.

That man walked out of the hospital despite it taking forty-five minutes from his heart stopping to his arrival in the emergency room. Mouth-to-mouth resuscitation saves lives, and if you do not do it because you are afraid of getting infected, you may have to live with your conscience for the rest of your life. The good Samaritan was the one who took the risk of being mugged or robbed to stop and help a dying man lying in the road.

For a man in the street, in a low-incidence country, the risk of the other person carrying the virus is low. The risk of catching the virus would be more for someone who knew that the person who had collapsed was positive, had AIDS, was a drug addict, or was a homosexual.

Q. ´Can you pick up any other infections from looking after someone with AIDS?

Yes. There are three possibilities: TB which can develop rapidly in someone with AIDS, cytomegalovirus and other infections causing diarrhoea.

People with AIDS are 100 times more likely to have TB than the average person, although the kind of TB they have is often less infectious to others. If someone walks into a hospital and has widespread TB, one of the first questions doctors ask now is: Does this person have AIDS? In healthy people tuberculosis is usually easily treated.

As we have seen, tuberculosis is the commonest reason worldwide for someone with HIV to die. The natural immunity that most people have to the microbe is destroyed, so people die quickly of TB. Therefore it comes as no surprise to find that worldwide TB cases are on the increase, even in industrialised nations such as the US or the UK.

One worrying problem has been the recent emergence of new strains which have resistance to most drugs used against TB. Someone with HIV needs to take antibiotics for long periods. It is difficult to eradicate the infection without some natural immunity to help. If medication is taken intermittently, there is a risk that resistance will develop. If health care workers become infected with these strains, treatment can be difficult, although fortunately many have protective immunity due to exposure to TB as a child, or from vaccination.

To reduce the risk to care workers, it has been recommended that people with HIV who have unidentified chest infections should be regarded as potentially infectious for TB. It is also suggested that in areas where multiple drug resistance is a problem, staff should be tested for TB every three months.

The other hazard, the cytomegalovirus infection, is very common and usually quite harmless, but can be crippling to someone with AIDS.

Some ask if pregnant women are at risk from cytomegalovirus (CMV) infection picked up from someone with AIDS. CMV infection is very common in the general population. Some 50% of women of childbearing age are actively infected at any time, without any signs unless the immune system is damaged. About 1% of uninfected women become infected with CMV during pregnancy. CMV can cross the placenta and infect the unborn child, almost always after new infection. In 1,000 births around three to four babies are CMV-infected. Of these, 10--15% have a CMV-induced abnormality such as brain damage and/or deafness.

A few hospitals offer screening for CMV antibodies to nurses working in high CMV incidence areas, eg AIDS wards. If antibodies are absent, women are advised to work elsewhere. However, there seems to be little hard data to support this advice, and the additional risk to the unborn child appears to be extremely small. Official advice is that no special precautions are necessary for the care of HIV-infected people excreting CMV, but that good personal hygiene should be followed, especially hand washing, after contact with respiratory secretions or urine. Good personal hygiene will prevent other bowel infections being transmitted. Apart from TB, the risks are entirely the other way around, as the simple cough or cold a well person has could make someone with AIDS seriously ill.

Q. ´I have heard that cats can give toxoplasma infections to those with HIV. Is this true?

It used to be thought that toxoplasmosis in those with AIDS might be linked to cat ownership---so much so that one person I visited with AIDS at home used to call his cat Toxo! Fortunately, a study has shown that where toxoplasmosis develops it is almost always the result of activation of infection many years previously. No cases were found of recently acquired infection.

Q. ´What is the importance of a `doubling time'?

The doubling time is the time it takes for the number of those with AIDS or early infection to double. It used to be six months in many countries first experiencing the disease but is now averaging three years or more in many countries.

A story is told of a famous chieftain who was agreeing the price of a piece of land: he had a

chessboard in front of him with sixty-four squares. He said his price was a grain of wheat on the first square, two on the second, four on the third, eight on the fourth, and so on. The deal was agreed. What the other man did not realise was that by the time he got to square sixty-four, all the grains of wheat in the entire world would not be enough! In around ten doublings you reach a thousand, but by twenty doublings you reach nearly a million. By thirty doublings the number is impossible even to imagine.

A doubling time of six months to a year means it only takes a generation to multiply current numbers by billions. But current numbers infected worldwide are already reckoned as millions.

Another way of looking at it is that all doubling times have to slow down.

Q. ´Could we all be wiped out by AIDS?

No. The spread is likely to slow down as many of the people with multiple partners and drug addicts become infected. The length of time for the number of new cases to double is getting longer in most countries. At the start of an epidemic in a small community the doubling time is often six months. After a few years it usually lengthens to more than a year or two. This is still very serious, but at least it shows some sign of hope. In Africa, South East Asia, and parts of Latin America other factors such as other sex diseases are encouraging the spread in ways we do not fully understand. Outside these areas the spread throughout the general population will continue, but almost certainly more slowly. Eventually we hope there will be a cure (although conceivably not for ten to twenty years).

The only way the whole of mankind might die would be if this highly adaptable, unstable virus were to change its method of transmission. Other similar viruses can be spread through droplets, coughing and sneezing. We really do not understand fully why this does not happen with HIV. We are all hoping this will never happen in the future, but it could, and the more people who are infected each year, the greater the chance of such a mutation . If it happened, the whole of mankind could be destroyed rapidly unless we found a cure in time.

Q. ´Why not test everyone and separate infected from uninfected people?

I am horrified when people ask me this question. This is a recipe for concentration camps. Also it will not work: many infected people will be missed due to the test not becoming positive for up to nine months after infection. Many who think they are positive will disappear and go underground. The days when any country could close its borders are over---particularly EC

countries with abolition of border controls. Millions of people travel to other countries each year, many illegally. Someone would have to enter quarantine after being abroad even for twelve hours because that is long enough to share a needle or have sex. Quarantine would be for up to nine months. During this time the person would have to be kept in solitary confinement in a prison cell so there could be no possibility of sexual intercourse or sharing needles. What would happen to business trips? No tourist could travel without being in a `sex-free' prison for up to nine months first. What are you suggesting? An iron curtain even more effective and destructive than was the one in the East? Husbands and wives separated on one side or the other? Children never able to see an aunt or an uncle except in a room with a television camera?

Even if the epidemic is controlled in one country, if all neighbouring countries have rapidly increasing problems HIV will find its way in. That is why even if I agreed with the concentration camp idea---and I find it utterly repulsive---I would think it stupid to try it. The answer has to be a worldwide answer. The only alternative is to close all borders, airports and sea ports, and blow up any ship, pleasure boat, or plane that approaches the coast.

Q. ´What is the cause of same-sex orientation? Is there a gay gene?

I am often asked after AIDS talks why people turn out to be heterosexual, homosexual or bisexual. I often wonder what is behind the question---a reaction against gay sex as perverted or abnormal, a desire to promote gay sex as natural and acceptable, or just curiosity? I am going to attempt to answer the question because misconceptions continue to inhibit a compassionate response to gay men with AIDS, with statements like, `He chose to be gay' linked to an `own fault' attitude.

Although, as we have already seen, most HIV infection worldwide is heterosexual, people's views of gay sexuality can be profoundly important in the response to AIDS in countries like the UK where gay men comprise the majority of those ill or dying.

At the risk of being rather simplistic, it could be said that in the past many of those approving of homosexual relationships may have tended to the view that people are `born gay'. Many disapproving of such relationships may have tended to the opposite view that people `become homosexuals' either as a result of upbringing, or as a result of individual choice.

What are the facts? There is certainly evidence that sexual orientation can be profoundly

affected by what happens to people as they grow up, but there is also growing evidence that our genes may have a degree of influence too.

Classical psychoanalytic theory has pointed to the family dynamic and a common pattern of a weak or absent father and a powerful or dominating mother being more likely to result in a homosexual son. Another model has suggested that sex abuse can either drive the person towards same-sex relationships or away from them, depending on the circumstances. The model breaks down---as do all the simple models---because there are many with a same-sex orientation whose childhood and adolescence were quite different.

In the 1950s and 1960s two studies were done of identical twins reared apart. These kinds of studies are very interesting because they help us settle the nature/nurture argument, as each pair of twins has identical genes. Any differences must therefore be due to factors operating after birth. If sexual orientation were purely preprogrammed, then such twins would always have the same sexual feelings. The studies found there was a link, but not a complete one. Many, but not all, of the twins were found to have the same orientation as the other.

The nature/nurture debate can get very heated. On the one hand some may say that a genetic influence on sexual orientation justifies homosexual relationships as normal. Others may say that if there really is a gene, it must be just as abnormal as the one causing cystic fibrosis and should be eliminated from the population. My own view as a Christian is neither of these two extremes. My understanding is that God loves us whatever our genetic makeup. Genes in themselves are morally neutral, yet a part of our fallen world. The real question seems to be how we choose to live with them.

Some Christians get very agitated over the issue because they feel that an environmental explanation based on `unfortunate experiences' is easier to cope with than the thought that our Creator might have `designed us like that'. However, to be consistent, if we take the line that all genes in all people are as God designed and originally intended, then we are forced to the odd conclusion that God intended people to have haemophilia, cystic fibrosis, or a host of other conditions programmed by genes.

The traditional Christian view on illness and suffering has been that God created the world perfect, but gave us free will. When man fell, sickness and decay entered the universe. This makes sense of the observation that we probably all contain rogue genes, useless genes, harmless genes, beneficial genes, dangerous genes and genes which are just part of the

varied normal human condition. It then becomes a matter of heated theological and biological debate to decide which category so-called `gay genes' might fall into.

This is something which needs sorting out, since a tough secular world has a knack of quickly destroying embryos which do not fit the fashion of normality. Christians have been remarkably united in condemning such a utilitarian approach to life. In this there is a strong consensus between Evangelicals, traditional Catholics and the Gay Christian Movement. All are utterly opposed to the possibility of destroying embryos on the basis of a possible gay gene, although perhaps for different reasons.

Some are troubled over the question of choice. Some make the suggestion that if sexual orientation is environmental, people can choose. Since people do not choose their parents, the circumstances of their upbringing, or to be sexually abused, I cannot see it makes any difference if sexuality is more or less genetic or environmental.

I cannot find any evidence that people choose to have homosexual feelings. On the contrary, many are troubled by them and wish they were heterosexually inclined. People can, however, choose how feelings are expressed in terms of behaviour. This is a deeply sensitive, complex and controversial area, and one which has caused confusion in the church to the detriment of those ill with AIDS. Confusion and uncertainty mean people are unsure of how to respond.

As we will see in a later chapter, personal views have to be laid aside in order to care unconditionally. The day your views or mine---on politics, lifestyle, religion, race, sexuality or any other factor---begin to affect the care we give is the day we should stop trying to care for people. Doctors, for example, should be struck off the medical register for refusing to look after someone on the basis of race, lifestyle or because they have an unacceptable illness. If we cannot accept, love and care for people as people, then our care is almost worthless.

You do not have to agree in order to care. You might have a completely different outlook on life, but that does not take away the possibility---or indeed the obligation---of giving loving sensitive help to another human in great need. Some fear that expressing care condones behaviour they may consider immoral. If that is the case, then nursing someone with alcoholic liver cirrhosis would also be unacceptable, or helping someone who fell under a car when drunk---or is it just a special judgement to be imposed on those who are practising homosexuals? For further discussion see Chapter 8.

Q. ´What should I do if I'm worried about infection?

If you are concerned about HIV infection, the first thing you could do is change your lifestyle: have one partner (currently uninfected) for life and do not inject drugs. You may feel you have good reasons to be worried. You need expert advice from a physician with experience in this area as a result of which you may want to be tested. You need to think this through carefully. The decision to be tested is not straightforward and you need good preparation if you decide to go ahead. If the test comes back positive things can happen very fast. In the upset you can end up sharing the result with someone who then lets you down by telling other people. The result can be a lost job or worse, so you need to have thought through what you will do if the result is positive.

You may have been required to have a test because you are about to get married. Many people are choosing to get married somewhere else to avoid a test. But this is one area where testing is especially important: here are two people committing themselves to each other for life and probably intending to have a family. I know people who have decided to be tested because of their past lives, out of courtesy and respect for a future spouse or partner.

A positive test result needs checking a second time to be absolutely sure. The result can occasionally be wrong. A confirmed positive result means your body has been exposed to the virus. Some of your soldier cells will have been reprogrammed. We have to make sure that those soldier cells stay asleep for as long as possible before being stimulated by other infections into producing more virus particles.

Anything that would improve the health of an uninfected person is also likely to give the very best chance of health to someone who is infected. Boosting your immune system will also help your body keep well if some of your soldier cells are starting to die.

Eat a balanced diet, avoid physical exhaustion, and pace yourself in what you do. Exercise regularly and be careful about situations you know are likely to leave you completely drained emotionally. It seems that some people can live for many years---even decades--- with this virus. The longer you live, the more likely it is that we will find more effective treatments or even a cure.

A lot of people may try to exploit your fears by selling you all kinds of treatments or remedies.

Before you spend your savings on these things, just remember that every drug company in the world would love to find a natural substance that could work well for people with AIDS. Every folk remedy you hear about has already been examined and rejected by scientists or is as yet unproven. Most of these things gain their reputation because people who take them often seem to improve. However, as we have seen, what makes people with AIDS ill is usually the other infections that invade when the soldier cells are damaged. The natural course of the illness can be a series of dramatic ups and downs. People then credit a folk remedy for an improvement that was bound to happen anyway.

I do not want to stop you from trying these things but many people have wasted a lot of money on `cures' that are totally worthless.

You may panic because, having read this book, you think you are suffering from the early stages of AIDS. This illness is a great mimic of other less serious conditions. For example, a fever together with swollen glands for a while is quite likely to be caused by glandular fever. All kinds of things can produce rashes or diarrhoea. If you are worried, you should see a physician.

However, you may know that you are a carrier of the virus, and your physician has confirmed that the virus is now making you ill. Exactly the same things apply as for those infected but feeling well: basically, take care of your body to give it the best environment to protect you.

If you are infected with AIDS, you have probably already become an expert on the disease. Some days you may feel able to handle it and other days you may feel you are not coping at all. However you became infected, and whatever your background, not far from where you live there are other people in the same situation who may be able to help you. AIDS is too big a burden for anyone to have to carry on his or her own. Sometimes you will find yourself caught between facing the practicalities of dying and wanting to build plans for the next two decades.

Whatever your situation, there are a number of agencies available to help you practically, emotionally and spiritually. A few are listed at the back of this book.

Often it is more harrowing to watch someone else suffering than to be in the situation yourself. You can feel helpless and frustrated. On top of all that can be the exhaustion that comes from giving care twenty-four hours a day, seven days a week. There can also be a lurking unease

that your partner may have infected you or that you infected your partner. All these things can produce high levels of anxiety and stress.

Again I urge you to link up with various agencies where they exist, for practical and emotional support. You may be encouraged to know that many partners have not infected each other even after long periods of unprotected sex. You will need to think through that whole area now in the light of the next chapter in this book about condoms and the advice to partners of infected people.

Q. ´Is there an answer to AIDS?

A simple answer to AIDS is, in the words of a doctor from Northern Ireland, an `epidemic of faithfulness'. An epidemic of faithfulness will have a major impact on the epidemic of AIDS---together with testing blood donations, taking care over sterilisation and disinfection, and discouraging sharing of needles and syringes by drug addicts.

In the words of the World Health Organisation: `The most effective way to prevent sexual transmission of HIV is to abstain, or for two people who are not infected to be faithful to one another. Alternatively, the correct use of a condom will reduce the risk significantly.'

All these questions are important. However, the biggest question in my mind is this: Are condoms really as safe as everyone seems to think they are? Is the emphasis on condoms for safer sex simply because we can't think of anything better to say---or is it really grounded in fact? If it is safer, how much safer is it?

The Truth About AIDS