

# Progress in Developing AIDS Vaccine Gains Momentum

by Md Asadullah Khan

World wide public leaders, and researchers have started vigorous campaigns to stop this veritable scourge. True, campaigns against needle sharing and unsafe sex can help, but they won't stop the spread of AIDS at least not in countries like Zimbabwe, Uganda and Botswana where one in four adults is already HIV positive. Our only real hope, experts now agree, is to create a preventive vaccine. Scientist are making some real head way.

SOON after the researchers announced in the mid-1980s that they had discovered the virus that causes AIDS (acquired immunodeficiency syndrome), US health officials confidently declared that a vaccine would be ready in two years. There was optimism all around that the most frightening scourge of the late 20th century would succumb to a swift counter attack of human ingenuity and high technology. Sadly true, till now there is no vaccine, no cure and not even an indisputably effective treatment. Encouragingly, during the last couple of years potent new drugs have eased AIDS mortality throughout the developed world and preventive efforts have slowed the spread of HIV. Worldwide, a staggering 30 million people are now living with HIV. Nearly 6 million contracted the virus last year alone — some 16,000 every day as the UN AIDS report suggests. But there is some good news coming from the developed countries. The number of Americans dying from the disease fell instead of rising in recent times. The number of deaths in the first half of 1996 was 13 per cent below that for the same period in 1995. In France the decline was greater, at some 25 per cent. And even in São Paulo, Brazil's largest city, deaths from AIDS dropped significantly. After years of official pleas for people to change their behaviour to reduce exposure, the message seems to be finally getting through.

Despite the reduction in mortality rates infection rates are still rising. Because 90 per cent of all infected people live in the developing countries of Asia and sub-Saharan Africa who will never see the miracle treatment like protease inhibitor. "More shocking, most will die within a decade", UN AIDS predicts. The most shocking part of the story is that most will have no idea they're infected until they have had several years to pass the virus to others.

**Methods of Transmission:** Worldwide, there are more than 30 million people now infected with HIV. Despite the fact there have been victories in some countries especially in Thailand because of its efforts with prostitutes, and the aggressive education campaign in Uganda, the disease is still spreading quickly in the globe's most populous areas. In the U.S., the method of transmission is mainly through homosexual sex close to 52 per cent, heterosexual sex being 13 per cent, blood transfusion 2 per cent, IV drug use 38 per cent. Methods of transmission in other places of the world where the disease takes a heavy toll of lives are shown in the chart below.

**Where the AIDS Epidemic Has Hit Hardest...**

**Methods of Transmission**

**South Africa**

Homosexual	7%
Mother to child	13%
Blood Transfusion	1%
<b>Heterosexual</b>	<b>79%</b>

**Russia**

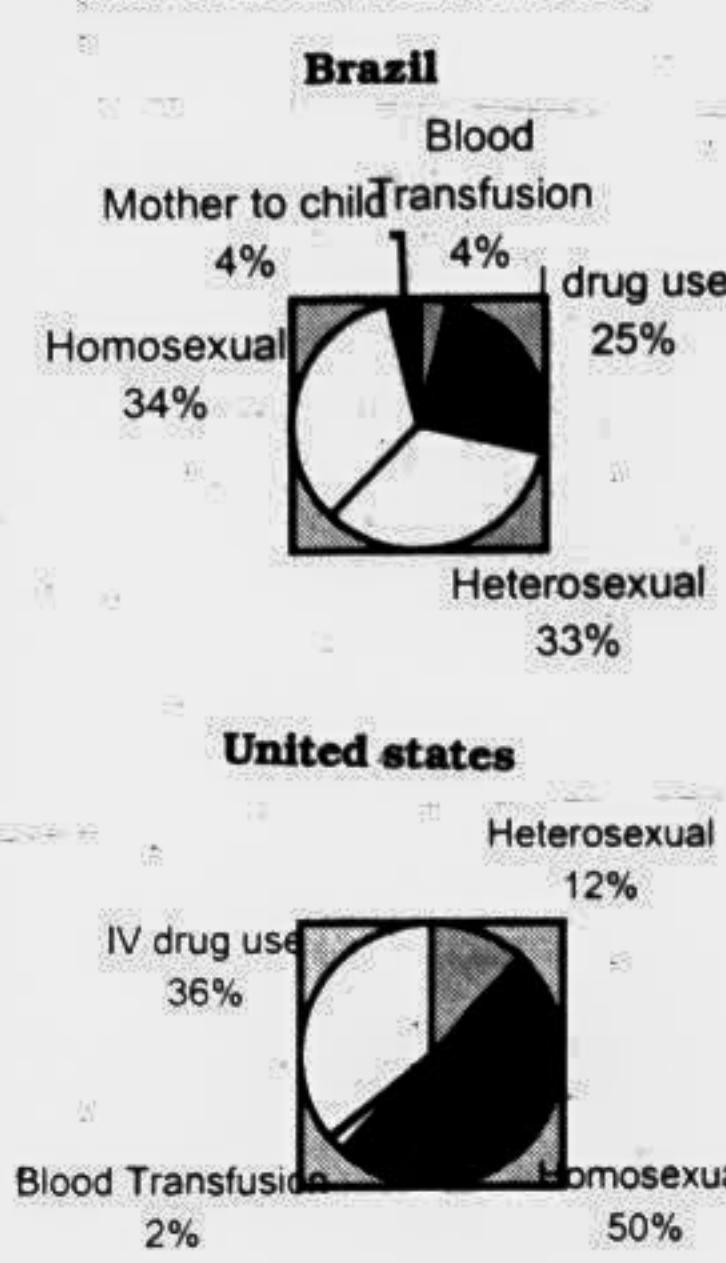
Blood Transfusion	1%
Mother to child	2%
<b>Heterosexual</b>	<b>32%</b>
Homosexual	63%

**China**

Blood Transfusion	19%
<b>Heterosexual</b>	<b>16%</b>
Homosexual	8%
IV drug use	57%

## And Where It's Growing Fastest

### Methods of Transmission



### Improvement in Treatment:

Despite the reduction in mortality, infection rates are still rising. But what has definitely improved is the treatment. When AIDS was first identified, people exhibiting its symptoms could just die within about 11 months. But now they can survive for 20 months or longer. This is in part due to the advent of drugs that slow the virus down, and in part to better treatment of the opportunistic infections that take advantage of the weakened immune system that is the hallmark of AIDS.

The latest results confirmed in a series of scientific papers suggest that of the new class of anti-HIV drugs introduced over the past two years, the so-called protease inhibitors are going to fulfil their early promise. In addition, the discovery over the last one year of two quite different mechanisms of natural immunity to HIV opens up the possibility of further new drugs or even vaccines for those unfortunate victims who lack immunity. But studies have shown that when the new medications were combined with older ones such as AZT (Azidothymidine), they could paralyse HIV within the body. Triple drug cocktails have since become standard treatment for HIV infection and the effects, researchers indicate, have been stunning. For two years in a row, U.S. death rate from AIDS has fallen by half. And some experts reasoned that if newly infected people could arrest the virus early, their infected cells could die off completely within a few years.

However, the complete cure of the scourge is still miles apart. Tests have shown that HIV lingers in the idle immune cells of patients on the drugs, ready to flourish as soon as the drugs are withdrawn. The challenge as such now is not to eradicate the virus but to stay a step ahead of it. But that does not seem to be so easy. Experts have seen that if the cocktail works less than perfectly, the virus adapts to the new drugs and their effect soon fades. In one recent study, researchers at the university of California, San Francisco, examined the records of 136 patients who had started triple-drug regimens since 1996. More than half had suffered treatment failure. And when one protease inhibitor lost its effect, adding or subtracting others made little difference.

The new treatments have another shortcoming. Combination therapy is gruellingly difficult to follow since it involves taking numerous pills on different time schedules as experts indicate — some alone and others in tandem, some on a full stomach and others on an empty one. Strict adherence is necessary but few patients manage it. One recent survey

found that 74 per cent had skipped a medication within six months.

**Side Effects:** Even when the patients can master the rules, they can't always tolerate the drug's side effects. The common ones range from diarrhoea to fatigue and anaemia. Other problems include kidney stones and a bizarre redistribution of body fat, usually accumulating more on the trunk or back of the neck. The condition may faster high blood pressure and cholesterol raising the risk of heart attack and stroke. But all this means little to the developing world, home to more than 10 per cent of the 30 million people who have been infected with the virus. Because they need affordable version of the drug and not this costly drug that at the present market price costs \$16,000 a year even in the U.S. per patient.

In case of HIV virus, mutations happen most frequently when the virus is rapidly multiplying. During the course of a day, experts assert, a single HIV particle can make thousands of copies of itself in an individual. Their wild propagation starts in organs like lymph nodes and then spills into blood stream. What triple drug therapy does is to dampen this viral celebration and reduce the number of viruses in the bloodstream. According to Ray Gulick of New York University Medical School, the number of virus particles — a figure known as virus load — can fall from tens of thousands per millilitre of blood at the height of infection to undetectable levels within few weeks of the beginning of the treatment.

More importantly, this benefit lasts as long as treatment lasts. After 68 weeks of triple drug treatment in Dr. Gulick's trial — the longest to date so far known from available records — 85 per cent of his patients (people who entered the treatment with mild to advanced AIDS) have blood that is free of the virus.

Experts are still uncertain if cleaning up the blood by means of Dr. Gulick's regime is possible. Flushing the virus out of its lymphoid lairs is essential to a complete purge. Assuringly, a paper published in May 1997 in *Science* by Ashley Haase and his colleagues at the University of Minnesota Medical School in Minneapolis, suggests such possibility. Dr. Haase's team has shown that a triple drug therapy using "ritonavir" (another protease inhibitor) alongside AZT and 3TC, can sweep HIV out of the tonsils, one of its favourite haunts. After six months of continuous treatment — dozens of pills a day, precisely timed, there is almost no sign of HIV in the cells (immune system cells called T lymphocytes and white blood cells called macrophages) it normally inhabits.

Experts believe that the virus may still take refuge in other sanctuaries, such as the brain. This makes it difficult to know when or whether, it is safe for a patient to come off a triple drug therapy. New research findings published in the "Nature" magazine by Alan Perelson at Los Alamos National Laboratory at New Mexico and David Ho at the Aaron Diamond Research Centre in New York suggests some indications of complete purge of the virus in the next one or two years.

But however promising the outcome might be, even for those who can stay the course of triple drug therapy at \$16,000 a year in the U.S., it is for now a rich man's solution to a disease that largely affects poor people. Nine out of ten people with HIV live in the tropics, and if they are to be treated a different approach will be needed. A hint as to what that might consist of has come from the discovery of people who seem to be immune to the attentions of HIV in the first place.

**Natural Immunity:** This immediately brings to our attention the case of Pumwani, a

The writer is Controller of Examinations, BUET.

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both the mother and her child.

The rate of HIV infection of children by mothers ranges from 25 to 35 per cent around the world while the rate stands at 85 per cent in Sub-Saharan Africa. And the trend is similarly higher in developing countries which is said to be around 35 per cent. Until recently, Bangladesh was by and large reluctant to acknowledge the danger from the fatal disease even after feared epidemic in neighbouring countries on the pretext that the country's people harbour conservative family values. But various studies conducted by non-government organisations have helped a lot in melting down the reluctance to face the silently growing menace.

According to figures provided by CAP, 72 people, including 15 women, were found affected with HIV virus in the country until 1996. Of the women AIDS victims, seven were from Sylhet, three from Chittagong, one from Noakhali, two from Khulna, and one each from Faridpur and Rajbari.

# Is It Too Difficult to Stand by Women?

by Ekram Kabir

When a woman speaks up in the home, will we, the men around, listen, as carefully and respectfully as if she were a man? And will we finally respect their choices, as women? Will we admit that we are the elements who often make their lives a living hell?

SARAH, 23, and seven-month pregnant, has to look after the mother and father of her architect husband. But there's no one in the house to look after Sarah's pregnancy-related needs, neglecting which she may even run the risk of an immature death.

"I am denied of going to my parents' house where I can get proper rest and diet for me and the baby inside me," says a sobbing Sarah, adding, "I'm trying to get used to the verbal abuses of my husband and father-in-law, who is a former Dhaka University Professor. I have never heard those words from anyone before."

These sad words of Sarah may appear like a mundane monologue from a "coping-with" drama of everyday life of majority of Bengali women: there's apparently nothing wrong with it...

Rightly so?

No.

Simple: if you listen to how women like Sarah are suffering within while living with their "certificate-holder" husbands, you are supposed to find there are melodramatic elements in their existence which are known to all. They are physically beaten and mentally wounded beyond any limits.

On the basis of this observation, Plummer and his team suggest that exposure to the virus is actually "priming" a reaction against it — in essence the basis of vaccination. "And the secret of the women's success seems to be their unusual immune cells, in particular their T lymphocytes", Dr. Plummer concluded. Other than the T lymphocytes attacked by HIV known as CD4 cells, there is a second class of T cell not attacked by HIV with a different surface protein known as CD8.

These CD8 cells are known as "killer" lymphocytes. Their job is to assassinate cells infected with viruses, thus preventing the infection from spreading. Andrew McMichael and Sarah Rowland-Jones who work at the Institute of Molecular Medicine at Oxford University, reckon that there is something about the CD8 cells from Pumwani's "ladies of the night" that is nipping HIV infections in the bud. They have been prodding CD8 cells from these women with a variety of proteins from HIV looking for a killer response in the test tube.

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And yet Dr. Plummer's report in the early part of 1998 revealed that these prostitutes have no signs of infection. Neither HIV nor antibodies to it can be found in their blood.

Most curiously, the longer they ply their trade, the more immune they seem to become. Dr. Plummer has monitored more than 1500 prostitutes during the course of 12-year study. For those who are resistant each year of prostitution reduces their risk of HIV infection by 20 per cent. This has confounded all expectations since one of the usual risk factors for infection with HIV is the length of prostitution.

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be an abstraction without women asserting their rightful place alongside us.

Wives, mothers, sisters and daughters are mere a few household names. But, having seen their lives in distress by violence, both emotionally and physically, how much have we done — especially around kitchen tables?

To us — husbands, fathers, brothers and sons — are they valued as much as we deserve? Do they have the food, health-care, education, safe shelter and, above all else, the **support** they need to survive and flourish? Do they have access to the opportunities to help them reach their inherent potentials?

No, there won't be many to say that "I do care for my partner". If everyone is found saying so, many must be lying.

Why do we have to lie, anyway? Well, it is probably one of the riddles about civilisation reeking with regression and that at a time when enlightened mankind elsewhere is planning human settlement on other planets, we are still forced to air our voice and concern for our women. In one way or the other — like Sarah's husband, although educated, and in-laws — we keep on torturing them, suppressing them as our slavish attendants.

Now, can there be a more shameful, regrettable realisation if we view it as it is, indeed the whole march of civilisation since creation as a composite act of the labour and intellect of both woman and man? Definitely not... But the tragedy is, that is exactly our societal truth in the nineties.

If we care to listen, we can

hear the voices