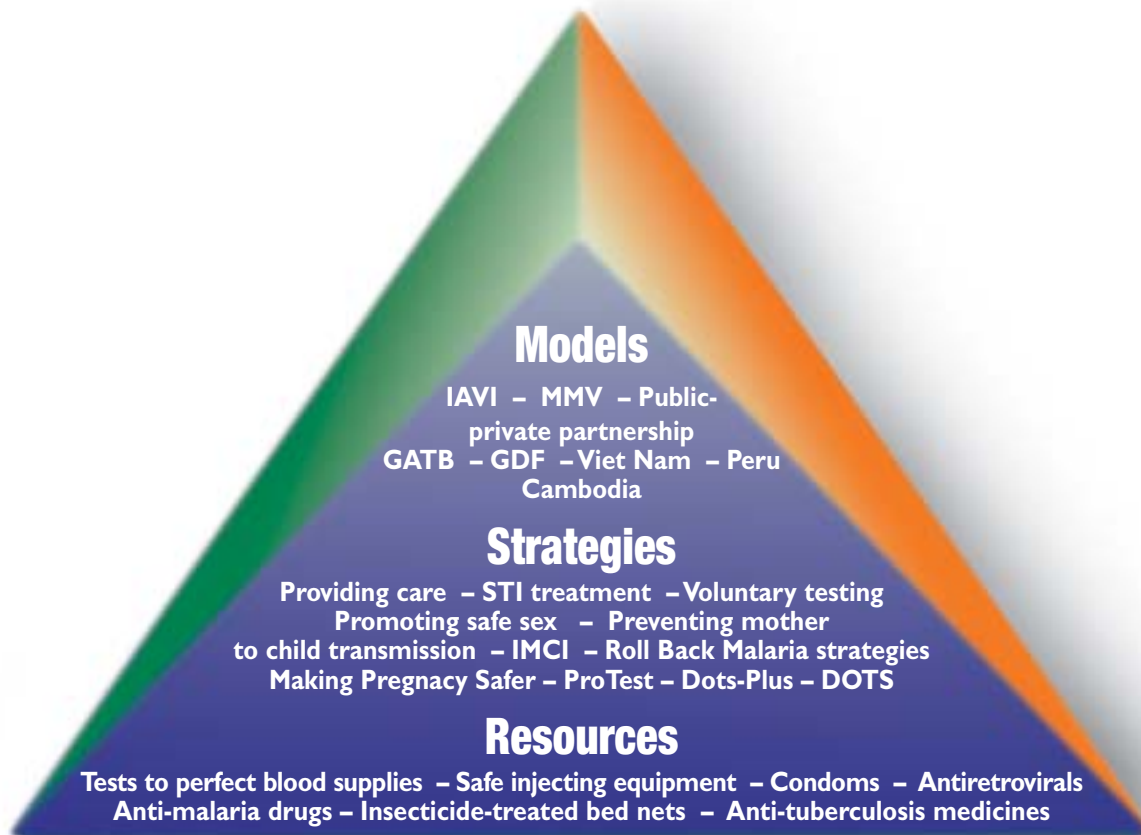



EFFECTIVE INTERVENTIONS



Tools to prevent or cure AIDS, TB and malaria have been available for decades. Yet worldwide, fewer than 25% of those at risk have access to the most effective of these products and commodities.

 ver the coming decade we can make substantial progress in fighting the diseases that are devastating the health and well-being of millions of poor people. We have the medicines that can cure TB, malaria and the opportunistic infections associated with HIV. We have the health commodities (condoms, nets and safe insecticides) that can prevent HIV and malaria transmission. And increasingly, affordable drugs are becoming available that can delay the development of AIDS and prevent mother-to-child transmission. Responding to the challenge of these three killer diseases requires accelerated action to make interventions more widely available. At the same time it requires intensified efforts in research and development of new drugs, diagnostics, vaccines and other essential health commodities that are even more effective.

Nearly 95% of people living with TB can be cured with medicines that cost as little as US\$ 10. It is estimated that as many as 1 in 2 malaria deaths can be prevented if people have ready access to a rapid diagnosis and treatment with anti-malarial drugs – costing as little as US\$ 0.12 for a tablet of chloroquine. In addition, one quarter of child deaths can be prevented if children sleep under insecticide-treated nets – costing US\$ 4 – to avoid the mosquito bites that can cause malaria and prevent mosquitoes from carrying infections further. When used consistently and properly, condoms – a year's supply of which can be provided for US\$ 14 – are extremely effective in reducing the spread of HIV.

Affordable strategies have been developed to provide these medicines and supplies in the poorest of communities. For example, DOTS – a 5-pronged strategy for the detection and treatment of TB – has proved highly effective in ensuring that patients take their medicines properly. With the IMCI (Integrated Management of Childhood Illness) strategy, disease control for childhood diseases enables immediate treatment of the five most common causes of childhood deaths – malaria, pneumonia, diarrhoea, measles and malnutrition. Intensive use of well-targeted, low-cost HIV

prevention and care strategies can prevent millions of new HIV infections.

RESOURCES AVAILABLE – AND THOSE STILL REQUIRED

Tools to prevent or cure AIDS, TB and malaria have been available for decades. Yet worldwide, fewer than 25% of those at risk have access to the most effective of these products and commodities. Moreover, the potential of scientific knowledge and research capacity to develop even better and more affordable tools is enormous. Only a tiny fraction of the world's medical research however, is devoted to finding even better tools to control these diseases of poverty.

Tools and medicines to stop TB

The first of nearly a dozen effective antituberculosis medicines was discovered in 1944. Over the next three decades, enormous strides were made against TB in the industrialized world, permitting wealthy countries to effectively control this feared disease. Today, the medicines exist to treat TB effectively and cheaply. Taken regularly for a period of 6 months, available antituberculosis drugs are nearly 100% effective in curing the lungs and other parts of the body. Drug-resistant strains of TB are also becoming curable with more effective use of second-line drugs. These drugs are expensive, but are becoming less so as a result of cooperation between manufacturers and health-care providers.

Diagnostic tools for detecting the disease have also become much more effective and inexpensive. Previously, multiple X-rays of the lungs were required to detect the presence of the damage caused by rapidly-multiplying TB bacilli. In recent decades, a much more accurate and inexpensive means of diagnosing TB has come into use: sputum coughed up from the lungs is stained and then examined under a microscope for the presence of TB bacilli. The materials to conduct each test cost as little as US\$ 0.50 in developing countries.

Effective tools

The following affordable medicines and tools are highly effective, when used correctly.

TB medicines cure 95% of TB cases.

Cost: US\$ 10 for a 6-month course treatment.

Antimalarials cure 95% of cases.

Cost: US\$ 0.12 per tablet.

Insecticide-treated mosquito nets can reduce malaria deaths.

Cost: US\$ 4 per net.

Condoms are highly effective in preventing HIV.

Cost: US\$ 14 for a year's supply.

Tools and medicines to roll back malaria

Preventing malaria through the use of insecticide-treated nets has been shown to be a highly cost-effective tool for decreasing disease and death, particularly among pregnant women and children under 5 who are especially vulnerable to the disease. Nets to prevent mosquito bites can cost as little as US\$ 4 and a year's supply of insecticide to retreat the net can cost US\$ 0.50 to US\$ 1. Dip-it-yourself kits and single-dose sachets of insecticide are now available for re-treating the nets at home. A long-lasting, wash-resistant, treated net which will remain effective for up to 4 years will soon be available.



In the last 10 years, the malaria parasite has grown increasingly resistant to the most common treatment, chloroquine. However, it was found that a combination of anti-malaria drugs using the Chinese herb-derivative artemisinin could achieve malaria cure rates above 95%, even in areas of multidrug resistance. In May 2001, in a joint effort to provide essential medicines at affordable prices, WHO and the Swiss pharmaceuticals company Novartis announced that developing countries would be provided with this new treatment for drug-resistant malaria. Novartis supplies the new therapy, called Coartem, at a cost of about US\$ 0.10 a tablet, or less than US\$ 2.50 per full treatment or around US\$ 1 for a young child. In addition, intermittent preventive treatment with sulfadoxine-pyrimethamine (SP) has been introduced for pregnant women.

New tools for malaria diagnostics using dipstick tests, new treatments such as artesunate suppositories and prepackaged combinations of medicines make for more effective home treatment. A simple pack of fast-acting drugs made widely available to mothers – together with training to recognize malaria symptoms – could save the lives of many children with severe malaria. User-friendly packaging of anti-malarials is a low-cost way of increasing compliance. Studies in Ghana show that more than 80% of patients given a

course of antimalarial drugs packaged in a numbered blister pack finished the course of treatment. Of those receiving loose, unpackaged drugs – the way they are usually dispensed in developing countries – only 65% completed the treatment. Using blister packs was also shown to help patients by halving the time they had to wait at dispensaries.

Tools and medicines to fight the HIV/AIDS epidemic

Effective responses to the epidemic involve reducing the risk that people face of becoming HIV positive and providing care for people infected with HIV/AIDS. It is also vital to curb the impact of the epidemic at community level by helping communities to understand behaviours that increase vulnerability to HIV/AIDS. Efforts in these areas operate together: prevention and care form a virtuous circle to reverse the spread of the epidemic and mitigate its impact.

It has been repeatedly demonstrated that increasing the use of condoms is the most effective way of bringing down the rate of HIV infection. In Thailand, for example, the government introduced the “100% Condom Campaign” which worked intensively with brothel owners, sex workers and clients, including political, police and public health authority backing. The results have been impressive. Surveys show that more than 90% of commercial sex encounters now involve condom use, up from about 15% before the campaign began. HIV infection rates have also begun to fall, along with levels of other sexually transmitted infections (STIs).

Other tools include drugs that prevent transmission of HIV from mother to child, and drugs that cure other sexually transmitted infections that are likely to facilitate HIV transmission. Where necessary, safe drug injecting equipment and the tests to protect blood supplies can also play an important role in preventing the spread of HIV.

A combination of new medicines known as antiretrovirals (ARV) has been developed to postpone the emergence of

Responding to the challenge of these three killer diseases requires accelerated action to make interventions more widely available.

Available tools

Prevention	Treatment and care
TB BCG vaccine, effective in children but not adults	Sputum-smear examination to quickly detect infectious TB cases and prevent a further spread of infectious TB. Anti-TB drugs.
Malaria Insecticide-treated nets Insecticides Intermittent preventive treatment	Antimalaria medicine combinations. Artesunate suppositories. Dip-stick malaria diagnostics.
HIV/AIDS Inexpensive condoms (male and female) Clean needles for safe injection practices Safe blood for transfusion Diagnostics in support of voluntary counselling and blood testing Rapid diagnosis and treatment of STIs	Antiretrovirals Essential drugs for palliative care. Drugs for the treatment of opportunistic infections including TB.

AIDS. The drugs work in combination to prevent the HIV retrovirus from reproducing and infecting additional cells in the body. When properly taken, according to a schedule that can be quite complicated, ARVs have been shown to be effective in slowing the spread of HIV and preventing the development of AIDS. They do not cure AIDS, but they prolong and dramatically improve the lives of people living with HIV. However, because of the high cost of these drugs and the medical back-up systems needed to monitor their use, very few people in developing countries with high HIV prevalence have access to them.

Research to develop even better tools and medicines

If used more widely, existing medicines and prevention tools for these diseases could save millions of lives. However, none of them can completely eliminate HIV/AIDS, TB or malaria. The development of vaccines will likely provide the only quick way to eventually stop the spread of infection. Moreover, the increasing spread of bacteria, viruses and parasites resistant to first-line treatment requires the development of new medicines, as older ones gradually lose their effect.

Research and development into new drugs, vaccines and commodities is a crucial component for building up effective ammunition against diseases that keep people in poverty. So far, however, only a relatively small amount of money is spent on research into these diseases. For example, less than 1% of the US\$ 70 billion spent in 1998 on the research and development of new medicines, vaccines and diagnostic tools was devoted to HIV/AIDS, TB and malaria. Of the 1233 drugs that reached the global market between 1975 and 1997, only 13 were for tropical infectious diseases that primarily afflict the poor.

For TB, longer term strategies in order to research and develop new diagnostic tools and drugs to compensate for

the spread of anti-microbial resistance are critical, as is the development of an effective vaccine to replace BCG. The effectiveness of many antimalarial drugs is also decreasing as the malaria parasite and mosquito become resistant to existing drugs and insecticides respectively. It is extremely important to invest in the research and development of improved affordable drugs including combination therapies that are safe and effective, particularly for drug-resistant malaria.

Until now, efforts to develop a safe and effective vaccine against HIV have been hampered by failure to evoke or identify a protective immune response. So far, most of the clinical trials have been staged in industrialized countries, but now trials are increasingly being done in developing countries as well. During the 1990s, several vaccine initiatives were launched in developing countries, including some in Africa. About 30 experimental HIV vaccines have been tested so far, all of them in the early phases of clinical trials. This year two large-scale trials are under way in the United States and in Thailand. Initial results are expected towards the end of 2002. Numerous other vaccine endeavours are also under way.

New drugs and diagnostic tests for sexually transmitted infections currently under development could help prevent their spread, ensure prompt and more effective treatment and provide a valuable weapon in the fight against HIV/AIDS. The currently available STI tests are too expensive for use in most developing countries and laboratory analysis is not always available. Moreover, a syndromic case management – a cost-effective way of treating STIs on the basis of symptoms alone – is often inadequate for women as they may have no symptoms of infection. Efforts are also continuing to develop a vaginal microbicide that could inactivate HIV and other microbes that cause STIs. This would be a major breakthrough in efforts to protect women who are unable to insist on condom use.



EFFECTIVE STRATEGIES

Over the past two decades, innovative strategies have been developed to increase the availability of tools and medications for controlling these three diseases to ensure that they are accessible even to the poorest communities. Cost-effective strategies have been developed to mobilize both professional and volunteer health service providers particularly in regions where hospitals and health clinics are few and far between, to bring these interventions closer to households on an out-patient basis. Operational research continues to improve these strategies and make existing medicines and tools even more accessible.



Effective strategies for stopping TB

Millions of TB deaths can be averted through the use of DOTS – a public health strategy designed to carefully monitor each patient's progress toward being cured while they are being treated with a combination of inexpensive TB drugs. This highly effective health care package is based on a system of management and supervisory techniques designed to ensure that every person involved in a TB control programme successfully completes the tasks for which they are responsible. A key component is regular ongoing support to the patient. This includes observation to ensure that patients follow the treatment correctly and a follow-up sputum test to determine whether it has been successful. The strategy can cure disease in over 85% of infectious patients, even in the poorest countries. The DOTS strategy involves five essential elements:

Microscopy: Accurate diagnosis of active TB is the first step in early detection of infectious patients; it sets the DOTS cure cycle in motion.

Drug Supplies: Regular, uninterrupted supply of the 4-6 most effective drugs.

Monitoring: Through regular, standardised reporting procedures that hold health workers accountable for curing the

patient. Rigorous record-keeping also provides early warning for emerging disease trends such as multidrug-resistant TB.

Treatment: Regular, directly-supervised treatment by health workers or volunteers for a period of 6-8 months.

Political commitment and resources: TB control is a public health responsibility and top level support is crucial.

Though only a dozen countries followed this strategy a decade ago, today DOTS is being used in 119 countries. One in four TB patients throughout the world is being treated under DOTS, although very few countries with a high burden of TB have expanded DOTS to reach the whole population. If the global targets for controlling TB are to be reached, a rapid expansion of DOTS services is needed, especially in high-burden countries.

While DOTS has proved to be very successful, the effectiveness of this strategy is facing two new challenges: the spread of multidrug-resistant TB (MDR-TB) and the co-epidemic of TB/HIV. To address these challenges WHO and its partners have established two new strategies: DOTS-Plus for MDR-TB and proTest for TB/HIV.

DOTS-Plus is a pilot strategy to address multidrug-resistant TB, defined as resistance to at least isoniazid and rifampicin, the two most powerful TB drugs. This strategy includes the five elements of DOTS and in addition takes into account other issues that need to be addressed in areas where there is a relatively high prevalence of MDR-TB. The aim is to assess the feasibility and cost-effectiveness of treating MDR-TB with more effective drugs in resource-limited settings.

To tackle the TB/HIV co-epidemic, proTest is promoting voluntary counselling and testing for HIV as an entry point for a range of HIV and TB prevention and care interventions. Two-thirds of the people living with HIV worldwide are in sub-Saharan Africa and more than 90% do not know they



are infected. The region accounts for 70% of all co-infections with TB/HIV.

Effective strategies for rolling back malaria

Widespread prevention and prompt treatment provide the basis for the Roll Back Malaria strategy. Up to 30% of malaria deaths can be prevented if children at risk sleep under nets. With social marketing strategies, nets can be promoted and made available to communities at risk. In areas of stable malaria transmission pregnant women, who are particularly vulnerable to infection, should receive intermittent preventive treatment to reduce the risk of malaria and associated anaemia, and also reduce the risk of low-birth weight which endangers the survival and healthy development of newborns.

In areas of high seasonal malaria transmission, other mosquito-control measures continue to play an important role. Monitoring of mosquito populations is also critical for assessing whether resistance to the currently-used insecticides is emerging and whether there is a need to switch to other insecticides which are more effective.



Effective strategies for fighting HIV/AIDS

There are two core priorities in the fight against the HIV/AIDS epidemic: preventing the spread of the disease and providing care and support to those infected and affected by HIV/AIDS.

Prevention focuses largely on promoting safe sex and the use of condoms; it also involves postponing the first sexual encounter for young people and mobilizing community support against non-consensual sex. Voluntary testing and counselling, harm reduction approaches to injecting drug use, treatment of STIs and preventing mother-to-child transmission are of equal importance. All these measures face behavioural, cultural and religious barriers. But delaying

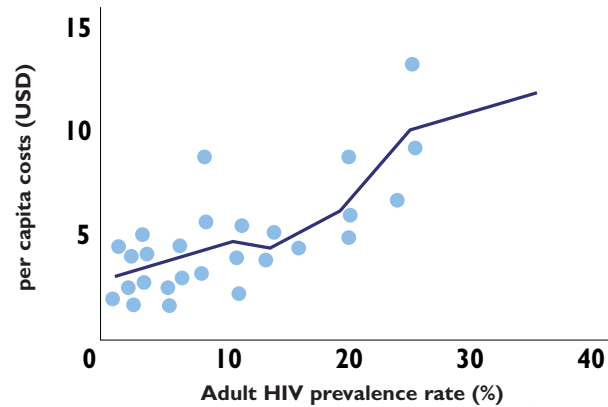
prevention results in escalating costs. Per capita costs of addressing the epidemic rise steeply as the prevalence rate increases. Early and effective interventions have been shown to keep prevention costs low.

Few countries have succeeded in prevention efforts without strong political commitment at the highest level that can engage a broad range of partners and address the stigmatization and denial associated with HIV/AIDS. During the 1990s the success of prevention campaigns in Senegal showed that HIV infection rates could be kept at very low levels against all the odds with strong political commitment. Political leaders took the initiative early on, openly discussing the issues. Safe sex education was integrated into the school curriculum and support obtained from the religious community. Condom use was promoted and treatment for sexually transmitted infections made widely available.

Effective responses to HIV/AIDS involve preventing the spread of the disease, hand in hand with reducing the impact of the epidemic on households and communities. Providing care and support to those infected by the epidemic include actions to ensure that people with AIDS have access to antiretroviral drug therapy and drugs for treating opportunistic infections.

Antiretrovirals (ARVs) have proved effective in extending the lives of people infected with HIV and it is desirable to put them to more extensive use in developing countries, bearing in mind the respective infrastructures and other health priorities. Although HIV prevention strategies remain much more affordable and cost-effective than the provision of ARVs, both strategies require the effective organization of health systems to reduce the impact of the epidemic. Intensive efforts and additional funds will be needed to strengthen the capacity of health systems in countries where they are currently underresourced and underperforming, to ensure access to ARVs, including the development of health and social services to monitor patients. Addressing the issues of social stigma and denial

HIV/AIDS prevention, treatment and basic care in sub-Saharan Africa



Source: UNAIDS, 2000

are of critical importance, as are strategic actions in community mobilization.

Focusing on children, pregnant women and mothers

Malaria has been shown to affect mainly children and pregnant women and young mothers. In the particular case of malaria, life-saving improvements can be made through the Integrated Management of Childhood Illnesses (IMCI) – a strategy focusing on children – and Making Pregnancy Safer – a package concentrating on pregnant women and mothers.



IMCI helps tackle malaria, as well as diarrhoea and respiratory infections – often associated with HIV/AIDS, in children and adolescents, facilitating rapid detection and treatment even at the periphery of health care systems. IMCI focuses on preventing and treating the five most common causes of childhood death: pneumonia, diarrhoeal diseases, malaria, measles and malnutrition.

IMCI is a broad strategy to improve child health, which encompasses interventions at home, in the community and within the scope of health systems. Its aims are to reduce child deaths, diseases and disability and to improve children's growth and development, with a special focus on the poorest and most disadvantaged. Three main components concentrate on family and community practices affecting child health and nutrition, on health systems and on the skills of health workers. The strategy also responds to the needs of care givers. IMCI is a flexible strategy that addresses preventive and curative interventions, including improved infant and child nutrition, the promotion of breastfeeding, immunization and the use of insecticide-treated nets in malaria-prone settings. The IMCI treatment guidelines have been developed to assist health workers to recognize signs of children's illness easily and to take appropriate action, even if there are co-existing health conditions.

For expectant and new mothers, pregnancy and birth can be made safer through simple and often inexpensive measures, such as intermittent preventive treatment for malaria, treatment of opportunistic infections in those with HIV infection, HIV testing and preventing mother-to-child transmission, and the presence of skilled attendants during birth. The Making Pregnancy Safer is WHO's strategy which ensures good health care throughout pregnancy and childbirth and helps prevent maternal and perinatal deaths as well as lifelong disabilities due to complications of pregnancy. Integrated Management of Pregnancy and Childbirth (IMPAC) package forms part of this strategy. IMPAC costs no more than US\$ 3 per year per capita in low-income countries and is designed to prevent maternal and infant deaths. It involves ensuring access to:

- antenatal care;
- normal delivery care assisted by a skilled birth attendant;
- treatment for complications of pregnancy;
- neonatal care;
- family planning advice;
- management of sexually transmitted infections.

Effective strategies for stimulating research

Public-private partnerships are proving a viable means to increase efforts to research and develop better and more affordable tools to fight AIDS, TB and malaria. Partnerships between the public and private-sectors can provide incentives for pharmaceutical companies to invest in the research and development of new tools to fight diseases of poverty. Such incentives must create confidence that there will be viable markets for more effective and affordable tools when they are developed, and help to accelerate the provision of potentially useful products that are currently in the pipeline.

Likewise, increased cooperation between the research institutions of developed and developing countries, and between industry and academia, is stimulating the develop-



Strategies

DOTS for curing TB and preventing its spread.

DOTS-Plus for curing multidrug-resistant TB and preventing its spread.

ProTEST for HIV/TB co-infection.

Social marketing of condoms for preventing HIV and nets for malaria prevention.

Voluntary counselling and testing for HIV.

Health and sex education in school and beyond.

IMCI (Integrated Management of Childhood Illness) for preventing and treating malaria and other childhood diseases, with a special adaptation for children who are HIV-positive.

Making Pregnancy Safer for reducing maternal and perinatal deaths due to malaria and other diseases.

ment of new prevention and treatment strategies for infectious diseases. Such cooperation focuses on access to more affordable essential drugs, expanding in-country training in laboratory and research techniques, and enhanced international commitment.

SUCCESS IN THE MIDST OF POVERTY

Almost half of all deaths in developing countries are due to infectious diseases. But wherever a low-cost strategy is available to prevent or treat infectious diseases, individual countries – even poor ones – can make dramatic progress in bringing them under control. Some of the success stories which follow are evidence that widespread and wise use of low-cost tools and strategies coupled with flexible new ways of working, often through partnerships and across sectors other than health, can have a major impact. Others demonstrate that innovative partnerships between the public and private-sectors can stimulate the development of even more effective interventions.

Peru cuts its TB burden in half

The highly successful TB programme in Peru provides overwhelming evidence that the DOTS strategy works to stop the spread of TB. With only 3% of the population of the Americas, Peru accounted for 15% of the region's TB infection in 1997. It was one of the world's 22 highest-burden countries for TB. Not only health, but also national productivity and prosperity were being undermined.

DOTS was adopted in 1990 and now covers the entire country. The Peru TB programme's dynamic leadership succeeded in increasing the proportion of infectious cases treated under DOTS from its 1990 level of just over 70% to 100% by 1998, with a cure rate over 90%. Rapid expansion was possible because the country already had a TB programme with trained nursing staff in place, to which political commitment, sufficient resources for drugs and a dynamic leadership were added. Strengths of the programme include the stability of the TB management team

and a budget of more than US\$ 5 million, fully provided by the state.

Because the TB programme is a national priority, drugs are free to patients and food packages are given as an added incentive to encourage low-income families to comply with the requirements for regular check-ups. In addition, drug financing is maintained and supervision at intermediate levels ensured as the health sector is reformed. Peru is also the first of the 22 high-burden countries to systematically address the problem of multidrug-resistant TB, by offering the far higher treatment costs as an investment in a TB-free future.

Viet Nam reduces malaria deaths by 97%

A concerted drive against malaria in Viet Nam has had a dramatic impact on the number of malaria deaths and cases. Between 1992 and 1997, Viet Nam reduced its malaria death toll by 97%. Simultaneously, as a preventive intervention, the number of people using insecticide-treated nets provided free of charge soared from 300 000 to 10 million. Today, with its impressive success rates, Viet Nam is setting an example for the entire Mekong region to achieve the target of reducing malaria deaths by at least 50% by 2010.

Viet Nam's success has been achieved largely through countrywide provision of insecticide-treated nets, indoor spraying with insecticides, the use of high-quality antimalarial drugs, preventing malaria in pregnant women, and disease monitoring and reporting. Other important factors in the country's success were coordination of malaria control efforts at the local level and considerable investment in training and supervision of health workers in malaria-endemic areas. Disease reporting and epidemic forecasting systems were strengthened and supported nationally by 400 mobile teams. The development and manufacture of a new class of antimalarial drugs – artemisinin derivatives – to treat severe and multidrug-resistant cases of malaria was also a major breakthrough.



Cambodia slows the spread of HIV

In 1997, Cambodia had the highest HIV prevalence in all of Asia with almost 4% of the adult population infected. Today, it is one of only three developing countries in the world where the HIV/AIDS epidemic seems to have slowed and the number of new infections is actually in decline. This remarkable turn-around is attributable to its pragmatic, broad-based, comprehensive, frank and open national HIV/AIDS prevention programme.



Cambodia is using an innovative combination of evidence and advocacy. First, the national surveillance system, initiated in 1994-1995 with support from WHO and the United States Agency for International Development (USAID) and funded by the World Bank, provided hard data on the evolution of the HIV/AIDS epidemic. Then a coalition of partners mounted a vigorous promotion campaign borrowed from Thailand called "100% Condom Use" in all commercial sex establishments. Careful programme monitoring has shown that HIV infections among sex workers under the age of 20 actually dropped by almost half – from 40% to 23% – between 1998 and 2000.

The increasing number of patients with AIDS-related illness, however, threatens to overwhelm Cambodia's health services. This turnaround demonstrates nevertheless that prevention strategies – coupled with unswerving national commitment and leadership – can work to stem the tide of the HIV/AIDS epidemic.

Medicines for Malaria Venture

One of a new breed of partnerships whose uniqueness lies in its business approach to public health, the Medicines for Malaria Venture (MMV) offers a new perspective to the discovery and development of medicines to treat, and perhaps one day prevent, malaria. It addresses creatively the high cost and risk associated with pharmaceutical research and development, and seeks to discover and commercialize antimalarial medicines for low-income population groups in developing countries.

Established in 1999, MMV receives support from numerous sources, including WHO, the International Federation of Pharmaceutical Manufacturers Associations (IFPMA), the World Bank, the government of the Netherlands, the Rockefeller Foundation, the Global Forum for Health Research, the United Kingdom Department for International Development (DFID), the Swiss Agency for Development and Cooperation, the Bill and Melinda Gates Foundation, and ExxonMobil.

MMV supports the process of drug research and development (R&D) which requires a long-term engagement and investment anywhere from 3-7 years from concept to chemical compound, to clinical trials; then another 5-8 years to enter the commercial market on a scale that would generate a return on the original investment. Because earnings are limited by the drug's patent life that starts early in the development phase, a company investing in drug R&D must aim to recover the costs of that investment before its patents expire – usually 20 years from the date of filing. The total research cost for a portfolio of projects to produce drugs usually amounts to hundreds of millions of dollars per drug.

By creating a “public venture-capital fund”, MMV hopes to provide the private-sector with incentives to discover, develop and commercialize antimalarial drugs at prices people can afford in countries hardest hit by the disease. The goal is to produce at least one new product every five years. MMV functions like a small R&D company. It is now targeting a budget of US\$ 30 million a year until 2004, to be divided between drug discovery and development. If funding targets are reached, it is expected that the first product to be generated by MMV will be commercially available before 2010.

The International AIDS Vaccine Initiative (IAVI)

IAVI, created in 1996, promotes the development of safe, effective and accessible HIV vaccines for use throughout the world, especially in developing countries. Partners include national governments, vaccine and biotechnology compa-

Successful country projects

DOTS to stop TB:

- In China, Nepal and Peru, the DOTS strategy has cut TB deaths by half during the 1990s.
-

Malaria deaths are avoidable

- In Malawi, the number of babies born with dangerously low birth weight was reduced significantly when women received intermittent preventive treatment, sulfadoxine-pyrimethamine (SP), during pregnancy.
 - In Viet Nam the use of insecticide-treated mosquito nets, early diagnosis and rapid treatment reduced malaria deaths by 97%.
 - In Azerbaijan, early diagnosis, rapid treatment, vector control and epidemic response reduced malaria cases by over 50%.
-

Prevention and care for HIV/AIDS

- A broad-based national effort in Uganda reduced HIV infection among pregnant women in Kampala from 30% to 11.4% (1990-1999), and in urban areas outside Kampala from 13% to 5.2% (1992-1999).
 - In Senegal, social marketing of condoms, sex education campaigns and improved STI treatment have kept HIV infection rates under 2% since the mid 1980s.
-

nies, academic and research institutes, international development agencies, NGOs and private corporations. Major funders include the Bill and Melinda Gates Foundation, the Rockefeller Foundation, the Sloan and Starr Foundations, the World Bank, UNAIDS, the governments of the United Kingdom, the Netherlands, Ireland, Canada and the United States. Since its establishment, IAVI has invested some US\$ 20 million in innovative international vaccine development partnerships and negotiated groundbreaking intellectual property agreements to help ensure that the fruits of its labours will be available in developing countries.



Global Alliance for TB Drug Development

The Global Alliance for TB Drug Development (TB Alliance) was launched in October 2000 with the ambitious goal of developing an affordable new drug for tuberculosis by the end of the decade. Created by leaders in health, science and industry, the TB Alliance operates as a virtual R&D company with a social mission.

TB Alliance was designed to overcome the global market factors that led to a 30-year absence of serious R&D in tuberculosis. Existing drugs impose excessive treatment duration, strains of multi-drug resistant TB are spreading rapidly, and TB's convergence with HIV requires better preventive treatment. A new anti-TB drug that reduces treatment to 2 months, is effective against MDR-TB, and improves treatment of latent TB infection (LTBI) would dramatically reduce treatment costs and accelerate control and elimination of the disease.

To expedite the search for new therapeutics and bridge existing R&D gaps, TB Alliance partners with researchers in endemic countries and draws on new science and recent biomedical innovations. With creative agreements to share or acquire promising technology, TB Alliance will invest and manage a diverse portfolio of drug candidates. By outsourcing projects to public and private institutions, it will fund selected testing and development stages to further speed the process of delivering technology to the patients who need it most.