

## Drawing from Life to Explain HIV/AIDS

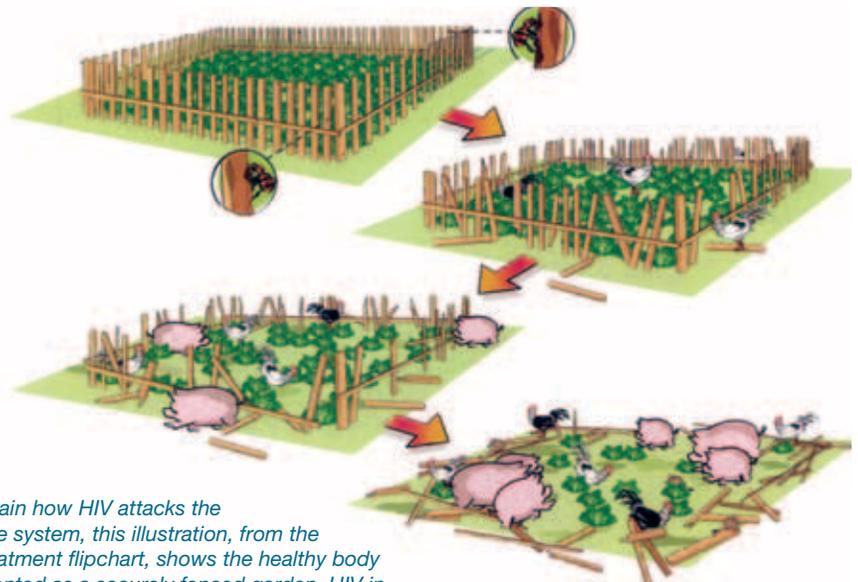
Successful HIV/AIDS prevention, treatment, and care depend on how effectively facts about this immensely complex disease can be communicated. For treatment educators and counselors in Asia, the task can be particularly daunting in low-literacy communities.

Discouraged by the dense explanations and complicated terminology of most treatment literacy materials, TREAT Asia's community program manager, Jennifer Ho, decided a few years ago to try another approach. Visual storytelling, she reasoned, could help make HIV/AIDS treatment less intimidating and confusing. "I thought, why not give treatment educators a tool that is entirely visual?," she remembered.

The result is a groundbreaking educational flipchart—widely distributed in China, Cambodia, Indonesia, and Viet Nam—which uses simple, vivid images drawn from everyday life to help explain HIV/AIDS. To describe how HIV attacks the body's immune system, for instance, the chart depicts a garden with a secure fence, which is damaged by termites (HIV), thereby allowing pigs and chickens (opportunistic infections) to invade and destroy the garden.

Saban Prak works with HIV-positive women in Phnom Penh and regularly uses the Cambodian version of the flipchart to explain treatment issues. "As an HIV educator, the most difficult things for our clients are the names of antiretrovirals. They are illiterate so they can't write them down—they have to remember," she said. "The flipchart makes it simpler by

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*To explain how HIV attacks the immune system, this illustration, from the HIV treatment flipchart, shows the healthy body represented as a securely fenced garden. HIV in the form of a termite has begun to attack the fence, however, allowing opportunistic infections (pigs and chickens) to invade and destroy the garden.*

## ViiV Healthcare and TREAT Asia Partner to Optimize HIV Treatment for Children



HIV-positive children consistently face greater disadvantages than adults when it comes to antiretroviral therapy (ART). Relatively few ART regimens are available that can be dosed and delivered to children and that are safe for growing and developing bodies. Among children

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## HIV Research Lights the Way to Better Prevention and Care

Some of the most critical questions about optimizing HIV/AIDS prevention and clinical care are being answered by research that is being conducted in resource-limited settings where the epidemic strikes hardest. Results from the widely publicized CAPRISA 004 trial, carried out in South Africa by South African investigators, were presented in July and demonstrated that a microbicide gel can successfully reduce HIV infections among women. Another key study, conducted in Haiti, led to a recent change in World Health Organization (WHO) guidelines for when to start antiretroviral therapy (ART) in adults in resource-limited settings (see story on page 5). This clinical trial showed that starting treatment at a higher CD4 level led to a 75 percent reduction in the rate of death, compared to the previous WHO CD4 threshold. In 2008, another study out of South Africa, the CHER trial, achieved a similar reduction in mortality with early infant treatment and also led to changes in the WHO pediatric guidelines.

Despite these recent studies and their impact on global HIV treatment guidelines, research alone cannot save lives. Only when research is put into practice can it have its full impact. If the 2010 WHO guidelines for children, pregnant women, and other adults are not rapidly implemented by national governments, the potential benefits of recent studies will be lost. But this is easier said than done. Shifting treatment thresholds and expanding the number of people on ART in Asia and around the world will require an intensified commitment to scaling up treatment access. National governments in low- and middle-income countries are under greater pressure to increase their own healthcare expenditures, but this will not obviate the need for ongoing international funding support.

As HIV research continues to light the way to better care and prevention, it is local and global leadership on health policy and community advocacy that will put the progress of the scientific and medical communities into practice.

Annette Sohn, M.D.

## Purple Sky Network Elects Board Chairs

The Purple Sky Network—a coalition of HIV/AIDS groups representing men who have sex with men (MSM) and transgenders in the Greater Mekong Sub-region, for which TREAT Asia serves as regional coordinating secretariat—has established a formal governance structure and elected its first chairs in July.

The Purple Sky Network's five-member executive board is chaired by Vieng Akone Souriyso of the Lao Youth Action for AIDS Programme, in Vientiane, Laos, and co-chaired by Nay Oo Lwin, MSM program manager at PSI Myanmar. The full board includes 17

members representing MSM communities, governments, and non-governmental organizations in Cambodia, China (Yunnan and Guangxi provinces), Laos, Myanmar, Thailand, and Viet Nam.

In addition to selecting its leadership, the Purple Sky Network's governing board discussed the network's goals and prioritized promoting advocacy efforts that reduce stigma and discrimination against MSM and transgender people in the region—an issue that cuts across the diverse social and political settings within the region. ■

### TREAT Asia Report

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TREAT Asia is a network of clinics, hospitals, and research institutions working with civil society to ensure the safe and effective delivery of HIV/AIDS treatments throughout Asia and the Pacific.

The information in the *TREAT Asia Report* is compiled from a variety of sources and may contain controversial views and opinions not endorsed by amfAR. Material in the *Report* should not be used as the basis for medical diagnosis or treatment.

This newsletter is also online at [www.treatasia.org](http://www.treatasia.org).

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AIDS RESEARCH

## DRAWING FROM LIFE CONTINUED FROM PAGE 1

using pictures. The pictures also make it easier for us to explain things like the HIV life cycle.”

By distilling complicated information about HIV and its treatment into accessible images and situations, the interactive booklet also helps strengthen the connection between treatment educators and their clients. For each illustration in the booklet, educators are offered instructions in their own language for using the image to explain an aspect of HIV—an interactive structure that encourages cross-communication.

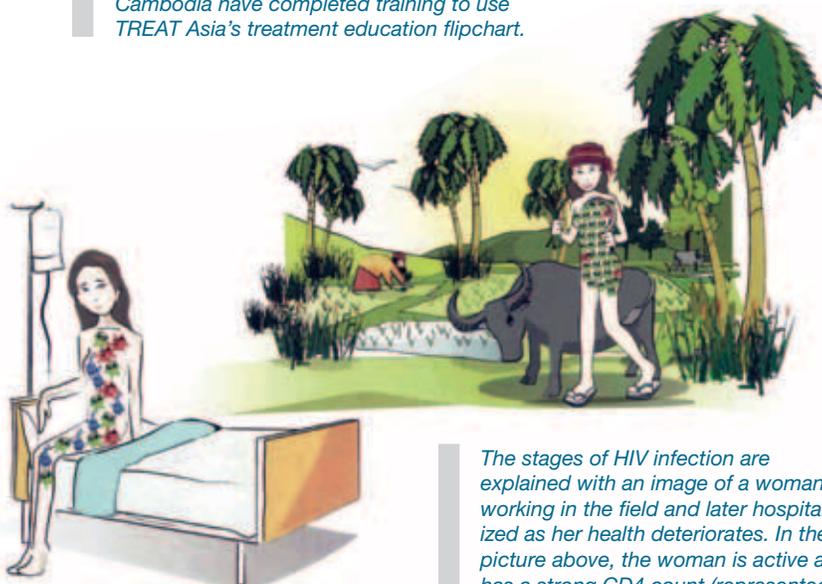
Originally developed in a collaboration between TREAT Asia and treatment educators at AIDS Care China, the booklet’s images have been modified and its text translated for each additional country to reflect different cultural contexts. The Chinese edition explains the stages of HIV infection by showing a woman shopping in the market, for instance, while the Cambodian version, which is aimed at rural communities, situates her in the field with a water buffalo.

The HIV treatment flipchart, which was developed through a grant from GlaxoSmithKline/Positive Action, is now considered a key training tool for counselors in each country, and hundreds of copies can be found in clinics and hospitals. In China, where the booklet has been in use since 2005, at least 20 Red Ribbon sites employ it regularly, reaching more than 6,000 patients. Three hundred copies of the Vietnamese edition, which was revised in 2008 with the help of World Concern Vietnam, are used by counselors and self-support groups at approximately 55 sites around the country. A similar number of sites regularly use the Khmer version, which was revised and distributed in 2009 with the help of the Cambodian Community of Women Living with HIV. And in Indonesia, the PITA Foundation finished revising the Bahasa Indonesia version of the flipchart in 2009 and 50 copies are in use by clinics and counselors around the central Jakarta area. ■

*For pregnant women who are HIV-positive, prevention of mother-to-child transmission is presented through a series of illustrations depicting pregnancy, delivery, and post-natal stages, all of which require ART to protect the baby from contracting HIV.*



*These HIV/AIDS self-help group leaders in Cambodia have completed training to use TREAT Asia’s treatment education flipchart.*



*The stages of HIV infection are explained with an image of a woman working in the field and later hospitalized as her health deteriorates. In the picture above, the woman is active and has a strong CD4 count (represented in green) with a relatively low level of HIV (red). Later, when she is hospitalized, her CD4 count is lower (fewer green), her viral load is growing (red), and she has a rising number of opportunistic infections (blue).*



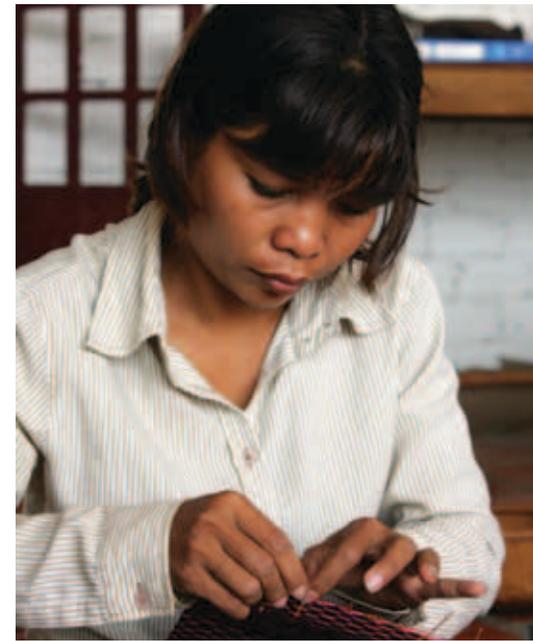
## Hormonal Contraceptives and HIV

HIV is the leading cause of mortality among women of reproductive age worldwide.<sup>1</sup> In 2008, an estimated 1.4 million pregnant women living with HIV in low- and middle-income countries gave birth. About 40 percent of the people living with HIV in Southeast Asia are women.<sup>2</sup>

For HIV-positive women who wish to prevent pregnancy, use of an effective contraceptive improves their ability to make their own reproductive choices, reduces demand for abortions, and lowers the risks of maternal morbidity and mortality. It also reduces the number of infants born with HIV.<sup>3</sup> However, there has been some controversy over the safety of using hormonal contraceptives (i.e., oral contraceptive pills and hormone

injections) together with antiretroviral therapy, as some drug interactions can reduce the effectiveness of these birth control methods. In addition, previous studies in animals and humans have suggested that hormonal contraception may accelerate HIV disease progression.

A recent retrospective analysis is the largest yet published to examine the issue of combining ART and hormonal contraceptives. The study, which used data collected over more than 10 years from 625 Ugandan women who had recently been diagnosed with HIV, found that 27.5 percent (172) reported using hormonal contraceptives at some point during the follow-up period. Of the total study population, 29.9 percent (291) progressed to AIDS and 16.6 percent (104)



died during observation. The median time from initial HIV diagnosis to AIDS diagnosis was 4.5 years and from HIV diagnosis to death, 7.06 years.

## Sex Among MSM in Bangkok: Implications for Pre-exposure Prophylaxis

Several clinical trials are under way among men who have sex with men (MSM) to evaluate the safety and effectiveness of pre-exposure prophylaxis (PrEP)—giving antiretroviral (ARV) drugs to HIV-negative people to prevent HIV infection. Trial interventions include a daily or intermittent oral dose of the ARV tenofovir, or a combination of tenofovir and emtricitabine.<sup>1</sup> But it is not clear if PrEP—whether daily or intermittent—would be a feasible prevention strategy in resource-limited settings in Asia.

A recent study of HIV-negative MSM in Bangkok evaluated factors that would influence the effectiveness of taking prophylactic ARVs, including the frequency of sex, whether it is planned or unplanned, and the likelihood of exposure to HIV. Among 823 men from the Bangkok MSM Cohort Study, 64 percent had sex less than once a week, 18 percent several times a week, and 1.3 percent every day.<sup>2</sup> Sex was more frequent on Saturday and Sunday than on other days of the

week. Among participants who had had sex in the previous week, 66 percent reported that it had been planned. Alcohol use in the past four months, use of erectile dysfunction drugs, group sex, sex with a foreigner, buying or selling sex, and a history of HIV testing were associated with having sex three or more days a week. Being 22 to 29 years old, not identifying as homosexual, having receptive anal sex, having lower formal education, and not engaging in group sex were associated with unplanned sex.<sup>2</sup>

The study authors suggested that intermittent PrEP (iPrEP) may be a more suitable approach than daily PrEP for most of the men who participated in the survey. This study may assist in informing the development of iPrEP trials for MSM in Thailand. ■

1. AVAC. PrEP Trials Table March 2010. Available: <http://www.avac.org/ht/d/sp/i/3507/pid/3507>  
2. van Griensven F, et al. Sex frequency and sex planning among men who have sex with men in Bangkok, Thailand: implications for pre- and post-exposure prophylaxis against HIV infection. *Journal of the International AIDS Society*. 2010; 13: 1–15.

Investigators found that hormonal contraceptive use was not associated with faster progression to death. In fact, in this group of women, the use of hormonal contraceptives was associated with a reduced risk of disease progression to AIDS or death, compared to women using no contraceptive. There was no difference in disease progression between women who used hormonal contraceptives and those who used non-hormonal methods (e.g., condoms, diaphragms, or intrauterine devices).<sup>3</sup>

## Hormonal contraceptives were associated with a reduced risk of disease progression to AIDS or death, compared to women using no contraceptives.

The results of this study may help HIV-positive women and healthcare providers make more informed decisions about using birth control. Identifying safe and effective methods of contraception will support the reproductive health needs of HIV-positive women and can reduce the number of infants exposed to HIV. ■

1. WHO, *Women and Health: Today's Evidence Tomorrow's Agenda*. 2009; 43.
2. WHO, UNAIDS, UNICEF, *Towards Universal Access: Scaling Up Priority HIV/AIDS Interventions in the Health Sector Progress Report*. 2009; 88–89.
3. Polis CB, et al. Effect of hormonal contraceptive use on HIV progression in female HIV seroconverters in Rakai, Uganda. *AIDS*. 2010 Jul; 24(12) 1937–44.

## Earlier Treatment Saves Lives

### Recent Study Influences WHO Recommendations on ART

In July 2010, the World Health Organization (WHO) revised its antiretroviral therapy (ART) guidelines for adults and adolescents, which now recommend starting ART when a patient's CD4 count drops below 350 cells/ml<sup>3</sup>. Earlier WHO guidelines had set the threshold at 200 cells/ml<sup>3</sup>.

A study conducted in Haiti on when to start ART provided key evidence for the revised recommendation.<sup>1</sup> Researchers from the Haitian Group for the Study of Kaposi's Sarcoma and Opportunistic Infections (GHESKIO) conducted a randomized trial in Port au Prince on the timing of ART initiation. Participants were enrolled in two groups based on their baseline CD4 count. The first group had CD4 levels between 200 and 350 cells/ml<sup>3</sup>, and the second had CD4 levels below 200 cells/ml<sup>3</sup>. A total of 816 participants (58 percent female) whose median CD4 count was 281 cells/ml<sup>3</sup> were followed for a median of 21 months between 2005 and 2008. Follow-up was conducted on a monthly basis by a clinician. Trimethoprim-sulfamethoxazole (also known as cotrimoxazole) was provided to all participants to prevent pneumonia, and isoniazid was given to those with positive tuberculosis skin tests. Adherence questionnaires were completed every six months.

The study showed a 75 percent decrease in deaths and a 50 percent decrease in the incidence of tuberculosis among those who started ART when their CD4 count was between 200 and 350 cells/ml<sup>3</sup> compared to those who waited until their CD4 count was below 200 cells/ml<sup>3</sup>. These results validate findings from other observational studies on when to start ART, including those described in the March 2009 and July 2009 issues of the *TREAT Asia Report*. The reduction in tuberculosis is also consistent with observational studies conducted in Africa.

The results of this clinical trial point to the urgent need to improve access to HIV testing and treatment in resource-limited settings. While the financial implications of treating larger numbers of people continue to raise concerns among donors and policy makers, this study clearly demonstrates the short- and long-term clinical benefits of starting treatment earlier. WHO's revised global treatment guidelines underscore the urgency of overcoming the barriers to treatment access. ■

1. Severe P, et al. Early versus standard antiretroviral therapy for HIV-infected adults in Haiti. *New England Journal of Medicine*. 2010 July 15; 262–265.

**These results point to the urgent need to improve access to HIV testing and treatment.**



*A treatment educator in Viet Nam discusses medication choices. (Photo: Karl Grob)*

# Testing the HIV Genome: A Key to Long-term Treatment Success

## TREAT Asia Quality Assurance Program

Nothing about HIV/AIDS is simple, but few aspects of its treatment are as complex as the genetic analysis required to determine if HIV has become drug resistant. Because resistance to lifesaving antiretrovirals has a critical influence on the long-term success of treatment scale-up in Asia, HIV genotyping is an increasingly important tool.

For the last five years, TREAT Asia has been working closely with laboratories across the region through the TREAT Asia Quality Assurance Scheme (TAQAS), the goal of which has been to ensure the accuracy and consistency of HIV genotyping.

The process of HIV genotyping involves analyzing the genetic material of HIV to see if mutations in the viral genome have made it resistant to drugs (see sidebar). “HIV genotyping allows for more accurate selection of the antiretroviral drugs that are most likely to lead to treatment success in patients who have failed their first regimens,” said TREAT Asia Director Annette Sohn, M.D. “It is especially helpful in children who will need careful regimen sequencing through adulthood.”

### ‘Home-brew’ testing

While commercial test kits simplify the process of HIV genotyping, most hospitals in Asia cannot afford them. As a result, many labs develop their own in-house or ‘home brew’ assays,



*Dr. Sunee Sirivichayakul in the lab at Chulalongkorn University in Bangkok, which participates in TAQAS. (Photo: Louis Galdieri)*

which require less expensive reagents and equipment than the commercial alternatives. Although all tests are susceptible to technical and human error, hospitals using in-house assays

frequently lack the technical support to help troubleshoot problems with testing. TAQAS seeks to create access to this type of technical support while setting standards for HIV genotyping that can improve the quality of patient care.

Under the TAQAS program, Sally Land of the National Serology Reference

Lab in Melbourne, Australia, has sent panels of five plasma samples to 20 participating labs (including three from Africa). The labs return their results to Melbourne for analysis and review.

## HIV Genotyping: How It's Done

Determining whether an HIV-positive patient has become resistant to antiretroviral therapy (ART) requires complex genetic detective work to discover whether that patient's virus has changed or mutated in response to treatment. A multi-step process known as genotyping allows researchers to view the building blocks that make up the virus's genetic material and thereby detect mutations that signal the emergence of resistant virus.

The genotyping process begins when researchers extract viral nucleic acid from a patient's plasma and generate a DNA copy. Laboratory technicians amplify, or make multiple copies of, a specific region of the DNA using a technique known as polymerase chain reaction. The next step produces a picture of the DNA that reveals the sequence of its basic building blocks, known as nucleotide bases. This is done by running the amplified DNA through a series of chemical reactions.

The resulting product is placed in a DNA sequencer, which uses software to produce an image called an electropherogram showing each of the four nucleotide bases

*Drug resistance testing forms at Chulalongkorn University in Bangkok. (Photo: Louis Galdieri)*



“Labs that have a lot of molecular experience do very well,” said Land. “For labs that are setting up the protocol, it can be quite difficult to optimize their testing. TAQAS shows them where they are falling down and in what areas they need to concentrate and improve.”

“A number of laboratories may have a problem detecting all drug resistance mutations when they first test a panel—that is, they will detect

maybe 60 to 70 percent of the drug mutations in all the samples,” she continued. “What we’ve seen again and again is that as they test subsequent panels, their results significantly improve. Labs participating regularly in the program frequently detect more than 95 percent of mutations.”

TAQAS was launched in 2006 as part of a major initiative funded by the Dutch government to help build capacity for HIV drug resistance surveillance and monitoring in Asia and Africa. Next year, this funding will end, but TAQAS participating labs have generated a meaningful long-term gain for AIDS care. These labs, which are increasingly able to meet international standards, are now being transitioned into a parallel program being offered by Melbourne’s National Reference Lab—graduating from a regional to a global program.

But HIV drug resistance remains of secondary concern to many funders, whose increasingly limited funds tend to support programs that address the front end of the epidemic, such as HIV testing and getting infected people into treatment. Regional clinicians recognize that the problem of drug resistance will arise more often as patients spend more time on treatment. Without greater investment in the components of care that prevent the emergence of drug resistance and treatment failure, patients will be faced with fewer options to sustain the benefits that antiretroviral therapy initially offered them. ■



*Sally Land of the National Serology Reference Lab in Australia at a TAQAS workshop.*

in a different color. Computer software is used to “read” the order of the bases in the sequence. However, in regions where two nucleotide bases coexist at the same position or where sequence quality is poor, electropherograms must also be examined visually to verify the computer reading. This visual analysis is one of the most subjective parts of the test and requires a great deal of training and expertise.

Once the patient’s viral sequence has been determined, it can be submitted to an online database where the sequence is compared with a sequence from a prototype “wild-type” virus—HIV that does not contain mutations and is susceptible to ART. Mutations or differences in the patient’s virus from the wild-type virus that have been shown to be associated with ART resistance are generated by these web-based applications, together with a set of scores indicating the patient’s level of resistance to particular drugs. Scientists and treating doctors can review the web-generated ART report and take into account the patient’s ART exposure when determining suitable treatment options. ■

# UNICEF Focuses on TREAT Asia Network Member

*The pediatric HIV program at Prachanukroh Hospital in Chiang Rai, Thailand—a member of the TREAT Asia Pediatric Network—is featured in a new UNICEF report, Getting It Right: Case Studies on Paediatric Treatment, Care and Support in Thailand and Cambodia. The full report, excerpted below, can be downloaded at [www.unicef.org/aids/files/Getting\\_it\\_right\\_book.pdf](http://www.unicef.org/aids/files/Getting_it_right_book.pdf).*



*The pediatrics team from Prachanukroh Hospital works closely with community hospitals around Chiang Rai to deliver HIV treatment to local children.*

In the mid-1990s, Chiangrai Prachanukroh began admitting a steady stream of children to its paediatric ward who were infected with HIV. As health care workers struggled to respond, they received some unexpected help in the form of a donation of antiretrovirals for children from AIDS ACCESS, a foundation dedicated to responding to the HIV epidemic in Thailand.

It wasn't long before [doctors at Prachanukroh] realized how invaluable PLHA and NGOs were when it came to treating and caring for children infected with HIV. The key was partnership.

In Thailand, as in most settings, only PLHA or NGO workers can assume the responsibility of making home visits and serving as the eyes and ears of the hospital staff in the patient's environment. "PLHA can go into people's lives in a way we doctors cannot," said Dr. Rawiwan Hansudewechakul, [head of pediatrics at Prachanukroh Hospital].

The model developed in Chiang Rai has proven to be a strong model for success. The evidence, first and

foremost, is in the numbers: In nearly seven years Chiangrai Prachanukroh Hospital has treated 488 children who were living with HIV and the survival rate has been 90 per cent. The children who had no hope, now have more than hope—they have the odds in their favour that they will live at least until adulthood. The key was treatment adherence—achieved through the assistance and involvement of PLHA volunteers and AIDS ACCESS staff in providing care and support through home visits. ■

## HIV TREATMENT FOR CHILDREN

CONTINUED FROM PAGE 1

under care at TREAT Asia's pediatric sites, approximately 15 percent have seen their first-line ART regimens fail.

With the aim of improving access to higher quality healthcare for HIV-positive infants and children in Asia, TREAT Asia and ViiV Healthcare have established a two-year initiative. Building on the efforts of the TREAT Asia Pediatric Network, the initiative will help develop strategies to support lifelong pediatric care and generate clinical evidence to inform global treatment guidelines.

The partnership between ViiV and TREAT Asia, announced in June, addresses critical gaps in current HIV/AIDS care and treatment programs

among infants and children. Research, provider education, and advocacy programs supported by ViiV will focus on treatment failure, drug resistance, and optimizing pediatric ART.

"We believe that TREAT Asia, with its extensive infrastructure, relationships, and expertise across the region, is an ideal partner to undertake this critical research, which we hope will not only enhance our understanding of HIV in children but could be used much more broadly," said Dr. Dominique Limet, CEO of ViiV Healthcare.

The data generated through this project will create an evidence base from which to identify best practices

in ART management to delay first-line failure, and will directly influence the quality of local, national, and regional pediatric HIV care and treatment guidelines. Coordination, data management, and analysis will take place in Asia through a unique collaboration with the Thai Red Cross AIDS Research Centre.

A major part of the initiative will be to develop medical education programs built on the clinical experience and research being done by TREAT Asia's network of pediatric HIV providers so that they can train other primary- and provincial-level clinicians in their countries. ■