

World Health Organization sets out route map for scale-up of treatment as prevention

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The number of people eligible for antiretroviral treatment (ART) will grow by around 6 million as a result of recent World Health Organization (WHO) recommendations on the use of antiretroviral drugs to prevent HIV transmission, Dr Gottfried Hirnschall, head of the WHO's HIV department told the IAPAC Controlling the HIV Pandemic with Antiretrovirals: Treatment as Prevention and Pre-Exposure Prophylaxis Evidence Summit in London.

The new recommendations almost double the number of people judged to be in need of ART – calculated at 7.4 million people with CD4 counts below 350 and therefore in need of treatment at the end of 2010. In 2010, antiretroviral coverage reached 47% of those eligible, he said.

His remarks coincided with the release by WHO of a *Programmatic Update on Antiretroviral Treatment for Prevention of HIV and TB*, which sets out the organisation's plans to galvanise greater use of ART to limit new infections.

The summit, organised by the International Association of Physicians in AIDS Care, is designed to review recent advances in the use of antiretroviral drugs as a means of preventing HIV transmission, and to discuss the practical implications of the new data for treatment and prevention programmes.

Speaking on the first day of the 2-day summit, Dr Hirnschall pointed out that, for every person placed on treatment, 2.5 people are still becoming infected every year, amounting to approximately 2.7 million infections a year in 2010.

Scale-up of a combination of effective prevention interventions remains urgent, and ART must play a central role in the prevention of new infections, he said,

following last year's release of the results of the HPTN 052 study, which showed that early ART for the HIV-positive partner reduced the risk of HIV transmission by 96% in serodiscordant partnerships.

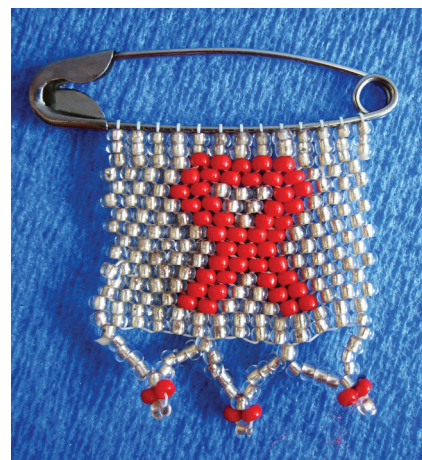
Similarly, evidence from the South African province of KwaZulu-Natal demonstrates that, at the population level, ART is already having an impact on one of the most severe epidemics in sub-Saharan Africa. Every 1% increase in antiretroviral coverage among adults in rural communities between 2004 and 2011 was associated with a 1.7% reduction in the risk of HIV acquisition, suggesting the potential for large reductions in HIV incidence if greater progress towards universal access to ART can be achieved.

However, Dr Hirnschall noted that current coverage in low- and middle-income countries – 47% in 2010 – 'is not giving us the prevention gain we want to see'.

WHO issued guidance on HIV counselling and testing for serodiscordant couples in April 2012. It recommended ART for all HIV-positive people in a serodiscordant partnership, irrespective of CD4 cell count.

Thirteen countries already make recommendations for serodiscordant couples on the use of antiretrovirals for prevention of HIV transmission, including the UK, USA, Canada, Italy, Nigeria, Zambia, Thailand and France. The Chinese Center for Disease Control and Prevention has begun providing ART for the HIV-positive partner in serodiscordant couples, regardless of CD4 count, and plans to reach an estimated 30 000 couples as part of a national strategy for the use of ART for prevention.

Several African countries with a high burden of HIV infection, including Mozambique, Zambia and Rwanda, are already taking steps to maximise the prevention impact of ART. Zambia's national programme already provides antiretrovirals to the HIV-positive partner in a serodiscordant partnership, irrespective of CD4 cell count. Mozambique and Rwanda are in the process of revising national treatment guidelines to the same effect.



Together with recommendations for ART for all TB patients diagnosed with HIV, and all pregnant women irrespective of CD4 counts, the impact of the new guidance is to add around 6 million people to the number in need of ART in low- and middle-income countries, even without a formal recommendation to use ART at CD4 counts above the current treatment initiation threshold of 350 cells.

WHO is already incorporating treatment as prevention into normative guidance through a sequence of incremental updates:

- 2012 guidelines on HIV testing and counselling for serodiscordant couples recommend ART for the HIV-positive partner irrespective of CD4 cell count.
- The 2012 update of recommended options for prevention of mother-to-child transmission pays greater attention to Option B+, the provision of lifelong ART for all women living with HIV once they become pregnant, both for the woman's own health and to prevent HIV transmission during pregnancy and breastfeeding.
- The need for guidance on the use of antiretrovirals by HIV-negative people to prevent infection – pre-exposure prophylaxis (PrEP) – will be addressed in a 'rapid advice' document for release in mid-2012.

However, WHO is working towards the release of consolidated guidance addressing the use of antiretrovirals across all age

groups and populations in July 2013. As part of that process, WHO's guidelines panel will review the question of whether the treatment eligibility threshold should be raised to a CD4 cell count of 500 for all adults, Dr Hirschall told the summit.

WHO is working with countries to identify opportunities for expansion of treatment in line with its 2010 guidelines, which recommended treatment for all people living with HIV with CD4 cell counts below 350, all infants below the age of 2, and for everyone with TB and HIV or hepatitis B and HIV co-infection.

WHO is also working with countries to identify additional opportunities for treatment as prevention, in particular through implementation of its new guidance on couples' counselling and testing, and ART for prevention in serodiscordant couples.

Country-level decision-making will require attention to the likely impact of different recommendations on the local epidemic. In which settings and populations will early treatment achieve the greatest impact on the overall national epidemic, and what is the best mix of interventions to achieve this impact? What are the best ways of delivering

treatment to larger numbers of people, and keeping them in care?

Research studies that set out to answer some of these questions are already underway or in the design phase, and will be discussed in a separate report from the evidence summit.

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News bites

International Scientists create liver from stem cells

Japanese researchers have created a functioning human liver from stem cells, it emerged last month, raising hopes for the manufacture of artificial organs for those in need of transplants. A team of scientists transplanted induced pluripotent stem



(iPS) cells into the body of a mouse, where it grew into a small, but working, human liver, the *Yomiuri Shimbun*, Japan's best-read newspaper, reported. Stem cells are frequently harvested from embryos, which are then discarded, a practice some people find morally objectionable. But iPS cells – which have the potential to develop into any body tissue – can be taken from adults.

A team led by Professor Hideki Taniguchi at Yokohama City University developed human iPS cells into 'precursor cells', which they then transplanted into a mouse's head to take advantage of increased blood flow. The cells grew into a human liver 5 mm in size, capable of generating human proteins and breaking down drugs, the *Yomiuri* reported. The breakthrough opens the door to the artificial creation of human organs, a key battleground for doctors who constantly face a shortage of transplant donors.

Taniguchi's research could be 'an important bridge between basic research and clinical application' but faces various challenges before it can be put into medical practice, the *Yomiuri* said. An abstract of Taniguchi's research was delivered to regenerative



medicine researchers ahead of an academic conference, but Taniguchi steadfastly declined to comment.

Two separate teams, one from the USA and one from Japan, discovered iPS cells in 2006.

Africa Mathematical model to predict malaria outbreaks

Ethiopian and Norwegian researchers have developed a mathematical model that can identify conditions that increase the likelihood of a malaria outbreak up to 2 months ahead of its occurrence. The computer model, Open Malaria Warning (OMaWa), incorporates hydrological, meteorological, mosquito-breeding and