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 Hirnschall 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.

Article courtesy of www.aidsmap.com

# 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

land-use data to determine when and where outbreaks are likely to occur. Torleif Markussen Lunde, one of the model's developers and a researcher at Norway's University of Bergen, said that the model made direct use of the limited real-time information available in typical rural areas. 'The model also reproduces observed mosquito species composition in Africa. It is the first time this has been done with a biophysical model. We are now looking at which areas in Africa the model can be applied,' he said. Lunde explained that past attempts at predicting malaria epidemics have had limited success because 'some models [were] oversimplifications of the reality, and might have led to problematically high or low sensitivity to changes in the environment.'

Predictions made by the model compared favourably with observations from field trials and health clinics, the researchers said. However the model needs to be tested during a significant malaria outbreak, and its outputs compared with case studies and field observations, according to Bernt Lindtjørn, professor of international health at the University of Bergen and a co-author of the paper. 'It is [also] specific to African mosquitoes and may require modification before being applied outside Africa,' he added. 'Our model is not only a tool for predicting malaria, but can also be used to understand the dynamics of malaria transmission,' he added, noting that the tool could be used to better understand the effects on a malaria outbreak of interventions such as residual spraying and bednet use. Daniel Argaw, of the World Health Organization in Ethiopia, said that 'the development of a model that can predict malaria outbreaks will have a significant role in combating malaria', adding that no other models have been developed for this purpose. The research was published in *Forecasting Malaria* in April.

## South Africa

### Roche cuts cancer drug price to SA government

The Department of Health has persuaded pharmaceutical company Roche to halve the price of its cancer drug rituximab, opening the way for the government to provide it to more patients. The drug belongs to an expensive class of medicines called biologics and is used for treating non-Hodgkin's lymphoma, leukaemia, and severe rheumatoid arthritis.

Branded MabThera by Roche, the drug has until now been too expensive for the state to procure on a wide scale, the Department's deputy director-general for health regulation and compliance, Anban Pillay, said last month. Once it is on the national tender, provinces with the capacity to offer cancer treatment will purchase the drug – within the constraints of their budgets. The main cancer treatment centres are in Gauteng, KwaZulu-Natal, the Western Cape and the Free State. Roche is a price-setter for MabThera, as the only market with a rival product is India. The drug generated about R10.7 billion in revenue for Roche during the third quarter of last year. However, its market dominance may face a challenge in the near future, as Hyderabad-based Dr. Reddy's has previously said it will market its version of the drug – branded Reditux – beyond India's borders once the patent on rituximab expires in the USA in 2015. Other generic companies including Cipla and Ranbaxy are also developing capacity to make biologics.

The department's latest 2-year oncology tender shows the government is willing to pay R7 950 for a 50 ml vial of the injectable rituximab, and R1 590 for a 10 ml vial. Dr Pillay said the health department was also in discussion with Roche about the scope for a 'more affordable' price for its breast cancer drug Herceptin, which was too expensive.

Herceptin is available only to state patients who are enrolled in clinical trials, and to people who belong to medical schemes willing to pay for it. Medical schemes vary as to the extent to which they will foot the bill; some schemes pay for a year's treatment, while others will pay for only 9 weeks. Until this year, some breast cancer patients in KwaZulu-Natal were able to get Herceptin at government hospitals on a limited basis, according to clinical oncologist Poovan Govender. Doctors were able to motivate for Herceptin on a patient-by-patient basis, but the budget constraints facing the province meant this was no longer possible, he said.

Dr Pillay said some biologics that were unaffordable to the state – such as Novartis's leukaemia drug Gleevec – were available at no charge to some public sector patients through what are known as 'patient access' programmes, where the drugs are donated by the company. However, these programmes were not open to private sector patients, as they breached the medicine pricing laws, which say there must be a uniform price for the private market.

Roche had not responded to a request for comment at the time of going to press.

'We would like to see that oncology is managed from a national point of view, and that everyone gets access to the same treatment everywhere,' said Linda Greff from the advocacy group, Cancer Alliance.

### Probe into attack at Baragwanath under way

The Gauteng Department of Health has launched an investigation into an attack on a doctor and several patients at the Chris Hani Baragwanath Academic Hospital in Johannesburg last month. According to reports, a psychotic patient was in one of the medical wards when he stole a pair of scissors from a medical tray and hid it. He later became aggressive and started stabbing patients and the doctors on duty. The patient was restrained by hospital security personnel and taken to Baragwanath's psychiatric ward for evaluation and observation. The stabbed patients suffered minor lacerations and were stitched up while the doctor was believed to be admitted to another hospital. A debriefing was initiated to the doctor and patients.

Gauteng Health MEC Ntombi Mekgwe has expressed sympathy with the doctor and patients who sustained injuries and said that everything possible would be done to investigate the incident and measures put in place to ensure that it was not repeated. She described the incident as 'unfortunate' and assured hospital users that security at the hospital was adequate. 'The department together with hospital management will

however consider the outcome of the investigation and tighten security measures if needed,' she added.

**First nurses trained to initiate MDR-TB treatment**

South Africa will increasingly move towards nurse-initiated treatment for multidrug-resistant tuberculosis (MDR-TB) in the next 5 years, and a programme in KwaZulu-Natal, which has the highest HIV/TB burden, is already training nurses to manage MDR-TB patients.

Faced with a chronic shortage of doctors, South Africa moved to nurse-initiated antiretroviral treatment (NiMart) in April 2010. Now, government plans to roll out nurse-initiated MDR-TB treatment, and to make it and NiMart available at all primary healthcare, antenatal, TB and mobile outreach clinics by 2016, according to the National Strategic Plan on HIV and TB.

In KwaZulu-Natal, a programme run by the USA-based Johns Hopkins University has already trained at least 70 nurses in MDR-TB treatment initiation and care. Preliminary research, released at the South African TB Conference, in Durban, showed that outcomes in patients initiated and monitored by these nurses were as good, and sometimes better, than those under a doctor's care. The research presented by Dr Jason Farley of Johns Hopkins compared the early outcomes of about 90 MDR-TB patients who had been assigned to one of two groups. Those in poorer health, or who were HIV-positive with low CD4 counts (indicating a weakened immune system) were initiated and monitored by a doctor. Nurses initiated those in better health, or who were HIV-positive but with higher CD4 counts.

Culture conversion rates – the number of patients with two consecutive TB-free sputum cultures – were the same in both groups, but nurse-initiated and -managed patients tended to reach culture conversion about 2 weeks sooner than those under a doctor's care, and were also more likely to be routinely checked for adverse reactions to their drugs. About a third of all MDR-TB patients diagnosed in 2011 never received treatment, according to figures presented by Dr Norbert Ndjeka, director of Drug-resistant TB, TB and HIV at the South African National Department of Health. Before the publication of new guidelines for drug-resistant TB in August 2011, MDR-TB patients could only be initiated on treatment after being admitted to a TB hospital, but a lack of beds in these facilities contributed to long MDR-TB treatment waiting lists, Ndjeka said.

**Chris Bateman**
*chrisb@hmpg.co.za*