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A look back at 2013

Tim Dehnel reviews the year in which several viruses, old and new, hit the headlines, the USA backed brain research in a big way, and a Super Typhoon wreaked havoc in the Philippines.

NHS on the rocks The UK's Health and Social Care Bill reform continued unabated in 2013, taking effect in April despite opposition from most health professionals, many of whom are keen to keep effectiveness of the new clinical commissioning groups high on the coalition government's agenda. This year also saw publication of the final damning report into the Mid Staffordshire NHS Foundation Trust, which exposed serious failings in patient care. Despite claims by Health Secretary Jeremy Hunt that changes would be made in the wake of the scandal, in November the Care Quality Commission reported that many acute hospitals had made "no improvement in assessing and monitoring the quality of care". To compound the NHS crisis, mortality rates in NHS hospitals were reported to be nearly double those in the USA and £400 million in extra funding had to be allocated to help accident and emergency departments cope with the demands of winter.

Polio politics 2013 saw global polio eradication efforts falter. Mistrust of motives behind vaccination campaigns and the fatal shooting of polio workers in Pakistan and Nigeria meant hundreds of thousands of children missed vaccination this year. Compared with 2012, when only six confirmed cases (of 223 overall) occurred outside the polio-endemic countries of Pakistan, Afghanistan, and Nigeria, 224 occurred in non-endemic countries in 2013, including 183 in Somalia and 17 in Syria. However, Afghanistan had no endemic cases (only reinfection from Pakistan), only 131 endemic cases were reported to Dec 4, and serotype 3 has been absent for more than a year. Crises in Syria and Somalia, and kidnapping of 11 vaccine

workers in Pakistan on Nov 23, show the end of polio is still more a political than a medical issue.

BRAIN gain On April 2, US President Barack Obama launched the BRAIN Initiative, calling for US\$100 million in the 2014 budget to develop better tools to map the brain. In September, the National Institutes of Health allocated its \$40 million of this funding, including to projects aimed at generation of a census of brain cell types, structural maps of the brain, and links between neuronal activity and behaviour. Improved brain imaging should improve neurological studies, which lack good markers of complex diseases. However, questions have been asked about the size of the task (after all, 1 mm³ of cortex contains more than 80 000 neurons and 4·5 million synapses), and ethical issues have been raised about diverted funding from more achievable targets.

MERS mystery With the pandemic potential unknown, WHO's Director General Margaret Chan called Middle East respiratory syndrome (MERS) coronavirus her "greatest concern" in June. However, slow inter-human transmission and no spike in cases around October's Hajj suggests a slow-burning epidemic. On Dec 2, WHO reported 163 laboratory-confirmed cases of MERS, mostly in Saudi Arabia. 71 people have died. Most cases were sporadic, and although compelling evidence suggests bats or camels are the zoonotic hosts, the animal reservoir is unknown. Notably, the case-fatality ratio of primary cases is about 74% but falls to 20% for secondary cases, suggesting that early detection and good clinical management could mitigate the worst effects.

H7N9 China Because most of the world's population lives in south and east Asia, presence of a rapidly transmitting and virulent influenza virus among its densely populated countries caused huge concern this year. H7N9 emerged in China, with a high case-fatality rate and a murky transmission chain from asymptomatic poultry. 45 people died from 135 laboratory-confirmed cases to July, but only two cases and no deaths have been reported since then. The rapid and open response by the Chinese authorities to the emergence of H7N9 was lauded by the international community. Six candidate vaccines have been developed, but whether they will be scaled up in time for the coming influenza season, or even needed because of H7N9's low inter-human transmission rate, remains to be seen.

If only "Functional cure" became the watchwords of 2013. Two men who had received haemopoietic stem cell transplants stopped treatment for long-term HIV infections. 11 weeks and 31 weeks after ceasing therapy, the virus remained undetectable. Elsewhere, a baby who received triple antiretroviral

MERS coronavirus

For *The Lancet News podcast* see <http://www.thelancet.com/lancet-news-audio/>

For more on the spread of polio see *World Report Lancet* 2013; **382**: 1621-22

For more on the BRAIN Initiative see *Editorial Lancet* 2013; **381**: 1247

For more on MERS see *Comment Lancet* 2013; **382**: 1962-64

For more on H7N9 see *World Report Lancet* 2013; **381**: 1347

H7N9—transmitted from poultry to people—emerged in China this year

CDC/Science Photo Library

therapy from birth but stopped treatment after 18 months was reported to have no detectable virus at 30 months. However, on Dec 6, the two adult Boston patients were announced to have resumed HIV treatment, with the virus becoming detectable once more. The HIV community will meet with more highs and lows on the path to true cure of the disease. 2013 was a good year nonetheless.

extend the debt ceiling in September unless the Affordable Care Act (ACA) was delayed and a medical device tax lifted. On Oct 1–17, many government employees were furloughed as the US Government shutdown. The shutdown ended when Republicans capitulated and agreed to fund the government to Jan 15. Although the ACA is viewed by supporters as the first step toward universal health care, problems with the enrolment system quickly arose. Online exchanges were poorly tested and mistakes were made in telling people they could keep existing policies. 2013's political infighting perhaps explains why the USA spends 17.9% of GDP on health—almost double that of other economically advanced countries—but its citizens are far from the healthiest.

The end of AIDS? By the end of 2012, 9.7 million people were on antiretrovirals for HIV infection. WHO sought to increase that number in June, by calling for early treatment initiation when CD4 counts fell to less than 500 cells per μL . Moreover, children younger than 5 years, pregnant and breastfeeding women, and people living with an HIV-positive partner were also included in the recommendation. Cheap and minimally toxic drug regimens mean that antiretroviral therapy can now be consolidated into use to prevent progression to AIDS, reduce transmission, and act as pre-exposure prophylaxis. As more is learnt about functional cure, 2013 might be seen as the end of the beginning of AIDS, with HIV moving to chronic disease status. That view needs to be tempered by the 2.3 million new cases of HIV in 2012, and the ephemeral nature of functional cures.

Robotic leaps and bounds Before 2013, even the best mechanical sensors in robotic limbs were flummoxed by changing physical conditions. But, a robotic prosthesis reported in the *New England Journal of Medicine* in September showed itself

able to adjust seamlessly to stairs or rough ground. The prosthesis received input via electromyographic signals from the residual thigh muscles of its amputee host, and outperformed similar prostheses that relied on mechanical cues alone. Coupled with a robotic arm controlled by the power of the mind (and a clever sensor array lodged in the brain) reported in *The Lancet* late in 2012, provision of full functionality for people who have lost limbs, or the ability to move them, is a step closer.

Bagus Indahono/epa/Corbis

Filipino disasters Following on from a destructive earthquake in October, winds blowing at up to 195 mph hit the central Philippines in mid-November, causing tremendous damage to property and infrastructure, and about 5500 deaths. Despite a strong international aid response in the immediate aftermath, relief efforts were hampered by geography. Air and sea links were severed to the islands of Leyte and Samar, which were hit first and worst by Typhoon Haiyan. Concerns remain about spread of infectious diseases and childhood mortality. The Disasters Emergency Committee, a group of 14 charities, announced that more than £73 million in donations had helped it and its partners, to reach almost 1.6 million people with aid, but that millions more still needed assistance.

Tim Dehnell

Dengue crisis The Honduran Government called a state of emergency in July, pushing dengue up its priority list for infectious disease control because of a burgeoning outbreak. By Dec 5, the Pan American Health Organization reported 37 666 clinical cases of dengue in the country, 4267 of which were severe, and 27 deaths. The government moved to control the outbreak quickly because of the memory of the 2010 epidemic that saw 67 000 people infected and 83 die. With 50–100 million people infected worldwide every year, dengue is one of the most widespread vector-borne diseases but is one of the least prioritised. Despite a successful phase 2b trial late last year, no commercially available dengue vaccine exists.

Indian Food Act After months of debate, India's senate finally approved the National Food Security Act 2013 in September. The law pledged £13 billion to provide subsidised wheat and rice to two thirds of India's population. The ambitious plan was praised for the noble aim of reducing malnutrition through provision of 5 kg of grain to 800 million people every month. It was also condemned for this ambition, with some observers citing cost, corruption, and voter coercion. If true, buying votes does look bad, but the economic and health benefits of increased food security are hard to ignore.

US health American politics descended once again into farce. Republicans refused to pass a funding bill to

For more on **India's food bill** see [World Report](#) *Lancet* 2013; **382**: 194

For more on **US health reform** see [World Report](#) *Lancet* 2013; **382**: 585–86

For more on **WHO's HIV guidelines** see [Comment](#) *Lancet* 2013; **382**: 287–288

For the **NEJM** paper see *N Engl J Med* 2013; **369**: 1237–42

For more on **Typhoon Haiyan** see [Editorial](#) *Lancet* 2013; **382**: 1679