Australia tackles HTLV-1

HTLV-1 research has long been under-funded, hampering research and control. A new Australian taskforce aims to change the situation at home and abroad. Karl Gruber reports.

Human T-cell leukaemia virus type 1 (HTLV-1) is an oncogenic retrovirus that affects as many as 20 million people worldwide. The virus is of zoonotic origin, and it is commonly found in several Old World monkey and ape species. It was discovered in 1979, but efforts to tackle this virus have been hindered by lack of funding. Now, new funding from the Australian Government for HTLV-1 research and care, and the establishment of a taskforce to tackle the infection, has raised hopes for control and prevention.

HTLV-1 can lead to the development of two severe conditions: adult T-cell leukaemia–lymphoma and tropical spastic paraparesis/HTLV-1-associated myelopathy. Additionally, other diseases, such as uveitis, infective dermatitis, and more recently bronchiectasis, have been reported as being associated with HTLV-1 infection.

The virus is found worldwide, with seven known subtypes, but it is focused in localised regions of Africa, Central and South America, several states within the USA, and Japan, Iran, Taiwan, and Australia. In some Aboriginal communities in central Australia, for example, more than 40% of adults are infected with HTLV-1. "One of the main characteristics of HTLV-1 is the existence of foci of high prevalence near populations with very little prevalence", said Antoine Gessain (Pasteur Institute and Global Virus Network, France).

The virus can be transmitted via sexual intercourse, through contaminated blood, and from mother to child via breast milk, and with no vaccine or treatment it is often difficult to control the virus, particularly in communities with high prevalence.

According to Robert Gallo (Institute of Human Virology at the University of Maryland School of Medicine and Global Virus Network, USA) one of the biggest challenges that needs to be addressed is funding. "There is a desperate need for multiple funding resources for HTLV-1 research and clinical follow up", he said. Gallo discovered HTLV-1 while at the National Cancer Institute laboratories, several years earlier than its close relative HIV. But the viruses have had very different path in terms of research and prevention: while HIV has been the focus of extensive research and prevention campaigns, media coverage, and public concern, little has been done to deal with HTLV-1. In the USA, federal funding for HIV-related research is US$33 billion per year. By contrast, no federal funding scheme has been deployed for HTLV-1 research or prevention since the virus was discovered. The blame for this long-standing funding problem, according to an open letter to WHO written by Gallo and other experts earlier this year, is a lack of awareness and understanding of the virus.

> **"One of the biggest hurdles that needs to be addressed to tackle HTLV-1 is funding"**

Government, researchers, and other stakeholders in Australia are now taking action. In May, the Australian Government pledged AUS$8 million to investigate infectious diseases in Indigenous communities, with a focus on HTLV-1. The money is being used to support a new taskforce of experts and other stakeholders that will help steer the direction of HTLV-1 research in Australia.

On Aug 28–29, a Collaborative Forum on HTLV-1, convened by the Central Australian Academic Health Sciences Centre and the Australian Government Chief Medical Officer, took place in Alice Springs (NT) to outline research priorities, consider clinical and public health guidelines, and plan community engagement.

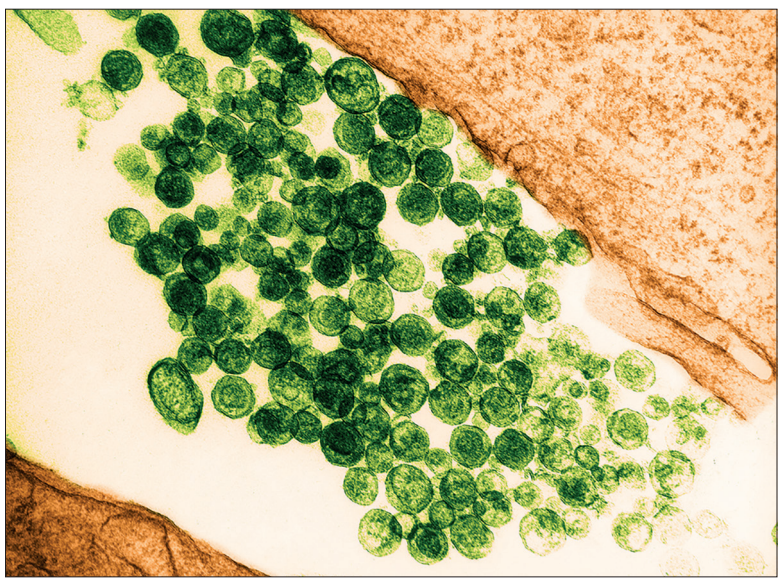
Damian Purcell (The University of Melbourne and Global Virus Network, Australia) welcomed the developments, saying that "the Australian Government needs to be commended for responding to our open letter with immediate commitment of sufficient funding to commence a response".

One of the first goals of the taskforce is to get a better picture of the prevalence and epidemiology of this virus in aboriginal communities. Brendan Murphy, Australia's Chief Medical Officer, says that there is a lot that is not known about the disease. "We need to do more to find out the epidemiology and prevalence of this virus infection and associated diseases. There are suggestions of rare diseases and other disease associations but they remain unproven. We don't want to create an alarm response on this", he said. "We are getting these epidemiology and prevalence studies that research groups are putting together and we will likely provide some funding from that pot in forthcoming months."

Getting a mainstream proviral load test is another early priority, says Murphy, since data suggest that there is link between proviral load and the development of disease. "It seems that infectious disease associations are more likely to be seen in people with high proviral loads and measuring proviral load is currently only a research test."

The need to learn more about the epidemiology of HTLV-1 is not exclusive to Australia. "HTLV prevalence remains uncharted in many areas of the world. An expansion of epidemiological research into new geographical regions such as India, China, Russia, Australia, and many African countries is therefore required", says Fabiola Martin (University of Queensland and Global Virus Network, Australia).

For the **open letter to WHO on HTLV-1** see **Correspondence** *Lancet* 2018; **391:** 2212



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One important step towards getting reliable data about incidence is training health-care providers on how to diagnose HTLV diseases efficiently Martin said. "Improved access to diagnostics guidelines and educational material developed with communities affected, such as WHO Health Topics, for health-care providers especially in regions of high HTLV-1 endemicity should be a top priority of health-care decision makers."

The efforts led by the Australian Government could lead the way in giving more international attention to the infection. "I have been greatly encouraged that the Australian Government action has advanced HTLV-1 as a priority locally and at WHO", said Purcell. "We need more international governments of countries with foci of high endemic HTLV-1 prevalence to urge WHO prioritisation of funding and resources towards confronting this preventable lifelong infection of the immune system. Patients and their families deserve to have the same level of monitoring and care that is offered to the others suffering persistent blood-born viral infections."

Karl Gruber

Infectious disease surveillance update

For more on **measles in Mauritius** see http://apps.who.int/iris/bitstream/handle/10665/274299/OEW35-2531082018.pdf

For more on **Ebola virus disease in DR Congo** see https://www.promedmail.org/post/6012775

For more on **schistosomiasis in Myanmar** see https://reliefweb.int/report/myanmar/who-s-field-visit-reports-over-400-schistosomiasis-cases-rakhine-state

Measles in Mauritius

Between March and late August, 2018, health officials in Mauritius have reported 808 confirmed cases of measles, including three deaths among immunocompromised adults aged 29–31 years (giving a case fatality ratio of 0·4%). The most affected districts are Port Louis and Black River. 50% of patients have not been vaccinated for measles, and 29% did not know their vaccination status. Before this outbreak, the last case of measles was detected in Mauritius in 2009.

Supplementary immunisation using the measles, mumps, and rubella vaccine has been underway since May 31. Rapid response teams have been actively seeking cases and verifying vaccination status in schoolchildren. The measles vaccination schedule has been reviewed and updated to give the second dose of the vaccine at age 2 years instead of age 5 years. People aged 15–45 years have also been recommended for immunisation.

Ebola in DR Congo

Since the declaration of the outbreak of Ebola virus disease in North Kivu on Aug 1, 129 cases of viral haemorrhagic fever have been reported, of which 98 have been confirmed as Ebola virus disease and 31 classified as probable cases. As of Sept 5, a further seven cases are under investigation. The district of Ndindi in Beni has reported 70% of the past 20 confirmed cases and is now the focus of the outbreak.

Incidences of community resistance to control efforts have been reported, including vaccination refusals and families refusing to allow patients to be taken to health facilities. Response coordinators are working with community leaders to improve acceptance of public health preventative measures. Since ring vaccination began on Aug 8, 6486 people have been vaccinated. As of Sept 3, 22 people had been treated with one of three experimental treatments: mAb114, Remdesivir, or Zmapp. Of those, 11 have recovered, seven remain in hospital with improvements, and four patients died.

Schistosomiasis in Myanmar

From March, 2018, when the first cases were reported, to Aug 20, 1256 cases of schistosomiasis have been recorded in Rakhine State, Myanmar. 428 have been laboratory confirmed. Cases were first reported in Sittwe Town and have since been found across several townships in Rakhine.

Schistosomiasis is caused by parasitic worms released by freshwater snails, leading to acute or chronic illness. The Ministry of Health and Sport is working with WHO to map freshwater snail habitats and plan preventive measures.

Ruth Zwizwai