

Zika hijacks pregnant woman's immune system

The Zika virus thrives in pregnant women by suppressing their already dampened immune systems and running roughshod over their body's natural defences, allowing the virus to directly attack the foetus, a new study reports.

A woman's immune system naturally suppresses itself during pregnancy to keep the body from recognising the foetus as a foreign body and attacking it, explained Senior Researcher Jae Jung, Chair of the Department of Molecular Microbiology and Immunology at the University of Southern California's Keck School of Medicine.

'The virus really tricks the host's immune system,' Jung said. 'It commandeers the pregnant woman's immune strategy to protect the foetus and utilises that strategy for its own benefit.'

This helps explain why Zika causes no symptoms at all in four out of five infected people, but can cause horrible neurological birth defects such as microcephaly when pregnant women become infected, Jung said.

Nearly 3000 cases of microcephaly have been associated with Zika-infected mothers, researchers said.

For their study, Jung and his colleagues tested both the African and Asian strains of Zika in the blood samples of healthy men and women, as well as samples taken from pregnant women.

Zika was first discovered in Africa in 1947, and that strain has not been associated with neurological birth defects, Jung said. But the virus subsequently travelled to Asia, where it mutated and became more dangerous to pregnant women and their unborn babies.

In the laboratory, the research team discovered that the Asian strain of Zika targets monocytes, which are white blood cells that mount the body's immune defence by destroying viruses and bacteria, Jung said.

In pregnant women, a certain number of monocytes essentially flip roles and become immune-suppressing, encouraging the immune system to power down, Jung said. Zika latches on to that natural process and amps it up.

'The virus goes in, replicates, grows and then crosses the placenta to enter the foetus and cause disease,' Jung said.

Point-of-care diagnosis for tuberculosis may reduce patients' time to treatment

A team of researchers have conducted a trial dedicated to studying the effectiveness of a molecular diagnostic test performed in the clinic compared with the test completed in a laboratory. The researchers hypothesized that this point-of-care test would result in better patient outcomes.

For the study, the researchers conducted a randomised controlled trial of the test in a rural clinic in South Africa, northern KwaZulu-Natal, a region with the highest rates of HIV and HIV-associated TB in the world. The study participants were randomised into two groups: point-of-care, which consisted of 651 patients, or laboratory testing, which consisted of 646 patients. All participants were adults reporting cough, and were either HIV-positive or at increased risk of drug-resistant TB.

Study leader Richard Lessells, PhD, a former clinical research fellow at Africa Health Research Institute (AHRI), and his team compared two testing systems: one where a nurse performed Xpert MTB/RIF at a rural South African clinic, and one where researchers transported sputum samples to a central laboratory where technicians performed Xpert MTB/RIF.

'To fight TB in South Africa and elsewhere, we need to decentralize both diagnosis and treatments in a coordinated manner,' Dr. Lessells explained. 'Nurses are at the frontline of TB and HIV care in South Africa, and we need to give them the tools to make the correct diagnosis and initiate the correct TB treatment in a single encounter.'

According to the study results, the researchers found that performing a molecular diagnostic test during a patient's visit at a clinic 'greatly reduced

the time to treatment for patients who did not have a drug-resistant form of the disease,' compared with performing the test at a centralised laboratory, according to a press release.

They found that the testing delivery system involving nurses at the clinic provided patients with a diagnosis within hours of their visit, and three out of four patients (who did not have drug-resistant TB) were able to begin treatment that same day.

In contrast, patients had to wait, on average, seven days to begin treatment with the diagnostic testing performed by the laboratory. Furthermore, they found that beginning treatment within 30 days



after receiving diagnosis 'was better with point-of-care than laboratory diagnosis.' However, the difference was 'not statistically significant.'

'Research has shown that in South Africa and other countries with high TB burden, up to one in four people with a laboratory diagnosis of TB do not start TB treatment,' explained Dr. Lessells in the press release. 'Theoretically, we now have the technology to diagnose TB and initiate treatment during a single visit—something that happens routinely with HIV and malaria—but we wanted to test this technology in the real world to see if it could actually deliver this.'

Novartis and MMV begin patient trial of antimalarial compound

Novartis and Medicines for Malaria Venture (MMV) have started a patient trial of antimalarial compound, KAF156, in Africa.

KAF156, which belongs to the class of the imidazolopiperazines, is a next-generation antimalarial compound that holds capability to treat drug-resistant strains of the malaria parasite.

The trial was designed to test the efficacy of KAF156 in combination with a new and improved formulation of the existing antimalarial lumefantrine.

The phase IIb study will assess multiple dosing combinations and dosing schedules of KAF156 and lumefantrine, including the feasibility of a single dose therapy in adults, adolescents and children.

KAF156's study has been launched in Mali, and will be expanded to sixteen additional centres across nine countries in Africa and Asia in the coming months.

The compound is fast acting and potent across multiple stages of the parasite's lifecycle and effectively

cleared both *Plasmodium falciparum* and *Plasmodium vivax* parasites, which was demonstrated in a phase IIa proof-of-concept trial.

The phase IIb study will assess multiple dosing combinations and dosing schedules of KAF156 and lumefantrine, including the feasibility of a single dose therapy in adults, adolescents and children.

Novartis drug development global head and Chief Medical Officer Vas Narasimhan said: 'With nearly half of the world's population at risk, malaria continues to be a major public health challenge.

'Developing new antimalarial medicines is critical to achieving malaria elimination. Innovative science continues to be our best weapon against the disease.'

MMV CEO Dr. David Reddy said: 'With the phase IIb trial of KAF156-lumefantrine now underway, the MMV-Novartis partnership is drawing closer to the exciting prospect of such a new medicine that would be a powerful tool to fight the disease.'

Better patient communication gets more people admitting adherence issues

Healthcare workers (HCWs) from an HIV clinic serving the districts of Kilombero and Ulanga in Tanzania were trained on how to encourage patients on antiretroviral treatment (ART) to talk about adherence problems and find ways to tackle these issues.

The intervention was found to have significant benefits in empowering people to discuss adherence issues, with self-reporting on non-adherence rising from 3.3% to 10.7%.

HCWs were trained in a two-day workshop and seminar, and adopted an assessment checklist for use during patient consultations. Around 300 people living with HIV (71% female, 29% male) were included in the trial, which ran from October 2013 to September 2014.

During each visit, the vast majority of participants (81%) completed a clinical and self-reported adherence assessment, and underwent a CD4 cell count, viral

load measurement and therapeutic drug monitoring (TDM).

The study found the virological failure rate, when consistently high and increasing levels of HIV are detected, remained unchanged throughout the study. As the virological failure rate was relatively low during the first visit, the fact that it remained unchanged may be due to only the most adherent patients being selected for the study.

Despite the study's limitations, it has shown how patient-centred communication can feasibly be delivered in low-cost settings, with significant benefits for adherence.

Interventions such as this one will be critical for the continued effective scale-up of ART to meet UNAIDS' 90-90-90 testing and treatment goals, which will see millions more people living with HIV on treatment by 2020, most of them in sub-Saharan Africa.

Zimbabwe and South Africa to establish clinics on major highways

Zimbabwe and South Africa have agreed to establish clinics along major highways to cater for cross border truck drivers within the region so that they can access HIV health-related services.

South Africa's Health minister, Dr. Aaron Motsoaledi said diseases 'know no borders' hence it was key to strengthen healthcare services to fight the high disease burden in the region.

Minister Motsoaledi spoke during the signing ceremony of a five year cooperation agreement which seeks to tackle regional health challenges.

'We need to put up cross border clinics along the major highways so that cross borders like truck drivers can access HIV services. This is an HIV and AIDs cross border initiative that can help us fight HIV within the region.

'The initiative should enable truckers from the region to access health care services at any of these clinics regardless of which country they are from.

'You are aware that Zimbabwe is the gateway to the rest of Africa in terms of trucking routes so these clinics would ensure that patients get treatment, help them on issues of HIV among other issues,' he said.

The five-year cooperation agreement, which tackles issues of health, research and regulation, comes after the lapse of the one that was signed in 2009.

Speaking at the same event, Zimbabwe's Health and Child Care Minister, Dr. David Parirenyatwa concurred the specialised medical care such as having clinics along highways was key in the fight against HIV.

'South Africa and Zimbabwe are really interlinked in many ways so the health, research and regulation agreement will really go a long way in addressing challenges faced by the two countries and the region.

'Truck drivers are a key population that are at a greater risk of HIV infection so having clinics along highways will then ensure that services are readily available,' he said.

Minister Mostoaledi noted that the agreement's key priority areas were prevention, control, management of communicable diseases and conditions, regulations and access to pharmaceuticals and vaccines.

HIV/AIDS is no longer the leading cause of death in Africa

The World Health Organization's most recent data on global deaths has good news for the African continent, including fewer people dying of HIV/AIDS and malaria.

The new death statistics researched by African fact-checking organisation, Africa Check, indicated that lifestyle diseases have taken over as the leading causes of death on the continent.

Lower respiratory tract infections top the list. These are caused by viruses and bacteria that target airways and lungs.

The most common diseases under this category is bronchitis or pneumonia which is responsible for 16% of global deaths of children younger than five.

HIV/AIDS took the number two position despite the increase in education on prevention and treatment.

An estimated 760 000 deaths from HIV/AIDS and related complications were recorded in Africa in 2015, against the one million deaths in 2010.

Diarrhoeal diseases take third spot. The disease is caused by viral, bacterial or parasitic infections.

Eighty-eight percent (88%) of diarrhoeal deaths worldwide are due to unsafe water, poor sanitation and insufficient hygiene, according to the Centres for Disease Control and Prevention.

It is the second leading cause of death of children younger than five in Africa.

The next leading cause of death is stroke which has increased over the past five years from 406 595 (4.4% of deaths) to 451 000 deaths (4.9%) in 2015.

The fifth leading cause of death in Africa is the ischaemic heart disease commonly known as heart attack.

In 2010, 389 785 deaths were as a result of heart attack (or 4.2% of total deaths). This increased in 2015 to an estimated 441 000 deaths (or 4.8% of the total).

In Africa, the majority of deaths in 2015, as in 2012, still remained largely due to preventable causes. It is worth noting that malaria has dropped off the top five list, allowing ischaemic heart disease to move into this list.

Blindness set to triple globally by 2050

Blindness affects 36 million people globally, with the greatest burden in developing countries, a global investigation has found.

Forecasts predict that there will be almost 115 million cases of blindness and 588 million people with moderate to severe vision impairment in 2050 (up from figures of 36 million and 217 million today, respectively).

The greatest burden will be found in developing countries in Asia and sub-Saharan Africa, according to a study published in *The Lancet Global Health* journal.

'With the number of people with vision impairment accelerating, we must take action to increase our current treatment efforts at global, regional and country levels,' says lead author Professor Rupert Bourne, Anglia Ruskin University, UK.

'Investing in these treatments has previously reaped considerable benefits, including improved quality of life, and economic benefits as people remain in work.'

Although rates of blindness and vision impairment have gone down in recent years, as the world population ages, the number of cases has increased. The new estimates highlight the need to scale-up efforts to alleviate vision impairment to help improve

quality of life, and educational and economic opportunities globally.

'Even mild visual impairment can significantly impact a person's life, for example reducing their independence in many countries as it often means people are barred from driving, as well as reducing educational and economic opportunities,' Professor Bourne says.

Rates of blindness among older adults are highest in eastern and western sub-Saharan Africa and south Asia.

The study analysed the prevalence of blindness and vision impairment in 188 countries between 1990 and 2015, as well as providing projections for 2020 and 2050.

It is the first to include figures on presbyopia—a condition that affects one's ability to read and is associated with ageing, and can be treated with eye glasses—and finds that almost 1095 million people aged over 35 are affected by the condition, including almost 667 million people over 50.

The researchers estimate that global blindness crude prevalence declined from 0.75% in 1990 to 0.48% in 2015, while the rate of moderate to severe vision impairment reduced from 3.83% to 2.90%. This is likely to be a result of socio-economic development, targeted public health programmes, and greater access to eye health services.



Rapid response to cholera outbreak in north-eastern Nigeria

The World Health Organization (WHO) and other partners are moving swiftly to help health authorities contain a cholera outbreak in a camp for internally displaced people in north-eastern Nigeria.

As of 29 August 2017, a total of 69 cases, including five deaths, have been reported so far in the outbreak at Muna Garage, a camp on the outskirts of Maiduguri.

Detecting and responding rapidly to suspected cases of cholera is vital to controlling outbreaks, which can spread rapidly in areas where access to safe water is limited, hygiene conditions are poor, and populations are weakened by

food shortages.

The State Ministry of Health is leading partners including WHO, in the response to the outbreak in Muna Garage, which includes the establishment of a cholera treatment centre, increasing risk communications and assessing the need for an oral cholera vaccination campaign in the affected area.

WHO-supported community outreach workers are conducting active case search in the camp to find and refer anyone suffering from the disease that has not been able to seek help at a health facility.