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Travel & Endemic Newsletter

SEPTEMBER 2023

YELLOW FEVER

Fractional doses of the 17D-213 vaccine non-inferior to standard doses in inducing seroconversion 28 days after vaccination in children

A randomized, double-blind, non-inferiority substudy of a phase 4 trial to assess the immunogenicity and safety of fractional doses (YEFE) compared with standard doses of the WHO-prequalified 17D-213 vaccine in young children.

The conclusions from this study were that Fractional doses of the 17D-213 vaccine were non-inferior to standard doses in inducing seroconversion 28 days after vaccination in children aged 9–59 months when assessed with PRNT50, but we found fewer children seroconverted at 10 days. The results support consideration of the use of fractional dose of yellow fever vaccines in WHO recommendations for outbreak response in the event of a yellow fever vaccine shortage to include children.

More at *sciencedirect.com*

Immunogenicity and safety of fractional doses of 17D-213 yellow fever vaccine in HIV-infected people in Kenya (YEFE):

A randomized, double-blind, non-inferiority substudy of a phase 4 trial to evaluate the immunogenicity of fractional and standard doses of yellow fever vaccine in HIV-positive adults. The fractional dosing met the non-inferiority criterion, and non-inferiority was maintained for 1 year.

The interpretation was that Fractional doses of the 17D-213 yellow fever vaccine were sufficiently immunogenic and safe demonstrating non-inferiority to the standard vaccine dose in HIV-infected individuals with CD4+ T cell counts of at least 200 cells per mL.

These results provide confidence that fractional dose recommendations are applicable to populations with high HIV prevalence.

More at *thelancet.com*

DENGUE & ZIKA

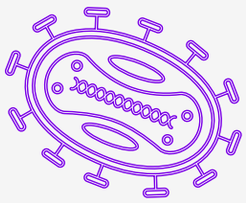
Impact of prior dengue virus infection on Zika virus infection during pregnancy in marmosets

Kim *et al.* report that prior infection of female marmosets with dengue virus exacerbated Zika virus infection during pregnancy. Pregnant dams that had been exposed to dengue virus showed increased viral RNA burden in the placenta and in fetal brain tissue compared with dengue virus–naïve dams. Dengue virus immune dams also showed higher titers of cross-reactive Zika virus–binding antibodies with poor neutralizing activity. These findings suggest a potential negative impact of pre-existing immunity to dengue virus upon subsequent Zika virus infection during pregnancy in marmosets.

This study shows the potential of marmosets as a useful nonhuman primate model for understanding the complexity of interactions between prior flavivirus infection and severe consequences of ZIKV infection in the context of pregnancy. The researchers report the exacerbation of prenatal infection and neurotropism of ZIKV in the fetal brain in DENV-immune pregnant dams.

More at *science.org*

MALARIA



Delftia tsuruhatensis TC1 has the potential to be deployed in mosquito breeding sites as a component of malaria control

Currently employed standards of care and control for malaria are either directed at targeting the parasite in the human host (treatment or prophylaxis) or at killing the malaria mosquito vector with insecticide-treated bednets and indoor residual spray. Unlike these approaches, the D. tsuruhatensis TC1–based intervention targets parasite stages in the mosquito and incapacitates its ability to transmit the malaria parasite.

A naturally occurring, non–genetically modified symbiotic bacterium, *Delftia tsuruhatensis* TC1, which was isolated from mosquitoes incapable of sustaining the development of Plasmodium falciparum parasites. *D. tsuruhatensis* TC1 inhibits early stages of Plasmodium development and subsequent transmission by the Anopheles mosquito through secretion of a small-molecule inhibitor that was identified to be the hydrophobic molecule harmane. on mosquito contact, harmane penetrates the cuticle, inhibiting *Plasmodium development. D. tsuruhatensis* TC1 stably populates the mosquito gut, does not impose a fitness cost on the mosquito, and inhibits Plasmodium development for the mosquito's life.

More at *science.org*

VACCINES

DEVELOPMENT

Study of the VLA1553 vaccine candidate for Chikungunya finds it is generally safe and provokes an immune response

After a single vaccination, the vaccine produced neutralizing antibody levels which are thought to protect against chikungunya disease in 99% (263/266) of participants.

Antibody levels declined 28 days after vaccination, but seroprotection persisted in more than 96% (233/242) participants after six months.

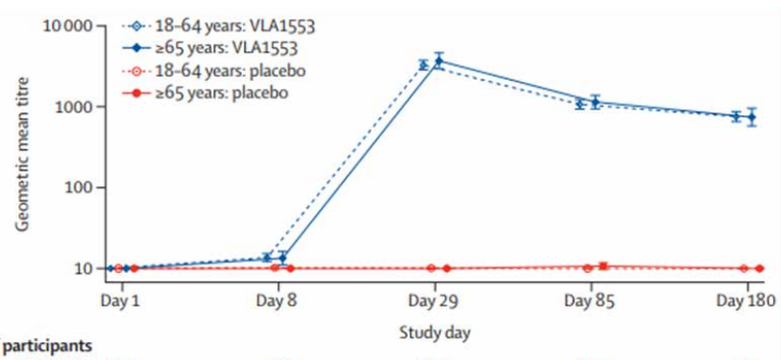
Most adverse events were moderate or mild and the authors say its safety profile is similar to other licensed vaccines.

Because the study was not conducted in regions where chikungunya is endemic, researchers were unable to investigate whether the vaccine protects against subsequent disease. Instead, the study tested for an immune response at levels that are thought to protect against the disease if infected with the virus.

More at *thelancet.com*

Line plot of chikungunya virus-specific neutralising antibodies geometric mean titres by study day and age stratum. Days shown in the figure refer to study days; day 1=day of vaccination. Error bars indicate 95% CIs. Neutralising antibodies to the vaccine were evaluated from clinical specimen (human serum) using a micro plaque reduction neutralisation test (μPRNT). A μPRNT50 titre was defined as the dilution with 50% plaque reduction in the μPRNT

Assessment of neutralising antibodies after vaccination



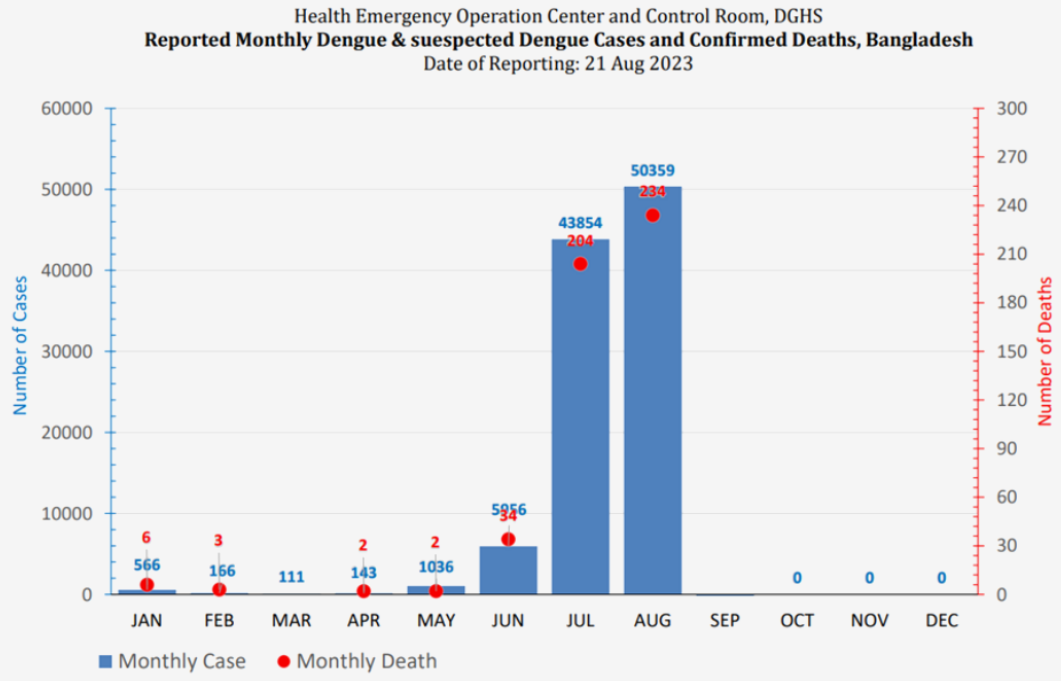
Number of participants	Day 1	Day 8	Day 29	Day 85	Day 180
18–64 years: VLA1553	207	198	207	194	184
18–64 years: placebo	73	70	73	69	68
≥65 years: VLA1553	59	53	59	52	58
≥65 years: placebo	23	23	23	22	23

DISEASE OUTBREAKS

Bangladesh dengue outbreak rises

Bangladesh is struggling to deal with higher casualties and infections from dengue this year, with officials warning that the death toll this month could break records. The 2023 death toll from the mosquito-borne illness has reached 364 in the south Asian country. More than 78,000 people have been infected since January this year. According to experts, Intermittent rains in August is one of the major reasons for the outbreak.

More at *foxnews.com*



Children in DR Congo facing worst cholera outbreak in six years

A spike in conflict and displacement in the eastern Democratic Republic of the Congo is pushing children into the worst cholera crisis since 2017, warns UNICEF. Across the country, there have been at least 31,342 suspected or confirmed cholera cases and 230 deaths in the first seven months of 2023, many of them children.

"If urgent action is not taken within the next months, there is a significant risk that the disease will spread to parts of the country that have not been affected for many years", said UNICEF DRC Senior Emergency Coordinator.

UNICEF is calling for US$ 62.5 million to scale up its prevention and response activities to the cholera and WASH crisis over the next five months, which seeks to reach 1.8 million people, including 1 million children, with safe water, hygiene kits, latrines, medical supplies, and child-friendly cholera care.

© UNICEF/Benekire *Amina Bakunda is a doctor at the UNICEF-supported Cholera Treatment Center in Bulengo, a site for displaced persons in North Kivu province, DR Congo.*

More at *unicef.org*

Re-emergence of cholera outbreak in DRC: A silent fight

This article aims to identify the predisposing, precipitating and perpetuating factors of the resurgence of the disease in the DRC. The authors summarized that Ultimately, the healthcare system should be strengthened and equipped because it requires more resources and expertise to provide life-saving treatment. Establishing sustainable funding for cholera vigilance and outbreak emergency situations; ensuring the availability of clean water for drinking, sanitation, and hygiene, as well as cholera vaccination, if recommended, for vulnerable communities all necessitate a permanent framework for cross-border collaboration to develop efficient policies and strategies.

More at *at ncbi.nlm.nih.gov*

United States: Locally Acquired Cases of Malaria in Florida, Texas, and Maryland

Seven locally acquired cases of *Plasmodium vivax (P. vivax) malaria* in Sarasota County, FL, one case of *P.vivax* in Cameron County, TX, and one case of *P. falciparum malaria* in a Maryland resident who lives in the National Capital Region. This is the first locally acquired case of malaria in Maryland in more than 40 years. These cases likely indicate incidental mosquito-borne transmission from parasitemic imported cases.

There is no evidence to suggest that the cases in the three states are related.

More at *at cdc.gov*

Nearly all of the more than 2,000 Malaria cases reported annually in the United States are acquired by travelers overseas.

More at *medicalxpress.com*

Dengue virus spreads across Florida counties

Florida health officials are issuing a warning about dengue as the virus continues to increase in South Florida. In total, 10 cases of the mosquito-borne illness have been reported in the state this year. These cases indicate incidental mosquito-borne transmission from viremic imported cases, with potential for sporadic secondary cases. Sporadic cases without sustained transmission are reported in central and southern Florida in most years. Risk to travelers is minimal.

More at *foxnews.com*

Egypt: Dengue in Qina Governorate

According to Egypt's Ministry of Health and press sources, more than 65 cases of dengue fever (including an unknown number of laboratory-confirmed cases), a significant increase over average incidence, have been reported since early July 2023 in Qina Governorate. The last dengue fever outbreak in Egypt occurred in 2017. Travelers should observe daytime insect precautions.

More at *english.ahram.org.eg*

WORLD RABIES DAY

September 28 is World Rabies Day, a global health observance started in 2007 to raise awareness about the world's deadliest infectious disease and bring together partners to enhance prevention and control efforts worldwide.

28 September also marks the anniversary of Louis Pasteur's death, the French chemist and microbiologist, who developed the first rabies vaccine.

While Rabies is a 100% preventable disease, nearly 60,000 people die from the disease around the world each year.

Around the world, dogs are the most common animal affected by rabies, with more than 99 percent of human cases coming from dog bites. **Global Alliance for Rabies Control (GARC)** sponsors the event not only to raise awareness for one day, but with the hope that communities can put measures in place to help control the spread of rabies all year round.

Today, safe and efficacious animal and human vaccines are among the important tools that exist to eliminate human deaths from rabies while awareness is the key driver for success of communities to engage in effective rabies prevention.

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