UNIVERSITÉ DE GENÈVE

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PRESS RELEASE

Geneva | 14 January 2025

Hepatitis E vaccination is effective in an epidemic

A team from UNIGE-HUG Centre for Emerging Viral Diseases, MSF, MSF Epicentre, Johns Hopkins University and South Sudanese Ministry of Health has demonstrated the effectiveness of a vaccine against hepatitis E, during an epidemic, in South Sudan.

High resolution pictures

Hepatitis E, a potentially serious viral liver disease, is transmitted through contaminated water. The risk is particularly high in populations with limited access to safe water and sanitation. In South Sudan, outbreaks have regularly ravaged camps for internally displaced persons and their host populations. Although a vaccine has been available since 2011, its 3-dose regimen makes it difficult to administer in such a context. A team from Médecins Sans Frontières (MSF), MSF Epicentre, Johns Hopkins University (JHU), the South Sudanese Ministry of Health, the World Health Organization (WHO), the University of Geneva (UNIGE) and the Geneva University Hospitals (HUG) conducted clinical and lab studies after a vaccination campaign to assess its effectiveness in protecting individuals and helping to control the epidemic. Their results showed that the vaccine was effective with just the first two doses. These results can be read in the *Lancet Infectious Diseases*.

Hepatitis E is a viral infection that is particularly dangerous for pregnant women and people with chronic illnesses, with a mortality rate of up to 10-50 %. “Symptoms of hepatitis E are similar to other diseases that cause acute jaundice, making it difficult to detect. While we don’t have precise estimates of the global burden, some have put it at around 50,000 deaths a year,” explains Andrew Azman, epidemiologist at the UNIGE-HUG Centre for Emerging Viral Diseases, MSF and JHU, who led this research. “The Bentiu camp in South Sudan, home to more than 100,000 people who have been displaced due to civil war, is a regular victim of hepatitis E and other waterborne disease outbreaks, likely due to the poor sanitation conditions and frequent flooding.”

The Hecolin vaccine, developed in China and licensed in some countries since 2011, has been recommended as a potential tool in outbreaks by the WHO. However, until this use in an outbreak, it had only been used in the context of controlled clinical trials and travel medicine in China. “That’s why it was essential to study the vaccine’s effectiveness on other populations and in regions where the type of virus circulating is different from China, as well as the logistical feasibility of such a campaign,” adds Isabella Eckerle, Professor at the Faculty of Medicine and Director of the UNIGE-HUG Centre for Emerging Viral Diseases. “In particular, it was important to understand its effectiveness after just two doses, whereas it is usually administered in three doses 6 months apart.”

An original research partnership

The Centre for Emerging Viral Diseases, a specialist centre run jointly by the HUG and the UNIGE Faculty of Medicine, provided scientific support to the MSF field teams in charge of the clinical aspect of the study. “The vaccination campaign targeted individuals aged 16 years and took place in three rounds, in March, April and October 2022,” explains Iza Ciglenecki, Operational research coordinator at MSF Switzerland. “Our study then compared the vaccination status of 201 patients testing positive for hepatitis E between May and December 2022 with that of others in their neighbourhood presenting no symptoms. Despite fewer hepatitis E cases than expected after vaccination, our study revealed that two doses of vaccine was effective, an excellent result given the particular context of a camp for displaced people.”

The samples were then sent to the laboratories of the Centre for Emerging Viral Diseases to determine the biological characteristics of the virus and immune responses. “These laboratory data, which were challenging to carry out on site, not only demonstrated the protection induced by the vaccine, but also enabled us to better understand transmission and the performance of diagnostic tests, which can help us design better outbreak responses in the future,” emphasises Isabella Eckerle. “This project represents a rewarding synergy between MSF’s operational expertise and our own in translational research and diagnostic excellence!”.

A global stockpile created by the WHO

The study therefore confirms the protection provided by two doses of this vaccine, even during an epidemic, and the reduction in the incidence of the disease. “Our results combined with others helped lead to recent approval by WHO’s International Coordinating Group (ICG) on Vaccine Provision of a stockpile of hepatitis E vaccines for emergencies. This stockpile has the potential to save many lives and we’re looking forward to seeing it in action. These results have also already contributed to the WHO recommendations on the use of a two-dose schedule”, concludes Andrew Azman.

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DOI: 10.1016/S1473-3099(24)00657-1

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