PREVAC-UP
PARTNERSHIP FOR RESEARCH ON EBOLA VACCINATIONS

Project Summary of Publication

Period covered: 01 January 2020 to 31 December 2020

Context and Overall objectives

Human-to-human transmission of Ebola virus in West Africa was interrupted in 2016 but the risk of reemergence of the disease is real. Thus, efforts to develop a safe and effective vaccine against Ebola virus disease with a durable prophylactic effect in communities must continue. PREVAC-UP is built around the PREVAC trial, a phase IIB, randomised, placebo controlled, multicentre trial evaluating the safety and immunogenicity over 12 months of three vaccine strategies in children and adults.

Participants received either the Ad26.ZEBOV (rHAd26) vaccine with a MVA-BN-Filo (MVA) boost, or the rVSVΔG-ZEBOV-GP (rVSV) vaccine with or without boosting, or placebo.

PREVAC-UP aims to extend the follow-up of 2,802 participants included under PREVAC in Guinea, Liberia, Sierra Leone and Mali, for four additional years of follow up. PREVAC-UP will also evaluate the effect of coinfections, such as malaria and helminths, on the immune response to vaccination. An integrative statistical analysis of the immune response will be used to explore the mechanism of action of the vaccines and to identify early correlates of durable antibody induction. PREVAC-UP will build on the extensive community mobilisation efforts previously generated through PREVAC to provide a trans-national platform for social and health science research and training. Finally, this project will expand and sustain capacity building and training of scientists in the four participant African countries.

Main results achieved so far

The year 2020 was marked by the pandemic situation, which led to situations of suspension/resuming of activities due to COVID-19 pandemic in accordance with site re-opening plans. On the clinical trial, a protocol V5 was finalized, and submitted to regulatory authorities in participating countries and approved for implementation. In order to evaluate the impact of malaria and other parasitic infections on the persistence of the antibody response to two Ebola vaccines, a survey has been completed successfully in Mambolo district Sierra Leone. Laboratory sample have been analysed, data entry has been completed and analysed, and a report on the main findings has been submitted to the Ministry of Health and the Helen Keller Foundation, which provided support to the survey. The final paper describing the findings of the study is scheduled for submission in the first quarter of 2021.

EDCTP

PREVAC-UP project is funded by the European and Developing Countries Clinical Trials Partnership (EDCTP2) programme supported by the European Union. PREVAC-UP also benefits from co-funding from Inserm, the NIAID, the LSHTM and the COMAHS as well as host country support from Liberia, Sierra Leone, Guinea and Mali.

Follow-up visits of the participants enrolled in the immunological study in Guinea were postponed. First PBMC isolations started in September 2020 instead of April 2020. Regarding the data processing, samples have been shipped to Inserm-VRI in January 2021, and the statistical analysis plan will be updated with the immunophenotyping in 2021. All the consumables needed for the experiment on the field were shipped to Conakry.

As for capacity building, which aims at strengthening and maintaining capacity in clinical research for site staff during the conduct of the trial, some academic achievements were carried out, with notably the creation of a new university degree in Global Health and Emerging at Gamal Abdel Nasser University of Conakry in partnership with Montpellier University, and applications by Bordeaux School of Public Health (ISPED) / University of Bordeaux for an international exchange program at Bordeaux School of Public Health (ISPED). Furthermore, three scholarships for a distance-learning short course in epidemiology organized by Bordeaux School of Public Health (ISPED) have been graduated in 2020.

Progress beyond the state of the art and expected potential impact

Besides of the devastating effects on the population, Ebola outbreaks have a pronounced socio-economic impact in affected countries. To date, two vaccines have obtained authorization from international drugs agencies to be used to control Ebola virus disease and they have been used during epidemics. Yet, durability of the immune response following vaccination with rVSV or with Ad26.ZEBOV/MVA vaccines remains unknown. Outbreaks sporadically occur in different countries on the African continent and authorities need to provide the safest and most efficient approach to better protect populations at risk as well as to control the spread of the virus. PREVAC-UP comes to bring much needed data regarding longterm immunogenicity and safety of the three different Ebola vaccine regimens tested in PREVAC, as well as the impact of co-infections on the persistence on the antibody response. In terms of impact the Ministry of Health and the Helen Keller Foundation has been given important information on the success of their helminth mass treatment programme in areas such as Mambolo. Once the Luminex assay has been established and validated in Kambia district, this will be used to measure antibody concentrations in the samples collected each year in Sierra Leone rather than requiring the samples to be sent outside the country.

The follow-up of vaccinated participants during these 5 years will enable to evaluate long-term cellular immune responses to the vaccines and to describe the durability of the immune response. The societal impact is strong as it will help to determine if new vaccination campaigns are necessary to ensure the protection of the population in the event of a new epidemic.

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