Oxford University news release

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Oxford Vaccine Group to carry out next study phase of an Ebola vaccine regimen

Oxford University doctors and scientists are performing the second phase of clinical studies of an experimental Ebola vaccine regimen. The study is part of the EBOVAC2 project, a collaborative programme involving the University of Oxford, French Institute of Health and Medical Research (INSERM) as project coordinator, London School of Hygiene & Tropical Medicine (LSHTM), Le Centre Muraz (CM), Inserm Transfert (IT) and the Janssen Pharmaceutical Companies of Johnson & Johnson (Janssen).

Funded under a grant from the European Commission's Innovative Medicine Initiative, the Ebola+ programme was launched in response to the Ebola virus disease outbreak. The EBOVAC2 project aims to assess the safety and immunogenicity of a novel prime boost preventative vaccine regimen against Ebola Virus Disease (EVD).

The original development of the prime boost vaccine regimen was accelerated in response to the outbreak of Ebola virus disease in West Africa, which has now claimed more than 11,000 lives. Although the number of confirmed EVD cases has decreased in recent months, new cases of EVD in Liberia, which had been declared Ebola free, highlight that a preventative vaccine may still be needed to control the spread of disease.

The Oxford Vaccine Group, part of the University of Oxford Department of Paediatrics, has started enrolling into the phase II study this month, with additional French sites coordinated by Inserm anticipated to start recruitment in August. An additional study is planned to follow in several African countries.

The Phase II study aims to recruit more than 600 healthy adult volunteers in the UK and France.

In the UK, volunteers for the study, aged 18–65 years, are likely to come largely from the Oxfordshire region, and will be asked to make a maximum of 17 visits to the Oxford Vaccine Group site on the city's Churchill hospital site over a period of a year. The Oxford study is supported by the NIHR Oxford Biomedical Research Centre , a partnership between the University of Oxford and Oxford University Hospitals Trust, funded by the National Institute for Health Research.

The study involves two different vaccines, given a few weeks apart. The first vaccination is intended to stimulate, or 'prime', an initial immune response. The second vaccination then is designed to 'boost' the level of the body's immune response further.

Neither vaccine component contains any replicating virus, so it is not possible to be infected with Ebola.

In pre-clinical studies of this vaccine regimen conducted in collaboration with the National Institutes of Health complete protection from death due to Ebola was achieved against the Kikwit variant – which is highly similar to the virus causing the current outbreak in Western

Africa. Preliminary results from the first phase of the clinical study, conducted in Oxford and involving 87 volunteers, indicated that the prime-boost vaccine regimen is immunogenic, regardless of the order of vaccine administration, and that both vaccines were well-tolerated.

People interested in volunteering can find out more at **www.ebolavaccine.org.uk**.

In addition to the Phase II study being conducted in the UK and France, similar studies are also starting in Africa to establish how robust the immune response is to the Ebola vaccine regimen. Given the compressed nature of this development program, the Phase II studies are anticipated to be conducted in parallel with the planned safety and immunogenicity study in Sierra Leone as part of EBOVAC1.

Prof Andrew Pollard, Director of the Oxford Vaccine Group, said: 'The devastating Ebola epidemic in Guinea, Liberia and Sierra Leone has shown how urgently we need a safe and effective vaccine. That goal has brought together manufacturers, public health bodies and research regulators to accelerate these studies of new Ebola vaccines. The results of the first phase, which are due to be published shortly, are encouraging. We are appealing, once again, for volunteers to come forward and help us in the second stage of this vital work.'

Another team in the Jenner Institute has been studying a different Ebola vaccine (ChAd3 EBOZ) funded by the Wellcome Trust and the Department for International Development and developed with GSK/ US National Institutes of Health. Led by Professor Adrian Hill, preliminary results from the phase I studies conducted earlier this year have shown that this vaccine has a good safety profile and stimulates an immune response against the Ebola virus. Professor Hill's team has since started on a phase I trial of a boost to this vaccine and recruitment is ongoing.

The objectives of the EBOVAC2 study are to determine further the vaccine regimen's safety profile and how well it stimulates the immune system to protect against Ebola infection. The team also want to work out the best timing for each of the vaccines. Volunteers will therefore be put on different schedules, where the gap between 'prime' and 'boost' dose will be 28, 56 or 84 days.

The immune responses that the vaccine generates – both antibodies and T cells – will also be measured over a period of one year.

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Notes to editors

Images: A trial vaccination session is running on Thursday 18 July between 8.30am and 3.30pm. To arrange attendance please contact the News Office.

* **The 'prime' and 'boost' vaccines** have different components.

One component (Ad26.ZEBOV) makes use of technology from Crucell Holland B.V., one of the Janssen Pharmaceutical Companies of Johnson & Johnson. A non-replicating human adenovirus is used as a base for the vaccine, to which genes for a protein from the Zaire species of the Ebola virus is added

The other component (MVA-BN FILO ®), made by the company Bavarian Nordic in Denmark, is based on a non-replicating modified vaccinia Ankara (MVA) virus, to which genes for the protein from the Zaire species of Ebola virus is added, along with genes coding for proteins from the related viruses Marburg, Sudan virus, and Taï Forest virus.

Neither the adenovirus nor the MVA virus in the vaccines can cause disease, nor can anyone be infected with Ebola or the other related diseases from the vaccines.

* This project has received funding from the **Innovative Medicines Initiative 2** Joint Undertaking under grant agreement EBOVAC2 (grant nr. 115861). This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme and EFPIA.

* The **design of the study** will see the volunteers allocated into three groups.

The first group of 30, recruited only in the UK, will receive both the 'prime' and 'boost' vaccines. They will receive the 'boost' dose 28 days after the 'prime' dose. Volunteers will also be asked if they are willing to take part in genetic tests to describe what genes are needed for a good vaccination response.

The second group of 270 will be recruited in the UK and France. This group will receive either the two vaccines or a placebo. They will receive the 'boost' dose 56 days after the 'prime' dose. They too will be asked if they are will take part in genetic tests.

The third group of 312 volunteers will be recruited jointly in the UK and France and will also receive either the two vaccines or a placebo. They will receive the 'boost' dose 84 days after the 'prime' dose.

* The **Oxford Vaccine Group**, part of the University of Oxford, is headed by Professor Andrew Pollard and conducts studies of vaccines in both adults and children. Over the last nine years the group has recruited over 7000 participants to clinical trials of vaccines. In addition to studying vaccines against meningitis and respiratory infections the Oxford Vaccine Group is currently conducting world-leading research on the vaccine prevention of typhoid and paratyphoid disease.

* The **NIHR Oxford Biomedical Research Centre** is a partnership between the research expertise of the Oxford University Hospitals NHS Trust and the University of Oxford. Its main aim is to enable clinical research for patient benefit and foster innovation to improve healthcare. It is funded by the National Institute for Health Research (NIHR). The NIHR provides the NHS with the support and infrastructure it needs to conduct first-class research funded by the Government and its partners alongside high-quality patient care, education and training. Its aim is to support outstanding individuals (both leaders and collaborators),

working in world class facilities (both NHS and university), and conducting leading edge research focused on the needs of patients. www.oxfordbrc.org

* **The National Institute for Health Research (NIHR)** is funded by the Department of Health to improve the health and wealth of the nation through research. Since its establishment in April 2006, the NIHR has transformed research in the NHS. It has increased the volume of applied health research for the benefit of patients and the public, driven faster translation of basic science discoveries into tangible benefits for patients and the economy, and developed and supported the people who conduct and contribute to applied health research. The NIHR plays a key role in the Government's strategy for economic growth, attracting investment by the life-sciences industries through its world-class infrastructure for health research. Together, the NIHR people, programmes, centres of excellence and systems represent the most integrated health research system in the world. For further information, visit the NIHR website (www.nihr.ac.uk).

* **EBOVAC2**
The EBOVAC2 project is one of 8 research projects funded under IMI2 Ebola+ programme that was launched in response to the Ebola virus disease outbreak. The consortium brings together industrial and academic stakeholders: Janssen Pharmaceutical Companies of Johnson & Johnson (Janssen) as sponsor, French Institute of Health and Medical Research (Inserm) as coordinator, University of Oxford, London School of Hygiene & Tropical Medicine (LSHTM), Centre Muraz (CM), and Inserm Transfert (IT). The project aims to assess the safety and efficacy of a novel prime boost preventive vaccine regimen against Ebola Virus Disease (EVD). The prime-boost vaccine regimen strategy requires two vaccinations with two different vaccines (Ad26.ZEBOV and MVA-BN-Filo). This is original in the Ebola context and different from other ongoing vaccination strategies with only one vaccination.

www.ebovac2.com

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