

Safety and Immunogenicity of the heterologous prime-boost Ebolavirus vaccine regimen ChAd3-EBO Z and MVA-BN[®] Filo in Healthy UK Adults

Aims/Objectives: Viral vectored vaccines using chimpanzee adenoviruses and Modified Vaccinia Ankara (MVA) vectors have demonstrated efficacy against Ebolavirus challenge in non-human primates. This Phase 1 trial was designed to assess the safety and immunogenicity of 2 novel Ebolavirus vaccines in healthy UK adults: the monovalent chimpanzee adenovirus 3 vector encoding Zaire Ebolavirus glycoprotein (ChAd3-EBO Z) and the multivalent MVA encoding multiple filoviral proteins (MVA-BN[®] Filo).

Methods: 60 healthy adults volunteers were recruited in Oxford, UK and vaccinated with a single dose of the ChAd3-EBO Z vaccine at three dose levels: 1×10^{10} viral particles (vp), 2.5×10^{10} vp and 5×10^{10} vp (n = 20 per group). Of these subjects, 30 received a heterologous boost with MVA-BN[®] Filo at 2 dose levels: 2.2×10^8 TCID50s (n=18) and 4.4×10^8 TCID50s (n=12). Safety was assessed over the subsequent four weeks. Antibodies were measured by ELISA, T cell responses by ELISpot and flow cytometry assays were performed.

Results: Both ChAd3-EBO Z and MVA-BN Filo were well tolerated in all subjects, with short-lived, predominantly mild adverse events, and a low rate of febrile reactions. Both ChAd3-EBO Z alone, and the heterologous prime boost regimen were immunogenic at all dose levels with induction of both antibodies and T-cells on ELISpot and flow cytometry.

Conclusions: Initial assessment of ChAd3-EBO Z and MVA-BN[®] Filo show these vaccines to be safe and immunogenic. These results suggest that this regimen is suitable for further evaluation as a tool to aid control of the current and future Ebola outbreaks in West Africa.

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