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A clinical trial to determine the safety and immune responses to a new vaccine against Hantavirus disease

Submission date	Recruitment status	[ ] Prospectively registered
19/08/2025	Recruiting	[ ] Protocol
Registration date	Overall study status	[ ] Statistical analysis plan
31/10/2025	Ongoing	[ ] Results
Last Edited	Condition category	[ ] Individual participant data
31/10/2025	Infections and Infestations	[X] Record updated in last year

Plain English summary of protocol
Background and study aims
Hantavirus disease is a dangerous disease caused by several different viruses, which can be fatal in up to 15% of cases. It leads to fever, diarrhoea and vomiting, bleeding dysfunction and organ failure. It is transmitted to humans mainly by rats. There are no current treatments other than symptom management, and no existing vaccines.
This study is testing a new vaccine for hantavirus disease. It is using the same, safe virus used to vaccinate against smallpox and more recently mpox, known as MVA (Modified Vaccinia Ankara). The MVA virus has been modified to expose the body to parts of the viruses which cause hantavirus disease. MVA has been given to hundreds of thousands of people as a vaccine previously and is known to be safe. The new vaccine is called MVA-Hanta.

Who can participate?
Healthy volunteers aged 18 to 50 years

What does the study involve?
We will give three increasing doses of MVA-Hanta to 24 healthy people to test that it is safe and that it provides an immune response to the viruses which cause Hantavirus disease. Eight people will receive each dose. We will start with the lowest dose, and if there are no safety concerns after giving it to all eight volunteers, we will begin giving the medium dose. We will repeat the same procedure before giving the highest dose. Each participant will receive two sets of vaccinations, 28 days apart. For groups one and two, each set will be one injection of 0.5 ml. For group three, each set will be two injections of 0.5 ml. All participants will complete a diary of their symptoms and be monitored closely, including with blood tests. Participants will be followed up for 6 months following their first vaccine administration. Volunteers will be vaccinated twice (Day 0 and Day 28) and will be in the study for a maximum of 6 months following their first vaccination, and will have up to 12 scheduled study visits, plus two follow-up telephone calls.

What are the possible benefits and risks of participating?
As with any vaccine, volunteers may experience local and/or systemic reactions following each

vaccination. This includes pain and redness at the infection site, and more general reactions such as flu-like symptoms.
Similarly, there is a risk of a very rare, but serious, reaction (anaphylaxis). MVA-Hanta has not previously been studied in human participants and the potential side effects are currently unknown. Most symptoms are expected to be mild. There is extensive historical experience with MVA vector as a backbone, which has been shown to be safe and well-tolerated.
Each volunteer will be monitored for 1 hour following each vaccination by medically trained members of the study team. The study team at University Hospital Southampton are trained in the management of anaphylaxis and there will be immediate access to adrenaline and resuscitation equipment.
After the first vaccination, each volunteer will be provided with a card containing a 24-hour telephone number to contact the on-call study physician if required. Volunteers will be informed to keep this card on their person for the duration of their participation in the study. Each volunteer will also be given an electronic diary (with paper backup available), an oral thermometer and a tape measure, enabling volunteers to self-assess and record (including time and severity) of solicited and unsolicited adverse events (AEs) that may occur post-vaccination, as well as to document any medication taken for 28 days after each vaccination. The diary is designed to be easy to use and each volunteer will be instructed on how to complete diaries at their first vaccination visit. Symptom diaries will be reviewed during each follow-up visit.
Volunteers will receive a telephone follow-up call within 24 hours of both vaccinations. All volunteers will attend the research unit for several follow-up visits after each vaccination.
The volume of blood to be taken over the course of the study should not cause any problems for healthy adults. Following any blood samples taken in the study, there may be some temporary discomfort, including bruising and tenderness. Volunteers will be asked to sit or lie down during venepuncture to reduce the likelihood of a volunteer experiencing light-headedness. The study nurses and doctors are highly skilled and experienced in performing venepuncture.
Any female volunteer who is pregnant, breastfeeding or planning on becoming pregnant during the study will not be allowed to take part in the study. If a volunteer becomes pregnant during the trial, this would constitute an absolute contraindication to further administration of the vaccine and would be withdrawn from the study.

Where is the study run from?
University Hospital Southampton NHS Foundation Trust (UK)

When is the study starting and how long is it expected to run for?
August 2025 to September 2026

Who is funding the study?
UK Vaccine Network

Who is the main contact?
1. Dr Alasdair Munro, a.munro@soton.ac.uk
2. Dr Saul Faust, s.faust@soton.ac.uk

Contact information

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Scientific

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

Integrated Research Application System (IRAS)
1012615

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
RHM MED2095

Study information

Scientific Title
A Phase I study to assess the safety and immunogenicity of an MVA-based vaccine for Hantavirus (MVA-Hanta)

Study objectives
1. To assess the safety and reactogenicity of a new Hantavirus candidate vaccine MVA-Hanta in a prime-boost regime in healthy volunteers.
2. To assess anti-Hantavirus cellular, mucosal, and humoral immune responses induced by different doses of MVA-Hanta.

Ethics approval required

Ethics approval required

Ethics approval(s)
notYetSubmitted, ref: 25/LO/0668

Study design
Non-randomized study

Primary study design
Interventional

Study type(s)
Efficacy, Safety

Health condition(s) or problem(s) studied
Hantavirus disease

Interventions
The intervention is vaccination with MVA-Hanta. Participants will be enrolled sequentially in three groups to receive escalating doses of the vaccine, to be given in two administrations, 28 days apart. The doses received will be ≤5 x 10e7 pfu, ≤1 x 10e8 pfu and ≤2 x 10e8 pfu. Participants will be observed for 60 minutes post vaccination then asked to complete a diary of solicited adverse events for 7 days afterwards. Participants will receive a telephone follow-up at 24h post vaccination. They will then attend for in-person visits on day 3, day 7, day 14 and day 28 post vaccination. During these visits any adverse events will be reviewed, bloods will be taken to assess for safety and immunogenicity, and saliva samples provided for mucosal immunogenicity. After the second administration there are also follow-ups at 3 and 6 months post the first vaccine visit.

Intervention Type
Drug

Phase
Phase I

Drug/device/biological/vaccine name(s)
MVA-Hanta

Primary outcome(s)
The specific endpoints for safety and reactogenicity will actively and passively collect data on adverse events. The following parameters will be assessed:
1. Occurrence of solicited local reactogenicity signs and symptoms for 7 days following each vaccination.
2. Occurrence of solicited systemic reactogenicity signs and symptoms for 7 days following each vaccination.
3. Occurrence of unsolicited adverse events for 28 days following the first vaccination and for subsequent vaccinations from the time of vaccination through the following 28 days.
4. Change from baseline for safety laboratory measures for 28 days following each vaccination.
5. Occurrence of serious adverse events within 28 days (day of vaccination and 27 subsequent days) after each vaccination and over the whole study duration.
6. Solicited and unsolicited AE data will be collected at each clinic visit. It will be collected from

diary cards, clinical review, clinical examination (including observations) and laboratory results. This AE data will be tabulated and the frequency, duration and severity of AEs will be compared between groups.
7. Haematological and biochemical laboratory values will be presented according to toxicity grading scales and tabulated by group.
8. SAEs, AEs of special interest and withdrawal due to AE(s)/SAE(s) will be described in detail

Key secondary outcome(s))
1. The cellular immunogenicity of MVA-Hanta will be measured by testing Peripheral Blood Mononuclear Cells (PBMCs) for interferon-gamma responses to Hantavirus nucleoprotein peptides in an Enzyme-Linked ImmunoSpot (ELISpot) assay
2. The humoral immunogenicity of MVA-Hanta will be measured by testing serum for IgG specific to the Hantavirus nucleoprotein in an Enzyme-Linked Immunosorbent Assay (ELISA)
3. The mucosal immunogenicity of MVA-Hanta will be measured by testing saliva samples in a secretory IgA ELISA
4. Functional antibody responses to Hantavirus, e.g., by virus neutralisation, may also be assessed
5. Anti-vector immunity may also be assessed by ELISA

Due to the lack of relevant samples prior to this trial, immunogenicity assays will not be fully validated prior to testing. Assays will have documented Standard Operating Procedures and system suitability acceptance criteria. Samples from this trial will be used to develop and qualify immunogenicity assays against Hantavirus.

Measured at 28 days after dose two (day 56)

Completion date
30/09/2026

Eligibility

Key inclusion criteria
1. Healthy adults aged 18 to 50 years.
2. Able and willing (in the Investigator’s opinion) to comply with all study requirements.
3. Willing to allow the Investigators to discuss the volunteer’s medical history with their General Practitioner (GP).
4. For females only, willingness to practice continuous effective contraception (see below) during the study and (for females only) a negative pregnancy test on the day(s) of screening and vaccination.
5. Agreement to refrain from blood donation during the course of the study.
6. Provide written informed consent.

Female volunteers of childbearing potential are required to use an effective form of contraception for the duration of their participation in the study. Acceptable forms of contraception for female volunteers are as follows:
1. Established use of oral, injected or implanted hormonal methods of contraception
2. Placement of an intrauterine device or intrauterine system
3. Total abdominal hysterectomy or surgical sterilisation
4. Barrier methods of contraception (condom or occlusive cap with spermicide)
5. Male sterilisation if the vasectomised partner is the sole partner for the subject
6. True abstinence when this is in line with the preferred and usual lifestyle of the subject
For the purpose of this document, a woman is considered of childbearing potential (WOCBP), i.e.

fertile, following menarche and menarche and until becoming post-menopausal unless permanently sterile. Permanent sterilisation methods include hysterectomy, bilateral salpingectomy and bilateral oophorectomy. A postmenopausal state is defined as no menses for 12 months without an alternative medical cause.

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Upper age limit
50 years

Sex
All

Key exclusion criteria
1. Participation in another research study involving receipt of an investigational product in the 30 days preceding receipt of MVA-Hanta, or planned use during the study period.
2. Prior receipt of an MVA-based vaccine or mpox vaccine.
3. Receipt of a licenced vaccine, or other investigational vaccine in the 30 days preceding receipt of MVA-Hanta and which is likely to impact on interpretation of the trial data, as assessed by the investigator.
4. Any medical condition that in the judgment of the investigator would make intramuscular (IM) injection unsafe.
5. Administration of immunoglobulins and/or any blood products within the three months preceding the planned administration of the vaccine candidate.
6. Confirmed or under investigation for immunosuppressive or immunodeficient state, including HIV infection; asplenia; recurrent, severe infections and chronic (more than 14 days) immunosuppressant medication during the period starting 6 months prior to the first vaccine dose. For corticosteroids, this will mean prednisone 20 mg/day (for adult subjects), or equivalent. Inhaled and topical steroids are allowed.
7. Administration of long-acting immune-modifying drugs at any time during the study period (e.g. infliximab).
8. History of Hantavirus anti-viral treatment within 60 days prior to vaccination.
9. History of allergic disease or reactions likely to be exacerbated by any component of the vaccine.
10. Any history of anaphylaxis in relation to vaccination.
11. Pregnancy, lactation or willingness/intention to become pregnant during the study.
12. History of cancer (except basal cell carcinoma of the skin and cervical carcinoma in situ).
13. History of serious psychiatric condition likely to affect participation in the study.
14. Any other serious, chronic illness requiring hospital specialist supervision.
15. Suspected or known current alcohol abuse as defined by an alcohol intake of greater than 42 units every week.

16. Suspected or known injecting drug abuse in the 5 years preceding enrolment.
17. Seropositive for hepatitis B surface antigen (HBsAg).
18. Seropositive for hepatitis C virus (antibodies to HCV).
19. Known positive HIV Test
20. History of clinical Hantavirus infection
21. Any clinically significant abnormal finding on screening biochemistry or haematology blood tests or urinalysis.
22. Any other significant disease, disorder or finding which may significantly increase the risk to the volunteer because of participation in the study, affect the ability of the volunteer to participate in the study/comply with study requirements or impair interpretation of the study data.
23. Inability of the study team to contact the volunteer's GP to confirm medical history and safety to participate

Date of first enrolment
30/09/2025

Date of final enrolment
01/04/2026

Locations

Countries of recruitment
United Kingdom

Study participating centre
Not provided at time of registration
United Kingdom
-

Sponsor information

Organisation
University Hospital Southampton NHS Foundation Trust

ROR
https://ror.org/0485axj58

Funder(s)

Funder type
Government

Funder Name
UK Vaccine Network

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study will be available upon request from the chief investigators, Prof. Saul Faust and Dr Alasdair Munro (s.faust@soton.ac.uk and a.munro@soton.ac.uk).

IPD sharing plan summary
Available on request