

Clinical trial of a novel tourniquet (Vacuderm tourniquet) which aims to aid further filling of veins through a pumping mechanism

Submission date 16/11/2016	Recruitment status No longer recruiting	<input type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 27/03/2017	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 07/05/2021	Condition category Other	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Cannulation is the procedure in which a patient's skin is punctured with a needle to allow insertion of a temporary plastic tube into a vein. It can be performed by doctors, phlebotomists, trained nurses and trained health care assistants. Venous cannulation is performed on about 80% of patients admitted into hospital in order to administer fluids, drugs, blood or blood products. Cannulation is the most commonly performed invasive medical procedure in hospitalised patients and is frequently life-saving. The NHS in England and Wales currently use about 26 million cannulae per year. However, the procedure is not always successful and the failure rate can range from 15 to 30%. In patients who have had multiple previous cannulations the failure rate can much higher particularly, for example, in those who have received chemotherapy before. Each attempt is painful and can cause bruising, with the obvious added distress to the patient. The Vacuderm tourniquet is a device designed to assist with difficult cannulation and blood-taking procedures through the use of a dome feature which can be used to "pump" blood into the veins, making them larger and therefore easier to access. The aim of this study is to investigate whether the use of Vacuderm can reduce the failure rate of cannulation.

Who can participate?

Emergency department patients aged 18 and over who require venous cannulation and have had a failed first attempt at cannulation on the current occasion

What does the study involve?

Participants are randomly allocated to undergo a second attempt at cannulation using either the Vacuderm tourniquet or the conventional standard tourniquet. The success rate of cannulation, safety, user acceptability and patient satisfaction are assessed in both groups.

What are the possible benefits and risks of participating?

Cannulation failure is often distressing to patients. There is a chance of failure with every

cannulation attempt, leading to patient discomfort and other side effects. Vacuderm may benefit the patients by making cannulation easier. The risk of use of the Vacuderm is not considered greater than that of using a standard tourniquet or blood pressure cuff.

Where is the study run from?
Royal Derby Hospital (UK)

When is the study starting and how long is it expected to run for?
January to April 2017

Who is funding the study?
Olberon Ltd (UK)

Who is the main contact?
Kara Baron
kara@olberon.com

Contact information

Type(s)
Public

Contact name
Miss Kara Baron

Contact details
Olberon Ltd
The Sir Colin Campbell Building
Triumph Road
Nottingham
United Kingdom
NG7 2TU
+44 (0)115 802 2025
kara@olberon.com

Additional identifiers

Protocol serial number
olb/vac/001

Study information

Scientific Title
Randomised control trial of a novel tourniquet (Vacuderm tourniquet) which aims to aid further filling of veins through a pumping mechanism

Study objectives
Does the use of the Vacuderm tourniquet significantly improve the success rate of venous cannulation when compared to the use of a conventional tourniquet?

Ethics approval required

Old ethics approval format

Ethics approval(s)

Not provided at time of registration

Study design

Single-centre randomised control trial

Primary study design

Interventional

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Difficult venous access - cannulation procedure

Interventions

Participants are randomised to undergo cannulation using either the VacuDerM tourniquet or the control, which is the conventional standard tourniquet. Participants will be recruited on to the trial if they have already had an attempted cannulation procedure performed on the current occasion and this has failed; the second attempt will be performed after the participant has been randomised.

Intervention Type

Device

Primary outcome(s)

Success rate of venous cannulation, measured by recording the tourniquet (VacuDerM or control tourniquet) used and whether the cannulation attempt was successful

Key secondary outcome(s)

1. Safety: an inspection of the tourniquet site will be carried out after 30 minutes and any adverse events will be recorded in the case report form
 2. User acceptability, recorded on the case report form, whether cannulation was successful or not
 3. Patient/participant satisfaction, measured using a visual analogue scale (VAS)
 4. Cannula size, recorded on the case report form for the first failed attempt at cannulation and the cannula size will again be recorded after randomisation for the second attempt
 5. Provisional diagnosis, recorded by the trained delegate on the case report form
 6. Potassium levels - haemolysis, recorded by the trained delegate on the case report form
- All measured at a single timepoint

Completion date

28/04/2017

Eligibility**Key inclusion criteria**

1. Emergency department patients aged 18 and over
2. Able to provide informed consent
3. Requiring venous cannulation
4. Has had a first attempt failed cannulation within the emergency department during this attendance
5. The patient has an appropriate site for cannulation in the upper limbs in the opinion of the investigator

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Adult

Lower age limit

18 years

Sex

All

Key exclusion criteria

1. In the opinion of the investigator the patient has a contra-indication to use of tourniquet or blood pressure cuff (for example a low platelet count causing bruising)
2. Critically ill patients who need emergent IV access
3. Small cannula being used on patient – ie 22 gauge (blue) and smaller

Date of first enrolment

09/01/2017

Date of final enrolment

28/04/2017

Locations**Countries of recruitment**

United Kingdom

England

Study participating centre

Royal Derby Hospital

Uttoxeter Road

Derby

United Kingdom

DE22 3NE

Sponsor information

Organisation

Olberon Ltd

ROR

<https://ror.org/01rjdc72>

Funder(s)

Funder type

Industry

Funder Name

Olberon Ltd

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 Dr Graham Johnson (graham.johnson4@nhs.net).

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes