

# Delivering affordable, functional prostheses in the NHS: a trial across two clinical sites to compare existing care with an affordable, multigrip prosthesis to increase function and choice for children and adolescents with upper limb difference

|                                        |                                                   |                                                                                                              |
|----------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Submission date</b><br>18/01/2019   | <b>Recruitment status</b><br>No longer recruiting | <input type="checkbox"/> Prospectively registered<br><input type="checkbox"/> Protocol                       |
| <b>Registration date</b><br>20/03/2019 | <b>Overall study status</b><br>Completed          | <input type="checkbox"/> Statistical analysis plan<br><input type="checkbox"/> Results                       |
| <b>Last Edited</b><br>20/03/2019       | <b>Condition category</b><br>Other                | <input type="checkbox"/> Individual participant data<br><input type="checkbox"/> Record updated in last year |

## Plain English summary of protocol

### Background and study aims

At present via the NHS, the majority of patients with upper limb differences are either provided with a passive prosthesis (cosmetic only), or a body-powered, single grip prosthesis. This limited choice reflects the cost-effectiveness and durability of these prostheses. However, almost half of all upper limb amputees abandon their prostheses, attributed primarily to a lack of function. With recent advances in robotics, the production of multi-grip prostheses that use muscle activity (myoelectric) to create movement, have become a reality. However, with the cost of these prostheses between £25, 000 - £80, 000, they are rendered inaccessible for the majority of patients. This study looks to address this problem. The researchers have taken the first steps in completing a small scale study within a single NHS centre, which established the ability to deliver the prosthesis in an NHS care pathway. The next step is to conduct a full clinical trial that will compare the Hero Arm™, a multigrip, myoelectric prosthesis, with standard care (a single-grip myoelectric prosthesis).

### Who can participate?

Patients aged 8 to 18 who are trans-radial (forearm) upper limb amputees or with congenital (from birth) limb deficiencies

### What does the study involve?

Participants use both prostheses in a random order over a period of 6 months (3 months with each prosthesis) and are assessed at the start of the study and after 3 and 6 months.

### What are the possible benefits and risks of participating?

Not provided at time of registration

Where is the study run from?

1. Bristol Centre for Enablement (UK)
2. Specialised Ability Centre Manchester, University Hospitals of Manchester (UK)

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

March 2018 to June 2020

Who is funding the study?

Innovate UK, SBRI Healthcare (UK)

Who is the main contact?

Dr Abby Tabor

## Contact information

### Type(s)

Scientific

### Contact name

Dr Abby Tabor

### Contact details

University of Bath  
Claverton Down Rd  
Bath  
United Kingdom  
BA2 7AY

## Additional identifiers

### Protocol serial number

244661

## Study information

### Scientific Title

Affordable robotic prostheses in the NHS: a randomised controlled trial comparing the Hero Arm™ with the NHS standard upper limb myoelectric single grip prosthesis

### Acronym

Affordable Prosthetics

### Study objectives

The provision of an affordable, multigrip, robotic prosthesis is equal in performance, as measured through function in children and young people in comparison to standard care.

### Ethics approval required

Old ethics approval format

**Ethics approval(s)**

London -Camberwell St Giles Research Ethics Committee, Level 3, Block B, Whitefriars, Lewins Mead, Bristol, BS1 2NT, Tel: +44 (0)20 7104 8044, 06/08/2018, REC ref: 18/LO/1228, IRAS project ID: 244661

**Primary study design**

Interventional

**Study design**

Randomised controlled trial, crossover design, with stratified randomisation

**Study type(s)**

Quality of life

**Health condition(s) or problem(s) studied**

Trans-radial upper limb difference (congenital/acquired/traumatic), aged 8-18 years

**Interventions**

Having completed feasibility testing in a single centre, this Randomised Controlled Trial (stratified randomisation, with cross-over design) will involve recruitment from two NHS centres, comparing the Hero Arm™ with the standard care pathway currently commissioned in the NHS - a single grip myoelectric prosthesis. Specifically, the trial will engage a stratified randomisation, with participants stratified by age (8-13 years; 14-18 years) and previous prosthesis experience (novice, expert). This trial will also involve a cross-over design such that each participant tests each prosthesis sequentially for 3 months (6 months in total).

**Intervention Type**

Device

**Primary outcome(s)**

Upper limb function measured using Action Research Arm Test at baseline, 3 and 6 months

**Key secondary outcome(s)**

Measured at baseline, 3 and 6 months:

1. Health-related quality of life measured using Paediatric QOL Inventory (PedsQL)
2. Self-reported function and symptoms in the upper limb measured using Disabilities of the Arm, shoulder and Hand (DASH)

**Completion date**

26/06/2020

**Eligibility****Key inclusion criteria**

1. Aged 8 years – 18 years
2. Trans-radial (forearm), upper limb amputee
3. Established upper limb amputees: congenital limb deficiencies and post acquired limb loss more than 1-year post amputation

**Participant type(s)**

Patient

**Healthy volunteers allowed**

No

**Age group**

Child

**Lower age limit**

8 Years

**Upper age limit**

18 Years

**Sex**

All

**Key exclusion criteria**

1. Incomplete wound healing at residuum
2. Uncontrolled cardiovascular or respiratory conditions
3. Current multi-grip myoelectric prosthesis user

**Date of first enrolment**

01/02/2019

**Date of final enrolment**

28/06/2019

## **Locations**

**Countries of recruitment**

United Kingdom

England

**Study participating centre**

**Bristol Centre for Enablement, North Bristol NHS Trust**

Jupiter Rd, Patchway

Bristol

United Kingdom

BS34 5BW

**Study participating centre**

**Manchester Specialised Ability Centre**

Altrincham Rd, Wythenshawe

Manchester  
United Kingdom  
M22 4NY

## Sponsor information

### Organisation

The University of Bath

### ROR

<https://ror.org/002h8g185>

## Funder(s)

### Funder type

Other

### Funder Name

SBRI Healthcare

### Funder Name

Innovate UK

### Alternative Name(s)

Technology Strategy Board

### Funding Body Type

Government organisation

### Funding Body Subtype

National government

### Location

United Kingdom

## Results and Publications

### Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are/will be available upon request from Dr Abby Tabor at the University of Bath. Once the study is closed (from June

2020) the data will be available, including quantitative and qualitative outcomes. The data will be stored for 5 years and can be accessed throughout this time. All data is anonymised, associated with a participant number. At the outset of the study, all participants are informed as part of their consent that they can access their data at the conclusion of the study. The lead researcher is able to determine the data in association with a particular participant without compromising ethical restrictions.

### IPD sharing plan summary

Available on request

### Study outputs

| Output type                          | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|--------------------------------------|---------|--------------|------------|----------------|-----------------|
| <a href="#">HRA research summary</a> |         |              | 28/06/2023 | No             | No              |