

# SuperStarch Study

<b>Submission date</b> 16/04/2015	<b>Recruitment status</b> No longer recruiting	<input checked="" type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 18/06/2015	<b>Overall study status</b> Stopped	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 13/02/2023	<b>Condition category</b> Nutritional, Metabolic, Endocrine	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

Having a surgical operation can be very stressful for the body. It lowers a patient's immune system and disrupts their metabolism for a number of weeks or even months after surgery. These factors can increase the likelihood of complications following surgery, such as getting an infection or developing insulin resistance. Insulin resistance, which occurs in type 2 diabetes, is when the body doesn't produce enough insulin to function properly, or the body's cells stop reacting to insulin. The development of insulin resistance after surgery is very common, and is linked to an increase in disease and death. It has been shown that having a sugar-based carbohydrate drink before surgery can prevent the development of insulin resistance. As a result, patients are usually given a carbohydrate drink to have the night before surgery, and on the morning of surgery, as part of the Enhanced Recovery Programme (ERP) used in many hospitals. The aim of this study is to test an alternative starch drink called Generation UCAN, which does not contain sugar. Generation UCAN is popular as an exercise and sports drink. In this study, patients having bowel surgery are given either Generation UCAN or the standard sugar-based drink PreLoad® before their operation. The research team will then see if there is a difference in insulin resistance and stress response to surgery in patients who drank either PreLoad® or Generation UCAN before their operation.

### Who can participate?

Adults having a laparoscopic bowel resection operation.

### What does the study involve?

Participants are randomly allocated into one of two groups. Those in group 1 (control group) are given the standard pre-operative carbohydrate drink Preload®. Those in group 2 (intervention group) are given the new pre-operative starch drink Generation UCAN. All participants receive the same care according to the standard ERP. Blood samples are taken before and after surgery along with routine medical assessments and questionnaires. Follow up continues until 7 days after surgery.

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

The only change to patient care in this study will be the exchange of the standard pre-operative carbohydrate drink for a new one in the treatment group. All other aspects of the patient's care will remain the same.

Where is the study run from?  
East Lancashire Healthcare Trust (UK)

When is the study starting and how long is it expected to run for?  
August 2015 to September 2023

Who is funding the study?  
East Lancashire Healthcare Trust (UK)

Who is the main contact?  
Dr A Krige, anton.krige@elht.nhs.uk

## Contact information

### Type(s)

Public

### Contact name

Dr Anton Krige

### Contact details

Royal Blackburn Hospital  
Haslingden Road  
Blackburn  
Lancashire  
Blackburn  
United Kingdom  
BB2 3HH

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anton.krige@elht.nhs.uk

## Additional identifiers

### EudraCT/CTIS number

Nil known

### IRAS number

### ClinicalTrials.gov number

Nil known

### Secondary identifying numbers

Nil known

## Study information

### Scientific Title

Effect of a modified starch compared to standard maltodextrin on post-operative insulin resistance when given pre-operatively for laparoscopic colorectal surgery as part of an enhanced recovery program: a pilot RCT (SuperStarch Study)

## **Study objectives**

1. Does the use of a modified, long-acting starch before surgery, the first dose taken the night before and the second up to 2 hours before surgery, reduce the development of insulin resistance post-operatively when given as part of an Enhanced Recovery Protocol?

1.1. Primary null hypothesis: There is no difference in postoperative insulin resistance between patients who drink Preload® compared to those drinking Generation UCAN pre-operatively.

1.2. Primary alternative hypothesis: There is a difference in postoperative insulin resistance between patients who drink Preload® compared to those drinking Generation UCAN pre-operatively.

2. Does the use of a modified, long-acting starch before surgery, the first dose taken the night before and the second up to 2 hours before surgery, attenuate the post-operative stress response and show an improved recovery profile (i.e. reduced incidence of post-operative nausea and vomiting, decreased fatigue and decreased thirst and hunger?) when given as part of an Enhanced Recovery Protocol?

2.1. Secondary null hypotheses: There is no difference in postoperative stress response or in recovery profile between patients who drink Preload® compared to those drinking Generation UCAN pre-operatively.

2.2. Secondary alternative hypotheses: There is a difference in postoperative stress response or in recovery profile between patients who drink Preload® compared to those drinking Generation UCAN pre-operatively.

## **Ethics approval required**

Old ethics approval format

## **Ethics approval(s)**

North West Centre of Research Ethics Committees, 26/06/2015, ref: 15/NW/0511

## **Study design**

Randomised controlled unblinded parallel study

## **Primary study design**

Interventional

## **Secondary study design**

Randomised parallel trial

## **Study setting(s)**

Hospital

## **Study type(s)**

Treatment

## **Participant information sheet**

Not available in web format, please use contact details to request a participant information sheet.

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

Post-operative insulin resistance

## **Interventions**

Participants are allocated to one of two groups:

1. Group one (control) receives the current pre-operative carbohydrate solution, Preload® (a maltodextrin solution). The Preload® group will follow the standard enhanced recovery protocol (ERP) and ingest two 50g sachets in 800ml water the evening before surgery (providing 95g of carbohydrate) and one sachet (providing 47.5g of carbohydrate) in 400ml water up to 2 hours before surgery. All other aspects of patient care will be standardised as per our ERP.
2. Group two (intervention) receives Generation UCAN (a hydrothermally modified starch solution). This group will ingest 800ml water the night before surgery and 56.55g of flavoured Generation UCAN (providing 47.5g of carbohydrate) in 400ml water up to 2 hours before surgery. All other aspects of patient care will be standardised as per our ERP.

## **Intervention Type**

Supplement

## **Primary outcome measure**

Change in insulin resistance from baseline on postoperative day 1 (POD 1) measured by Homeostasis Model Assessment (HOMA), which utilises serial fasting blood glucose and insulin measurements.

## **Secondary outcome measures**

1. Change in insulin resistance from baseline on POD 2 and POD 3 measured using HOMA
2. Stress response following surgery, measured by sampling cortisol levels preoperatively, at the end of surgery, and at 24 hours post-operatively and the inflammatory response measured by CRP levels pre-operatively, and on POD 1, 2 and 3.
3. Ultrasound measurement of gastric volume pre-operatively
4. Recovery profile including:
  - 4.1. PQRS score measured pre-operatively, at 2 hours after surgery, POD 3 and POD 7.
  - 4.2. Muscle strength measured using a grip strength dynamometer pre-operatively, twice daily (morning and afternoon) on POD 1, 2 and 3, and then once daily on alternate days thereafter until discharge (the patient's dominant hand will be used for this measurement, and the best out of three consecutive strengths will be used with mean values analysed).
  - 4.3. Time to surgical fitness for discharge measured in hours (date and time of fitness for surgical discharge is recorded in the ERP database). Morbidity measured using the POMS score on POD 2 and 5.
  - 4.4. PONV VAS score on POD 1.
5. Sensations of thirst & hunger Visual Analogue Scale (VAS) score immediately pre-operatively and on POD 1.
6. Adverse events i.e. aspiration and hypo- or hyperglycaemia (these are the only relevant safety assessments for these interventions) will be assessed on the operative day for the former & up to the end of POD 1 for the latter.
7. Cost analysis: difference in cost between doses of Pre-Load & Generation UCAN and costs of respective hospital and critical care lengths of stay.

## **Overall study start date**

01/08/2015

## **Completion date**

01/09/2023

## **Reason abandoned (if study stopped)**

Lack of staff/facilities/resources

# Eligibility

## Key inclusion criteria

1. Patients >18 years
2. Laparoscopic colorectal resection
3. Included in Enhanced Recovery Protocol
4. American Society of Anesthesiologists (ASA) Physical Status classification 1-3
5. Able to give consent

## Participant type(s)

Patient

## Age group

Adult

## Lower age limit

18 Years

## Sex

Both

## Target number of participants

Total 40 divided between two clusters.

## Key exclusion criteria

1. Non-English speaker
2. Pregnancy
3. Diagnosed diabetes mellitus (diet, drug or insulin controlled).
4. Diagnosed impaired glucose tolerance (fasting glucose in POAC >5.5 mmol/l and/or HbA1C>5.7%)
5. Decreased gastrointestinal motility (from medication or disease) or predisposition to reflux
6. Diagnosis of inflammatory bowel disease
7. Allergy to either preoperative carbohydrate drink

## Date of first enrolment

01/08/2022

## Date of final enrolment

01/02/2023

# Locations

## Countries of recruitment

England

United Kingdom

## Study participating centre

**Royal Blackburn Hospital**

Haslingden Road  
Blackburn  
United Kingdom  
BB2 3HH

**Study participating centre****Royal Surrey County Hospital**

Egerton Road  
Guildford  
United Kingdom  
GU2 7XX

## Sponsor information

**Organisation**

East Lancashire Healthcare Trust

**Sponsor details**

Research and Development Department  
Royal Blackburn Hospital  
Haslingden Road  
Blackburn  
Blackburn  
England  
United Kingdom  
BB2 3HH

**Sponsor type**

Hospital/treatment centre

**ROR**

<https://ror.org/002pa9318>

## Funder(s)

**Funder type**

Hospital/treatment centre

**Funder Name**

East Lancashire Healthcare Trust (UK)

# Results and Publications

## Publication and dissemination plan

The publications will be done shortly after results have been analysed. It is hoped that this will be done through peer reviewed journals. We hope to publish the study findings of comparison between Preload and SuperStarch.

## Intention to publish date

31/12/2023

## Individual participant data (IPD) sharing plan

The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication.

## IPD sharing plan summary

Published as a supplement to the results publication

## Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
<a href="#">Protocol file</a>		17/04/2015	23/08/2022	No	No
<a href="#">HRA research summary</a>			28/06/2023	No	No