

# Do food supplements containing live bacteria (probiotics) reduce or stop a particular infection (CPE) living in the bowel?

<b>Submission date</b> 07/08/2019	<b>Recruitment status</b> No longer recruiting	<input checked="" type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
<b>Registration date</b> 30/08/2019	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 30/08/2019	<b>Condition category</b> Infections and Infestations	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

Antibiotic resistance of Gram-negative bacteria, particularly the Enterobacteriaceae, is a major global concern. Manchester is known to have a higher spread of carbapenem-resistant *Klebsiella pneumoniae* which combines virulence, high transmissibility and transmissible resistance to almost all antibiotics. Traditional approaches, such as antimicrobial stewardship and infection control, are unlikely to reverse the spread of carbapenem-resistant Enterobacteriaceae. The probiotic species *Lactobacillus reuteri* inhibits Enterobacteriaceae and its administration reduces their counts in the infant gut. It is now used in paediatric practice to treat carriage of resistant strains of Enterobacteriaceae, including *Klebsiella pneumoniae*. This is a study in Manchester of immuno-competent adults known to be colonised with multi-resistant K pneumoniae. The aim is to investigate whether any falls in faecal counts of multi-resistant K pneumoniae seen after the administration of a probiotic are greater than any falls seen in the control group. The study will also investigate whether a lower proportion of the final faecal samples from probiotic-receiving than from control participants yield multi-resistant K pneumoniae on culture.

### Who can participate?

Patients aged 18 or older who are immuno-competent and colonised with multi-resistant K pneumoniae

### What does the study involve?

Participants are randomly allocated to be discharged from hospital with a prescription of 1 chewable probiotic tablet to take each day for 21 days, or no additional tablets at all. All participants, regardless of having been asked to take the probiotic tablet or not, need to return a faecal sample to the hospital 21 days after they have returned home from their stay. Participants are given a kit to post this sample and instructions on how to do this. The kits are pre-paid for so it does not cost participants anything to post the sample. A Research Nurse from the hospital calls participants to remind them to send the sample and also ask questions about how the participant is feeling and to check that they have taken all probiotic tablets (if allocated to this group)

What are the possible benefits and risks of participating?

There will be no direct benefit to taking part in this study. However, it is hoped that the information from this study will show the impact probiotics have on the gut count of multiresistance bacteria in the gut for future investigations. It is not expected that the participants will experience any serious adverse events related to the probiotic. These products are considered to be food and are safe for consuming. There are a number of studies with children and adults supporting this. No other risks are identified.

Where is the study run from?

1. Manchester Royal Infirmary (UK)
2. Wythenshawe Hospital (UK)

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

November 2018 to December 2019

Who is funding the study?

Healthcare Infection Society (UK)

Who is the main contact?

Dr Beatriz Duran Jimenez  
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## Contact information

### Type(s)

Scientific

### Contact name

Dr Beatriz Duran Jimenez

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## Additional identifiers

### EudraCT/CTIS number

Nil known

### IRAS number

### ClinicalTrials.gov number

Nil known

### Secondary identifying numbers

B00261

## Study information

### Scientific Title

Randomised open-label controlled feasibility trial of probiotic in the elimination of faecal carriage carbapenemase-bearing *Klebsiella pneumoniae*

### Acronym

PITFALL

### Study objectives

1. To investigate whether any falls in faecal counts of a carbapenemase-bearing *Klebsiella pneumoniae* seen after 21 days of probiotic (*Lactobacillus reuteri*) administration to adults are greater than any falls seen in control adults
2. To determine whether a lower proportion of the final faecal samples from probiotic-receiving than from control subjects yields carbapenemase-bearing *K pneumoniae* on culture

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

Approved 26/03/2019, North West - Greater Manchester Central Research Ethics Committee (3rd Floor, Barlow House, 4 Minshull Street, Manchester, M1 3DZ, UK; Tel: +44 (0)207 104 8007; Email: nrescommittee.northwest-gmcentral@nhs.net), REC ref: 18/NW/0863

### Study design

Randomised open-label feasibility study

### Primary study design

Interventional

## Secondary study design

Randomised controlled 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

Patients with colonised carbapenemase-bearing *Klebsiella pneumoniae*

## Interventions

The intervention arm will involve patients taking the probiotic (as below). The control arm involves no intervention; there is no placebo so patients will be discharged without a supplement /probiotic.

The probiotic preparation to be used will be BioGaia Gastrus tablets (BioGaia AB, Stockholm, Sweden). BioGaia Gastrus chewable tablets is a dietary supplement containing a combination of the probiotic strain *Lactobacillus reuteri* 17938 (*Lactobacillus reuteri* Protectis) and *Lactobacillus reuteri* ATCC PTA 6475.

Dose: 1 chewable tablet per day for 21 days.

One tablet consists of a minimum of 200 million live *Lactobacillus reuteri* Gastrus. Ingredients: Bulking agent (isomalt), *L. reuteri* DSM 17938 and *L. reuteri* ATCC PTA 6475, fully hydrogenated vegetable oil (palm), flavour enhancer (ascorbic acid), mandarin flavouring and mint flavouring. One tablet consists of a minimum of 200 million live *L. reuteri* Gastrus. Net weight per tablet: 700 mg.

There is no physical follow-up visit at hospital. At 21 days patients will post a faecal sample to the hospital in a pre-paid sampling/postal kit. This will mark the end of trial involvement.

## Intervention Type

Supplement

## Primary outcome measure

1. The feasibility of initiating studies in the secondary care setting, by identifying potential participants but study interventions carried out in the community
2. The feasibility of conducting a randomised controlled trial in immuno-competent adults known to be colonised with multi-resistant *K pneumoniae* and an assessment of recruitment and retention rates over a 12 month period

## Secondary outcome measures

1. Faecal counts of multi-resistant *Klebsiella pneumoniae* measured using faecal sampling and culture at day 0 and day 21±2

2. Faecal counts of carbapenemase-bearing *Klebsiella pneumoniae* measured using faecal sampling and culture at day 0 and day 21±2

**Overall study start date**

27/11/2018

**Completion date**

17/12/2019

## **Eligibility**

**Key inclusion criteria**

1. Written informed consent
2. Male or female; aged 18 years or older
3. Immunocompetent as per medical history
4. TCD-KP detected on rectal screening in the last 2 months
5. Not currently hospital inpatient (when planning starting probiotic supplementation)

All individuals will be considered for inclusion in this study regardless of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion and belief, sex, and sexual orientation except where the study inclusion and exclusion criteria EXPLICITLY state otherwise.

**Participant type(s)**

Patient

**Age group**

Adult

**Lower age limit**

18 Years

**Sex**

Both

**Target number of participants**

40

**Key exclusion criteria**

1. Any active infection at the time of enrolment
2. Presence of or likely to develop mucositis on examination, as per medical history
3. History of Presence cardiac prostheses
4. Consumption of any marketed probiotic product in the 30 day period prior to enrolment and during the duration of the trial
5. Consumption of Over the Counter (OTC) medication or herbal remedies labelled as to improve your immunity system or "for daily immunity"
6. In receipt of systemic or intestinal antibiotic within 14 days before baseline samples to be taken
7. Receiving or intended to receive antibiotic within 30 days of 1st baseline sample
8. Current and past history of pancreatitis

9. Concurrent melaena
10. Abdominal surgery within the 3 months prior to study enrolment
11. Known pericardial constriction, genetic hypertrophic cardiomyopathy, or infiltrative cardiomyopathy
12. Any medical condition, which in the opinion of the Investigator, may place the patient at higher risk from his/her participation in the study, or is likely to prevent the patient from complying with the requirements of the study or completing the study
13. Past medical history of Severe renal dysfunction at Visit 0, defined as e GFR <30 mL/min, or end-stage renal disease requiring dialysis.
14. History of severe hepatic impairment or liver dysfunction at Visit 0, defined as total bilirubin above the ULN (excluding patients with Gilbert's syndrome), AST or ALT >3 times the ULN or alkaline phosphatase >2.5 times the ULN
15. Known hypersensitivity to any of the components of the probiotic.
16. Pregnancy, lactation or planning pregnancy. A pregnancy test will not be required before study enrolment, however, if a woman determines that she is pregnant during the study period, she must stop the probiotic

**Date of first enrolment**

02/09/2019

**Date of final enrolment**

26/11/2019

## **Locations**

**Countries of recruitment**

England

United Kingdom

**Study participating centre**

**Manchester Royal Infirmary**

Manchester University NHS Foundation Trust

Oxford Road

Manchester

United Kingdom

M13 9WL

**Study participating centre**

**Wythenshawe Hospital**

Manchester University NHS Foundation Trust

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# Sponsor information

## Organisation

Manchester University NHS Foundation Trust

## Sponsor details

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## Sponsor type

Hospital/treatment centre

## Website

<https://mft.nhs.uk/research/>

## ROR

<https://ror.org/00he80998>

# Funder(s)

## Funder type

Other

## Funder Name

Healthcare Infection Society

## Alternative Name(s)

HIS

## Funding Body Type

Private sector organisation

## Funding Body Subtype

Associations and societies (private and public)

## Location

United Kingdom

# Results and Publications

## Publication and dissemination plan

- 1. Peer-reviewed scientific journals
- 2. Conference presentation
- 3. The researchers do not wish to make the protocol available at this point, but will likely do so at the conclusion of the study when they publish

## Intention to publish date

01/06/2020

## Individual participant data (IPD) sharing plan

The data sharing plans for the current study are unknown and will be made available at a later date

## IPD sharing plan summary

Data sharing statement to be made available at a later date

## Study outputs

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