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Saliva to predict risk of disease using transcriptomics and epigenetics

Submission date	Recruitment status	[ ] Prospectively registered
15/09/2017	No longer recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
04/10/2017	Completed	[X] Results
Last Edited	**Condition category**	[ ] Individual participant data
05/11/2024	Cancer	

Plain English summary of protocol

Background and study aims

There are numerous lifestyle-altering diseases in the UK for which patients undergo multiple invasive tests before they can be properly diagnosed. These tests are often uncomfortable and inconvenient for patients, in addition to being very costly for the National Health Service (NHS). They typically involve a degree of risk to patients (e.g. bleeding and bowel rupture during endoscopy, or harmful radiation exposure from CT scanning). Many of these tests also tend to have normal results, since only a small fraction of patients are eventually diagnosed with the disease being sought. The aim of this study is to analyse symptoms, risk factors and genetic changes detected in saliva samples to predict patients' risk of developing diseases.

Who can participate?

Patients aged over 18 who are already known to have oesophageal or colorectal disease including Crohn's disease, and patients who are awaiting tests to diagnose or exclude these diseases.

What does the study involve?

Participants complete a questionnaire to obtain information regarding their symptoms and risk factors for the disease. Saliva and blood samples are collected and, when appropriate, blood and tissue samples are taken during any investigations that they are already scheduled to undergo as part of their treatment process. No additional procedures or interventions are performed on these patients, and their clinical treatment is not affected in any way. Genetic analysis is performed on these samples to see if the characteristics of the patients' saliva in combination with symptoms and other risk factors can accurately predict their disease. The saliva test results are compared with the blood and, where possible, tissue test results.

What are the possible benefits and risks of participating?

The results may help to create a cheap, portable and quick bedside test that uses patients' saliva to predict their risk of disease, so that only high-risk patients will in future need to undergo invasive investigations. This will save the NHS and other healthcare systems worldwide significant amounts of money, while saving patients across the world time, inconvenience and reducing their risk of complications from unnecessary investigations.

Where is the study run from?
1. University College London (UK)
2. University College London Hospitals NHS Trust (UK)
3. Guy's and St Thomas' NHS Foundation Trust (UK)
4. Lister Hospital (UK)
5. Frimley Park Hospital (UK)
6. Wexham Park Hospital (UK)
7. Western Sussex Hospitals NHS Foundation Trust (UK)
8. Princess Alexandra Hospital (UK)
9. Royal Albert Edward Infirmary (UK)
10. Royal Surrey County Hospital (UK)
11. Shrewsbury and Telford Hospital NHS Trust (UK)
12. UK IIBD Bioresource

When is the study starting and how long is it expected to run for?
April 2017 to March 2023

Who is funding the study?
1. Rosetrees Trust (UK)
2. CORE Digestive Disorders Foundation (UK)
3. Helmsley Charitable Trust (USA)

Who is the main contact?
Prof. Laurence Lovat

Contact information

Type(s)
Scientific

Contact name
Prof Laurence Lovat

Contact details
Research Department of Targeted Intervention
Division of Surgery & Interventional Science
University College London
Floor 3, Charles Bell House
43-45 Foley Street
London
United Kingdom
W1W 7TS

Additional identifiers

Integrated Research Application System (IRAS)
217388

Study information

Scientific Title
Saliva to predict risk of disease using transcriptomics and epigenetics (SPIT): an observational study

Acronym
SPIT

Study objectives
There are numerous lifestyle-altering diseases in the UK for which patients undergo multiple invasive tests before they can be properly diagnosed. These tests are often uncomfortable and inconvenient for patients, in addition to being very costly for the National Health Service (NHS). They typically involve a degree of risk to patients (e.g. bleeding and bowel rupture during endoscopy; or harmful radiation exposure from CT scanning). Many of these tests also tend to have normal results, since only a small fraction of patients are eventually diagnosed with the disease being sought. This study will focus on using analysis of symptoms, risk factors and genetic changes detected in saliva samples to predict patients' risk of developing diseases.

Ethics approval required
Old ethics approval format

Ethics approval(s)
West Midlands - Coventry & Warwickshire Research Ethics Committee, 28/02/2017, ref: 17/WM/0079

Primary study design
Observational

Study design
Observational basic science study

Study type(s)
Screening

Health condition(s) or problem(s) studied
Oesophageal cancer, colorectal cancer, Crohn's disease

Interventions
A 'symptom and risk factor' questionnaire will be developed based on known symptoms and risk factors for the disease being studied. Saliva will be collected from patients from the identified groups representing the disease profiles being studied and appropriate control subjects and analysed for epigenetic and transcriptomic biomarkers. Matched blood samples may also be collected from patients to demonstrate whether the salivary epigenetic and transcriptomic findings match those in the blood. Where patients are already undergoing invasive tests, matched tissue samples from normal and diseased tissue may be collected to demonstrate whether the salivary epigenetic and transcriptomic findings match those in the tissue. Bioinformatics combined with novel artificial intelligence techniques will be used to analyse the samples to identify highly accurate biomarker profiles to predict the presence of both disease and disease risk.

Intervention Type
Other

Primary outcome(s)
Epigenetic and transcriptomic biomarkers, measured using next generation sequencing of saliva /blood/tissue samples collected at single study visit

Key secondary outcome(s)
Disease symptoms and risk factors, measured using questionnaire at single study visit

Completion date
01/10/2023

Eligibility

Key inclusion criteria
Current participant inclusion criteria as of 25/08/2021:
For the initial study of oesophageal disease, both current and new patients identified as having oesophageal disease (e.g. Barrett’s oesophagus, oesophageal cancer) will be recruited together with those being referred along the 2-week-wait cancer-target pathway. Patients without oesophageal disease attending for a clinically indicated endoscopy may be recruited as controls.

For the initial study of colorectal disease, patients will be recruited from the National Bowel Cancer Screening Programme, as well as from other patients with colorectal disease attending for colonoscopy. Patients without colorectal disease attending for a clinically indicated colonoscopy may be recruited as controls.

For patients with Crohn's disease, both the UK IBD Bioresource and participating centres will contact patients inviting them to sign up for the study online.

Previous participant inclusion criteria:
For the initial study of oesophageal disease, both current and new patients identified as having oesophageal disease (e.g. Barrett’s oesophagus, oesophageal cancer) will be recruited together with those being referred along the 2-week-wait cancer-target pathway. Patients without oesophageal disease attending for a clinically indicated endoscopy may be recruited as controls.

For the initial study of colorectal disease, patients will be recruited from the National Bowel Cancer Screening Programme, as well as from other patients with colorectal disease attending for colonoscopy. Patients without colorectal disease attending for a clinically indicated colonoscopy may be recruited as controls.

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
Current participant exclusion criteria as of 25/08/2021:
1. Patients who are unable to undergo definitive investigations such as colonoscopy or surgery as a definitive pathological diagnosis will not be achievable in such instances
2. Patients who are unable to give informed consent in English, or in the presence of an English translator
3. Pregnant women
4. Patients under the age of 18 years

Previous participant exclusion criteria:
1. Patients who are unable to undergo definitive investigations such as colonoscopy or surgery as a definitive pathological diagnosis will not be achievable in such instances
2. Patients who are unable to give informed consent in English, or in the presence of an English translator
3. Pregnant women
4. Patients under the age of 21 years

Date of first enrolment
06/04/2017

Date of final enrolment
01/03/2023

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
University College London
United Kingdom
WC1E 6BT

Study participating centre
University College London Hospitals NHS Trust
United Kingdom
NW1 2PG

Study participating centre
Guy's and St Thomas' NHS Foundation Trust
United Kingdom
SE1 9RT

Study participating centre
Lister Hospital
United Kingdom
SW1W 8RH

Study participating centre
Frimley Park Hospital
United Kingdom
GU16 7UJ

Study participating centre
Wexham Park Hospital
United Kingdom
SL2 4HL

Study participating centre
Western Sussex Hospitals NHS Foundation Trust
United Kingdom
BN11 2DH

Study participating centre
Princess Alexandra Hospital
United Kingdom
CM20 1QX

Study participating centre
Royal Albert Edward Infirmary
United Kingdom
WN1 2NN

Study participating centre
Royal Surrey County Hospital
United Kingdom
GU2 7XX

Study participating centre
Shrewsbury and Telford Hospital NHS Trust
United Kingdom
SY3 8XQ

Study participating centre
IBD Bioresource
Box 299, Cambridge BioMedical Campus
Hills Road
Cambridge
United Kingdom
CB2 0QQ

Sponsor information

Organisation
University College London

ROR
https://ror.org/02jx3x895

Funder(s)

Funder type
Charity

Funder Name
Rosetrees Trust

Alternative Name(s)
Rosetrees, Teresa Rosenbaum Golden Charitable Trust

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
United Kingdom

Funder Name
CORE Digestive Disorders Foundation

Funder Name
Leona M. and Harry B. Helmsley Charitable Trust

Alternative Name(s)
Helmsley Charitable Trust, The Leona M. and Harry B. Helmsley Charitable Trust, Leona M. & Harry B. Helmsley Charitable Trust, The Helmsley Charitable Trust, The Leona M and Harry B Helmsley Charitable Trust, Helmsley

Funding Body Type
Private sector organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
United States of America

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 Prof. Laurence Lovat. Data will be available after the study ends.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		01/01/2024	05/11/2024	Yes	No
HRA research summary			28/06/2023	No	No
Other publications		09/03/2020	25/11/2020	Yes	No