

# Biomarker improvement and development in non-endoscopic samples

<b>Submission date</b> 20/12/2022	<b>Recruitment status</b> No longer recruiting	<input type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
<b>Registration date</b> 31/01/2023	<b>Overall study status</b> Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
<b>Last Edited</b> 31/01/2023	<b>Condition category</b> Digestive System	<input type="checkbox"/> Individual participant data <input type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

In the past two years, Cyted Ltd (UK) has provided more than 10,000 non-endoscopic based tests for Barrett's oesophagus and Oesophageal adenocarcinoma. These tests have enabled NHS Trusts to address the endoscopic backlog created during COVID. Cyted's current test relies on a pathologist reading a standard haematoxylin and eosin (H&E) stained slide alongside a slide-based antibody stain (TFF3) to diagnose Barrett's, and a separate slide-based antibody stain (P53) to identify patients at who are at a high risk of cancer. We aim to improve these tests, ensuring that patients continue to be provided with the best information available regarding their personal disease risk. This includes expanding our ability to test for oesophageal squamous cell carcinoma (OSCC) and other oesophageal diseases such as eosinophilic oesophagitis (EoE).

### Who can participate?

Samples collected from patients with Barrett's oesophagus and Oesophageal adenocarcinoma during a routine diagnostic procedure

### What does the study involve?

This study intends to:

1. Improve the accuracy of our existing artificial intelligence platform with the inclusion of additional slide images from our diagnostic archive
2. Develop additional biomarkers to supplement the existing slide-based stains (i.e. TFF3, P53) for diagnosis and risk stratification in Barrett's screening and surveillance samples - Identify diagnostic biomarkers for OSCC and EoE

Improvements to these diagnostic tests will also enable improvements in our pathology reporting to NHS Trusts through increased accuracy for cancer risk, and screening for other diseases (i.e. EoE) that are currently only available through endoscopic sampling.

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

Not provided at time of registration.

### Where is the study run from?

Cyted Ltd (UK)

When is the study starting and how long is it expected to run for?  
November 2022 to December 2025

Who is funding the study?  
Cytel Ltd (UK)

Who is the main contact?  
Dr Sarah Killcoyne (Principal investigator), sarah.killcoyne@cyted.ai (UK)  
Ms Basirat Afinowi, basirat.afinowi@cyted.ai (UK)

## Contact information

### Type(s)

Principal investigator

### Contact name

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## Additional identifiers

Integrated Research Application System (IRAS)  
322308

## Study information

## **Scientific Title**

Biomarker improvement and development in non-endoscopic samples within the Cyted diagnostic pathway

## **Study objectives**

This study's primary objective is to improve our available biomarker tests to ensure continued high-quality diagnostic information is provided to patients. This will be achieved by identifying additional biomarkers that can be used in addition to, or as an alternative to the current TFF3 /P53/atypia slide-based stains.

## **Ethics approval required**

Old ethics approval format

## **Ethics approval(s)**

Approved 05/12/2022, South Central - Berkshire B Research Ethics Committee (The Old Chapel, Royal Standard Place, Nottingham, NG1 6FS, UK; +442071048276; berkshireb.rec@hra.nhs.uk), ref: 22/SC/0470

## **Study design**

Single-centre retrospective cohort study

## **Primary study design**

Observational

## **Study type(s)**

Diagnostic

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

Diagnosis of oesophageal conditions in patients with reflux including Barrett's oesophagus, Oesophageal cancer, and Eosinophilic oesophagitis.

## **Interventions**

This study is a single-centre retrospective cohort study using diagnostic samples collected during a routine diagnostic procedure and reported a minimum of 3 months prior to inclusion.

A targeted set of molecular tests will be run to assess sufficiency for the existence of specific cell types relating to disease, sensitivity/specificity analysis in comparison to existing methods and assess what the normal/healthy range is in patients without cancer. Image-based machine learning methods will include analysis of cellular mixtures and ratios of cell types in different cohorts and an accuracy assessment for our internal quality control procedures.

## **Intervention Type**

Other

## **Primary outcome(s)**

1. Sensitivity/specificity for any new biomarker for the given endpoint (1) diagnosis of Barrett's by endoscopy OR (2) risk of cancer) at the end of the study
2. Accuracy as measured against the pathologist's diagnosis for Barrett's diagnosis at the end of the study

## **Key secondary outcome(s)**

1. General improvements to our internal laboratory processes for sample testing and reporting to pathologists. Improvements are measured against the current internal standard for sample processing. Each improvement will be evaluated against an appropriate internal sample set, sample size calculations will be performed based on the specific process we address. The final timepoint for all improvement studies will be the end of the study.

2. Identification of biomarkers for other oesophageal conditions including EoE or OSCC measured using a combination of IHC biomarkers, the gold standard for any new biomarker is our pathologist's diagnosis and non-inferiority with our current IHC biomarker tests. Timepoint is at the end of the study.

**Completion date**

31/12/2025

## Eligibility

**Key inclusion criteria**

1. Patient aged 18 and over
2. Male or female
3. Final pathology report submitted a minimum of 3 months prior to search

**Participant type(s)**

All

**Healthy volunteers allowed**

No

**Age group**

Adult

**Lower age limit**

18 years

**Sex**

All

**Key exclusion criteria**

1. Samples submitted less than 3 months prior search
2. Samples that have not yet resulted in a pathology report

**Date of first enrolment**

01/01/2023

**Date of final enrolment**

01/12/2023

## Locations

**Countries of recruitment**

United Kingdom

England

### Study participating centre

Cyted Ltd  
22 Station Road  
Cambridge  
United Kingdom  
CB1 2JD

## Sponsor information

### Organisation

Cyted Ltd

## Funder(s)

### Funder type

Industry

### Funder Name

Cyted Ltd

## Results and Publications

### Individual participant data (IPD) sharing plan

Summary datasets generated during and/or analysed during the current study will be published as a supplement to the results publication. Individual results will not be made available to ensure anonymisation is preserved.

### 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="#">HRA research summary</a>			28/06/2023	No	No
<a href="#">Protocol file</a>	version 1.0	11/11/2022	22/12/2022	No	No