

PARTNER

University of Hull / Hull York Medical School · Hull University Teaching Hospitals NHS Trust

STUDY TYPE

Investigator-led, open-label feasibility trial (baseline → azithromycin), with continuous cough monitoring

THERAPEUTIC AREA

Chronic cough across multiple respiratory diseases (chronic cough, interstitial lung disease, COPD, asthma)

STUDY SNAPSHOT

Single centre (Castle Hill Hospital, Hull, UK) · 30 recruited / 26 completed · July 2023 – May 2024

REGULATORY

ClinicalTrials.gov NCT05469555 · REC ref 22/NE/0194 · Sponsor: Hull University Teaching Hospitals NHS Trust

KEY OUTCOME

Hyfe's cough tracking provided continuous, objective cough measurement alongside high-resolution oesophageal manometry, supporting a multi-endpoint design that examined cough and oesophageal function together for the first time.

4
DIAGNOSIS GROUPS
30
RECRUITED PATIENTS
26
COMPLETED PATIENTS
92%
STUDY COMPLETION
CHALLENGE

Hull York Medical School's Respiratory Research Group studies the gut-lung axis in chronic respiratory disease, working from the hypothesis that oesophageal dysmotility contributes to chronic cough. To explore whether azithromycin (a motilin-receptor agonist that may improve oesophageal motility) affects both oesophageal function and cough, the team designed a study that measured the two together: repeated high-resolution oesophageal manometry paired with continuous cough measurement, across a population of chronic-cough patients spanning several underlying respiratory diseases.

Cough is often assessed with 24-hour cough counts on two occasions, or with subjective diaries: periodic snapshots, subject to recall bias, and noisy given the day-to-day variability in cough. The team needed a continuous, objective cough signal that could run unobtrusively in patients' daily lives, perform consistently across a heterogeneous cohort, and operate as one endpoint alongside an invasive physiological measurement, all while remaining acceptable to patients and an ethics board.

SOLUTION

Each participant was continuously monitored with the Hyfe for at least one week at baseline and for four weeks after starting azithromycin, producing timestamped cough counts around the clock, alongside high-resolution oesophageal manometry performed before treatment and again at four weeks. Hyfe provided the cough watches for the study.



This is the first study to combine continuous longitudinal cough monitoring with repeated high-resolution oesophageal manometry, allowing the team to relate objective cough to oesophageal function within the same patients. Hyfe's cough tracking provided the study's continuous objective cough measurement, running alongside high-resolution oesophageal manometry across a cohort spanning several respiratory diagnoses.

It also fit the practical realities of a real clinic. Cough detection runs on-device, with no audio stored or transmitted, which Dr Sykes highlights as decisive for ethics approval and patient trust. Monitoring was decentralized and low-burden: patients wore the watch through their normal daily lives, with no requirement to be tech-savvy, and the team captured continuous cough data across a wide age range.

RESULTS

Hyfe's cough tracking performed across a multi-indication cohort and a multi-endpoint design. The study recruited a mixed chronic-respiratory population, ran continuous monitoring in parallel with manometry, and completed successfully, with strong retention and high-quality continuous cough data.

What the deployment showed	Result
Supported a multi-indication cohort	4 diagnosis groups in one cohort: chronic cough (60%), ILD (23%), COPD (~10%), asthma (~7%)
Provided continuous objective cough measurement in parallel with HROM	Continuous cough monitoring run in parallel with repeated high-resolution oesophageal manometry
Completed in a real-world clinical setting	30 recruited, 26 completed (87% retention) at a single center
High-quality continuous cough data	92% of completers (24 of 26) achieved satisfactory continuous cough recordings
Privacy by design	On-device detection; no audio stored or transmitted (supported ethics approval)
Patient acceptability	Continuous wearable monitoring accepted across a wide age range; minimal technical burden

OPERATIONAL SNAPSHOT

STUDY DURATION

~5 weeks per participant (≥ 1 -week baseline + 4 weeks on azithromycin)

DESIGN

Investigator-led, open-label feasibility trial; continuous decentralized cough monitoring

PARALLEL MEASUREMENT

High-resolution oesophageal manometry

SITE

Single centre — Castle Hill Hospital, Hull, UK; recruitment 3/month over 10 months

POPULATION

30 recruited / 26 completed; mixed chronic-respiratory (chronic cough, ILD, COPD, asthma); mean age 65.2; 57% female

"Continuous cough monitoring is far superior to counting coughs on two separate occasions. Cough trials often have a large placebo effect, and prolonged recording lets us see the granular detail, like whether a therapy is improving the morning cough a patient finds most bothersome."

Hyfe's dashboard is an extremely useful tool for monitoring cough this way. This method of cough recording also allows for novel cough analysis using metrics such as cough density and relief-of-cough much more easily. Patients found it extremely convenient to wear and love that they don't have to be tech-savvy; we've collected full datasets from patients of all ages, including people in their late 80s."

— Dr Dominic Sykes, NIHR Academic Clinical Lecturer
in Respiratory Medicine, Hull York Medical School

WHAT THIS MEANS FOR YOUR STUDY

For sponsors, CROs and academic groups, this study shows Hyfe's cough tracking providing continuous, objective cough measurement within a rigorous, multi-modal design. It supported a cohort spanning four respiratory diagnoses, ran in parallel with a specialist physiological measurement (high-resolution oesophageal manometry), and delivered continuous, objective cough data throughout a successfully completed study.