Cobalt Medical Charity – Research Overview

Nov 2026

Introduction

Cobalt Medical Charity has three strands:
Diagnosis, Research and Education.

Research is an integral part of the Cobalt ecosystem that delivers PET/CT, CT, MRI, X-ray, and Ultrasound imaging services rated Outstanding by the Care Quality Commission.

Our charitable objectives underline our commitment to providing and assisting in "research into the methods of detection, diagnosis, treatment and prevention of sickness, in particular cancer, and publication of any useful results" – because we recognise how vital research is to improving patient outcomes.

Cobalt Medical Charity
Diagnosis • Research • Education

CareQuality Commission Outstanding March 2026

See our website:
www.cobalthealth.co.uk/research

Cobalt's research activity includes:

- ✓ Sourcing tracers and delivering high-specification, quality-assured imaging for clinical trials and translational studies.
- ✓ Providing funding, data, expert analysis and advice for a wide range of research projects.
- ✓ Co-authoring journal articles, textbook chapters, and research presented at national and international conferences.

Funding research

Cobalt allocates funding to enable research. Here are a few examples from 2025 and 2026:

- → We've offered grants for 2 new research studies to take place in Birmingham, pending the necessary NHS approvals.
- → We're funding protected time for a researcher analysing dementia scan durations using Florbetaben PET data from CIC.
- → We fund protected time for our Research Director Prof Iain Lyburn, Nuclear Medicine Physician Dr Ayah Nawwar, and Radiologist Dr Julie Searle to work on numerous research projects* and co-author a wealth of published research*. (*detailed on pages 5-10)
- → We funded protected time for our Senior Radiographer Kerry Pawley's UKIO-competition-winning 'More Than Just a Gown' research project.
- → We awarded a small grant to enable findings from a breast screening clinical audit to be presented at Symposium Mammographicum, and to NHS staff from Thirlestaine Breast Centre.

Supporting breast cancer research in partnership with Gloucestershire Hospitals NHS Foundation Trust

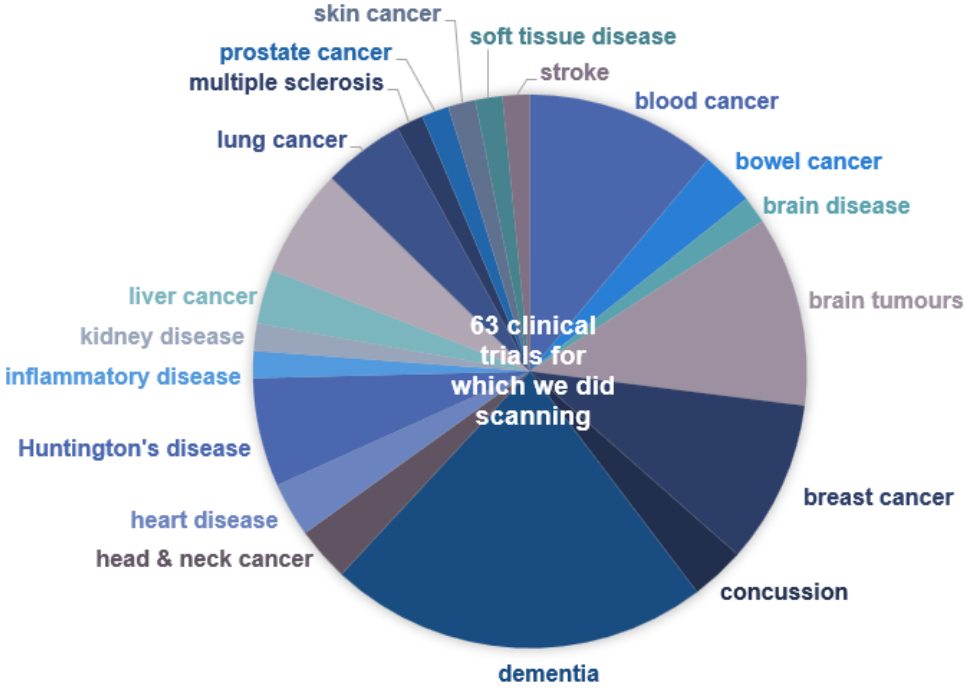
- → We are now in our 10th year of funding research nurse posts within GHNHSFT to support local participation in breast cancer clinical trials. We also deliver subsidised imaging for some of these trials, such as BRAID and FAST/DIAMOND.
- → Cobalt provides the Thirlestaine Breast Centre site to GHNHSFT at a subsidised rate, plus free meeting space in Linton House for CPD and breast speciality meetings.

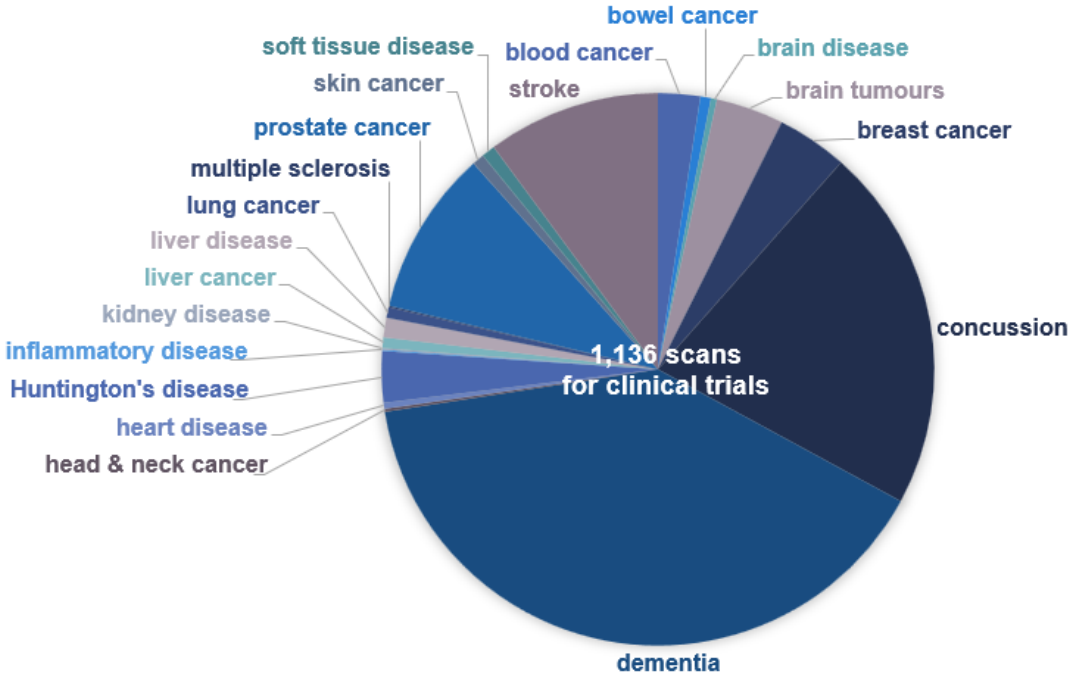
Clinical trials

Last year, we performed 1,136 scans of patients participating in 63 research trials.

Modality & department	Clinical trials		Scans for clinical trials	
	for which we did scanning in the year 2025-26	open for scanning as of Sep 2026	carried out in the year 2025-26	carried out in the first half of the year 2026-27
PET & CT at CIC	24	22	132	59
MRI at CIC			380	173
MRI on the 3.0T mobile	2	1	210	79
MRI at the ITM	37	60	414	187
Total	63	83	1,136	498

The clinical trials we supported in 2025-26 are improving diagnosis and treatment of the conditions shown below.





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Mobile 3.0 Tesla MRI for a clinical trial in Gloucestershire

We operate the only mobile 3.0 Tesla MRI scanner in Europe. In 2026, we provided mobile imaging for two clinical trials. One was a multimodal study of concussion in sport – aiming to improve diagnosis, to clarify when it's safe to return to training/competing, and to inform protective equipment and strategies. In collaboration with Oxford University, Podium Institute for Sports Medicine and Technology, Gloucester men's rugby club and Hartpury women's rugby club, our mobile MRI team scanned players' heads at home and away matches, as well as performing baseline and control scans.

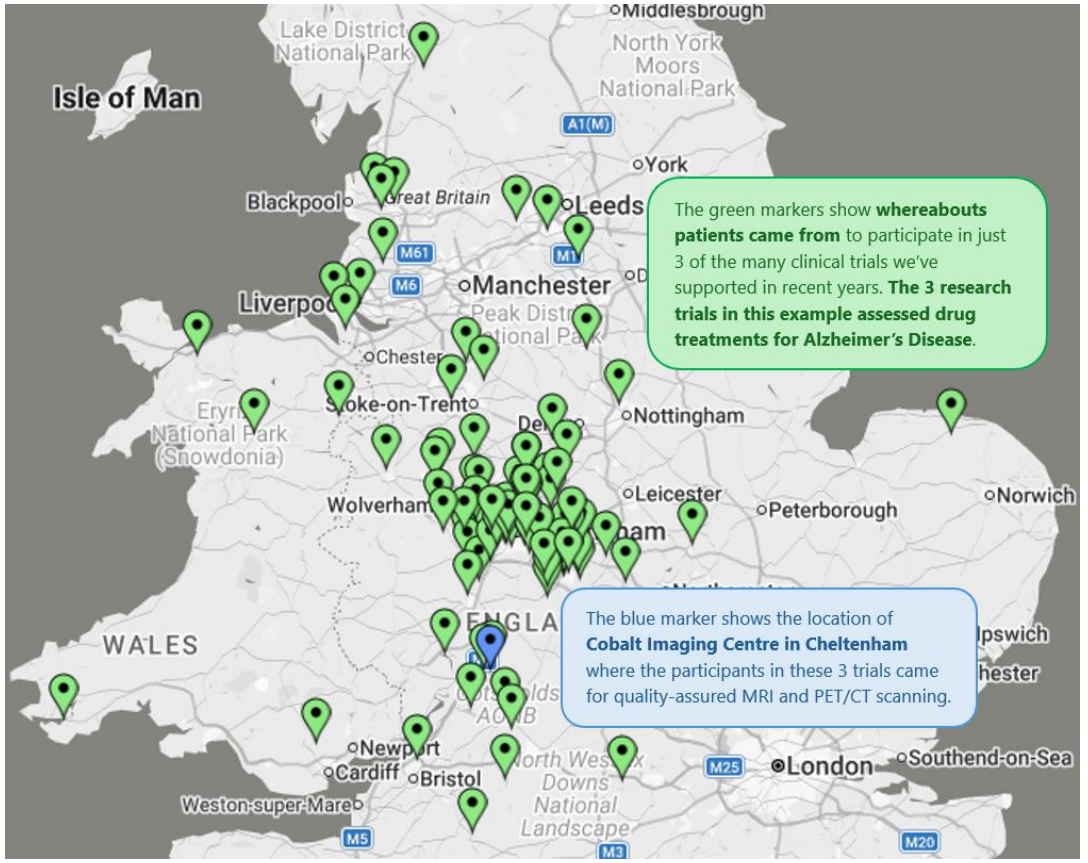
Trials benefiting patients far and wide

Our imaging centres in Cheltenham and Birmingham and our mobile 3.0T MRI scanner enable patients from across the UK to participate in clinical trials. Additionally, the findings from these trials benefit future patients nationally and internationally.

We deliver imaging for approximately 63 clinical trials each year. Looking at just 3 trials as an example:

94 participants came to Cobalt Imaging Centre over a 5-year period as part of a series of 3 trials of pharmaceutical treatments for Alzheimer's Disease. The amyloid-busting drugs assessed in these trials are designed to slow the disease's progression, by breaking down harmful buildups of amyloid protein in the brain. For each participant, we completed a screening MRI, 1 to 5 PET/CT scans, plus further MRI appointments.

The map shows where the 94 patients in this cohort travelled from – to access quality-assured imaging, delivered by research-experienced staff, at our multi-modality Cheltenham site.



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Translational studies

In addition to supporting clinical trials, our imaging team at the Institute of Translational Medicine in Birmingham also deliver specialist MRI scans to enable translational research – improving healthcare for people affected by epilepsy, brain tumours, brain disease, multiple sclerosis, cerebrovascular and musculoskeletal conditions.

Modality & department	Patient scans enabling translational research	
	carried out in the year 2025	carried out in the first 9 months of 2026
MRI at the ITM	130	147

In 2026, one of the translational research projects supported by Cobalt's imaging team in Birmingham led to the worldwide launch of new functional MRI paradigms from NordicNeuroLab. These require epilepsy patients to complete specific tasks during their scan, so that corresponding activation in their hippocampus can be analysed. This will help neurosurgeons to accurately predict whether a specific operation will cause memory loss in the patient. These new tools were developed and tested by Dr Vijay Sawlani and colleagues at University Hospitals Birmingham NHSFT with the help of Cobalt's 3.0T MRI team.

Research projects – in future

We are liaising with NHS and industry contacts about collaborating to support a wide range of potential/future research projects, including a feasibility study aiming to develop large-scale, well-governed and up-to-date imaging datasets for validating clinical AI tools.

Twice a year (15th Nov-31st Dec and 1st May-15th Jun), we welcome applications for support/funding from Cobalt to directly enable research. See our website cobalthealth.co.uk/research for more information.

We will soon be launching an annual award to support a Cobalt staff member/duo in undertaking their own research.

Research projects – in progress

The following 15 Cobalt-supported research projects are currently in progress, with more expected to start soon.

Project	Cobalt lead	External Collaborators	Cobalt's involvement	How it benefits patients	Expected outputs
Dementia service evaluation: **Investigating Florbetaben PET scan durations**	Ayah Nawwar	Bristol Physics team	Cobalt grant funding + retrospective access to Cobalt scan data + supervisory support from Ayah/Iain	Shortening scan times could increase successful completion of scans for dementia patients who struggle to remain still for extended periods, and shorten waiting lists.	**1 publication and/or conference presentation is expected.**
Dementia service evaluation: **Investigating FDG PET scan durations**	Ayah Nawwar	Bristol Physics team	We provided access to Cobalt scan data, plus supervision time from Ayah	Shortening scan times could increase successful completion of scans for dementia patients who struggle to remain still for extended periods, and shorten waiting lists.	**1 paper expected.** The researcher will be achieving a (Doctor of Clinical Science) degree.
Radiographer's research project: **More Than Just a Gown**	Kerry Pawley		Cobalt funded some protected time for Kerry to conduct the project + access to Cobalt patients to invite them to complete the questionnaire	Enhancing ease, comfort and dignity for patients	Development of prototype gown + potential conference presentation.
Breast cancer clinical trial: **SMALL**	Iain Lyburn	Belfast University	Iain is providing expertise (a second opinion) in interpreting mammogram images, and participating in the Trial Management Committee, plus we provided some equipment being used in this trial	Assessing a procedure (which can be performed under local instead of general anaesthetic) which provides an alternative to surgery for breast cancer patients.	2 papers published so far. **2 more papers expected.**
Prostate cancer projects: **Collaboration with Keele**	Iain Lyburn	Keele University	Iain is providing clinical opinion on the utility of basic science research on prostate biopsies	Helping to potentially develop a biomarker for prostate cancer.	3 papers published in 2025. **1 more paper expected.**
Breast cancer clinical trial sub-study: **NOSTRA breast MRI database**	Iain Lyburn	Glos. Hospitals NHS FT & Birmingham	Iain and Cobalt colleagues collated imaging data and provided observations and analysis	Looking at whether quantitative analysis of MR images could be used to predict the effectiveness of chemotherapy for patients with HER2-positive breast cancer	Presentation due at 2026 British Society of Breast Radiology conference + **1 paper expected**.

Project	Cobalt lead	External Collaborators	Cobalt's involvement	How it benefits patients	Expected outputs
Breast disease guidance: **ENIGMA** (Establishing National Guidance for Idiopathic Granulomatous Mastitis)	Iain Lyburn	Manchester University	Iain is part of the Committee of people putting together expert documents	Creating guidance and opportunities for research related to an inflammatory condition affecting the breast.	National guidance and hopefully an NHS research database. 4 papers published in 2026. **At least 1 more paper expected.**
Breast cancer clinical trial: **PHOENIX** DDR/Anti-PD-L1	Iain Lyburn	Institute of Cancer Research, London	Iain is on the trail management group and imaging group. Leveraging expertise acquired from NOSTRA trial	Assessing effectiveness of new chemotherapy drugs for patients with advanced breast cancer.	**1 paper expected.**
2 research papers invited by The British Journal of Radiology: (1) **FDG PETCT in Staging Breast Cancer**, (2) **FDG PETCT in Assessing Treatment Response in Breast Cancer**	Iain Lyburn, Ayah Nawwar & Julie Searle		Iain and Ayah are primary authors, and Cobalt provided all images for the case illustrations	Developing guidance for PET/CT scanning of patients with breast cancer.	**2 papers expected.**
Breast cancer screening trial: **PROSPECTS**	Iain Lyburn	King's College, London	Iain is Chair of the Trial Data Monitoring Group	Increasing earlier detection of breast cancer	**1 paper expected.**
Radiology Advisor: to MHRA's **PRASEAG** (Plastic, Reconstructive and Aesthetic Surgery Expert Advisory Group)	Iain Lyburn	Bristol	Iain is the group's radiology advisor	Improving patient safety in relation to surgical implants including for breast cancer patients.	3 papers published.
Peer review and editorial work for journals: (1) the **British Journal of Radiology** and (2) **Clinical Radiology**	Iain Lyburn		Iain shares his expertise as an Advisory Editor to these journals	Enabling the publication of numerous research papers authored by other researchers.	Numerous papers published by the journals.
Oversight/guidance for a large-scale mammography database: **OPTIMAM**	Iain Lyburn	Royal Surrey Scientific Computing team	Iain is a member of the Steering Committee for this live, centralised database of more than 10 million images	This database enables the development and testing of artificial intelligence software to interpret medical images.	2 papers published so far.

Project	Cobalt lead	External Collaborators	Cobalt's involvement	How it benefits patients	Expected outputs
Prostate cancer clinical trials: **Global Prostate Trial Steering Committee**	Karen Hackling -Searle	University College London	Karen sits on this trial steering committee	The committee provides oversight of progress, protocol adherence and safety in prostate cancer trials.	Prostate cancer trials overseen by this Committee include: PRIME, RECONCILE, VALIDATE-PRO, CLIMATE, LIMIT and ACT-RESOLUTE
Breast cancer clinical trials at Thirlestaine Breast Centre: e.g. **FAST MRI DYAMOND** & **other trials**	Jim Brown	Glos. Hospitals NHS FT	Subsidised imaging at CIC for BRAID and FAST/DYMOND trials Funding 3 breast cancer research nurse posts within GHNHSFT: a mammographer, co-ordinator, and senior HCA	Creating opportunities for patients in Gloucestershire to take part in clinical trials, and increasing recruitment of patients for research improving breast cancer diagnosis/treatment.	BRAID trial paper published.

Published research

Our current projects (listed above) are expected to result in 11 further pieces of research being published.

60+ pieces of published research have been made possible by Cobalt since the start of 2020 including:

- 48 items (journal articles, textbook chapters, and research abstracts presented at international conferences) authored by Prof Iain Lyburn and/or Dr Ayah Nawwar in collaboration with others.
- Translational research papers published by Consultants in Birmingham, supported by our MRI team at the ITM Imaging Centre.
- Research published in 2026 by the Manchester Lunch Health Check team, enabled by our mobile CT operations.
- Research co-authored by Dr Shah as part of an NHS Research Fellowship post funded by Cobalt in 2024.

This does not include: papers authored by clinical trials teams using our imaging services, nor research posters presented by Cobalt radiographers for example on the British Institute of Radiology stand at the UK Imaging & Oncology Annual Congress.

In future, an online library of published research authored/enabled by the Cobalt team will be added to our webpage: cobalthealth.co.uk/research
Meanwhile, the next pages show a snapshot (not an exhaustive list) of recently published research supported by Cobalt.

Research published in 2026 (so far)					
Type	Title	Journal or conference	Cobalt team	Explanation	Link
Scientific review	Risk factors for idiopathic granulomatous mastitis: scoping review	BJS (British Journal of Surgery) Open	Prof Lyburn	A review of the risk factors affecting the likelihood of a patient developing this unusual breast condition.	https://doi.org/10.1093/bjsopen/zrag137
Conference abstract	The NOSTRA Feasibility MRI substudy: use of breast MRI to predict pathological complete response (pCR) in HER2+/ER- breast cancer patients receiving neoadjuvant dual-targeted anti-HER2 treatment	British Society of Breast Radiology Annual Scientific Meeting	Prof Lyburn	This research looked at whether quantitative analysis of MR images can be used to predict the effectiveness of chemotherapy for patients with HER2-positive breast cancer.	Research poster presented at the British Society of Breast Radiology's 2026 Annual Scientific Meeting
Scientific review	Establishing National Guidance for Idiopathic Granulomatous Mastitis (ENIGMA): a scoping review of diagnostic practice	Journal of Clinical Pathology	Prof Lyburn	A review of current treatment options for an unusual breast condition.	https://doi.org/10.1136/jcp-2025-210394
Scientific review	Protocol for Establishing National Guidance for Idiopathic Granulomatous Mastitis (ENIGMA)	BJS (British Journal of Surgery) Open	Prof Lyburn	Research recommending best practice for diagnosing and treating an unusual breast condition.	https://doi.org/10.1093/bjsopen/zraf141
Original research	Evaluation of the Addenbrooke's Cognitive Examination-Revised in a routine cognitive outpatient clinic	Journal of Alzheimer's Disease	Prof Lyburn	This study reassessed the reliability of a memory test used in clinics to help diagnose dementia.	https://doi.org/10.1177/13872877261471428
Conference abstract	Longitudinal Multi-Instance Learning of Baseline and Post-Therapy 18F-FDG PET/CT for Prognostic Stratification in Esophageal Cancer [Research presented at the SNMMI 2026 Annual Meeting in America in June 2026]	Journal of Nuclear Medicine	Prof Lyburn, Dr Nawwar & Dr Searle	This research analysed an AI tool, which is being developed to aid Radiologists in reporting scan results - to diagnose oesophageal cancer and assess whether it's responding to chemotherapy.	https://jnm.snmjournals.org/content/67/supplement_1/261352
Scientific review	Idiopathic granulomatous mastitis: A scoping review to determine the quality and geography of the evidence base	The Breast	Prof Lyburn	This study assessed the available clinical data which could be used to improve diagnosis of an inflammatory breast disease.	https://doi.org/10.1016/j.breast.2026.104825
Original research	Population Impact of Risk-Based Lung Cancer Screening on Late-Stage Incidence in Greater Manchester	Journal of Thoracic Oncology	Mobile LHC service in Manchester	This paper analysed how a CT screening programme in Manchester had affected how early or late lung cancers were being diagnosed.	https://doi.org/10.1016/j.jtho.2025.11.014
Conference abstract	Audit of Low-Dose CT (LDCT) Radiation Exposure in the Greater Manchester Lung Cancer Screening Programme	Lung Cancer	Mobile LHC service in Manchester	This research, presented at a medical conference, looked at how specialised CT scanners can reduce the amount of radiation that patients are exposed to when undergoing scanning for lung health screening.	https://doi.org/10.1016/j.lungcan.2026.109187
Textbook chapter	Breast Imaging (chapter 6) in Rapid Review of Radiology	CRC Press	Prof Lyburn	This is a textbook used by doctors training to become radiologists, to improve their interpretation of scan images such as mammogram and ultrasound.	ISBN: 9781032287393

Research published in 2025					
Type	Title	Journal or conference	Cobalt team	Explanation	Link
Original research	Cross-National Radiomics Validation Using Mammography to Predict Occult Invasion in Ductal Carcinoma in Situ	Molecular Imaging and Radionuclide Therapy (MIRT)	Prof Lyburn	This research assessed how accurately an AI algorithm could distinguish between cancerous and benign cases of calcification shown in mammogram images.	https://doi.org/10.1148/radiol.243739
Original research	Comparison of supplemental breast cancer imaging techniques-interim results from the BRAID randomised controlled trial	The Lancet	Prof Lyburn	This study compared imaging techniques for breast cancer screening in women with dense breast tissue (for whom tumours can go undetected on a standard mammogram).	https://doi.org/10.1016/S0140-6736(25)00582-3
Interesting image	Penile Metastasis from Prostate Cancer: Detection on 18F-PSMA-1007 PET/CT	The Quarterly Journal of Nuclear Medicine and Molecular Imaging	Prof Lyburn, Dr Nawwar & Dr Searle	This paper presented an unusual case in which a PET/CT scan helped to identify prostate cancer which had spread to the penis.	https://doi.org/10.4274/mirt.galenos.2025.32815
Scientific review	Diagnostic yield and impact on patient management from [18F]FDG-PET/CT in FUO/IUO in the adult population	The Quarterly Journal of Nuclear Medicine and Molecular Imaging	Dr Nawwar	This paper identified steps which can be taken to improve the quality of PET/CT scan images for patients thought to have a potential infection.	https://doi.org/10.23736/S1824-4785.25.03660-X
Scientific review	Impact of pre-scan patient-related factors on diagnostic yield of 18F FDG PET/CT in fever of unknown origin	Chemical & Biomedical Imaging	Prof Lyburn, Dr Nawwar & Dr Searle	This paper identified steps which can be taken to improve the quality of PET/CT scan images for patients with a high temperature.	https://doi.org/10.23736/S1824-4785.25.03669-6
Original research	Revealing prostate calcification heterogeneity through their elemental distribution	Scientific Reports	Prof Lyburn	This study looked at specialist X-Ray images, and samples from prostate glands, to assess how to improve diagnosis of prostate cancer.	https://doi.org/10.1021/cbmi.5c00050
Original research	Prostate microcalcification crystallography as a marker of pathology	BMJ Open	Prof Lyburn	This study looked at specialist X-Ray images, and samples from prostate glands, to assess how to improve diagnosis of prostate cancer.	https://doi.org/10.1038/s41598-025-98692-8
Study protocol	SMALL: open surgery versus minimally invasive vacuum-assisted excision for small screen-detected breast cancer — protocol for a phase III randomised multicentre trial	BMJ Open Sport & Exercise Medicine	Prof Lyburn	This trial compared two different methods for treating small breast tumours: normal surgery vs. removal using a special vacuum and ultrasound or X-Ray imaging.	https://doi.org/10.1136/bmjopen-2025-099702
Original research	Developing a multivariate model for the prediction of concussion recovery in sportspeople: a machine learning approach	"Interdisciplinary Neurosurgery: Advanced Techniques	ITM team	This study used MRI and other data to make more accurate predictions around when it's safe for sportspeople to return to training/competing after a concussion.	https://doi.org/10.1136/bmjsem-2024-002090
Original research	Brainstem lesion diagnostic dilemma: the role of multiparametric magnetic resonance imaging	and Case Management"	ITM team	This study looked at using specialist MRI to help differentiate between inflammatory lesions and brainstem tumours, potentially avoiding the need for a risky and invasive biopsy.	https://doi.org/10.1016/j.inat.2025.102018
Scientific review	Role of FDG PET/CT in bacteremia and fever of unknown origin: a pictorial overview of finding the culprit	The Quarterly Journal of Nuclear Medicine and Molecular Imaging	Dr Nawwar	This review used example cases to show how PET/CT can be used to more accurately identify the location of an infection within the body.	https://doi.org/10.23736/S1824-4785.25.03618-0
Original research	Enhanced recovery using lung tumour thermal ablation in scleroderma associated interstitial lung disease	Journal of Scleroderma and Related Disorders	Cobalt Fellowship	This study assessed a CT-guided treatment for lung cancer in patients who also have lung disease.	https://doi.org/10.1177/23971983241299284

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Original research	Beyond T2-FLAIR mismatch sign in isocitrate dehydrogenase mutant 1p19q non-codeleted astrocytoma: Analysis of tumor core and evolution with multiparametric magnetic resonance imaging	Neuro-Oncology Advances	ITM team	This study assessed whether a particular MRI sequence can be used to diagnose how advanced the cancer is in patients with a specific type of brain tumour.	https://doi.org/10.1093/noajnl/vdae065
Letter to the editor	Letter to the Editor (Outcomes of bronchial artery embolization in CF patients)	Journal of Cystic Fibrosis	Cobalt Fellowship	This open letter advised that patients with cystic fibrosis do not in fact experience a higher risk of a bleeding complication after undergoing a procedure called bronchial artery embolisation.	https://doi.org/10.1016/j.jcf.2024.08.006
Original research	Calculating optic nerve planning organ at risk volume margins for stereotactic radiosurgery using optic nerve motion determined using MRI	British Journal of Radiology	ITM team	This study looked at a particular MRI technique for making radiotherapy more targeted, to protect the optic nerve when treating brain tumours.	https://doi.org/10.1093/bjr/tqae201
Original research	The utility of multiparametric magnetic resonance imaging in reducing diagnostic uncertainty for primary central nervous system lymphoma	World Neurosurgery	ITM team	This study assessed the use of advanced MRI techniques to provide a more accurate and quicker diagnosis for patients with suspected brain tumours.	https://doi.org/10.1016/j.wneu.2024.05.037
Original research	Test-retest reliability of the "Home Town Walk" fMRI paradigm for memory activation and lateralisation in the pre-surgical evaluation of patients with temporal lobe epilepsy	Frontiers in Neurology	ITM team	This study tested the reliability of an MRI technique designed to help plan brain surgery for patients with epilepsy, to improve outcomes from these operations.	https://doi.org/10.3389/fneur.2024.1419047
Scientific review	Image guided lung biopsy (a systematic review)	Lung Cancer	Cobalt Fellowship	This is an educational review of techniques which use CT scanning to guide radiologists in taking samples from patients' lungs.	https://doi.org/10.1016/j.lungcan.2024.107803
Conference abstract	Prognostic Value of Semi-quantitative Metrics Obtained with Convolutional Neural Network Deep Learning Algorithms on 18F-FDG PET/CT in Cancer Esophagus Patients Treated with Neoadjuvant Chemoradiotherapy	Journal of Nuclear Medicine	Prof Lyburn, Dr Nawwar & Dr Searle	This study looked at the size of oesophageal tumours as a predictor of life expectancy.	https://jnm.snmjournals.org/content/65/supplement_2/241185
Interesting image	Adult presentation of cutaneous Langerhans cell histiocytosis: 18 F-FDG PET/CT detection of systemic disease	Clinical Nuclear Medicine	Prof Lyburn, Dr Nawwar & Dr Searle	This case study shared images of an unusual presentation of a rare blood disease affecting the skin, to increase knowledge of the disease.	https://doi.org/10.1097/RLU.0000000000005109
Original research	Multiparametric MRI and T2/FLAIR mismatch complements the World Health Organization 2021 classification for the diagnosis of IDHmutant 1p/19q non-co-deleted/ATRX-mutant astrocytoma	Clinical Radiology (The Royal College of Radiologists)	ITM team	This study assessed the use of advanced MRI techniques, in combination with conventional methods, to improve the diagnosis of a particular type of brain tumour.	https://doi.org/10.1016/j.crad.2023.11.016
Original research	Translating microcalcification biomarker information into the laboratory: A preliminary assessment utilizing core biopsies obtained from sites of mammographic calcification	Heliyon	Prof Lyburn	This study evaluated a new technique using chemical analysis of breast tissue samples to identify whether calcification in the tissue was cancerous.	https://doi.org/10.1016/j.heliyon.2024.e27686

Queries about this document or its contents can be emailed to research@cobalthealth.co.uk

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