MRC Regional Account for Clinical Researchers

West Midlands

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MRC West Midlands RACR for health and care professionals (including nurses, midwives, allied health professionals, healthcare scientists, pharmacists and psychologists): research scope, examples and eligibility

Why this page exists

Nurses, midwives, allied health professionals (NMAHPs), pharmacists, psychologists and healthcare scientists are under-represented among applicants to MRC funding, partly because of a perception that MRC remit means laboratory medicine led by medically qualified doctors. It doesn't. MRC funds research into human health and disease from molecules to populations, including mechanistic rehabilitation research, clinical and exercise physiology, symptom science, perinatal biology, diagnostics, imaging, neuroscience, nutrition, behavioural science, and population and systems medicine.

Much of this research is led by, or is a natural fit for, these professions.

The West Midlands MRC Regional Accounts for Clinical Researchers (WMRACR) scheme supports clinically active health and care professionals in developing their research careers. This guide illustrates the kinds of research from these professions that fit MRC remit and explains the career-development purpose of WMRACR.

The examples are illustrative, not exhaustive. They show the breadth of what is possible rather than defining a restrictive list of eligible projects.

Who is WMRACR intended to support?

WMRACR supports clinically active health and care professionals at critical points in their research careers, particularly those moving beyond a PhD or returning to research after clinical training or an extended break.

It is especially relevant to people in substantive NHS clinical posts, clinical training roles or academic appointments linked to clinical practice (including those holding honorary NHS clinical contracts) who need protected research time to consolidate, advance or re-establish a clinical academic career. This includes registered nurses, midwives, AHPs, pharmacists, psychologists and healthcare scientists, not only doctors and dentists.

The purpose is not simply to fund another research project. It is to provide targeted, short-term support that makes a real difference to an individual's longer-term clinical academic career.

Applicants already employed in funded research roles, on short-term research contracts or holding existing research funding will need to explain what additional opportunity WMRACR would provide. In particular, they should show the step change that WMRACR support would enable beyond their current arrangements. This might include:

- Establishing an independent research direction
- Developing new methodological or scientific expertise
- Generating preliminary data to support a competitive fellowship or substantial research grant
- Re-establishing research activity following a period of predominantly clinical work
- Making a sustainable transition towards a clinical academic career

WMRACR is not intended simply to provide continuity of existing research employment, replace expiring funding or duplicate activities already supported elsewhere. Applicants currently employed in research-funded posts should demonstrate a clear additional career-development benefit and explain how WMRACR will enable a step change towards research independence or a sustainable clinical academic career.

Current holders of postdoctoral-level fellowships are not eligible under the published guidance. Applicants in other research-funded roles should clarify their eligibility and show the additional career-development benefit of the proposed award.

The key question is: what will WMRACR enable you to achieve that you could not reasonably achieve through your existing role or funding, and how will this improve your longer-term research career?

Is my project within MRC remit?

MRC supports discovery science, experimental medicine, population and systems medicine, and early translational research.

For NMAHP, pharmacy, psychology and healthcare science researchers, the important distinction is usually between research intended to generate new scientific understanding and research concerned with evaluating, delivering or implementing healthcare.

Questions that may fit MRC research remit include:

- What biological, physiological, psychological or behavioural mechanisms explain a condition or a response to treatment?
- Why do individuals differ in their response to rehabilitation, nursing care or other interventions?
- Can imaging, biomarkers, physiological measurement or population data reveal new disease mechanisms or clinically meaningful phenotypes?
- Can experimental studies, causal inference or computational methods generate new knowledge about health, disease or recovery?

- Can new diagnostics, measurements, technologies or research methods be developed to investigate these mechanisms?

Questions that are usually better suited to NIHR include:

- Does an established intervention improve outcomes in routine clinical practice?
- How should a treatment or service be implemented, delivered or scaled up?
- Is a clinical pathway effective, acceptable or cost-effective?
- How can research evidence be translated into routine healthcare delivery?

These are guides rather than strict boundaries. MRC research *can* include patient-reported outcomes, questionnaires, behavioural mechanisms and clinical settings. Equally, using biomarkers, imaging or advanced statistics does not automatically place a project within MRC remit. **What matters is the principal research question, the new knowledge being generated and the purpose of the work**.

Fit with MRC research remit is necessary but not sufficient. A project can be scientifically appropriate for MRC and still be unsuitable for WMRACR because of the applicant's career stage, clinical status or the absence of a clear career-development benefit. The MRC guidance requires both: research within remit and an appropriate career transition.

Examples: nursing and midwifery

Nursing and midwifery research is often assumed to be about care delivery and experience. Much of it is, and belongs with NIHR. But nurses and midwives also lead symptom science, acute physiology, tissue biology and perinatal research that sit squarely in MRC remit.

Nursing

- Pressure injury and wound healing biology: tissue perfusion, inflammatory markers and why chronic wounds fail to heal
- Sepsis and deterioration physiology: vital-sign and biomarker trajectories in early deterioration
- Delirium mechanisms in hospital and critical care: neuroinflammation, sleep and circadian disruption
- Symptom science: the biological basis of fatigue, breathlessness, pain and sleep disturbance in long-term conditions
- Continence physiology: bladder and pelvic floor function and the mechanisms of response to conservative treatment
- Infection prevention: microbiome, colonisation and transmission biology in hospital and care home settings
- Cognitive and physical decline in older adults: mechanisms of hospital-associated deconditioning and recovery

- Mental health nursing: psychophysiological mechanisms of stress, sleep and emotion regulation, and predictors of relapse

Midwifery

- Placental physiology and fetal growth: biomarkers and imaging to understand fetal growth restriction and stillbirth risk
- Prediction and mechanisms of preterm birth: cervical biology, inflammation and the vaginal microbiome
- Physiology of labour and birth: uterine contractility, fetal heart rate signal analysis and intrapartum compromise
- Gestational diabetes and metabolic health in pregnancy: mechanisms and long-term cardiometabolic outcomes for mother and child
- Lactation physiology and breastfeeding: hormonal, metabolic and infant feeding mechanisms
- Perinatal mental health: neuroendocrine, inflammatory and sleep-related mechanisms
- Pregnancy cohorts and lifecourse research: how pregnancy exposures shape maternal and child health

A study of how a ward or maternity unit delivers care is applied research. A study of the physiology, biology or causal pathway behind the problem is discovery science.

Examples: allied health professions

Pain and musculoskeletal health

- Quantitative sensory testing and conditioned pain modulation: why people respond differently to exercise or manual therapy
- Exercise-induced hypoalgesia: dose, duration and the endogenous pain-inhibitory pathways involved
- Tendon and muscle adaptation to loading: the biological basis of tendinopathy rehabilitation
- Pain and motor control: how pain alters muscle recruitment and whether retraining reverses it
- The transition from acute to chronic pain: inflammatory and biological mechanisms after back injury or whiplash

Neurorehabilitation

- Mechanisms of motor recovery after stroke: corticospinal excitability and imaging markers of response to therapy
- Neuroplasticity and the timing and intensity of rehabilitation: whether specific periods offer greater potential for recovery

- Spasticity physiology: effects of stretching, botulinum toxin and task-specific training on reflex pathways
- Vestibular compensation and the neural mechanisms of balance recovery
- Sensory integration and proprioception: their contribution to gait and upper limb recovery

Respiratory and cardiac rehabilitation

- Skeletal muscle dysfunction in COPD and heart failure: mitochondrial function and biological responses to exercise training
- Inspiratory muscle training and diaphragm physiology: mechanisms of respiratory muscle weakness after intensive care
- Airway clearance mechanics in cystic fibrosis and bronchiectasis
- Cardiopulmonary adaptation to rehabilitation: the physiological determinants of exercise tolerance

Exercise physiology and ageing

- Sarcopenia and anabolic resistance: muscle protein synthesis responses to resistance exercise and bed rest
- Physiological mechanisms of exercise intolerance in long COVID, ME/CFS and post-intensive care recovery
- Prehabilitation biology: how pre-operative exercise influences the surgical stress response and immune function
- Neuromuscular and metabolic mechanisms of frailty, falls and declining physical function

Dietetics and nutrition

- Gut microbiome responses to dietary interventions in bowel disease and malnutrition
- Nutrient and exercise interactions in muscle wasting and cancer cachexia
- Nutritional biomarkers and metabolic phenotyping: individual differences in response to dietary treatment
- Mechanisms linking nutritional status, inflammation and recovery

Speech and language therapy

- Swallowing physiology: neuromuscular mechanisms of dysphagia using videofluoroscopy, manometry and neurophysiology
- The neural basis of aphasia recovery and response to different intensities of language therapy
- Voice and laryngeal physiology underpinning new treatments for voice disorders
- Neurocognitive mechanisms of speech and language recovery after acquired brain injury

Occupational therapy

- Mechanisms of cognitive rehabilitation after brain injury, measured with neurophysiological or cognitive methods
- Sensory processing in neurodevelopmental conditions and the mechanisms of response to intervention
- Upper limb recovery and the neural correlates of task-oriented training
- Cognitive, sensory and motor mechanisms of functional independence after illness or injury

Podiatry, orthoptics, radiography and paramedicine

- Diabetic foot disease: plantar pressure, tissue biomechanics and wound healing biology
- Visual neuroscience of amblyopia treatment and binocular vision rehabilitation
- Imaging biomarker development: radiographer-led quantitative MRI and other modalities
- Prehospital physiology: early physiological signatures of sepsis, stroke, cardiac arrest and major trauma

Digital health and devices

This area sits at the boundary of discovery science and early translation.

- Development and validation of wearable sensors: new physiological measurements of gait, movement quality, sleep or recovery
- Neuromodulation and electrical stimulation devices to investigate mechanisms of pain, continence or motor recovery
- Digital phenotyping using continuous sensor data to characterise disease mechanisms and recovery trajectories

Projects primarily concerned with implementing an established device in a clinical pathway, or evaluating its routine effectiveness, are usually better suited to NIHR or another applied funding scheme.

Examples: pharmacy and psychology

Pharmacists and practitioner psychologists are also eligible, and much of their research sits naturally in MRC remit.

Pharmacy

- Pharmacokinetics and pharmacogenomics: why individuals differ in drug response and adverse effects
- Mechanisms of polypharmacy harm, drug interactions and deprescribing in older adults and multimorbidity

- Antimicrobial stewardship science: resistance mechanisms, dosing and pharmacodynamics
- Medicines adherence as a behavioural mechanism, including its biological and cognitive determinants

Psychology

- Cognitive and neural mechanisms of psychological interventions, using experimental and neuroimaging methods
- Mechanisms of behaviour change: the psychological and physiological processes that explain why interventions work
- Psychoneuroimmunology: stress, inflammation and their contribution to physical and mental illness
- Cognitive and affective phenotyping to identify subgroups and predict treatment response

Examples: healthcare science

Healthcare scientists (clinical scientists, biomedical scientists, clinical physiologists, clinical technologists and bioinformaticians) are particularly well placed to develop research within MRC remit, given their expertise in physiology, laboratory science, imaging, engineering and bioinformatics. However, translating this expertise into independent research can be challenging where clinical service commitments limit access to protected research time. WMRACR is designed to address exactly that gap.

Physiological sciences (cardiac, respiratory and sleep, neurophysiology, audiology, vascular, gastrointestinal, ophthalmic and urodynamic science)

- Mechanisms of exercise intolerance and dyspnoea: cardiopulmonary exercise testing, lung mechanics and muscle oxygenation
- Sleep physiology: sleep-disordered breathing, circadian disruption and their cardiometabolic and cognitive effects
- Clinical neurophysiology: EEG, EMG and evoked potential biomarkers of disease progression and recovery
- Audiology and hearing science: cochlear and central auditory mechanisms and tinnitus neuroscience
- Cardiac physiology: arrhythmia mechanisms and echocardiographic and ECG biomarkers of early myocardial dysfunction
- Vascular science: endothelial function, microvascular physiology and non-invasive biomarkers of vascular disease
- Gastrointestinal physiology: motility, visceral sensitivity and gut-brain mechanisms

Life sciences (clinical biochemistry, haematology, immunology, microbiology, virology, histopathology and genomics)

- Discovery and validation of diagnostic and prognostic biomarkers, including multi-omic signatures
- Antimicrobial resistance mechanisms, transmission dynamics and host-pathogen interaction
- Immune phenotyping to understand disease mechanisms and variation in treatment response
- Clinical genomics: variant interpretation, functional validation, pharmacogenomics and polygenic risk
- Haematology and transfusion science: coagulation disorders, cell therapy and the biology of blood products
- Digital pathology: computational analysis of tissue to identify new morphological and molecular phenotypes
- Reproductive science: embryo biology, gamete quality and the mechanisms of implantation failure

Physical sciences, engineering and bioinformatics (medical physics, clinical engineering, radiotherapy physics, nuclear medicine, clinical bioinformatics)

- Quantitative imaging biomarker development across MRI, PET, ultrasound and CT
- Radiobiology: mechanisms of tumour and normal tissue response to radiotherapy
- Rehabilitation engineering: biomechanical modelling, prosthetics, orthotics and assistive technology
- Medical device development at the discovery and early translation stage, including novel sensors and point-of-care diagnostics
- Clinical bioinformatics: integrating genomic, proteomic and clinical data to identify disease mechanisms and subgroups
- Computational modelling of physiological systems to simulate disease and predict individual treatment response

As with other professions, the distinction is purpose. Running an accredited diagnostic service or evaluating a test in routine use is applied work. Developing the test, understanding the biology it measures, or using it to answer a mechanistic question is discovery science.

Examples: population and systems medicine

MRC remit is not limited to laboratory research. It includes cohort studies, routine data, genetics, epidemiology and computational modelling to investigate the causes of disease and the biological, psychological, social and environmental mechanisms that shape health. The important distinction is the purpose of the research, not the dataset or the analytical method.

- Causal epidemiology of modifiable exposures, using Mendelian randomisation or target trial emulation

- Lifecourse and birth cohorts: the developmental origins of musculoskeletal, respiratory, metabolic and neurological conditions
- Genetic and biological phenotyping of pain, fatigue, frailty or preterm birth risk using cohort and biobank data
- Imaging epidemiology: population-scale MRI, ultrasound or DXA data and its relationship with symptoms and function
- Multimorbidity and multi-organ physiology: how conditions interact and contribute to functional decline
- Laboratory data at population scale: linking routine results to outcomes to discover prognostic signatures
- Infectious disease epidemiology and genomic surveillance, including transmission dynamics
- Systems and computational modelling of gait, swallowing, breathing or glucose regulation
- Environmental and social exposures and the biological pathways through which they influence disease and disability
- Population-scale digital phenotyping using wearable and app data to investigate recovery and disease onset

Describing variation in service delivery or outcomes is not, by itself, discovery science. Population research that investigates causal relationships, mechanisms or the development of disease sits firmly within MRC remit.

Examples: AI, data science and prediction models

Data science fits MRC remit when it aims to generate new scientific knowledge, investigate disease mechanisms, identify biologically or clinically meaningful phenotypes, or advance research methodology.

NMAHPs, pharmacists, psychologists and healthcare scientists generate and interpret some of the richest data in healthcare, including continuous physiological monitoring, movement, imaging, speech, laboratory results, genomic data and physical function, and are well placed to lead this work.

- Prognostic and risk prediction models using biological, imaging or physiological predictors
- Phenotype discovery using unsupervised learning on cohort, biobank or laboratory data
- Machine learning on continuous monitoring data (vital signs, fetal heart rate, EEG, ECG) to investigate deterioration and recovery
- Machine learning on movement, gait, posture and speech signals to investigate disease mechanisms or motor recovery
- Computer vision and deep learning applied to clinical imaging and digital pathology for quantitative biomarker development

- Treatment effect heterogeneity and causal machine learning to explain differences in response to intervention
- Digital twins and in silico modelling of physiological systems to simulate treatment response
- Research into prediction and data science methods: validation, calibration, generalisability and fairness
- Natural language processing and large language models to identify phenotypes in unstructured health data

Developing or applying AI does not automatically make a project discovery science. A prediction model designed mainly for immediate clinical decision-making, or a study evaluating how an existing tool performs in routine care, is usually applied health research. The question is whether the project generates new scientific or methodological understanding, rather than simply developing or implementing another clinical tool.

Choosing between MRC and NIHR

The distinction between MRC and NIHR is not always straightforward, particularly for rehabilitation research, complex interventions, behavioural science, diagnostics and data-driven research. A useful starting point is the primary purpose of the project.

More likely to fit MRC

- Investigating the mechanisms through which an intervention or exposure produces its effects
- Understanding the causes, progression or biological and behavioural characteristics of disease
- Identifying and explaining differences between patient subgroups or responses to treatment
- Developing new scientific methods, measurements, diagnostics or early-stage interventions to advance understanding of health and disease

More likely to fit NIHR

- Testing clinical effectiveness or cost-effectiveness in routine healthcare
- Evaluating existing treatments, tests, pathways or services
- Studying implementation, accessibility, acceptability or uptake
- Investigating how evidence-based interventions can be delivered more effectively in practice

These categories overlap. Research into the psychological mechanisms of behaviour change could fit MRC if the primary aim is new mechanistic understanding; a study of whether a behavioural intervention improves routine outcomes is a better fit for NIHR. Including a biomarker or physiological measurement does not, by itself, make a study mechanistic. The research must be designed to answer a substantive scientific question.

If your research sits more naturally with NIHR, its career development funding programmes offer personal awards across career stages. The choice of funding route should be based on the aims and maturity of the research, the applicant's career stage and the objectives of the particular scheme.

Before applying: three questions

1. **Research remit.** Is the central question about generating new scientific understanding of health, disease, mechanisms or methods, rather than evaluating routine care?
2. **Career development.** Why is WMRACR the right opportunity at this point in your research career? What specific skills, independence, preliminary work or future funding opportunity will it enable?
3. **Additionality.** If you already hold a funded research position, personal funding or a short-term research contract, what real step change will WMRACR provide beyond your current support, and why could this not be achieved through your existing role or funding?

A strong application should answer all three clearly.

Where to seek advice

If you are unsure whether your research fits MRC remit, or whether your employment or funding arrangements affect eligibility, **contact the WMRACR team before applying**. We would rather discuss a borderline research idea or an unusual career situation than lose a strong applicant because they assumed their work, profession or employment circumstances made them ineligible. The aim is to support excellent researchers at the points in their careers where focused support can make the greatest difference.

Further information

This page is illustrative guidance and does not replace the formal eligibility criteria. Applicants should read the official scheme documents.

- MRC Regional Accounts for Clinical Researchers: official funding opportunity and scheme guidance
- MRC RACR webinar FAQs and useful links (PDF), which confirms that RACR awards are open to registered, clinically active nurses, midwives, AHPs and healthcare scientists working within MRC remit
- Clinical researchers in the UK: reversing the decline. Nurses, midwives and allied health professionals (PDF), the OSCHR report that informed the design of RACR