

**Institution: University of Exeter**

**Unit of Assessment: UoA3 Allied Health Professions and Nursing**

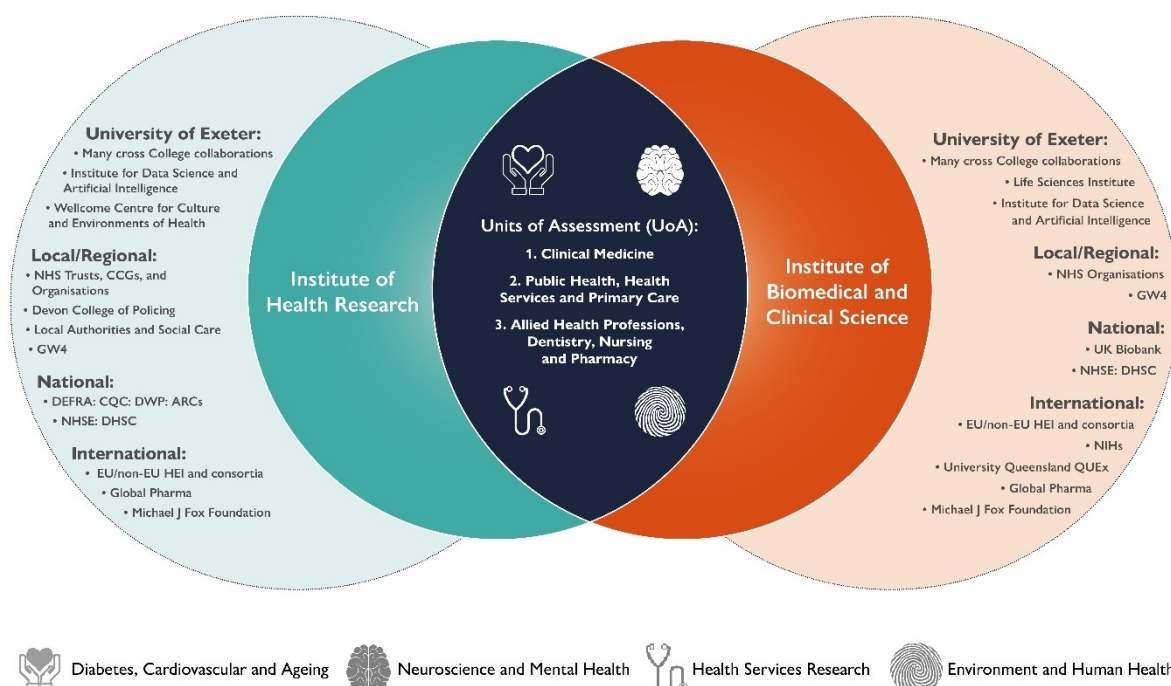
### 1. Unit context and structure, research and impact strategy

This return is the first under UoA3 for the University of Exeter, as a consequence of Exeter researchers in Allied Health Professions (AHPs) and Nursing making world-leading contributions to health research. It is underpinned by our strategic increase in STEMM research at Exeter including a policy of further growth in nursing and AHP research; see **1.4 Institutional-Level Environment Statement (ILES)**. Key achievements include:

- Establishment of a groundbreaking Academy of Nursing (2018); Exeter is the only research-intensive university to do so since the introduction of nursing funding reforms.
- A rapidly growing community of UoA3 post-graduate research students (PGRs) (32 currently registered compared with 11 completions over REF2021 period).
- National and international honours for Goodwin (MBE), Ellard (OBE), Shepherd (one of 100+ Outstanding Women Nurses and Midwife Leaders).
- Research leadership recognition for Richards (NIHR Senior Investigator)

The staff returned here are a multidisciplinary, dynamic group of thirteen (12.5FTE) AHPs, nurses and health services researchers working in the University of Exeter's College of Medicine and Health (CMH). Incorporating Medicine, Nursing and AHPs, to reflect the University's commitment to delivering world-leading interdisciplinary healthcare research and education, CMH was established in 2018 and grew out of the University of Exeter Medical School (2010). We organise our research in two Institutes: Biomedical and Clinical Science (IBCS) and Health Research (IHR). The two Institutes' staff (354FTE) are based on the St Luke's and Penryn campuses and at the Royal Devon and Exeter (RD&E) Hospital and Royal Cornwall Hospital (RCH) sites. Across Institutes, research is focused in four interdisciplinary research themes; see **2.3-2.4 ILES**. Each of these spans the spectrum of research activity from experimental science to clinical trials, health policy and implementation with our regional, national and international collaborators (Figure 1). Research that is internationally recognised for its excellence and informs AHP and nursing practice sits across three of these themes: Diabetes, Cardiovascular and Ageing; Neuroscience and Mental Health; Health Services Research.

### College of Medicine and Health



**Figure 1:** Structure of the University of Exeter CMH; links illustrative only

## 1.1 Structure of the Unit

CMH does not have a traditional departmental structure. UoA3 staff are members of IBCS and IHR, working in cross-cutting groups on interdisciplinary programmes of research relevant to nursing and AHP clinical practice within the overall CMH strategy, incorporating medical statistics, economic modelling, qualitative research, intervention and diagnostic test development, and, patient and public involvement.

Our particular strengths are, therefore, in **interdisciplinary methodological work** and **applied health and social care research**: research that reflects the needs of the public, service users, health and social care staff, commissioners and service providers. Scientists returned in this unit of assessment lead the following specifically focussed programmes, drawing on the broad collaborative interdisciplinary expertise of our Institutes.

### Diabetes, Cardiovascular Risk & Ageing

#### *Diabetes*

*Shepherd* (Nurse, Category C), *Ellard* (Clinical Scientist) and *Shields* (statistician) together with Hattersley (UoA1) have established an international interdisciplinary research programme to investigate monogenic forms of diabetes combining research, clinical practice and education. Their research focusses on the impact of a correct genetic diagnosis and the consequence of treatment change as a result. *Ellard* has led the laboratory research that identified new genetic subtypes of monogenic diabetes and developed a new NHS diagnostic test for all subtypes in a single assay. This genomic approach has enabled an accurate diagnosis for 1000s of patients throughout the world, many of whom have changed treatment (often stopping unnecessary insulin injections). *Ellard* led the NHS Genomic Medicine Centre set up to deliver the 100,000 Genomes Project in the South West and is the Scientific Director for the new South West NHS Genomic Laboratory Hub.

*Shepherd* provides clinical advice regarding management of monogenic diabetes nationally/internationally and has developed major clinical guidelines ([www.diabetesgenes.org](http://www.diabetesgenes.org)). She leads the national, award winning Genetic Diabetes Nurse (GDN) translational initiative educating experienced Diabetes Specialist Nurses to increase awareness of monogenic diabetes amongst healthcare professionals nationally, resulting in increased referrals for genetic testing and identification of people with monogenic diabetes. Once a genetic diagnosis is confirmed GDNs support patients with treatment change and assist with family follow up. *Shepherd* also organises research-based international training courses in monogenic diabetes and together with *Ellard* co-developed a Massive Online Open Course (MOOC) in Genomic Medicine. *Shepherd, Ellard and Shields* work is detailed further in an Impact Case Study.

*Tavakoli's* (Optometrist) is internationally recognised in developing novel ophthalmic biomarkers and a range of biomarkers for early detection of diabetic neuropathy. Her translational research represents a huge leap forward in terms of our ability to diagnose, follow the progression of, and assess therapeutic response in patients with diabetic neuropathy and other peripheral neuropathies. It will have both an immediate diagnostic impact on patients and also longer-term implications with the development of a novel surrogate marker 'In Vivo Corneal Confocal Microscopy (IVCCM)' for assessing new therapies. Research on implementing IVCCM screening into primary care optometry practices has shown it to be acceptable to patients with further research underway on refining the technology and its cost-effectiveness.

#### *Cardiovascular and Ageing Rehabilitation*

Our rehabilitation research, funded by NIHR and the Stroke Association in collaboration with partners from other UK and international institutions, is a broad programme on the development and evaluation of complex interventions for older people and for those living with long term conditions. Staff have methodological expertise in intervention development, clinical trials, process evaluation, qualitative and mixed methods research, underpinned by a strong PPI and clinical engagement foundation.

*Dean* (Physiotherapist) leads a programme of mixed methods research applying psychology to rehabilitation and health, increasing concordance with therapeutic exercise and physical activity. She investigates behaviour change techniques like goal setting and education in health promotion and long-term condition management for obesity prevention in schoolchildren (HELP trial, 2018), stroke (ReTrain pilot trial, 2018) and urinary incontinence (OPAL trial, 2020).

*Goodwin* (Physiotherapist) leads on research relating to falls and frailty, focussing particularly on home-based rehabilitation. She was Co-I on an international group investigating falls prevention in Parkinson's (PDSAFE) and is currently South West Co-I lead for seven sites on the NIHR-funded HERO trial of rehabilitation for older people living with frailty. She leads the health and wellbeing work stream on the EPSRC-funded VSimulator facility (See Section 1.3). Ongoing work includes a recent interdisciplinary grant from the Wellcome Trust Seed Corn in collaboration with colleagues from Sport Sciences and Maths on the 'Maintenance of Symmetry and Stability in Human Walking'.

## Neuroscience & Mental Health:

### *Dementia*

*Testad* (Nurse) has longstanding experience leading non-pharmacological interventions for people with dementia at home and in care homes. She was part of developing a large NIHR-funded UK research project to increase quality of life and reduce neuropsychiatric symptoms in dementia (WHELD). *Testad* is chief investigator on an ongoing EU funded multicentre Joint Programme - Neurodegenerative Disease, SHAPE, a novel project supporting people with dementia to live well with the condition, evaluating the effectiveness of a 10-week Health Promotion and Self-management intervention combined with e-learning for carers in improving self-efficacy in people with dementia. Other dementia work includes RCTs of non-pharmacological therapies for people with dementia living in residential care, including studies of massage and telepresence communication, and the largest RCT to-date of robotic pets (2017).

### *Mental health and psychological therapies*

*Richards* (Nurse) led a major, NIHR-funded, multi-centre, multi-disciplinary, randomised controlled clinical trial in depression (COBRA), demonstrating non-inferiority for Behavioural Activation compared with Cognitive Behavioural Therapy with 20% direct cost savings (2016). He has been Co-I on four other major NIHR funded clinical trials for depression (REEACT and REEACT-2; CASPER and CASPER plus). *Sugg* led the first feasibility and pilot study of Morita Therapy, a Japanese psychological therapy offering a radically different approach to depression treatment, establishing the grounds for a fully powered effectiveness trial (2019). Using precision medicine approaches, we will extend this work to test psychosocial predictive markers identified in our trials, helping therapists and patients distinguish between likely effective and non-effective therapies for depression.

## Health Services Research

### *Child Health*

*Morris* (Health Services Researcher) leads the Peninsula Childhood disability Research Unit (PenCRU) which includes developing and evaluating outcome measures and classification systems (2014), working with professionals, patients and carers to establish research priorities for health in specific conditions, condition-specific core outcome sets (2019), and reporting guidelines to improve publication quality (2017). This work included several NIHR-funded programmes: development and evaluation of complex interventions including a peer-led group-based public health intervention to improve health and wellbeing of parents of disabled children (CI); evidence synthesis on continence management for children with neuro-disability (PI).

### *Research Methods*

*Richards*, with *Frost* and *Sugg*, are members of an international mixed methods collaboration developing and testing individual participant data integration techniques in clinical trials of complex interventions –initial summit and expert panel funded by the MRC Hubs for Trials Methodology Research Network leading to a 2019 position paper. Future work includes testing individual level participant data integration techniques for quantitative and qualitative datasets, investigating the potential for such methods to add value to clinical trials. *Richards* is also editor of the strongly selling and highly regarded interdisciplinary research methods textbook 'Complex Interventions in Health', including contributions from sixteen Exeter colleagues returned in this and other UoAs.

### *Medical Imaging*

*Knapp* (Radiographer) leads Medical Imaging group research focussing on diagnostic techniques to identify and monitor musculoskeletal pathologies, specifically osteoporosis and osteoarthritis. Research explores the use of artificial intelligence for diagnosis of fractures and diseases and developing clinical support systems to optimise treatment choices. *Knapp* collaborates with the orthopaedic knee team at the RD&E Foundation NHS Trust on large industry-funded studies exploring new types of non-cemented knee prosthesis for primary and revision knee replacements. Working collaboratively with mathematicians, physicists and computer scientists

enables novel interdisciplinary research to be undertaken within medical imaging. Research will continue in both of these areas and will see a large expansion into PET/CT to better understand bone activity related to different prostheses and pharmacological interventions.

### Nursing

*Richards* leads a programme of research addressing the fundamental care needs of people in acute care environments and care homes. With *Frost, Russell and Sugg* he collaborates internationally with groups in Australia, Denmark and Canada through the International Learning Collaborative, which has established a research and implementation programme to 'value, talk, do, own and research' fundamental care, recently advanced in a published co-authored position statement on Fundamental Nursing Care (2019). This work, funded by NIHR (*Richards* – PI, *Goodwin* and *Frost* – Co-Is) is building an evidence base for fundamental nursing care, progressing from development to evaluation within NHS implementation units for clinical research (see 1.5), supporting at least one education only colleague to undertake a PhD in the area.

### COVID

Our ability to be nimble in response to urgent health research needs is evidenced by several UoA3 staff leading COVID-related research, contributing to Exeter being 4<sup>th</sup> in UKRI awards; see **1.5 ILES**. *Richards* is chief-investigator for the £430k NIHR/UKRI multi-site 'COVID-NURSE RCT of fundamental nursing care for patients in hospital with COVID-19'. *O'Dwyer* has led the "Caring through Coronavirus" qualitative study to better understand how family carers are coping through the pandemic and how changes in policy and health and social care provision have impacted on their wellbeing and caring responsibilities. A systematic review, led by *Goodwin*, is establishing whether rehabilitation interventions for those with severe respiratory illness requiring critical care could benefit those with COVID-19 (accepted for publication in Physiotherapy).

## 1.2 Research Strategy and objectives

Core to our activity is a focus on addressing questions important to members of the public, patients and clinicians, delivering maximum societal impact and minimising 'research waste'. We are driven by important health and care questions to be answered using our methodological and clinical strengths. This UoA's strategy is aligned to the overall strategic aims and goals of CMH, detailed in our 2014 UoA1 and UoA2 REF submissions. These have been developed further since 2014, leading to significant interdisciplinary research informing nursing and AHP clinical practice. We continue to expand our health research activity to be highly competitive in terms of volume and world-leading quality.

Collaboration, interdisciplinary methodological work, research integrity, and applied health research are core principles of the CMH research strategy. Our strong record of patient and public involvement (PPI) in research is based on a collaborative, partnership model – co-creation, rather than 'consultation'. Patients, clinicians, educators, parents, carers, businesses and citizens contribute widely to all stages of research processes – evidenced in Section 4. All our research is undertaken to the highest standards of scientific, scholarly and professional integrity, conforming to university and health research ethical policy and frameworks; see **2.9 ILES**.

As UoA3 research spans basic through to applied research, our integrated approach ensures that the two research institutes work together and with members of the public and our partners in an interdisciplinary manner. Our research addresses the most important questions, precisely so as to translate our findings into health and social care practice. This interdisciplinarity is supplemented by close links with other cross-college departments within the university including Sport and Health Sciences, Psychology, Maths and Engineering.

This strategy is operationalised by **cross cutting activities** that **develop, test, evaluate and implement complex healthcare interventions** with direct relevance to nursing and AHPs in ageing, diabetes and mental health.

## 1.3 Supporting a Culture of Research Integrity and Open Access

Researchers are supported via the online Research Toolkit, CMH ethics committee and the university Integrity, Ethics and Research Governance Team; see **2.9 ILES**. Indeed, UoA3 staff have contributed to research reporting guidelines e.g., *Morris*: updated Guidance for Reporting Involvement of Patients and the Public in research (GRIPP2). To ensure the widest possible dissemination of research findings and data to members of the public and clinicians, we actively promote an open research culture, embedding open access principles in scholarly communication, supported by The University Open Access team; see **2.8 ILES**. This team manage



the institutional repository 'Open Research Exeter' (ORE) and research data services enabling open access to research datasets, for example our NIHR-funded 'COBRA' trial for depression. Institutional membership with health research publishers, such as BioMed Central and Springer has resulted in discounted or no cost open access publishing thus accelerating the accessibility of our research worldwide.

#### 1.4 Research Strategy key achievements since 2014

The UoA3 strategy described here is embedded within the broader CMH research strategy and investment by the University of Exeter to foster vitality and sustainability in health research, particularly STEM; see **1.4 ILES**. Significant investment has been made in research capacity, including methodological expertise and infrastructure (new accommodation and facilities) to facilitate interdisciplinary interactions and a clear focus on areas of existing and potential strengths. These investments in outstanding facilities have enabled UoA3 staff and their research to develop and flourish.

##### Building research capacity in world leading research.

- UoA3 Research income since 2014 is **£7.96M**.
- UoA3 returned staff have produced **953 publications** since 2014.
- Establishment of the Exeter Clinical Trials Unit which gained UKCRC accreditation in 2017. *Dean* was Deputy Director then Co-Director (2016 to 2020).
- In 2014 we maintained funding for the NIHR Peninsula Collaboration for Leadership in Applied Health Research and Care (PenCLAHRC). In 2019, with our partners, we obtained a further investment of £9M (2019-2024) as an NIHR Applied Research Collaboration (PenARC).
- We established the Academy of Nursing (led by *Richards*) to drive research expertise in nursing, incorporating research in dementia care and fundamental nursing care (including leading the NIHR/UKRI rapid response funded multi-site cluster RCT of nursing care for patients with COVID-19). Our Academy nurse education programmes are entirely Masters level, to drive education/research integration, promote clinical academic careers in nursing and develop nurses as scientist practitioners: finding, appraising, using and producing research in nursing care.
- We had major impact from our research through the implementation of diabetes management into practice within the NHS England Diabetes prevention programme, the Genetic Diabetes Nurse programme and international training programme in monogenic diabetes (*Shepherd and Ellard*).

##### New research facilities.

We have established outstanding new research facilities to support researchers in this UoA and strengthen their cross-college and external collaborations:

- CMH refurbished 3710m<sup>2</sup> (**£12.48M**) of office space on the St Luke's campus in Exeter (opened in 2015) to accommodate IHR health researchers, the Academy of Nursing, and Medical Imaging
- We developed and built a new MRI & PET imaging facility in collaboration with the RD&E NHS Foundation Trust to support our basic scientists and Medical Imagers; supported by a **£10M** donation from the Gilling's Foundation.
- We opened the Wellcome Wolfson Medical Research Centre (total floor area 7535m<sup>2</sup>) in July 2014 in collaboration with the RD&E Hospital NHS Foundation Trust. (Total cost **£27.5M**, including a £4.75M Wellcome Wolfson Biomedical Capital Award).
- We opened the interdisciplinary VSimulator facility in 2020 as part of a new 1200m<sup>2</sup> research facility on the Exeter Science Park (Total cost **£11.7M** including a £4.5M EPSRC Equipment grant). The facility supports **interdisciplinary** study of human comfort, health and well-being.

#### 1.5 Future strategic aims and objectives:

Our overarching CMH research strategy continues a focus on our four interdisciplinary themes, pursuing research that drives improvements in outcomes and care. We are building our strengths further through a strong research culture, collaborations and partnerships, and our operational structures; see **2.1-2.7 ILES**. Working within the overall CMH research strategy, our UoA3 strategic aims for the next five years are to:

**Build enhanced research capacity and programmes in world leading research:**

- We will develop the Academy of Nursing – established in 2018 with four NHS Trusts and our PPI group – over the next REF period. The Academy took its first 34 Master's students in 2019, 54 in 2020, and its first PGR in 2020. In order to advance our integrated educational and research philosophy further, we will appoint an additional 15 staff, increase our research portfolio, appoint PGRs, support education-only colleagues to undertake PhD studies and bring research in nursing into the heart of our NHS partner organisations. Further PGRs and clinical academics will contribute to our research from 2020 onwards. Evidence of our commitment to research capacity development is the appointment of two research active staff in 2019-20, *Russell, Sugg*, and, in addition to *Richards*, another professorial level leadership post (*Gallagher- started November 2020*).
- We have created research and practice development units in partner NHS trusts, to provide spaces for research into interdisciplinary care practice, including those used by nursing and AHPs. These 'Embedding Research in Care' (ERIC) units have been established through our NIHR '70@70' research leadership (*Shepherd- Category C*) at the RD&E NHS Foundation Trust, where five AHPs and nurses as Chief Nurse Research Fellows were appointed to spend one day per week for six months, taking the first steps on a clinical-academic career pathway.
- We will develop our implementation work on diagnosis and nursing management of monogenic diabetes (*Ellard, Shepherd and Shields*) to further increase the international reach of this programme.
- In the Peninsula Childhood Disability Research Unit (PenCRU) (*Morris*) we will build additional capacity in childhood disability research, to produce evidence that users of research consider relevant, useful and accessible, and that impact and inform important real-life decisions being made by families, clinicians and commissioners.
- We will establish an interdisciplinary Centre for Ageing Research which builds on our research capacity development activities in Ageing and Rehabilitation (*Goodwin; Lamb UoA2*).
- Signposted in our recent publications (Goodwin et al, 2019; Richards et al, 2019; Sugg et al, 2020; Frost et al, 2020), we will develop novel methodological approaches pioneered at Exeter to add value to clinical evaluations. These include mixed-methods integration of individual level data undertaken by PGR Knight (2020-23), supervised by *Richards, Frost and Sugg* to test methods for deriving novel insights from clinical trials.

#### **Provide a supportive environment where researchers can reach their full potential.**

- Provide specialist support and advice through our Research Development and Management and Research Finance teams, (see **4.6 ILES**) and Innovation, Impact and Business team.
- Strengthen our current promotion procedures so that all staff are reviewed at least bi-annually and are encouraged to seek promotion when reluctant to self-nominate.
- Continue providing Researcher Development Essentials training and access to methodological support, including methods clinics and training, to ensure rigour and reproducibility.
- Promote networks for Early Career Researchers and Mid-Career Researchers enabling peer support and acting as change agents for CMH including UoA3 researchers; (see **3.8 ILES**)
- Maintain an actively "family-friendly" culture in line with our Athena Swan Silver award to ensure that all staff have an appropriate work-life balance.

#### **1.6 Enabling and Facilitating Impact**

CMH promotes external exposure to facilitate impact opportunities. We have a dedicated Senior Press and Media Manager, managing a team that oversees our social media outlets and optimise opportunities for research-related media coverage. In 2019, CMH generated 320 press releases or web stories, totalling more than 5,000 items of media coverage.

We have rigorous support procedures in place for all current and future programmes of research, including impact data collection and implementation science methodology support, to ensure that research leads to meaningful impact, not merely dissemination. We provide dedicated time in our workload allocation model for staff involved in the development of impact cases and have the support of a fully funded 'Impact Fellow' to assist with impact case development.

## **2. People**

The University of Exeter has been committed to Researcher Development and Integrity Concordats, demonstrated through our accreditation under the European HR Excellence in Research Award, our successful eight-year review and 2018–20 Action Plan; see **3.8 ILES**. UoE (and CMH) are 2020 signatories to DORA (San Francisco Declaration on Research Assessment), providing a framework guiding research strategy and delivery including recruitment, promotion and probation practices; best practice, governance and reporting processes; audit implications; communications and research metrics; see **2.8, 2.9 ILES**. DORA participation provides and underpins future major research bids within this UOA. From 2020, we will align our procedures to the revised three 2019 Research Development Concordat principles and obligations: **environment and culture, employment, and professional and career development**.

### 2.1 Environment and Culture; Equality, Diversity and Inclusivity

We provide a supportive and inclusive research culture. Through the Athena Swan programme, the College developed a pilot mentoring programme for both mentors and mentees, further developed recently into the UoE One Step Beyond programme; see **3.6 ILES**. Staff wellbeing is a vitally important aspect of college life and opportunities including on-site exercise facilities (open before, during and after the normal working day) as well as access to wellbeing officers and 24/7 online wellbeing advisors through our Employee Assistance Programme. All staff are fully briefed on findings from annual employee engagement surveys, with clear responsive action planning undertaken and delivered at Institute, College and University level.

### 2.2 Equality, Diversity and Inclusion (EDI)

EDI is a College and University priority driven by leadership at the highest institutional level and includes partnerships with national and local equality organisations and networks; see **3.14-3.16 ILES**. This UOA is committed to equality of opportunity across all protected characteristics. We achieved an Athena SWAN Silver departmental award (initially in 2014, and again in 2019), and our ambition is to achieve Gold status within the next REF cycle. We take a careful, planned approach to EDI considerations which extends to staff appointment and support and career progression. All staff involved in key decisions and those with line-management responsibilities have undergone training in unconscious bias, highlighting all protected characteristics. This includes all those involved in REF-output and impact case-study selection (100% compliance). EDI training is a key mandatory part of induction for all staff, refreshed two-yearly. Such training forms a core element of routine performance development review and probation. Appointment panels are actively managed to ensure gender balance and clear guidance is provided to panellists in the use of language and panel documentation. Our long-established College EDI Group has representation from all grades including early career researchers (ECRs) and PGRs. The number of women at senior level within the College has significantly improved since the last REF; women Professors increased from 22% to 37% since 2014/15. We have introduced enhanced, tailored support and development for individuals, improving our future pipeline, with women accounting for 63% of all promotions to Associate Professor in the same period. The college have recently adopted the BMA Race Equality Charter as a core element of UOA and College activity. To ensure achievement of our ambitions in respect of race/ethnicity, we have recently appointed a Race Equality Resources Officer alongside our existing Senior Academic Lead for BAME Students, and a member of our faculty has been appointed as the University's inaugural Associate Academic Dean for Racial Equality and Inclusion.

### 2.3 Employment

The thirteen colleagues returned here have a professional research focus on nursing and AHP practice but collaborate closely with colleagues across other units of assessment, particularly UoA1 and 2. Three of our staff (23%) are non-UK nationals.

The staffing profile is as follows:

<i>Grade</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
<i>Professor</i>	2 (1.5 FTE)	3	5
<i>Assoc. Professor</i>	0	3	3
<i>Senior Lecturer/Research Fellow</i>	0	4	4
<i>Lecturer</i>	0	1	1

We recruit, employ and manage researchers to recognise and value all of their contributions. The University's HR group work according to the Concordat in setting policy and practice for staff recruitment and development, so that our recruitment, progression and promotions procedures are open, transparent and merit based. The

University does not utilise zero-hours contracts. Managers undertake mandatory people management courses through the University's people development programme, to ensure excellent people management (including annual appraisals and duty of care). We are conscious of the difficulties faced by researchers on fixed-term contracts and have launched 'FEFA' (Fair Employment for All), promoting open-ended over fixed-term contracts; see **3.1 ILES**. However, for those currently coming to the end of their contracts, we have a policy that ensures an interview offer for any upcoming research vacancies, and recruitment policies that ensure income preservation through early career research appointments.

## 2.4 Professional and Career Development

Staff development is at the centre of our activities and fully aligned with Exeter's institutional policies, including the 'Exeter Academic' Framework and the Academic Professional Programme; see full details in **3.3-3.13 ILES**. We allocate staff a senior line manager to support career development and have a robust annual Personal Development Review process. This involves jointly setting targets and outlining further development opportunities to support career progression and promotion. We also offer externally supported 360-degree reviews for senior staff. During the period, *Testad* has been promoted to Chair, *Dean* and *Morris* have been promoted first to Associate Professor and then Chair, and *Knapp*, *Goodwin* and *Tavakoli* to Associate Professor. Two of our staff (*Richards*; *Dean*) have received internally prestigious 'Above and Beyond' awards for their exemplary contributions to College activities.

Those at early stages of their careers participate in the researcher development programme (a series of university-wide courses focussed on translational skills and careers for ECRs), including exposure to non-academic career options and a realistic self-appraisal; see **3.8 ILES**. IHR benefits from a vibrant, **ECR group** which provides regular input to senior team meetings, raises awareness of opportunities and training, and facilitates collaborative problem solving. ECRs and PGRs can apply for funds for Researcher-led Initiatives to develop and deliver transferable skills training. One successful initiative is 'The Bees Knees' – where PGRs facilitate Data and Discourse 'Bees' to share and problem solve qualitative analysis issues. A community journal club has also been funded through this initiative (Taylor; UoA3 PGR). ECRs and PGRs are encouraged and supported to develop their academic skill set through involvement in college ethics committee (e.g., Hall, a physiotherapist PGR), PGR committee (Taylor, student representative) Masters supervision (*Sugg*, *Hall*), undergraduate teaching and small group facilitation.

A **mid-career group** for Senior Lecturers/Senior Research Fellows, Associate Professors and Professional Services staff was established in 2018 with funding from the CMH Equality and Diversity group. This allowed an external facilitator to run two Action Learning Sets which enabled the group to become self-sustaining through self-facilitation.

The Principal Investigators and Research Leaders Survey (PIRLS) revealed that 80-90% of PI's felt that the University recognised their contributions to advancing their field with 70-80% reporting good levels of job satisfaction, feeling integrated and understanding how their research was aligned to University strategy. Recent initiatives in CMH include an action plan based on the 2018 Employee Engagement Survey and open staff meetings to discuss the results and task and finish groups to implement ideas. The action plan included improving clarity of line management responsibilities and additional support for promotion applications that has resulted in a pro rata increase in promotions in CMH over the first 5 months of 2020.

To develop grant writing skills, we provide learning and development courses, mentorship and peer review from the Institute Directors and senior staff. Each year we allocate places at a 3-day residential research school with the NIHR Research Design Service to receive intensive feedback on grant applications. Opportunities to attend a 2-day annual *off campus* writing retreat enable staff to work on grant proposals and papers. Staff are supported to attend leadership programmes and training, both in house and on the Aurora programme.

Each Institute has an annual away-day for all staff and PGRs, and regular seminars which are open to all. There are several journal clubs, study groups and training days run for those with a particular interest in a specific methodological approach; for example, the Qualitative Research Forum meets every two months to discuss research methods and projects, and provide a supportive environment for staff and PGRs to discuss challenges and develop solutions.

We run regular methodological clinics (search and review, statistics, qualitative research, health economics and PPI) to provide staff and PGRs with additional methodological assistance and advice. Members of the



CMH ethics committee and NHS R&D staff provide ethics training and advice, supported by academic staff providing methodological reviews of ethics proposals before submission to ensure high methodological quality.

## 2.5 Research students.

One of our specific goals within CMH is to increase the numbers of PGRs within UoA3, given how critical they are to the vibrancy and success of a strong research community. As such, we prioritise the support and development of our PGRs; see **3.8-3.13 ILES**. For example, we run an annual 2-day CMH residential research event for PGRs free of charge, to present and discuss their projects with their peers and a large group of senior staff. We have also established communities of practice for students with a common area of research; for example our PenCLAHRC PGRs working with people with dementia were supported to establish a community of practice which resulted in co-authorship on each other's publications.

We encourage ECRs and PGRs to attend training courses and seminars within CMH and elsewhere in the region. Generic skills training is facilitated by the University of Exeter Doctoral College and supplemented by courses to address the specific needs of the student as identified at initial skills and annual update reviews (<http://as.exeter.ac.uk/rdp/>). We ensure effective PGR supervision through regular reporting mechanisms, the use of a structured e-log to monitor supervision, and a formal upgrade presentation and viva within the first 12 months in order to maintain high completion rates. We actively encourage interdisciplinary supervision including both methodological and topic specific expertise, as well as cross-college and cross-institution supervision. Examples include Alenezi (co-supervised by Young from Sport and Health Science), and Taylor (co-supervised by Clegg from the University of Leeds).

In the REF period, there were 11.2 doctoral completions, and 32 PGRs currently registered and supervised by UoA3 academics. We have strengthened international AHP PGR recruitment via strong links with Saudi Arabia from physiotherapy, medical imaging and optometry backgrounds. The addition of the new 3T MRI and PET/CT scanners at the university has increased the interest in those wishing to study a PhD in Medical Imaging in Exeter.

The wellbeing of PGRs is further enhanced by a new service at the university which provides support and advice to all and has experts to advise on lifestyle, managing stress etc. <http://www.exeter.ac.uk/doctoralcollege/support/pgrsupport/wellbeing/>. Each PGR also has an independent pastoral tutor external to their supervisory team. Peer-to-peer support is encouraged by networking, seminars, the residential research events and the open plan coffee areas to encourage informal discussions and mixing of students and staff.

## 3. Income, infrastructure and facilities

### 3.1 Research Income and support

Our total UoA3 research income during the census period was **£7.96M**, averaging **£637k per FTE**. Sources of income include major project grants, fellowship and infrastructure support from NIHR, Research Councils (EPSRC, MRC, Wellcome) and major charities (Stroke Association; Diabetes UK; Alzheimer's Society; Dunhill Medical Trust). Funding has resulted in research capacity building for PGRs and ECRs to promote vitality. This provides an excellent foundation from which to build sustainable high-quality research activity and endeavour.

#### Income Generation Strategies

We operate 'Funder Advisory Networks (FAN)' of senior staff with extensive experience sitting on funding and fellowship panels which forms part of a university-wide Major Funder Strategy Group. *Goodwin* is Chair of the NIHR FAN which provides (a) rigorous internal peer review of grant and fellowship applications prior to submission, and (b) mentoring of early and mid-career staff to develop a pipeline for future applications. Staff present their ideas orally at "pitch and putt" events as grant proposals are developed, providing an opportunity for colleagues and peers from multiple disciplines to provide early feedback. Our substantial investment in methodological expertise in statistics, health economics, evidence synthesis, qualitative research and PPI ensuring all staff have access to methodological support early in project development. All applications are reviewed by the Institute Director before submission. Mock interviews (for fellowship candidates) and comprehensive mentoring and review (for all staff) ensure that final submissions are of the highest quality.

### 3.2 Infrastructure and facilities:

UoA3 researchers have access to outstanding facilities as a result of strategic investment by the College and University. We provide state-of-the-art facilities to promote and sustain interdisciplinary partnerships, leverage world leading research programmes and exemplary research impact.

#### Infrastructure projects and leveraged funding

- NIHR funding for the Collaboration for Leadership in Applied Health Research and Care South West Peninsula (PenCLAHRC) and now the Applied Research Collaboration South West Peninsula (PenARC) of £20.5M since 2014 has helped to underpin applied health research within IHR and this UoA. The funding has been used provide core methodological staff including exemplar and world-leading PPI groups who support the development of grant applications and are Co-Is on projects such as COVID-NURSE (*Richards*) and ReTrain (*Dean*). Within the ARC *Goodwin* is Academic Career Development lead and *Dean* is the lead for the Making Sense of Evidence programme.
- The establishment of the UKCRC (provisionally) registered Exeter Clinical Trials Unit (CTU) and a Joint Research Office bring together local NHS-research and academic interest (see **1.7 ILES**) and have substantially increased our ability to deliver large scale clinical trials including SHAPE evaluating self-management interventions for people with early-stage dementia (*Testad*).
- We opened South Cloisters and College House buildings on the St Luke's campus (3710m<sup>2</sup>) to provide new purpose-built accommodation for 135 applied health researchers from the Medical School, the Academy of Nursing and Medical Imaging (**£12.48M** university investment) and to co-locate them together on one site with methodologists, thus facilitating interdisciplinary collaboration.

The expanded NIHR Exeter Clinical Research Facility (CRF) – 5-year renewal of NIHR infrastructure funding in 2017, **£5.74 M**) comprising three four-bedded wards, exercise suite, research outpatients and individual intensive study rooms, as well as staff offices, seminar rooms and a new Postgraduate Education Centre. This facility supports the work of *Ellard*, *Shields* and *Tavakoli*.

- We opened the Wellcome Wolfson Medical Research Centre (total floor area 7535m<sup>2</sup>) in July 2014 in collaboration with the RD&E Hospital NHS Foundation Trust. (Total cost **£27.5M**, including a £4.75M Wellcome Wolfson Biomedical Capital Award). The Centre provides the laboratories and facilities to further develop the causes of diabetes and enable translation of biomedical research into treatments and therapies for patients (*Ellard*, *Shields*, *Tavakoli*).

A new imaging suite housing MRI and PET-CT scanners for clinical research (opening 2020) to provide state-of-the-art imaging facilities for clinical research and will be operated in conjunction with our partners in the RD&E NHS Trust (**£9.3 M**), providing increased research capacity for Medical Imaging in the future.

- A state-of-the-art multidisciplinary VSimulator (<https://vsimulators.co.uk/>) funded by EPSRC (**£4.5 M**) and the University (**£7.2 M**) will be part of a 1200m<sup>2</sup> new research facility at the Exeter Science Park (see **1.10, 4.19 ILES**). The interdisciplinary facility, comprising a 4x4m motion platform, virtual reality technology and motion capture, opened in 2020 and is used by academics from CMH, Engineering, Maths and Sport and Health Science alongside industry and healthcare partners to support interdisciplinary human movement research and innovation. This work has resulted in the establishment of the cross-college VSimulator Human Movement Science Group in 2020 that will contribute to the development of future health technologies through a future programme of research and research capacity development (*Goodwin*).

### 3.3 Future Plans

We will leverage the resources listed above to aim to double our return in the next REF. In the Academy of Nursing we have already doubled the number of PhD qualified staff during 2020 and will increase this further year on year, including through training our own PGRs. We will use externally funded projects such as NIHR COVID-NURSE and HERO to provide experience for early- and mid-career researchers in building their own

CVs. Expertise and facilities within the CTU, CRF, Wellcome Wolfson Centre, our imaging suite and the VSimulator facility will facilitate our teams to increase their grant capture, their outputs and their impact on health and society. This REF return is the beginning of a planned strong upward trajectory and increased impact contribution to the research and clinical communities.

#### 4. Collaboration and contribution to the research base, economy and society

Our impact has built on our strengths of interdisciplinary research spanning basic clinical science to applied health research that has enabled the development of a new UoA3 submission. We have established explicit processes to engage with members of the public, service users and those who provide services to ensure we ask the questions that really matter, evidenced by two UoA3 Impact Case Studies (ICS): the NHS diabetes prevention programme involving nurses and AHPs (*Smith*); the monogenic diabetes nurse education initiative (*Shepherd*) and a further two ICSs returned under UoA1 that include UoA3 staff: *Shields* developed the model now translated into an online calculator to help identify Maturity Onset Diabetes of the Young, now recommended by the World Health Organisation; *Ellard's* research on genetic testing for neonatal diabetes contributed to reduced diagnostic and treatment costs, with improved patient outcomes. Plans are already underway to develop impact and future impact case studies: the rehabilitation of people with Parkinson's, based on two randomised controlled trials and economic evaluations, as well as qualitative research underpins a training course (PDSAFE) under development with FutureLearn, an international platform for free Massive Open Online Courses (*Goodwin*); COVID-NURSE study has also developed clinical education materials which will be made available free throughout the NHS and internationally once the trial has been completed (*Richards*), incorporating automated data collection to assess programme reach and utilisation.

##### 4.2 Patient and Public Involvement (PPI)

We have an international reputation in researching optimal approaches to engaging with the public and service users on research strategy, design, delivery, and dissemination. The College has been at the forefront of PPI worldwide through investment in PenCLARHC, now PenARC. We have made a substantial investment in staff to support PPI members who can help researchers ensure that their work engages relevant service users or members of the public. Members of the public and service users are involved in all our activities, including selecting research questions, designing and conducting studies and analysing and disseminating results. We have well-established PPI groups associated with particular areas of research such as PenPEG (<https://www.arc-swp.nihr.ac.uk/penpeg>), the interdisciplinary Lived Experience Group at the University's Mood Disorders Centre (<https://www.exeter.ac.uk/mooddisorders/groups/leg/>), and the Family Faculty childhood disability research unit (<http://www.pencru.org/getinvolved/ourfamilyfaculty/>). In addition, we routinely involve service users as grant co-applicants in our studies, for example NIHR funded fundamental nursing care studies ESSENCE (*Richards, Goodwin, Frost*) and COVID-NURSE (*Richards, Russell*). *Goodwin* leads PPI nationally on the NIHR National Priorities Ageing, Dementia and Frailty programme. PPI is fundamental to our Academy of Nursing with PPI people as full Academy Board members with PPI being one of our six Academy thematic 'pillars'.

##### 4.3 Providers of health and social care services

The NHS and social care providers, are major users of the research we generate. We have close working relationships at organisational, research group and frontline staff levels. In addition to relationships between CMH and NHS organisations, PenARC, which is a key component of IHR, is a partnership between Exeter and Plymouth Universities and all NHS organisations within the South West Peninsula. Our relationship with the South West Academic Health Science Network (AHSN) is particularly strong with joint projects producing research and service improvements in the NHS. These organisations are represented within PenARC's management structure, with an explicit system through which they and practitioners feed into research, facilitated by extensive capacity building including programmes like "Making Sense of Evidence" led by *Dean*. These activities help individuals in the local health economy develop skills to work with us on research, help to ensure that we address impactful questions, and develop a cadre of practitioners and policy makers better equipped to foster impact through use of evidence.

We work closely with our NHS partners in the region and nationally to actively support clinical academic careers for AHPs and nurses through supervision, mentoring, running seminars and other training events.

- *Richards* is lead NIHR Advocate for Nursing and leads masterclass programmes for the NIHR Incubator for Nursing and Midwifery which has already led to an increase in successful NIHR

Fellowship bids from nurses and midwives. He also led the successful NIHR Research Capacity for Dementia Care Programme (RCDPC) bid for nurses and AHPs in 2015.

- *Goodwin* supervises NIHR funded clinical academic physiotherapists (Paviour – ICA Internship and Pre-Doctoral Fellow; Rogers – PenCLAHRC pre-doctoral fellowship; Hall – RCDPC Doctoral fellowship; ICA Post-doctoral (bridging) Fellowship; Hulbert - ICA Post-doctoral (bridging) Fellowship). She provides mentorship and research support for NIHR Fellowship holders, in particular physiotherapists specialising in older people and rehabilitation in Nottingham and Kings College London. She has chaired (2019 & 2020) the regional HEE/NIHR ICA Internship and pre/post-doctoral bridging Fellowship panel and is working with HEE to develop and support clinical academic pathways and individuals across the region.
- *Goodwin and Knapp* are facilitators for the Council for AHP Research (CAHPR) providing PPI and pre-doctoral fellowship workshops and support for research and fellowship applications.
- *Knapp* is a steering group member of the Formal Radiography Research Mentorship (FoRRM) programme to increase research capacity amongst radiographers (funded by the College of Radiographers). In the first round (12 mentees), the national programme resulted in papers, conference abstracts and two successful PhD applications.
- *Shepherd*, lead nurse for research and development at the RD&E NHS Foundation Trust and an inaugural '70@70' nurse research leader, established the 'Bridging the Gap' initiative for increasing research capacity amongst Nurses and Midwives. This comprises training, mentoring, developing and undertaking projects towards external funding (grants or fellowships), is closely linked with research infrastructure in PenARC, Clinical Research Facility, Clinical Research Network, Research Design Service and CAHPR, and aims to improve patient care, outcomes and staff satisfaction through increased research activity.
- Four local NHS Trusts, the University and our PPI group established the Academy of Nursing in 2018 with an integrated educational and research mission to drive intervention development and research expertise in nursing.

Other private and public sector organisations important for health and wellbeing include Local Authorities and private sector providers such as care homes, a vital location for improving older people's health. We have established close relationships with independent care homes as part of the Exeter Care Homes and Knowledge (ExCHANGE) Collaboration, supported by funding from the Alzheimer's Society (*Goodwin* – Co-I), a collaboration between the University of Exeter, PenARC, SW AHSN, and the Devon Care Home Kite Mark Collaborative. The latter is an established group of >50 independent care home providers committed to improving the lives of those living in their care through a programme of continual review and improvement including peer inspections, learning events, and training. Recent research with these partners includes two PenCLAHRC funded PGRs investigating mealtimes and fundamental nursing care.

#### 4.4 International Collaborations

Academics in this UoA are involved in collaborations with universities internationally resulting in jointly authored outputs, grant applications, implementation of research outcomes and representation on international boards and panels. Examples include: *Richards* was President (2012-2018) of the European Academy of Nursing Science, including coordinator of a European Science Foundation funded Research Networking award in complex interventions research methods (2011-2016); *Dean* has been an international collaborator on several funded studies on the management of low back pain with colleagues from the University of Otago; *Testad* is a member of the World Health Organisation's steering committee 'Global Network in Health Ageing'; *Goodwin* received a QUEX (UoE and University of Queensland partnership) initiator grant to develop a research around solutions to health, wellbeing and community participation of older people. This has resulted in a publication on co-design through PPI (2020) and has fostered further collaborations and grant applications currently under review.

#### 4.5 External engagement

##### Contributions to UK government and health organisations

*Ellard* was a member of the NHS Commissioning Board Clinical Reference Group for Genetics (2012-2016), NHS England Genomics Programme Board (Policy) 2016-2018 and is an NHS Assembly Member (2019-current). *Morris* led the James Lind Alliance Childhood Disability Research Priority Setting Partnership with



considerable impact on NIHR commissioned research, an exemplar for the first pillar of the NIHR Adding Value in Health Research strategy. *Richards* is leading focussed activities in the NIHR nursing incubator to improve nursing and midwifery performance in NIHR fellowship applications. He is the lead NIHR training advocate for nursing. *Goodwin* has been a specialist advisor on the NICE Quality Standards for the assessment and management of falls (2015), an advisor to the Royal Osteoporosis Society on Clinical Standards for Fragility Fractures (2015) and a steering committee member for Public Health England on the Cost-effectiveness and Return on Investment for falls prevention programmes.

### **Research funding panels**

Our academics have been members of national funding panels during the assessment period including NIHR Academy Fellowship panels (*Ellard* – Healthcare Science Fellowships; *Goodwin* - Development and Skills Enhancement Fellowships and ICA Internships & Bridging Fellowships; *Richards* – Clinical and Senior Clinical Research Fellowships; Senior Investigators), Stroke Association (*Dean*); Physiotherapy Research Foundation (*Goodwin*); Diabetes UK (*Shields*).

### **Journal editing**

Our academics peer review manuscripts for national and international journals. Additionally, some serve as editors or associate editors for national and international journals including Physiotherapy (*Goodwin*); Trials (*Dean*); Physical and Occupational Therapy in Paediatrics (*Morris*), Developmental Medicine & Child Neurology (*Morris*), Radiography (*Knapp*), Journal of Clinical Nursing (*Richards*); Diabetic Medicine (*Shields*); Frontiers in Neuroscience (*Tavakoli*); Frontiers in Endocrinology (*Tavakoli*); BMC Endocrine Disorders (*Tavakoli*).

### **Awards, prizes and fellowships**

The influence and contribution of our staff within this UoA to the research base of the discipline has been recognised nationally and internationally. Examples include:

- *Goodwin* was made a Fellow of the Chartered Society of Physiotherapy in 2015 and a Member of the Order of the British Empire (MBE) in the Queen's New Year Honours in 2017 for services to physiotherapy.
- In 2015, *Ellard* awarded the Donald Steiner Award for Outstanding Achievement in diabetes research and was made an Officer of the Order of the British Empire (OBE) in the 2018 Queen's Birthday Honours for services to patient care.
- In 2020, *Shepherd* was identified as one of the Women in Global Health's 100+ Outstanding Women Nurses and Midwife Leaders.
- *Sugg*: Early Career Researcher Award 2020 from the NIHR Clinical Research Network (South West Peninsula)
- *Richards* was a NIHR Senior Investigator and appointed Emeritus.

### **Summary**

The University of Exeter has invested deeply in staff, infrastructure, and resource to develop our activity and profile in AHP and Nursing research. UoE remains committed to further strategic expansion in these key areas of importance to health care planners and health system providers, with a view to growing depth, extending scope, and increasing reach in this exciting core set of activities. We remain ambitious for further success and growth amongst this burgeoning group of highly talented individuals and the research groups contributing to this unit of assessment.