

<p><b>Institution: University of Central Lancashire</b></p>
<p><b>Unit of Assessment: 3 Allied Health Professions, Dentistry, Nursing and Pharmacy</b></p>
<p><b>a. Overview</b></p>
<p>Unit of Assessment 3 (UoA3) includes academic staff from several university schools who undertake applied and translational health-related research to improve the health and wellbeing of populations, communities, patients, service-users, carers and/or families. Working under an overall theme of <b>Evidence for Translation and Transformation in Health and Wellbeing</b>, there are three subthemes which include interdisciplinary research groups with similar perspectives and research audiences:</p> <p><b>Evidence for Societal Change</b> encompasses programmatic research to benefit populations, communities and vulnerable groups by influencing and collaborating with policymakers at all levels within governmental and non-governmental organisations.</p> <p><b>Evidence for Transforming Healthcare</b> focuses on programmatic applied health services research to improve the quality, effectiveness and efficiency of nursing and allied-health interventions for patients, families, carers and service-users.</p> <p><b>Evidence from Bench to Bedside</b> spans translational laboratory-based pharmaceutical and biomedical research directed towards applying novel techniques to improving clinical interventions for patient benefit.</p> <p>Subtheme research spans basic science and conceptual research through to observational, experimental and highly applied research. Each subtheme provides a critical mass with well-established, internationally renowned research groups and emergent groups in key strategic areas. Across the themes, staff are supported by a hub of experienced methodologists and a research support team. Service-user involvement and engagement is enhanced through a core-funded initiative, COMENSUS. Cross-cutting research with other UoAs is fostered through multi-disciplinary research and teaching groups. The vibrancy of the research environment has led to significant achievements over the last 6 years including:</p> <ul style="list-style-type: none"> <li>• 35% increase in full-time professorial posts and 30% increase in REF returnable staff across all grades</li> <li>• £6 million pound investment by the university in state-of-the-art biomedical and pharmaceutical laboratory research facilities and equipment</li> <li>• greater internationalisation of the research agenda on topics of global importance, e.g. access to medicines for the poor and maternal and infant health</li> <li>• an increase in consolidated and productive collaborations with UK and international universities including 7 QS World Top 50 ranking universities</li> <li>• partnerships with international and national organisations and industry to maximise research significance and reach including Department of Health, International Committee of the Red Cross, UNICEF</li> <li>• doubling of grant income from £3.5 million to £7 million, increased proportion of international funding from 5% to 20% overall</li> <li>• collaboration in the recently funded North West Coast NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRC) bid - £9 million NIHR and £12.5 million NHS funding</li> <li>• nearly 150% increase in the number of PhD completions.</li> </ul> <p><b>b. Research strategy</b></p> <p>Since the last research assessment exercise, the University has implemented an <b>inclusive, supportive and ambitious</b> strategy towards achieving world class research standing. Integral to this has been maximising research excellence and external funding, whilst attracting and retaining</p>

the best staff to expand and strengthen the research community and its research capacity. A particular focus is the enhancement of each member of staff's capabilities through a range of tailored activities, with structured career support and succession planning. UoA3 exemplifies the university approach as illustrated below.

The underpinning vision of the UoA is to undertake research which has a significant impact on the health and wellbeing of populations, communities, patients, service-users, carers and families. We aim to make a difference to people's lives through developing new biomedical techniques and health and social care interventions, transforming health and social care services, and influencing health and social care policy. In line with the University's strategic aims, the UoA's main objectives include:

- (i) advancing multi- and inter-disciplinary research to develop, implement and evaluate innovative solutions to important health and social care issues
- (ii) strengthening methodological and technical expertise and improving access to state-of-the-art techniques and equipment
- (iii) enhancing the international responsiveness and reputation of our research
- (iv) developing collaborative partnerships with NHS, industry and policymakers at the forefront of strategic developments to increase the relevance of our research and promote dissemination and implementation of research findings
- (v) involving and engaging service-users and the public in identifying salient issues and developing, designing, conducting and disseminating research to meet these priorities
- (vi) fostering the next cadre of researchers of international standing through high-quality training and mentoring of junior researchers, clinical academics and postgraduate research students.

### Research Structure

To achieve these objectives, the UoA works under the overall theme of **Evidence for Translation and Transformation in Health and Wellbeing** and research groups in the theme have formed three subtheme groups. Each subtheme shares coherent perspectives and research audiences. The subthemes promote multi- and inter-disciplinary working and provide a critical mass of researchers with skills across basic science/conceptual, observational, experimental and applied quantitative and qualitative research. This has engendered a programmatic approach within research groups enabling the development of innovative research and sustaining the extended pathway from concept through to the development of novel interventions, their evaluation and then dissemination and implementation; thus providing for both early and long-term research outputs. Researchers work across research groups and subthemes allowing access to core clinical disciplines, underpinning disciplinary approaches such as ethics, biomedicine, public health and social sciences and a range of research methodological expertise. This enables rapid development of expert teams able to respond to emerging research and policy questions. The theme lead (Watkins) reports to the Deans of Schools and the University Director of Research. There are regular monthly theme meetings that provide strategic direction, updates and operational oversight; each research subtheme is led by a co-ordinator with a remit to promote multi-disciplinarity and reciprocity, implement strategic vision and support the development of emergent research groups. The core aim is to develop programmatic research. Joint research meetings stimulate subtheme collaborations, facilitate cross-fertilisation of disciplinary perspectives and provide training in research techniques and methodologies.

### Research Subthemes and Research Groups

**Evidence for Societal Change** (co-ordinator Dey) encompasses programmatic research to benefit populations, communities and vulnerable groups by influencing and collaborating with policymakers at all levels within governmental and non-governmental organisations. The subtheme includes three well established groups from the previous research exercise: *the Midwifery Research Group*; *the International Justice in Health Group* and *the Centre for Mental Health and Wellbeing*. The on-going growth of these research teams is evidenced by an increase in international collaborations and research grant capture since the last UoA. The **International Justice in Health Group** (Schroeder, Pogge) continues to analyse global institutional frameworks such as the intellectual property rights system and its impact on health. Research is focused on

WHO priorities (public health & access to medicines for the poor) and UN priorities (UN Convention on Biodiversity benefit sharing with vulnerable populations; UNESCO efforts on promoting responsible research and innovation). In this assessment period, the team has led four global multi-disciplinary projects funded through the European Commission (EC) with funding in excess of three million Euros. Long-term collaborations include the universities of Yale, Princeton, Oxford, Oslo, and Melbourne. Future work, for which European funding has already been secured, will undertake institutional implementation research in collaboration with policymakers (including UN agencies, WHO and policy advisors from Europe, Asia and Africa) on reaching vulnerable populations with health innovations, including life-saving medicines. The **Midwifery Research Group** (Downe, Dykes, Moran, Lowe, Thomson, Flacking, Kingdon) has internationally acclaimed research delivered through the *Reach in Childbirth and Health Unit* (ReaCH led by Downe) which focuses on the complexity of delivering normal childbirth within real world settings; *Maternal and Infant Nutrition and Nurture Unit* (MAINN led by Dykes) focused on the complex, political, cultural, psychosocial and economic influences on maternal and child nutrition and the *International Institute of Nutritional Sciences and Applied Food Safety Studies* (led by Lowe) which focuses on strategies for improving nutritional status in developing countries. The group has developed cutting-edge methods to assess the quality of reports of meta-syntheses used by international research groups. They have active collaborations with universities in Sweden, Finland, Australia, China, and the US. The group has been successful in attracting large scale external funding including EC funding for the COST action network with 26 countries in active membership working towards excellence in maternity care and an NIHR grant for a trial of self-hypnosis to increase normal birth outcomes. The group has been a major player in the EC funded EURECCA network of excellence leading the review of dietary zinc recommendations in Europe that will continue into the next 4 years through a new EC funded COST action zinc-network of 20 European collaborators, led by Lowe. The **Centre for Mental Health and Wellbeing** (Duxbury, McKeown, Hahn, Gertz, Hurley) is an exemplar of a programmatic approach integrating theory building through critiquing of mental health concepts through to action and participatory research in mental health settings and service-user advocacy. Innovative research work on risk and safety in mental health settings particularly around aggression and coercive practices has led to national and international recognition and is influencing policy; the group's Management of Aggression and Violence Attitude Scale (MAVAS) has been translated and amended for different settings and is increasingly being used in the UK and internationally. Duxbury and Gerdtz (University of Melbourne) work together on Australian funded projects in restraint in mental health. In the last year, the UoA has brought together researchers across diverse disciplinary fields with a publication record in issues related to genetics including DNA identification, ethical issues relating to genetic technology and genetics education. These researchers have formed the **Genetics and Society Group** (Benjamin, Goodwin, Hadi, Herrison-Kelly) to provide a critical mass and explore synergies which will lead to novel research proposals to meet national and international priorities in this area.

The **Evidence for Transforming Healthcare subtheme** (co-ordinator Watkins) focuses on programmatic applied health services research to improve the quality, effectiveness and efficiency of nursing and allied-health interventions for patients, families, carers and service-users. In particular, there is a focus on health service delivery, clinical practice, professional education and patient experience, and on using research findings to shape services, outcomes, and policy at local, national and international levels. There are four research groups: two groups, *Stroke and Older People's Care* and *Families, Children and Life Transitions*, were already well established in the previous UoA but have considerably strengthened their research teams, collaborations and outputs over the last six years. The **Stroke and Older People's Care group** (Watkins, Leathley, Gibson, Lightbody, Thomas, Connell, Sutton, Hackett, Putman) undertakes programmatic patient-centred, clinically-generated applied health research across the stroke pathway from prevention [raising awareness in hard to reach and high risk groups], emergency and acute care [emergency response, telemedicine in stroke specialist assessment, dysphagia screening], rehabilitation [promoting continence, recognising mood problems and supporting adjustment, facilitating upper limb recovery] and long-term care [assisting recovery of communication ability, rehabilitation in care homes]. Its research on supporting psychological adjustment post-stroke includes the first study to demonstrate the substantial benefits of a talk-based therapy on wellbeing and survival following stroke. The team has had considerable success in attracting external research funding to

develop programmatic research, of which the NIHR funded ESCORTT programme is an exemplar. Designed and implemented in collaboration with ambulance services and patients and carers, ESCORTT utilised a range of research methodologies to understand pre-hospital care pathways, identify key evidence and develop and evaluate on-line staff training packages. It has provided robust evidence (incorporated into world-wide stroke guidelines) on how to enhance recognition of stroke by emergency call handlers facilitating rapid access to stroke specialist interventions. Other NIHR funded programmes of research include ICONS (continence) and ASTUTE (telemedicine). The group has been successful in attracting UKCRN funding to support internationalisation of each of their research streams (e.g. substantive links have been developed with universities in Sydney, Australia and Birmingham and Atlanta, US). The programmatic research of the **Families, Children and Life Transitions Group** (Carter, Hunt, Sanders, Tume, Peak, Arnott) aims to make a difference to children, parents and families whose lives are disrupted by illness, disability or disadvantage. The research team integrate a range of disciplinary perspectives (children's nursing, social science, bioscience) and include staff in active clinical practice. There are extensive links with local, national and international networks and institutions, particularly in children's pain research (University of Tasmania and University of California, San Francisco). Researchers have a growing track record internationally in disorders of sex development, children's pain assessment, children's intensive care, children's medicines and adverse drug reactions. The growth of the team and the quality of research outputs has been facilitated by the development (led by Carter) of the unique Children's Nursing Research Unit at Alder Hey Children's NHS Foundation Trust, the largest children's hospital in Europe. This started as a charitably endowed unit and is now self-sustaining. The **Cancer, Supportive and Palliative Care Group** has been established following the appointment of Beaver. The research group (Beaver, Williamson, Martin Hirsch, Hack) aims to make a significant and positive difference to the lives of people diagnosed and treated for cancer and their families. Researchers work closely with cancer patients following treatment to identify information needs and decision-making preferences, develop innovative interventions and harness and develop the skills of specialist nurses to redesign secondary care services. This group's work to develop and evaluate a training package for specialist nurses on delivering a telephone follow-up intervention has been incorporated into national guidelines. The team has secured funding from NIHR for the ENDCAT trial which extends this work to another patient group with endometrial cancer. The **Pharmacy Practice Group** (Becket, Wilson) is the newest research group in this subtheme. Initially focussed by necessity on pedagogic research to develop professionalism among undergraduate pharmacy students in the newly established school, the focus of the group is now expanding to research on medicine optimisation to maximise patient outcome and safety.

The **Evidence from Bench to Bedside subtheme (co-ordinator Lea)** includes laboratory-based pharmaceutical and biomedical research groups directed towards making a significant difference to people's lives by translating basic science into applications for clinical practice. There are four inter-disciplinary research groups of which three have evolved over this REF period following the integration of biomedical sciences with pharmacy into the School of Pharmacy and Biomedical Sciences. A **Neuro-oncology Group** (Lea, Alder, Lawrence, Shaw, Shervington, Welsby) undertakes multi-disciplinary research within a strategic alliance of several universities and NHS institutions within the North West (Brain Tumour North West, <http://bit.ly/17nvlvw>). An important initiative has been the establishment of a 'brain tissue and blood bank' enabling the largest research group of academics and clinicians associated with neuro-oncology research in the UK to develop co-ordinated research programmes using primary tumour tissue. Currently, largely funded by endowment trusts and local charities, the work focusses on serum biomarkers for the prognostic and diagnostic detection of brain tumours; potential molecular targets and signalling pathways for chemotherapy and development of novel chemotherapeutic agents. This has resulted in several patent applications. The group hosted the British Neuro-oncology Society Annual Meeting in 2008. A **Drug Design and Delivery Group** (D'Emanuele, Alnan, Elhissi, Jones, Passante, Krysmann, Smith, Snape, Singh J, Singh K, Fong) engages in research in pharmaceutical sciences, specifically the synthesis of biologically active anticancer and antimicrobial compounds and the development of new nano-carriers for delivery (across challenging barriers such as the gastrointestinal tract and blood-brain barrier) and targeting of therapeutic agents in the treatment of inflammatory diseases, cancers, infections, asthma and diabetes. The group collaborates internationally with Sichuan University and the University of São Paulo. The *Membranes, Proteins*

**Environment template (REF5)**

*and Peptides Group* (Phoenix, Dennison, Phillips-Jones) investigates structure-function relationships of amphiphilic biomolecules including membrane interactive molecules such as antimicrobial and anticancer peptides. This internationally recognised group collaborate with several leading international institutions, including the Helmholtz Zentrum, Berlin, and has access to the UK synchrotron facility at the Diamond Light Source Ltd, Oxfordshire. A more recent development has been the **Oral Dental Services Research Group** following the appointment of Crean, linked to the newly established undergraduate dentistry teaching programmes. This group aligns basic science and oral health with international chronic disease priorities. Its current collaborative research with the University of Florida focuses on the laboratory evidence for a link between oral pathogens and Alzheimer's disease, which has implications for promoting oral health lifestyle interventions to prevent a growing societal problem.

**Strategic Approaches**

Within the UoA, four key underpinning approaches have been operationalized: 1) service-user engagement, 2) methodological quality, 3) internationalisation, and 4) multi-disciplinarity.

*Service-user engagement:* The University has significantly invested in service-user engagement to improve the relevance and impact of its research. Funded by the university as core business, COMENSUS is a service-user led initiative with dedicated staff, committee membership and facilities and affiliation of groups and individuals from diverse communities across Lancashire. This initiative, supported by the service-user and carer community, affiliated to the university, and research staff (namely McKeown), is based on the conscious formation of enduring and effective relationships underpinned by democratic principles that form a sustainable basis for future on-going relationships between 'expert' service-users and researchers. COMENSUS provides input into the development, design, implementation and dissemination of UoA research studies and research groups to ensure authentic public and patient involvement. This is evidenced by the number of lay advisory groups within funded research projects. COMENSUS has been a catalyst for wider service-user engagement activities, raising awareness of the benefits for research and inclusivity and disseminating research through end-user publications and conference presentations. As a result of the infrastructure provided by COMENSUS, an NIHR grant was awarded to evaluate independent mental health advocacy that employed 12 service-user researchers and there have been externally-funded PhD studentships. National and international research within the UoA has a distinct participatory approach with evidence of transformative impact on policy, services and people's lives (see Impact Template). This includes an increasing international focus through maternity services stakeholders in Lisbon, Gotenburg, and Lucerne through the EC COST network and Schroeder and Pogge's international networks. The latter demonstrate that user engagement can lead to considerable benefits for end-users in developing countries. For instance, Kenyan sex workers were given an opportunity to feed into pending legislation on access to DNA samples and benefit sharing; indigenous peoples met representatives of the Namibian Ministry of Environment and Tourism and the South African Department of Environmental Affairs and Tourism to discuss ways to achieve compliance with the 1992 UN Convention on Biodiversity. Future work will promote service-user led research, further develop methods to engage hard-to-reach groups, and enhance service-user skills in research dissemination. This will be supported through academic appointments in implementation research.

*Methodological quality:* a major benefit of bringing together research groups has been the greater access to methodological expertise. The UoA has developed a *Health Research Methodology and Implementation Hub* (co-ordinated by French) which draws on senior researchers within the subthemes to provide advice on research design and analysis. This hub includes senior staff with expertise in statistics (Hurley, Sutton), epidemiology (Dey), clinical trials (Watkins, Sutton, Dey), systematic review (French, Downe, Moran, Hackett), economics (Leathley, Putman), qualitative research methods (Downe, Dykes, Carter), mixed methods (Moran), measurement (Sutton, Dey) and implementation (Thomas, Wilcox, Connell, Dey). There has been considerable investment in a comprehensive research infrastructure to support the UoA: this includes junior statisticians, research managers, data co-ordinators, research assistants, research administrators and laboratory managers and technicians. Laboratory-based researchers benefit from significant multi-million pound university investment in new laboratory facilities: a facility-based approach has been

adopted (co-ordinated by Lea), such that each laboratory is dedicated to the employment of a specific range of techniques, overseen by a laboratory manager and appropriate technical support, so as to allow and encourage workers to develop a multi-disciplinary approach. The development of methodological expertise in the UoA is enhanced by supported attendance at masterclasses, conferences and summits (e.g. European Science Foundation Implementation Science masterclass, MRC Methodology Hub events, including Clinical Trials Methodology conferences); by a regular programme of visits, presentations, and discussions with national and international experts in specific research methodologies, and by hosting methodological meetings, such as the Royal Statistical Society local group meetings. As the critical mass of methodologists grows, the expectation over the next five years is that the UoA will develop a stream of methodological research to support innovative approaches to research design and implementation. This will be secured through the planned appointment of senior methodologists and the further development of a Clinical Trials Unit with a specific focus on feasibility studies and complex interventions.

*Internationalisation:* Over the REF period, research addressing global issues involving international collaborations has significantly increased, much of it focussed on health issues related to deprivation and/or vulnerable groups. Senior academic researchers have been supported to undertake research with international bodies; hold visiting fellowships at academic institutions in other countries e.g. Australia, Sweden, or to lead or contribute to international policy or research groups e.g. UNICEF Baby Friendly Initiative, Gates-funded Lancet Midwifery Series group, European Violence in Psychiatry Research Group. Within the '**Bench to Bedside**' subtheme, there are formal international collaborations with institutions in Greece, Portugal, United Arab Emirates, Pakistan, China and Japan. Over the last two years, UCLan funding (over £21K) has been made available for five international distinguished visitor fellowships for senior overseas academics to visit the university to develop or cement collaborative research endeavours. There are also serial international midwifery research conferences, which have led to a number of overseas researchers spending time with research groups. Over time, these research exchanges have led to several international researchers becoming integrated within the respective research groups and then funded as university academic staff either on a part-time basis (e.g. Pogge, Hahn, Flacking, Hack, Putman, Hackett) or full-time (e.g. Singh K). Evidence of the success of this approach is now visible. There has been increased ten-fold accrual of EC funding. The *International Justice in Health Group* is now leading a global EC funded group on responsible research and innovation in health. There are two other highly visible international research streams: work with the Abaseen Foundation into malnutrition in Pakistan (Lowe), awarded the Times Higher Education (THE) award for international collaborations (2010), has secured on-going funding from the Wellcome Trust; Goodwin works with the International Committee of the Red Cross into policies around identification of human remains following mass disasters/conflict. We anticipate that the benefits of core funding of international academics in our programmatic research will be quickly realized through greater responsiveness to global priorities and securing of further international funding.

*Multi-disciplinarity:* There are two additional key approaches to maximising multi- and inter-disciplinary research with groups in other UoA: cross-university research groups and collaboration with the NHS and industry. Researchers are active in three cross-university research groups - *UCLAN Cancer Studies*, *Mental Health Research@UCLAN* and the *Institute of Nanotechnology and Bioengineering*. These groups run seminars and conferences, support the recruitment of graduate research students, engage external partners in research, promote disciplinary hopping research and facilitate rapid mobilisation of academics to respond to national research calls. *UCLAN Cancer Studies* is led by Dey, Beaver and Lea and has a specific focus on 'changing attitudes to cancer' (the title of its first national conference, 2013) through translational cancer research, cancer early detection and cancer survivorship. Membership includes university staff and students in health, dentistry, pharmacy, engineering sciences, linguistics, psychology, law and arts as well as external members from local health services, third sector organisations and service-users. *Mental Health Research@UCLAN*, chaired by Duxbury, includes academic staff from sociology, psychology, pharmacy, built and natural environment and the arts. It is holding its first international conference on recovery in October 2013. The *Institute of Nanotechnology and Bioengineering*, involving several schools across the University, has research programmes in collaboration with several internationally recognised laboratories in Chinese Universities. These

cross-university research groups are beginning to establish exciting and novel research collaborations, e.g. between linguistics, journalism and public health (Dey, Carter, Hurley) and investigations of nanotechnology solutions for rapid testing of dental water lines (Crean). The second key approach is the development of close functional links with NHS, local government and industry. UoA research groups work closely with clinicians, policymakers and managers in the development, design and implementation of research. The UoA has a strong track record in securing funding from the Technology Strategy Board for Knowledge Transfer Partnerships with local NHS organisations, third sector organisations and industry to develop, implement and evaluate innovative interventions. There are key initiatives which strengthen these links and involve staff in the generation of research ideas such as the 'Brain Tissue and Blood Bank' at Lancashire Teaching Hospitals Foundation NHS Trust and the Children's Nursing Research Unit at Alder Hey Children's Hospitals NHS Foundation Trust. There has been co-funding of joint appointments with the pharmaceutical industry (e.g. Singh K match-funded by the pharmaceutical company Wockhardt UK) and research capability initiatives (e.g. Lancashire Initiative for Nursing and Caring in research in Stroke (Watkins) which has expanded from clinical researchers in one trust to a much larger endeavour involving trusts across Lancashire funded by Health Education England). Some of these initiatives have generated postgraduate research bursaries facilitating recruitment of high-calibre clinical and non-clinical research students to undertake collaborative NHS and industry research. The university is a partner in the North West Coast Academic Health Sciences Network and UoA staff are co-applicants in the recently successful North West Coast NIHR Collaborations for Leadership in Applied Health Research and Care (CLAHRC) bid - £9 million funding from NIHR and £12.5 million from NHS. These collaborations will further strengthen our responsiveness to research priorities, advocacy for research in priority areas and integration of research findings into practice.

### c. People, including:

#### i. Staffing strategy and staff development

The staffing strategy has three strands: recruitment, sustainability and development. There has been investment in staff at all levels to ensure development of a critical mass of researchers within each subtheme. Each research group, with one exception, is led by a Professor, includes senior and junior research staff, and has access to research support staff. Through this strategy we have increased our delivery of high-quality research outputs and enabled the growth of emergent research groups in response to national and international priorities. The University has strategically invested to strengthen the academic base within each subtheme including attracting high-calibre:

- senior research leaders: there have been three new (Crean, Singh K, Beaver) and three promotional (Dykes, Duxbury, Lowe) professorial appointments. Two (Crean, Singh K) are aligned with the recent establishment of undergraduate courses in dentistry and pharmacy, which with new senior research staff appointments, has significantly strengthened the academic base within these key areas. Four appointments have enhanced the UoA aspiration to respond to national and international priorities in mental health, maternal and infant health and cancer care.
- potential research leaders: e.g. Phillips-Jones who developed the first use of SRCD spectroscopy to obtain quantitative data for ligand binding by any membrane protein; Connell in receipt of a NIHR Career Development Fellowship; Sanders in receipt of a HEFCE-NIHR/Chief Nursing Officer Senior Clinical Lectureship Award; Benjamin appointed University Guild Fellow.
- researchers with excellent potential to become independent researchers.
- research support staff to provide a flexible and responsive technical and administrative infrastructure to facilitate bid applications and study implementation.

The university is firmly committed to supporting and implementing the principles of the *Concordat to Support the Career Development of Researchers*. Stability and sustainability are secured by careful budgetary management between Deans of School and the finance department through a business partner model. Opportunity exists for deans to submit business cases to retain research staff between grant capture to ensure that effective 'bridging' takes place between formal grant activities. The university offers a number of sabbaticals each year which in the case of this unit are supplemented by specific local schemes. The sabbatical scheme allows researchers to be

released from their day-to-day responsibilities to concentrate on a particular research activity. All staff, either new to the university or new to their role, complete an individualised induction programme that has been robustly developed and recognised as a standard for good practice in Investors in People awards. This induction programme is extensive and facilitated by a named mentor who also seeks to determine any specific learning needs of the appointee. The annual appraisal system has been modified to ensure appropriate assessment of research performance and a self-appraisal checklist has been developed for research staff at different grades to facilitate discussions with senior staff on necessary career development to support performance. Researchers starting out on their careers either have low teaching workloads or protected time for research. They are mentored by senior staff within their subtheme to facilitate high quality outputs including submission of manuscripts to high impact journals and bids to research bodies. They are also supported to present at national and international conferences, attend professional and research networking events and become members of professional, policy and research committees. Less experienced researchers are also invited onto research student supervisory teams and afforded the opportunity to complete a Postgraduate Certificate in Research Degree Supervision. A research mentoring and secondment scheme is open to UoA lecturing staff to provide an opportunity to work with experienced researchers for a substantive period on a focussed research area (led by Carter). Research support staff are also encouraged to work with senior colleagues to write manuscripts and input into bids for grants-in-aid. There is extensive training available to research staff at all levels. Several staff are being supported to participate in the NIHR's research leadership training. In addition, there is a Research Leadership Programme, funded by the university, which has been taken up by a number of current and potential research leaders. This initiative provides training in the skills needed to develop and maintain dynamic research teams and facilitate entrepreneurship and academic partnerships. To ensure excellent research training, the university has invested in the Vitae Research Development Framework to support all research staff, and was recently awarded the Vitae Excellence in Research Training award and kitemark. To provide on-line skills training to staff, the university has also invested in the Epigeum Research Skills Master programme. This suite of programmes enables progressive training from research student to senior researcher via a combination of face-to-face, e-learn and web based training. Epigeum's on-line resources for researchers are ranked as being amongst the highest quality available. They are developed by academics from over 100 institutions nationally and internationally, and are now being delivered worldwide. The Researcher Toolkit has been developed for early to mid-career staff and includes critical analysis skills; bid writing; writing for publication; time and project management: 'Vitae' has been invited to deliver parts of the 'Effective Research Training' within that programme. Within the UoA, there are well-attended research seminars, within research groups and at theme level, with presentations from external speakers and research staff. The UoA also hosts writing workshops and workshops for research grant applications. National and international conferences are also hosted; some of which are discipline specific (e.g. normal childbirth, infant feeding) and others that cross subthemes (e.g. Changing Attitudes to Cancer, Health Research with Real Impact). PhD students and less experienced researchers are supported to present at these meetings alongside national and international external speakers; training is available to all staff on oral presentation skills. The monthly Research and Scholarly Activity Group seminar programme has been established to engage teaching staff and junior research staff in applying state-of-the art methods in current and planned research programmes. The university funds an Undergraduate Research Internship Scheme, which offers undergraduate students the opportunity to work with UoA researchers on research projects over the summer months. Since the scheme was launched in 2008, there have been nearly 200 interns with a significant number supporting UoA researchers. At the end of the internship, students present posters of their work at a special exhibition attended by the Vice-Chancellor. NHS clinicians working collaboratively hold university honorary contracts or fractional appointments. Within the Children's Nursing Research Unit in the *Families, Children and Life Transitions Group* there are part-time employees who also retain clinical duties with their NHS trust. In other groups, clinical staff have held secondments returning to clinical or research positions within the Trust when projects have completed. Irrespective of the funding arrangements to support the clinician, all are encouraged to complete the induction programme and have access to IT and library facilities. The clinical academics are fully integrated into research groups and participate in research programme development, project development and implementation,

analysis of findings, and subsequent dissemination of findings. They have access to all training opportunities, methodological expertise and research support.

## ii. Research students

There have been 44 research degree completions associated with this UoA during the REF period. Research student recruitment has been enhanced by bursary schemes for clinical researchers funded by the Strategic Health Authority, university scholarship schemes, collaborations with international universities and specific initiatives such as the Children's Nursing Research Unit and Brain Tumour North West. The UoA has also had success in securing external funding for studentships from funding organisations such as HFEA, Sidney Driscoll Trust, HEA, Wellcome Trust, Diamond Light Source Ltd, Kidney Fund, the Royal Liverpool Children's Hospital Endowment Fund and Technology Strategy Board through Knowledge Transfer Partnerships. Consequently, we have seen an increase in full time students. Doctoral students have gone on to be successful in gaining NIHR post doctoral training fellowships and HEFCE-NIHR / Chief Nursing Officer Senior Clinical Lectureship Awards, as well as senior posts within the health service. The UoA provides a supportive, but academically challenging environment, for research students to thrive and ensure timely completions. All students have three supervisors with a Director of Studies (DoS) overseeing the supervision. Students are embedded within the research group of their DoS but the thematic structure facilitates multi-disciplinary supervisory teams and access to methodological support. Supervisors include clinicians, if appropriate. The University has a comprehensive training programme for research staff and students. Full- and part-time students are required to attend a comprehensive induction day, eight of which are run each year close to the point of student intake (quarterly). This introduces them to the key players and research degree processes. It is backed up by literature including student handbooks, Vitae research relevant publications, and a host of information on the facilities available for their support. Additionally, all full-time students are required, and part-time students may elect, to attend a compulsory two-week block, the Graduate Research Skills programme, at the outset of their study. This is a validated programme, and contains around £1700 worth of training. It contains vital information on skills including Communication and Presentation; Reflective Practice; Project Management; Academic Writing; RefMan/RefWorks and NVivo; Teamworking; and Coaching. All students have access to the Epigeum resources (see above). In addition, the University runs a stand-alone programme of training, again, free to all part- and full-time students. It covers a huge variety of topics that are required in order to comply with the training requirements of the RCUK, HEFCE and QAA. In August 2011, the University gained the European Commission HR Excellence in Research Award, which acknowledges their alignment with the principles of the European Charter for Researchers and Code of Conduct for their Recruitment. The UK process incorporates both the 'QAA Code of Practice for Research Degree Programmes' and the 'Concordat to Support the Career Development of Researchers. There is a thriving research student society – PROGRESS – that organises monthly events, talks, social outings, annual banquets, targeted grant schemes and members of the postgraduate research community are represented on a number of university committees such as Research and Knowledge Transfer Committee. Each year the Graduate Research School hosts a very popular Research Student Conference over a three-day period. It showcases individual research student's research by oral and poster presentations with awards for outstanding work, which research students in this UoA have won.

## d. Income, infrastructure and facilities

**Income:** The audited spend on external research grant income is over £7 million. The UoA has seen a step change in the sources of funding for research over the last REF period with greater funding from research charities and national and international research schemes including the European Commission, Technology Strategy Board, National Institute for Health Research, Health Technology Assessment, Department of Health, NHS Executive, NHS Innovation Hub Pathfinder, Trustech and a number of Research Charities including the Wellcome Trust, Arthritis Research UK, Diabetes UK, The Stroke Association, Health Foundation, Burdett Charitable Trust. Local NHS organisations (NHS trusts, clinical networks and Health Innovation and Education Cluster) and local charities, such as the Sidney Driscoll Trust and Rosemere, remain significant and important sources of funding. To facilitate the successful identification and development of bidding for

external research income, the UoA is supported by the University's central Funding, Development & Support (FDS) unit, part of the Research and Innovation Office. In the initial stages of a grant development, FDS is available to help shape the proposal and identify and negotiate with appropriate partners, subjects and/ or end-users. Similarly, whilst operating in the critical friend role, FDS helps to identify any activity which requires further support, e.g. intellectual property development. If activity from our research would benefit the general public or specific beneficiaries, support is received from FDS to help identify sources of funding to facilitate the promotion and implementation of research findings. FDS undertakes the full costing of research bid proposals while the University Business Partner Unit, in Finance, are responsible for the financial management and audit of projects once a grant has been awarded. FDS operates a critical friend system to support the academic teams to facilitate contracts and projects being completed, on time and to budget with the contracted outputs and deliverables.

**Facilities:** The campus is modern with significant investment in recent years to ensure that it is conducive to state-of-the-art research. The University has invested £6 million for dedicated, purpose-built laboratories with funding to equip laboratories has been secured from both the University's research equipment development fund and from external sources. The University employs permanent research technicians, skilled in modern techniques, to support the various research programmes. In addition, a fully equipped and staffed analytical unit is available to all researchers. All researchers are provided with dedicated office accommodation, which includes an internet-enabled personal computer, and have access to Library and Information Services. Less experienced researchers and research support staff are co-located within their research groups to facilitate active and stimulating discussion. In recognition of our increasingly international profile, Skype and other international conferencing facilities are available, and most of the professoriate and senior researchers have been issued iPads to enable rapid communication and networking. Research degree students have access to 'base rooms' which are well-equipped with computer terminals, lockable data storage facilities and social space for the exchange of ideas, questions, mutual support and debate. Full-time students have dedicated desk space and computer. All research degree students have access to a Library and Information Services account that provides access to the suite of research tools such as bibliographic management systems, electronic databases, inter-library loans and data analysis software for both quantitative and qualitative analysis.

**Governance:** The University has a robust equality and diversity strategy with all staff required to complete training and assessment in this area. Staff recruitment and selection is compliant with the equality & diversity strategy. Policy and practice in relation to research governance are determined by the University Research and Knowledge Transfer Committee. The University operates an innovative e-Ethics Committee including external and service-user representation to which all research projects are submitted for review. This ensures rapid evaluation of submitted projects, while serving to enhance ethical quality, safeguard participants and investigators in research, monitor practice and performance, promote good practice and ensure lessons are learned.

#### e. Collaboration or contribution to the discipline or research base

**National and international research collaborations (see also section b):** Watkins and members of her team are collaborators on several NIHR funded studies including OTCH (occupational therapy in care homes led by Birmingham University), RAFTAS (upper limb rehabilitation led by Newcastle University) and FRESH (vocational rehabilitation led by Nottingham University). Watkins is consultant on an US NIH trial of Motivational Interviewing in HIV/AIDS patients with Emory University, Atlanta, and leads the UK arm of the Australian NHMRC funded HeadPoST study. Dey is a member of two international stroke trialists' groups and Dey and Sutton are part of an international collaboration, including University of Hong Kong, Victoria University, Melbourne and Manchester University, to develop targeted intervention for patellofemoral pain (TIPPS) which has received Arthritis Research UK funding. Beaver is collaborating with the University of Southampton on a project funded by the Roy Castle Lung Cancer Foundation. Dykes collaborates on an NIHR funded Health Technology Assessment (HTA) study led by Stirling University into incentives for breastfeeding and smoking cessation and Dykes and Flacking work

with the SCENE group, including Scandinavian researchers. Downe collaborates with a team working on the epigenetics of childbirth, including participants from the University of Yale and the University of Technology, Sydney. Becket works collaboratively with the University of Otago.

**Wider influence:** Watkins and Leathley led the development of the national Stroke-Specific Education Framework which provides a quality assurance framework for education and training, as well as, providing staff with tools to understand their existing stroke-specialist knowledge and skills, and their training needs. Downe contributed to the Department of Health Midwifery 2020 Initiative and was founding member of the Royal College of Midwives Campaign for Normal Birth, which she chaired until 2012. Beaver's work on cancer follow-up has informed the National Cancer Survivorship Initiative and the National Institute for Health and Clinical guidelines. McKeown's mental health advocacy work has contributed to Social Care Institute of Excellence guidance for commissioning. Downe and Dykes host international conferences in childbirth and infant nutrition respectively which now alternately in the UK and overseas. Becket and Wilson hosted the 19<sup>th</sup> Health Services Research in Pharmacy Practice conference.

**Professional bodies:** Watkins and her research group collaborate with the Australasian Stroke Society, World Stroke Organisation and European Stroke Organisation. Downe was co-chair of the International Confederation of Midwives Research Standing Committee between 2009 and 2011. Crean is President of the British Society of Oral Implantology. Lea is member of the Council, British Neuro-oncology Society. Beaver sits on the British Psycho-social Oncology Society Executive Committee. Becket is a faculty board member of the Royal Pharmaceutical Society. Watkins chairs the UK Stroke Forum Education and Training committee.

**Expert committees:** Beaver sits on the National Cancer Research Institute Psycho-social Oncology Clinical Studies Group and Service Delivery and Evaluation subgroup. Schroeder is a member of several European Commission expert committees including "Ethical and Regulatory Challenges to Science and Research Policy at the Global Level". Lowe was selected to sit on the Biomarkers of Nutrition for Development panel, brought together by Eunice Kennedy Shriver National Institute of Child Health and Human Development and the National Institutes of Health in the USA. Duxbury has been appointed lead for the Department of Health Consortium on Restraint, is Chair of European Violence in Psychiatry Research Group and is a member of the Guideline Development Group for the NICE Violence Guideline Review. Benjamin is the co-opted genetic counsellor member of the NIHR Genetics Specialty Group. Becket sits on the UK APPLT Steering Group (Pharmacy Law & Ethics).

**Participation in peer review processes:** Phillips-Jones is part of BBSRC's pool of experts since 2009. Becket serves on the NIHR HTA Expert Advisory Panel and NIHR MRC Efficacy & Mechanism Evaluation Programme. Watkins is on the NIHR HTA Commissioning Board. Thomas is a member of the College of Experts for the NIHR Programme Grants scheme.

**Fellowships and awards:** Watkins was appointed as Senior Investigator and faculty member of the National Institute of Health Research and Fellow of the European Stroke Organisation; Downe was awarded an OBE in 2011 for services to midwifery; Carter was awarded a Fellowship of the Royal College of Nursing; Schroeder was selected for two awards (Sugden Fellow, Queen's College Melbourne; European Academy Fellow, European Academy for Technology Assessment, Germany) for her work in global justice. Phoenix was awarded OBE in 2010 for services to science and higher education and the distinction of Academician by the Academy of Social Sciences. Dykes was awarded Healthy Children Faculty Innovation Award for significant achievement - Breastfeeding and Human Lactation, The Healthy Children Project, USA in 2011.

**Journal Editorships:** Staff are editors of 4 journals and editorial board members of 7 journals.

**North West NHS research design service:** contributors include French (systematic reviews), Sutton (complex intervention trial design), Moran (mixed methods) and Leathley (health economics within reviews). Downe is lead for Patient and Public Involvement.