Institution: University of Exeter

Unit of Assessment: UoA2 Public Health, Health Services and Primary Care

a. Context

The University of Exeter Medical Schools' (UEMS) Institute of Health Research (IHR) is committed to high quality translational research. In addition to core funded posts in Public Health, Primary Care and Health Services Research, we have four major long-term funding streams that support applied health research and the implementation of beneficial change: the NIHR Collaboration for Leadership in Applied Health Research (PenCLAHRC, renewed to 2018), our technology assessment group (PenTAG funding renewed to 2016), the European Centre for Environment and Human Health (ECEHH funded to 2019), and the School for Public Health Research (SPHR funded to 2017). Although a young medical school, our research is already having beneficial impacts. Beneficiaries of our research include health care professionals, policy makers and government bodies, the public and communities, commissioning groups, and patients.

Impact on health care professionals: Much of IHR's and PenCLAHRC's research involves partnerships with health service professionals and users to identify key practice and policy questions which can be translated into practical research questions. We believe that this approach increases the likelihood that research findings will have a direct impact on services. For example, in conjunction with the South West Stroke Network we have undertaken operational research modelling to develop effective implementation of post-stroke thrombolysis in local hospitals. In the first hospital to complete the process the proportion of people with strokes appropriately treated rose from 4% to 16%, and the median delay times dropped from 100 minutes to 70 mins (Stein and Monks, Royal Devon and Exeter Hospital, data available); the process is now being replicated across the region. Similarly, we led the regional implementation of the results of the 'CRASH-2' trial, facilitating the use of tranexamic acid by paramedics treating traumatic haemorrhage (Logan). We were the first civilian centre to develop this strategy that is now being taken up across the UK (http://clahrc-peninsula.nihr.ac.uk/project/37-txa-in-trauma/full.php)

Impact on policy makers and government bodies: PenTAG works closely with NICE and its advisors; many of its reports have contributed to policy change, such as the work of Anderson et al on the prevention of childhood injury, and our HTA reports on cochlear implants and the management of renal cancer (Hyde, Stein, Green et al). Campbell's group in primary care have worked closely with the GMC since 2009 on the implementation of doctor revalidation, being responsible for the development of some of the assessment methods now in use; this work was cited in Hansard and has provoked International interest. Abraham was the scientific advisor to the House of Lords' Science and Technology committee (2011) report on behaviour. Ford helped develop the widely used Child and Adolescent Mental services database and its core outcome measures.(http://www.hscic.gov.uk/CAMHS). In conjunction with colleagues in our Institute of Biomedical and Clinical Sciences (Melzer and Galloway), we (Henley and Lang) have highlighted the deleterious effects of the oestrogenic chemical Bisphenol A, widely used in plastics. This work (Lang et al JAMA 2008) has resulted in regulatory authorities throughout the world working to reduce Bisphenol A contamination of food (see Global Strategic Business Report April 2010).

Impact on communities and social groups: The Health Complexity Group developed the Connecting Communities programme and implementation strategy; working with the police in Camborne they supported the development of the 'TR14ers' which has engaged with over 1000 young people in dance, resulting in a dramatic fall in offending and asthma, and increased school attendance and educational attainment. The initiative has been recognised by the Queen's award for Voluntary Service (see also http://www.youtube.com/watch?v=xGO657qqdSs). For research to have impact, interventions must be feasible and acceptable within the context in which they will be used; a core principle of our research is to work with recipients and deliverers of services at the design stage. For instance, in an intervention designed to prevent obesity in school children, (Wyatt et al 'HeLP' trial, funded by NIHR in 2012): we worked closely with local teachers, parents, children and the public health and local education authorities to develop an intervention that fits

within the school curriculum, saving effort for schools and teachers, as well as being acceptable to and engaging families. Should the positive effects seen in pilot work be replicated in the main trial we are confident of successful implementation in other schools. Similarly, Ford et al have worked closely with local schools on the design of an NIHR-funded trial aiming to reduce behavioural disorders in childhood (the 'STARS' trial).

Impact on patients and the public: Much of the work mentioned above is having a direct, beneficial impact on patients' health outcomes. Other strands of our work also benefit patients and increase their involvement in their health care. Campbell and colleagues developed the 'IMPROVE' programme surveying millions of patients attending GPs each year, resulting in the reallocation of funding in primary care and policy recommendations to improve care. Many of our systematic reviews and trials have had direct impact on patients and the public, for example Taylor's work on salt and blood pressure led the NIH to revise its position on dietary salt (2011), and both this and trials of exercise in the management of depression have had extensive media coverage. Taylor and Campbell have worked with Truro GP Dalal to develop a programme of home rehabilitation following myocardial infarction, which has been recognised within NICE guidelines and widely adopted. Similarly Campbell's work on inter-arm differences in blood pressure has resulted in changes in the European guidelines on the management of hypertension.

b. Approach to impact

- *The translation of health research into improvements in services:* Our approach over the last 5 years is epitomised by the IHR/PenCLAHRC strategy of 'research engagement by design'. This is a process of partnership with members of the public, users of health services, providers of health care, managers and policy makers, to identity key problems that need research based solutions in order to improve outcomes. To facilitate this we have developed strong links with the local NHS Trusts and research networks, and we continue to work closely with colleagues in Plymouth. In addition Britten leads an in-house patient involvement group ('PenPIG') that has worked to transform the research culture by embedding PPI throughout the research process. PenPIG also advises on how to make sure that our research is relevant and will have reach, significance and impact.
- *Improving health and well-being in communities:* This aspect of our work is evidenced by the health complexity group (leaders Wyatt and Durie) which, based on ten years of research, has developed the Connecting Communities (C2) programme which tackles health inequalities and builds partnerships. This initiative has been taken up by the CMO of Scotland, Marmot associates, and local providers such as Devon and Cornwall constabulary to build neighbourhood partnerships and improve health. The IHR and ECEHH work on the benefits of the environment to health (leader Depledge) as well as possible harms (leader Fleming). We have championed the 'green gym' and 'blue gym' concepts in Cornwall – the value of access to the countryside and coastal region respectively – and have been working closely with local people, communities, businesses, charities and service providers in the development and implementation of this work.

We work closely with the other Colleges of the University of Exeter. Wyatt was a co-applicant on an RCUK funded 3 year grant to create the Exeter Catalyst, a centre of excellence in Public Engagement. The bid drew heavily on the work of IHR/ECEHH and is supported by the Eden project, the Met Office and other partners (Exeter is one of 8 UK funded Catalyst centres). The Exeter Science Exchanges funded by the 'Bridging the Gaps' initiative (ESPRC funded) provided grants to help the formation of interdisciplinary groups that could have impact on social issues between 2010 and 2013; grant recipients included Britten, Dieppe, Llewelyn, Wyatt and several members of ECEHH. Exeter University's Research and Knowledge Transfer group (RKT) has advised on research impact, including organising workshops attended by our staff, making small sums of money available for impact, and distributing impact awards. This helped us develop a culture of impact in the IHR, ensuring that people consider it at all stages of the research process, including grant writing. Llewellyn won the 'Bright Futures' impact award in 2011. IHR groups are shortlisted for the 2013 impact awards, and in 2012 Dieppe received £2,000 to help implement the work of the Classics Department on Galen's approach to health.
Since 2008 we have recruited senior staff whose research has a high impact, including: Abraham

(2011), Dickens (2010), Dieppe (2009), Hamilton (2010), Hyde (2009), McCabe (2013), Richards (2008) and Valderas (2013). We have also attracted other key researchers working in the NHS if their research fits with our priorities and is impactful (e.g. Owens, 2012). We have encouraged them and other senior staff to maintain their existing collaborations; two notable examples being the links that Hamilton and Dieppe have with the University of Bristol. Hamilton has led the UK primary care cancer diagnosis agenda for several years, producing symptom-based risk assessment tools for 13 cancers to guide GP decisions on diagnostic strategies. This work was shortlisted for the NHS Innovation Prize in 2012. Dieppe has worked on joint replacement for the past decade, and continues to help lead NIHR programme grants and analysis of the UK joint replacement registry data. The outputs have changed orthopaedic policy; for example his papers on metal-on-metal hip replacements led to the CMO writing to all UK surgeons in 2011.

c. Strategy and plans

We will cement existing relationships with professional and user groups, and build new interactions with other key local community groups (such as Recovery Devon and Exeter's 'Hub on the Green'). We will run internal IHR seminars on dissemination, implementation and impact for academic staff, providing examples of best practice. Britten is CI of an MRC funded project on patient involvement in research which has produced an Impact Assessment tool which we will be using, and Garside has set up a community engagement group working with the Catalyst group and ECEHH. We will offer rewards to our researchers based on the impact of their work, and set up an impact advisory group with input from health users and patients. These initiatives were launched at our 2013 annual research event. Our policy of recruiting senior people whose research can improve service provision (outlined above) will continue.
Whilst continuing with our current activities developed through PenCLAHRC, PenTAG, PenPIG, ECEHH and SPHR, we will capitalise on the recent formation of formal research links between the Universities of Exeter, Bristol, Bath and Cardiff (GW4), particularly to help the development of two areas of research that we believe will have a major impact in the future:

1. Evidence based diagnosis, screening and surveillance programmes (leaders Hyde, Hamilton and Stein, working with Hattersley). Diagnostic labels underpin decisions in health care and are fundamental for personalised medicine, but research and the methods needed lags behind other areas. This is a key theme for the second period of PenCLAHRC and offers substantial opportunities to work with methodologists and basic scientists across partner universities.
2. Health and well-being in communities and environments (leaders Wyatt, Depledge, Dieppe, Richards D). We will build on the work of the ECEHH on the benefits of the environment, that of the complexity/C2 group, our prowess in developing new ways of working with user groups (e.g. PenPIG) and 'different publics', our expertise in developing and evaluating complex interventions (Dieppe, Richards D), our developing expertise in realist evaluations (Anderson et al), and our links with University of Exeter Humanities and Social Sciences groups to develop programmes and processes to improve public health and reduce health inequalities while preserving the environment. We are also developing new links with the 'Population Health Environment' (PHE) movement to aid evaluation of their International programmes.

d. Relationship to case studies

Each of our three case studies illustrates the power of research directed at specific policy and clinical questions to change outcomes. All are in the neuroscience/mental health domain, a priority research area for PMS and UEMS since their formation, and a government priority area for health research. We are continuing to support this area and have since 2008 have actively recruited staff to increase our impact in the field, including Dickens, Purandare (recruited 2010, died 2011), Richards D, and McCabe. The case studies illustrate our collaboration with local service providers and users, government bodies (such as NICE), and other academic groups (such as Exeter's Mood Disorders Centre) to tackle important problems of direct policy and practice relevance, and ensure that our work has impact. They demonstrate the way in which local UK research groups, linked to communities and government bodies, can produce and implement research that is of major benefit to communities worldwide.