

Institution: Cardiff Metropolitan University

Unit of Assessment: A3 Allied Health Professions, Dentistry, Nursing and Pharmacy
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a. Context

Applied research at the Cardiff School of Health Sciences has a well-established history of end-user engagement in biomedical research, food safety and nutrition, and applied psychology. Led by seven Professors and five Readers, the work is focussed on achieving a better understanding of human health and welfare, leading to an enhancement of quality of life and mitigation of harm. Processes for embedding impact in research activities and for recording impact have been designed to optimise resources and to exploit the potential for interdisciplinarity. There are three main types of impact. The first is linked to the treatment and prevention of illness and disease, where beneficiaries include health care providers and patients – particularly the National Health Service (NHS). The second is through engagement with partners in different industrial sectors to minimise health risks – and it is from this work that the two impact case studies have been derived. The third is concerned with public health policy and implementation – especially through corporate well-being for academic and non-academic organisations.

The school is committed to the delivery of the devolved Government's National Institute of Social Care and Health Research (NISCHR) Academic Health Sciences Collaboration strategy, and was a founding member of the South East Wales Academic Health Sciences Partnership which brings together the higher education institutions and the NHS University Health Boards nationally to foster closer collaboration in research as well as in teaching and enterprise.

The main beneficiaries of the impact of our research are the patients and clients of those responsible for particular aspects of health care delivery, service providers, the workforce of organisations for whom we provide corporate health checks, and industrial partners for whom we provide advice and guidance. As well as direct benefits to end-users of our research linked to health and welfare, there are also indirect economic benefits that accrue to organisations by reducing employee absence through illness.

b. Approach to impact

Responsibility for fostering and assessing research with impact at Cardiff Met is a pan-University imperative led by the Research and Enterprise Board under the direction of the Pro Vice-Chancellor (Research) and supported by the University's central unit, Research and Enterprise Services. The Cardiff School of Health Sciences has a Director of Research who, in conjunction with the School's Management and Planning Team, is charged with operationalizing the corporate strategy for research. Influenced by the School's Professoriate and assisted by a strong team of well-qualified technicians and administrators, research impact is integrated into School planning processes through the annual planning round and individual staff performance reviews. Registers/audits of impact cases have been established so that emerging cases can be identified at an early stage of their development and can then be managed effectively to optimise their potential. The Research and Enterprise Annual Review Update publication provides an opportunity for staff to showcase examples of research excellence and innovation.

As well as internal arrangements for nurturing research with impact there are two outward-facing imperatives linked to collaboration / partnership and communication / public engagement.

Collaboration / Partnership: Our primary collaborating partner is the NHS. Through our strategic link with the Cardiff and Vale University Health Board, research undertaken by **Curran** has provided an evidence base for the development and evaluation of orthoses in podiatry. Other public sector health care projects include: (i) **Cooper's** continuing work on the mechanisms of the antimicrobial effects of *manuka* honey in clinical practice which formed a contribution to a Guide for Healthcare Professionals (£130k); (ii) **Jones's** contribution to Lung Research Wales, a registered research group with a portfolio of £3.7 million which has developed a miniaturised near-patient diagnostic tool, and about which GlaxoSmithKline are investigating the potential for commercial exploitation; and (iii) **McDonnell's** contribution to the Anglo-Cardiff Collaborative Trial with clinicians from Cardiff University and the University of Cambridge which is recognised internationally for enabling clinicians and scientists to understand 'normal values' of vascular ageing throughout the life cycle. The scope of our research with public-sector end-users also extends to policy recommendations and continuing professional development for secondary care nursing staff on psychological therapy and counselling on substance misuse (**Alwyn** with John, University of South Wales £23k), with the Ministry of Justice National Offender Mentoring Scheme

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(**Bowes, Sellen and Watt**) and the Supporting Offenders through Restoration Inside programme delivered in collaboration with HM Prison Cardiff.

This latter body of research linked broadly to forensic psychology is an illustrative example of impact that has also influenced the commercial sector. Private forensic services as well as the NHS have been partners in the evaluation of an intervention programme about Control of Violence for Angry Impulsive Drinkers (**Bowes, Sellen and Watt**). Other collaborations with the health industry have led to a patent (US 20110111966 A1) for work on a method to identify agents for the screening and treatment of myeloproliferative disorders (**Ahlwalia and Erusalimsky** with a major global pharmaceutical company), and providing the scientific evidence for product development to wound dressing manufacturers and British National Formulary listing (**Cooper, Jenkins and Maddocks**).

The third arm of our collaborative activity is through policy development and governmental partnership from the European Union (EU) to local authority levels, and for individuals in particular Government departments. Funded by the EU, the 'Why We Age' project features in Horizon 2020 and resulted in the production of a white paper to assist in the identification of research themes on biogerontology for next 15 years. **Erusalimsky** continues to investigate this area of health science including a contribution to the €12 million 'Frailomic' project – an international multi-agency collaboration funded by the European Seventh Framework Programme to develop biomarkers of frailty. His work on sirtuins in age-related vascular ageing was highlighted in 2013 in the Welsh Government publication *Welsh Achievements (In Science, Technology and Engineering)*.

More locally, the effect of exercise on biomarkers of health and vascular physiology (**McDonnell, Morris, Thomas and Webb**) has led to the development of corporate 'Health MOTs' for the workforce of different organisations which now include the Welsh Government's Child Protection Services as well as the general public. The spin-out of this work has been further collaboration through the Welsh Government funded National Exercise Referral Scheme, a study with community based exercise groups to determine the effectiveness of 'green' exercise on markers of health and wellbeing – which **Thompson** has recently evaluated for Ground Work Wales. Work on the health benefits of social gardening through a NISCHR funded study 'Growing a Healthy Older Population in Wales' (**Clayton, Hawkins, Mercer and Thirlaway**) has also impacted on health and well-being of the elderly and been communicated through local media.

Communication / Public Engagement: The final aspect of the overall approach to research impact has been through effective communication and engagement with relevant stakeholder groups. The core principle has been to provide evidence-based research to inform health organisations (including the people in them), government agencies, charities, the commercial sector and the general public. We engage key stakeholders in dialogue, policy reports, relationship building, presentations and other dissemination. Contributions include BBC and ITV Television News and current affairs programmes (**Bowes, Cooper, Curran, Davies, Evans, Maddocks, Ruffino, Sykes and Thirlaway**), BBC Radio Wales (**Curran, Fielding and Lloyd**) and Public Health Wales - a pan-Wales NHS Trust (**Ruffino, Thirlaway, Thompson and Tomlinson**). These add to engagement with the print media to offer commentary on topical research-related issues (**Cooper, Curran, Maddocks and Sykes**).

There has been extensive engagement with key organisations – the Food Standards Agency ran a series of themed seminars about our research (**Allender, Fielding, Lloyd and Redmond**); the Department of Health and Social Services Health and Wellbeing events (**McDonnell, Morris, Thomas and Webb**); an Economic and Social Research Council Seminar Series on motivation for treatment engagement and behaviour change brought together speakers from around the world and academics, researchers and practitioners from around the UK, with policy experts from Wales (**Sellen**); the Health and Safety Executive management standards on work-related stress were informed by a systematic review (**Limbert**). **Fielding** and **Lloyd** have also made significant contributions to the food industry sector – the former is a member of the Welsh Food Advisory Committee (a public appointment) which advises the UK FSA Board on policy and strategy, the latter was a member of the Welsh Government's Agri-Food Partnership and chaired the South East Wales Agri-Food Partnership which was responsible for the publication of the Welsh Food Strategy – 'Food for Wales, Food from Wales' (2010).

c. Strategy and plans

The imperative that has driven the planning for impact is to establish a structure that assures recognition for the best applied research in human health and welfare. The corporate cornerstone

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of achieving this is an explicit commitment to performance management that characterises the implementation of the University's Strategic Plan and includes annual review at School, departmental and individual levels. Led by pan-University strategic research infrastructure and outward-facing communications and marketing support, the approach taken to the cultivation and exploitation of research impact has been predicated on a clear set of governance arrangements. In summary, these include the following sets of activities:

- (i) Subject specialists have been strongly embedded in the University's impact planning and decision-making processes (**Fielding, Peters** and **Sykes**).
- (ii) Cross-disciplinary research and impact has been nurtured through a series of University Research Open Days. We have also organised, hosted and contributed to conferences for the United Kingdom Association for Food Protection (**Fielding** and **Lloyd**), the Welsh Diabetes Research Network (**Morris, Thomas** and **Webb**), and the Atlantic Regions' Coastal Pollution Response Plus (**Russell** and **Sykes**).
- (iii) Specific roles have been identified to support the development of research impact at School level (**Fielding**), and each School has a senior academic lead for enterprise and entrepreneurship (**Sykes**).
- (iv) Strategic appointments to emphasise initiating new and/or capitalising on existing research impact partnerships have been made. Some were full-time (e.g., **Bowes, Jenkins, Kelly, Maddocks** and **McDonnell**), whilst others were honorary/visiting (e.g., **Al-Angari** and **Peiró**).
- (v) Staff have been engaged and included in research impact planning. From an initial register of eighteen impact case studies, four were identified and developed to evidence current or immediate impact. Led by **Cooper, Erusalimsky, Fielding** and **Sykes**, it is the latter two that are being submitted. Others have been targeted for medium-term impact exploitation.
- (vi) Where appropriate, alongside time allocated for strategic impact planning, all of these have been supported and acknowledged in workload calculations.

There are five shared strategic drivers for finding, establishing, nurturing, delivering and exploiting research impact. They are:

- (a) Consolidating our commitment to applied research with targeted end-use and end-users.
- (b) Ensuring that our commitment to the theory-practice interface results in our research meeting end-user needs.
- (c) Identifying programmes of research with the potential for significant 'reach'.
- (d) Differentiating between, and providing appropriate support to programmes of research that have potential for 'immediate', medium term and longer term impact – recognising that these are not mutually exclusive.
- (e) Supporting the targeted exploitation of impact through deployment of explicit resources and bespoke marketing initiatives.

d. Relationship to case studies

The case studies being submitted are the most compelling illustrations of the contribution made by research conducted at the Cardiff School of Health Sciences outside academia. With a twenty year history of research about the food industry, and led successively by Professors **Griffith, Peters** and **Fielding**, the first case study is concerned with the way that our multi-disciplinary research changed the food industry for small and medium-sized enterprises in Wales. Through a Knowledge, Innovation and Technology Exchange programme set up in 2008 with an initial £3.9 million multi-agency investment, 31 food manufacturing businesses have been beneficiaries of enhanced food production and food safety management systems. As a result, it is calculated that by March 2013 the commercial and economic effects had been £27 million of increased sales, £540k of waste reduction within processing, and the creation and safeguarding of 1,072 jobs.

The second case study emanates from the Centre for Health, Safety and Environment and is led by **Sykes**. The empirical platform for a sustained engagement with the waste management industry has been informed by previous studies from other senior researchers (Professors **Jones** and **Karani**) and others (**Allen** and **Morris**), and is an example of immediate and intermediate impact on the effective management of the risk to the health of workers from exposure to bioaerosols during composting. Based on our research, high-risk work activities were identified, and recommendations on risk reduction strategies and good practice were made which have been endorsed by the Health and Safety Executive.