**Engagement with the Transdisciplinary Academic Community (UK Responses)**

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| **Research Discipline(s):** | **What contribution your research discipline is already making to the health of the public?** | **What opportunities are there for greater contributions through transdisciplinary research activities?** |
| **Non-communicable disease (NCD) prevention policy and epidemiology, mainly cardiovascular and heart disease, diabetes and common cancers; hence studies on the key NCD drivers: inequalities, tobacco, alcohol, inactivity and, crucially, poor diet (hence obesity, sugar, salt, fats, fruit, etc).** | Our recent research work (funded by UKPRP/NIH/ NIHR/ EU/ MRC/ BHF/ WHO) includes: **A.**) Developing **effective, equitable and cost-saving non-communicable disease prevention strategies** regionally, nationally and internationally (majoring on healthy food & tobacco policies, and using quantitative modelling methodologies, policy appraisals and empirical analyses). **B)** **An IMPACT Model programme** helping to explain the dramatic falls in cardiovascular disease (CVD) mortality rates in the UK, USA and other high income countries; and conversely, rapidly increasing CVD mortality rates in China and some other low and middle income countries. Population-wide policies and harmful commodities consistently prove more powerful than modern treatments. **Primary prevention** could potentially avert some 40% of premature NCD deaths. Capewell’s “effectiveness hierarchy” shows that population-wide policies can powerfully improve health and reduce costs rapidly. Furthermore, most preventive interventions are highly cost saving, particularly population-wide, ‘upstream’ regulatory and fiscal policies with a return on investment up to 50-fold. Conversely, “downstream” interventions focused on individuals can be ineffective or widen inequalities. | NCD generation and prevention actions occur in complex adaptive systems; these are characterized by emergence, feedback, and adaptation, hence resisting quick policy fixes. Many policy and social choices interact to produce population health outcomes. The effects arising from preventive policy interventions can thus be unpredictable, non-linear, emergent and diffuse, because complex adaptive systems typically amplify some actions and dampen or neutralise others. Addressing NCD problems therefore needs to start by understanding this complexity, mapping the system’s visible Elements, functional Interconnections and Purpose, and then testing potential solutions, focussing particularly on the paradigms and structures. Policy makers and research users likewise operate in complex policymaking systems. They appreciate the potential benefit of systems thinking, but many desire further evidence and examples of its value to guide action.NCD prevention research and policy development HAS to be multidisciplinary. There are potentially major contributions to be elicited from Child Health, Clinical Epidemiology, Computing Science, Complex Systems Approaches, Data Science, Economics (general), Epidemiology, Ethics, Evidence Synthesis, Health Economics, Health Geography; Health Promotion, History, Informatics, Knowledge Brokerage, Law, Nutrition Policy, Nutrition Science, Operational Research, Policy Analysis, Policy Modelling, Political Science, Psychology, Public Health, Research Management, and Social Science.  |

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| **Public Health Ethics and Law, Mental Capacity Law, Health Law** | My disciplines are public health ethics and law. Contributions come from:• Heightened understanding within research itself: e.g. in explaining how governance for the public’s health may be justified, what considerations (in terms of both empowerment and constraint) are pertinent in the use of legal and other regulatory measures, and in analysing, comparing, assessing different possible interventions (e.g. a sugar tax; minimum pricing) or framings (e.g. the right to health) that have their bases in law/policy.• Heightened understanding of the different modes of ‘evidence’ that are applicable when aiming to provide ethical/political/legal justification for different forms of intervention.• Heightened understanding of ethics and law within the public health community: there is a keen interest in both, and they are both core to public health practice, activity, and agendas, but there are limited opportunities for training and educational opportunities. | Within government, public health, and academic communities, commitments to broadened agendas need to be matched by inclusion and recognition of the value of different approaches (see e.g. Richard Horton, ‘Offline: Apostasy against public health elies’ The Lancey (2018) 391:12121, 643, available at https://ac.els-cdn.com/S0140673618303040/1-s2.0-S0140673618303040-main.pdf?\_tid=8170cf70-b1ab-442c-97cd-51c3589376d6&acdnat=1551375824\_9337f88962801ed35e419e062c1fa5aa )Funding opportunities look increasingly set to promote this sort of transdisciplinary, and must be sensitive to the need for understanding from across disciplines, including different traditions, forms of analysis, methods, etc..Recent trends, e.g. towards a firmer embrace of the political as well as the scientific aspects of public health, will help advance further opportunities. |

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| **Landscape Architecture, people-environment studies, salutogenic environments** | Research from Landscape Architecture and associated disciplines on planning, design and management of the outdoor environment has informed a better understanding of a) affordances – how environmental design (and particularly outdoor and natural landscapes) offers different kinds of opportunities for (or barriers to) human use and enjoyment, from being physically active to relaxing and restoring mental health.b) How planning, design and management of landscapes can be more inclusive, to support outdoor use and enjoyment by older people, children, different socio-economic and ethnic groups, people with different capabilities and impairments, etc.c) The relationships between good access to landscapes such as green or natural environments and a range of health and wellbeing outcomes, such as lower stress, better quality of life, greater levels of physical activity such as walking. This has been achieved usually by working in collaboration with other disciplines and considering a range of potential pathways and outcome measuresd) Contributing to a better understanding of the ways in which good access to green and natural spaces is ‘equigenic’, i.e. helps reduce health inequities due to socio-economic status. | Much of the work linking landscape and health has been achieved through collaborations between landscape architects, psychologists, geographers, public health professionals, endocrinologists, sociologists, gerontologists, geriatricians, etc..We are still developing better understandings of the issues and the pathways to health, and these are likely only to be achieved through continued interdisciplinary collaboration. |

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| **Medical HumanitiesWorking clinician in women’s health** | I lead the Institute for Medical Humanities at Durham University:<https://www.dur.ac.uk/imh/>This is funded by the Welcome Trust and is committed to influencing the health care evidence base through research on human experience. We are committed to the idea that the arts, humanities and social sciences can play a constitutive role in creating the evidence base for health especially by working alongside clinical science.We have four main research strands:**Embodied symptoms** – which is investigating the process by which perceived changes become ‘symptoms’ in a clinical sense and is connected with the idea of patient delay in cancer diagnosis. The strand is committed to understanding the range of life experience that might influence symptom perception including families, ethnicity, wider popular culture, religion, imaginative experience. **Thinking, Feeling Imagining** – which investigates how thought, feeling, emotion memory and imagination contribute to a sense of wellness or illness and our construction of the self and others. **Everyday Environments** – explores the influence of time, space and place on individual and collective experiences of health.**Science of Human Experience** – investigates alternative forms of accessing inner human experience and uses them to advance models of mind and brain and particularly how social and environmental settings affect psychology and physiology. We have one further cross cutting strand:**Critical Concepts** – which explores concepts important across all these strands such as interdisciplinary or transdisciplinary working, personalisation, vulnerability, co-morbidity and the post human. These strands currently come together in work on two major Welcome-funded project:**The Life of Breath** – funded by a Senior Investigator Award which is investigating the experience of breathlessness with a focus on COPD**Hearing the Voice** – funded by a Collaborator Awards – investigating the experience of hearing a voice in the absence of any speaker. **Life of Breath**Has contributed to public understanding of breathlessness through a major exhibition currently at Durham and about to move to RCP in London called ‘Catch Your Breath”:<https://catchyourbreath.org/>We are also tackling the problem of poor uptake of pulmonary rehabilitation by researching new ways of managing breathlessness such as Singing for Breathing and Dance.What opportunities are there for greater contributions through transdisciplinary research activities? A team in IMH have devised a programme of training in transdisciplinary research for which we are bidding for Welcome support. The programme will involve a cross disciplinary group of researchers from all stages of career level. We have already run such a programme (with AHRC support) for ECRs.  | A team in IMH have devised a programme of training in transdisciplinary research for which we are bidding for Welcome support. The programme will involve a cross disciplinary group of researchers from all stages of career level. We have already run such a programme (with AHRC support) for ECRs.  |

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| **PH, transport planning, sociology, marketing** | What contribution your research discipline is already making to the health of the public?I work in the inter-disciplinary field of road transport and health. This is not an area that has been given that much focus from either the NHS and public health services nor from transport planning in Scotland (although there is limited activity across the UK). Active travel has been perhaps the most visible connection from a positive perspective. There is much to be done! So, I talk below more about opportunities than achievements to date. I took up a part-time post at Edinburgh Napier University in September 2018 – claimed as a world first – a Professor of Transport & Health. It is my intention to ‘shake-up’ the system in health and road transport, making connections across the disciplines and organisations and accelerating existing actions and developing new ones and in the process connecting diverse professionals often not considered in the frame . I was one of the developers of this field over the past 30 years internationally and am on a mission... A first step was a Transport and Health Seminar in November 2018, opened by the CMO. A second seminar meeting of the Transport and Health will be held with the GCPH in May. I have met with a few senior NHS staff recently not least in the context of the nascent PH Scotland and shared agendas but these discussions are at an early stage.With an Honorary role at the Physical Activity & Health Research Centre, University of Edinburgh, I have a reasonable base from which to try to make a difference (although very Edinburgh focused). | There is a lot which could be said here. There are a range of skill –sets that need to engage on transport and health e.g. social marketing. Firstly, there is a need for training for both PH professionals and transport and allied professions in local government, consultancies, NGOs. This needs to be addressed through the FPH bit also other health and transport sector agencies. I use to provide training for FPH Registrars in parts of England but there needs to be a coordinated programme across Scotland. The same could apply through other groups within the NHS e.g. via the BMA and or Royal Colleges.Where is the translational research? I have started <https://blogs.napier.ac.uk/tri/essential-evidence-scotland/> which follows on from another library of de-jargonised evidence summaries on transport and health from 2009 [www.travelwest.info/evidence](http://www.travelwest.info/evidence) A network which provides access latest research and has a Scottish focus on researchers and research groups interested in or involved in road transport and health.Networks: there are some well-placed organisations like GCPH and ScotPHN but not necessary one-stop locations for busy practitioners with specialist support offers. Perhaps a transport section within ScotPHN – unless I’ve missed something?Scottish NHS staff health – just reducing Bank staff and Locum costs would save the NHS £Ms is their travel behaviours could be changed. 69.1% of nurses are overweight or obese (Kyle et al, 2016). I am developing a research bid on this particular item… |