

Institution: University of Wolverhampton
Unit of Assessment: 3 – Allied Health Professions, Dentistry, Nursing and Pharmacy
a. Context

There are three major non-academic users of the research undertaken by the Research Institute in Healthcare Science (RIHS), small and medium enterprises (SMEs) both within the region and more widely, the NHS and the social care network and research charities.

SMEs make up a significant proportion of the West Midlands regional economy and these small firms are increasing both turnover and employment opportunities. Over the last three years 37% of SMEs have increased turnover, 19% by 10% and over a quarter have expanded their workforce, 8% by over 20%. Further significant growth over the next 10 years is expected in SMEs involved in high value added advanced engineering, transport, environmental and medical areas. There is a strong access to markets within the UK; with 98% of the UK market within 4 hours travelling time of the West Midlands. However, a significant local skills gap exists and limited access to research and development activity acts as a significant barrier to development.

As set out in one of the case studies, RIHS has built on the University's excellent track record of business engagement to deliver impact to small businesses. Over the present REF cycle members of RIHS have delivered or are delivering 6 KTPs with regional SMEs including Rozone, Crestwood Environmental Ltd and HR Chemicals and one in social care based research with Bryn Melyn Care Ltd. Two new KTPs have recently been approved for funding. The quality and significance of these university-business interactions is recognised nationally through short-listing in the Lord Stafford Awards and two KTP Fellow achieving KTP Business Leader of Tomorrow Awards. In addition over the same period small scale *ad hoc* consultancy has continued to grow and now exceeds £30K per annum.

With regard to our interaction with the NHS, there is evidence of significant health inequalities in the region. Men in Wolverhampton currently live an average of 76.5 years compared to 79 years across England. For women, the gap is smaller but still significant. And while deaths from cardiovascular disease have halved over the last 15 years, Wolverhampton still has higher mortality rates than the national average. There is also significant variation in deaths attributable to coronary heart disease, lung cancer and stroke across the city and as a result of these inequalities; men in Tettenhall and Wighwick live, on average, 6 years longer than men in East Park.

Charitable funding supports a significant proportion of the research income to laboratory-based research in RIHS and members of staff, graduate students and technicians engaged in this type of research contribute to awareness raising on behalf of the charities involved. For example, the Neuro-oncology Research Centre holds twice yearly Open Days for the general public that include laboratory tours, demonstrations, question and answer sessions and opportunities to meet research scientists and learn about the process of research. Members of the Centre contribute to patient and carers support groups for those touched by brain tumours across the region, as well as nationally at annual charity events and talk regularly to supporters groups about brain tumour research and how it will influence medical treatment in the future.

b. Approach to impact

The University of Wolverhampton research strategy is predicated on the application of its research to real problems especially those in the Black Country and more widely in the West Midlands although it recognises that solutions that are suitable for the region may well have significance more widely nationally or internationally. RIHS with its partner Schools have made strategic appointments over the last 5 years, which allow it to more closely align its research activities with

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its key external partners to ensure that its research can speedily, and effectively applied in the wider community. In order to develop and sustain the partnerships with the NHS the School of Health and Wellbeing has established the Centre for Health and Social Care Improvement (CHSCI) that aims to be the vehicle that delivers academic research to the NHS in a way that changes practice and addresses health inequalities. All members CHSCI are also members of RIHS. This close working relationship between the Schools and RHIS provide opportunity for joint planning of new academic appointments. A number of strategic appointments have been made that bridge builds between the University and the NHS. For example, Professor Magi Sque was appointed jointly between the University and the Royal Wolverhampton NHS Trust at New Cross Hospital to lead on developing frameworks for translational research between the Trust and the University. The School of Applied Sciences has invested in new appointments to strengthen cancer research, metabolic medicine and COPD research teams. These posts have been filled with individuals with excellent research credentials (for example, see Athanasopoulos, Kirkham and Morris in REF 2) and significant translational experience in order to expand our engagement with the NHS and the pharmaceutical industry. A number of strategic honorary academic appointments at Professor, Reader and Senior Lecturer level have been made by the University where research work aligns with the laboratory or professionally based research activities of the university and the NHS. Many of our pharmacy practitioner academics have joint clinical appointments and their research is often based on practice development and evaluation that has immediate applicability in the workplace. There has also been a progressive increase in interest from practitioners across the regions in our professional doctorate programmes in counselling psychology (the University trains all counselling psychologists in the West Midlands), Health and Wellbeing and Biomedical Science where practitioners undertake research projects with the University that are firmly based in the workplace and use these opportunities to influence their practice and the practice of others through their clinical links and publication. These practitioners are in the best position to translate academic discoveries into practice. RIHS has also secured significant funding to build on our industrial engagement with two professorial appointments in polymer chemistry with the express aim of driving forward the industrial and medical application of bacterially synthesised polymers that have arisen from its research work. RIHS recognises the importance of industrial engagement in its research agenda and is presently making use of the pathways to professorship based on commercial engagement that the University has put in place to recognise the contribution of this type of activity in promotion to professor.

In order to deliver the research strategy, RIHS and the three academic schools that contribute to it have business development managers and HEIF-funded fellows working within them. This provides a locally-based conduit allowing the business development managers to increase external income through consultancy and HEIF-funded fellows build and sustain both business/university partnerships and to drive the regional network of projects around health and wellbeing with clinical partners that include research designs to assess the impact of service redesign and workforce development.

At University level considerable support is available to staff to roll out university generated research into the community through the University of Wolverhampton Business Solutions Centre (UWBSC). The Help for Inventors pathway provides support to assess the commercial potential of a new discovery, the technology transfer process leading to patents or other types of protection, product development including access to rapid prototyping facilities located on the University's Telford Campus and help with the development of licensing agreements or spin out companies. UWBSC provides a significant input to the RIHS training programme for graduate research students and staff induction programmes. Over the REF cycle UWBSC has assisted members of RIHS to assess over 25 potential products, filed 3 UK, 3 PCT international and 1 USA patent

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applications. One product has been licensed and the University is in advanced discussions with companies about licensing three more products.

The University has an excellent track record in the delivery of Knowledge Transfer Partnerships (KTP) and the ERDF-funded KEEN that is designed help West Midlands based SME's increase profitability and achieves growth through working with the University.

c. Strategy and plans

The University is investing £25 million on a new laboratory building for science that will be complete in late 2014. In addition to new laboratory facilities for research and teaching there will be facilities to provide laboratory accommodation to facilitate university-business interaction particularly where SMEs lack research and development facilities of their own.

The Director of RIHS has a long-standing interest in medical innovation and has sat on the board of the regional biotechnology exploitation platform, CENTECH and more recently has been a board member of MIDTech, the NHS Innovation Hub for the West Midlands. He has recently been appointed the University Dean of Research in addition to his RI duties. This has resulted in the consolidation of research services in a single location, the Research Hub on City Campus. This facility will also complement interaction between the business facing parts of the University and the academic community that would like to work with industry in premises in the heart of the University's City Campus immediately adjacent to science, engineering, health and social care facilities. This is already providing opportunities for closer liaison between researchers, graduate students and business development activities to occur. An interesting focus will be on developing support for business start-ups for completing research students and postdoctoral fellows so that they can develop new business based on the knowledge they have developed as part of their research.

The University is developing in partnership with The Royal Wolverhampton NHS Trust at New Cross Hospital the Wolverhampton Medical Research Hub that will provide facilities within both the University and the Trust to prosecute translational research that can rapidly influence both health and social care across the region. New practitioner doctorate programmes are under development including new awards of MD and DTech degrees that will provide high-level skills training and generate workplace-based research with translational potential across the region in both the NHS and regional SMEs.

Looking more to the future, the development of a new faculty-based University structure over the next two years to include a Faculty of Science and Engineering undertaking interdisciplinary work in laboratory-based science, engineering and computer science that will lead to the development of high value products that contribute to enhanced manufacturing opportunities in the area of health technology. The University is conducting scoping exercises to align the research strengths of the University in healthcare science with the wider market opportunities in the region including the role of the University Science Park to determine if further investment in the latter will allow the University to contribute to those growth areas identified by the Government Office for Science in the biotechnological, pharmaceutical, materials and nanotechnology sectors.

d. Relationship to case studies

The four cases supplied represent important areas of our research that have lead to demonstrable impact in areas of clinical practice around organ transplantation, the development of Healthy Living Pharmacies, review of child deaths and interaction with SMEs. They reflect the success of our approach to impact through joint appointments between RHIS and the NHS (organ donation, Sque), our interest in commercial opportunities through engagement with local SMEs with limited research and development capacity (KTP partnerships, Hill), our commitment to workplace engagement with practitioners in the community (Healthy Living Pharmacies, Rutter) and areas of social care with worldwide significance (prevention of child deaths, Vincent).