**Institution: University of Manchester**

**Unit of Assessment: 19 (Business and Management Studies)**

**Title of case study: Mobilising knowledge to improve vascular health in the population of Greater Manchester**

## 1. Summary of the impact

Research into understanding and addressing the gaps between evidence and practice in health care has been conducted and applied at the University of Manchester. Working within the Department of Health funded National Institute of Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for Greater Manchester, research teams have applied an evidence-based approach to knowledge mobilisation to improve the identification and management of two vascular related conditions: impaired glucose tolerance (IGT) and chronic kidney disease (CKD). As a result of the initial pilot projects in Greater Manchester 1863 new CKD patients have been identified with the success leading to a further implementation programme that has spread to other areas of the UK. The IGT pilot project has directly led to the improved health of targeted patients in two areas of Greater Manchester.

## 2. Underpinning research

Building on a reputation for applied research, and specifically research into knowledge mobilisation and service improvement, in 2008 funding from the Department of Health was awarded to NHS organisations and the University of Manchester to establish the NIHR CLAHRC for Greater Manchester. This 5 year, £20 million collaboration aims to narrow the gap between cardiovascular research and its implementation in practice. Existing research has been applied to design and implement a programme of work designed to close the gap between known best practice and the actual delivery of care to people with CKD and IGT.

The approach taken builds on three areas of research expertise within the University of Manchester (UoM): Harvey's previous work on developing a conceptual framework to explain the factors that influence the successful implementation of research evidence into practice (the Promoting Action on Research Implementation in Health Services (PARIHS) framework); Boaden and colleague's research on quality improvement models in health care; and previous experience of Knowledge Transfer Partnership (KTP) programmes in Manchester Business School (MBS). Development of the PARIHS framework was undertaken by a team based at the Royal College of Nursing (RCN) Institute from 1996. Since joining the University of Manchester in 2003 (fulfilling the roles of Senior Lecturer/Reader), Gill Harvey has continued to be part of the team, continuing research on the development and testing of the PARIHS framework [1], in particular facilitation roles and methods to improve practice [2]. Ruth Boaden, whose research forms the other elements of this impact, has been based at the University of Manchester since 1989 (Lecturer/SL/Professor) and worked with other UoM staff on various research and knowledge transfer projects on quality improvement and healthcare since 2002.

The PARIHS framework challenges the deterministic view of knowledge translation, instead proposing that successful implementation of research evidence into practice is dependent on the complex interplay of the evidence to be implemented (how robust it is and how it fits with clinical, patient and local experience), the local context in which implementation is to take place (the prevailing culture, leadership and commitment to evaluation and learning), and the way in which the process is facilitated (how and by whom). It was one of the earliest conceptual models to propose this multi-dimensional view of knowledge mobilisation in health care and since its initial publication in 1998, the original PARIHS framework has received over 736 citations and has been used nationally and internationally as a heuristic to guide the application of research evidence into practice and as the conceptual underpinning of a variety of tools and frameworks to be used at the point of care delivery.

The research into quality improvement in practice spans a number of funded projects, as well as specific outputs including two books [3,4], and has included a range of Knowledge Transfer Partnerships (KTPs). The research provides empirical support for models of incremental, small-scale improvement and demonstrates that principles from operations management underpin all approaches to improvement, and can be applied within healthcare.

By combining these areas of research expertise, the CLAHRC team developed a model for facilitating the implementation of research into practice [5] which embeds the operational steps of the Model for Improvement (built around Plan-Do-Study-Act cycles), within the conceptual coordinates of the PARIHS framework, thus providing a flexible framework for knowledge mobilisation supported by active facilitation of the process at a local level. This approach has been successfully applied across a range of primary care settings in Greater Manchester to improve the care of people with chronic kidney disease and impaired glucose tolerance.

## 3. References to the research

**PARIHS framework**


1. Kitson A, Rycroft-Malone J, Harvey G, McCormack B, Seers K, Titchen A (2008) Evaluating the successful implementation of evidence into practice using the PARIHS framework: theoretical and practical challenges. *Implementation Science*, 3:1 (7 January 2008) DOI: 10.1186/1748-5908-3-1
   *Quality Assessment: Peer-reviewed journal. Highly accessed paper; 283 Google Scholar citations and 31788 online accesses since publication.*

2. Seers K, Cox K, Crichton N, Edwards RT, Eldh AC, Estabrookes CA, Harvey G, et al. (2012) FIRE (Facilitating Implementation of Research Evidence): a study protocol. *Implementation Science* 7:25 (27 March 2012) DOI: 10.1186/1748-5908-7-25
   *Quality Assessment: Peer-reviewed journal. Highly accessed paper; online accesses since 5343 online accesses since publication.*


**Quality improvement**


3. Boaden R, Harvey G, Moxham C and Proudlove N (2008) Quality Improvement: theory and practice in healthcare, NHS Institute for Innovation and Improvement/Manchester Business School, Coventry: NHS Institute for Innovation and Improvement, ISBN 978-1-906535-33-9
   *Quality assessment: over 8,000 copies downloaded/sold internationally, as a basis for both training and improvement initiatives within healthcare. – Copy available on request*

4. Walshe K and Boaden R (2006) *Patient safety: Research into Practice*, Open University Press.
   *Quality assessment: won the British Medical Association (BMA) Book Prize for 2006 in the "Basis of medicine" category – Copy available on request*


**NIHR CLAHRC for Greater Manchester implementation programme**


5. Harvey G, Fitzgerald L, Fielden S, McBride A, Waterman H, Bamford D, Kislov R and Boaden R (2011) "The NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) for Greater Manchester: Combining empirical, theoretical and experiential evidence to design and evaluate a large-scale implementation strategy" *Implementation Science* 6:1 (96) DOI:10.1186/1748-5908-6-96
   *Quality assessment: Peer reviewed journal.*


## 4. Details of the impact

**Context**

Vascular disease is a major cause of morbidity and the leading cause of death in the UK. Most deaths caused by vascular disease are premature and preventable, through earlier diagnosis, lifestyle changes and better management of the condition. Life expectancy at birth in Greater Manchester is one of the lowest in the UK; addressing the problems caused by vascular disease is one step towards improving this. This involves bridging the gap between known best practice and actual care delivery. Primary care quality and performance and data indicate that vascular related conditions are under-diagnosed; hence individuals do not receive appropriate preventive care.

**Pathways to Impact**

Applying our model of knowledge mobilisation, we have worked across a range of primary care trusts and general practices in Greater Manchester to assess, address and improve the gap between current practice and what research evidence indicates is best practice in the care of people with chronic kidney disease (CKD) and impaired glucose tolerance (IGT). Knowledge Transfer Associates, employed by and supported by the wider CLAHRC team, have worked as facilitators with locally established improvement teams to develop, implement and evaluate context-sensitive interventions to improve the management of CKD and IGT.

**Reach and Significance**

i. Chronic Kidney Disease (CKD)

CKD affects 5 to 10 per cent of the adult population. In the earlier stages, the disease is largely asymptomatic, but significantly increases a person's likelihood of a cardiovascular event, hospitalisation or death. Thus, early identification and management of the condition is recommended. In 2009, data collated by the CLAHRC team suggested a gap of around 2 per cent between recorded local prevalence of CKD and the estimated national prevalence, equating to approximately 41,000 undetected cases of CKD in Greater Manchester. The same data also indicated that of those patients diagnosed, around 30 per cent were not receiving optimal disease management, such as blood pressure monitoring or testing for proteinuria.

Two sequential implementation projects have been undertaken within the GM CLAHRC to tackle this apparent gap between current practice and known best practice, informed by clinical guidelines from the National Institute for Health and Clinical Excellence (NICE) on the identification and management of adults with CKD. In the first project (September 2009 to September 2010), the CLAHRC team worked with 19 General Practices in NHS Ashton, Leigh and Wigan, NHS Salford, NHS Stockport and NHS Bolton. In 12 months, the number of patients on practice CKD registers increased by 1324 (from 4185 to 5509) and blood pressure management improved from 34 to 74 per cent of patients on practice CKD registers having a recorded blood pressure within recommended NICE guidelines. The learning from this project was collated into a CKD improvement guide, which is promoted by organisations such as the UK National Kidney Federation [A]. In the words of the National Clinical Director for Kidney Disease [A]: *"The impressive local impact and learning from this project was incorporated into a CKD improvement guide which was spread through the UK National Kidney Federation and was the first of its type to be produced."*

The guide has been used a resource for practices in the second CLAHRC implementation project (March 2011 to March 2012), working with 10 General Practices from NHS Ashton, Leigh and Wigan [B] and 1 from NHS Salford. In this second phase of work, we have also collaborated with the NIHR CLAHRC for Leicestershire, Northamptonshire and Rutland (LNR), specifically to apply an audit tool they developed to identify patients with possible CKD on practice registers. In a 12 month period, the 11 practices have increased CKD prevalence on their registers by 1.2 per cent (539 new patients with CKD identified) and improved the management of blood pressure from 60 per cent to 83 per cent. Over both phases of work (30 practices in total), 1863 patients have been identified, and re-audit of those in the first phase shows that register size has remained stable, demonstrating the sustainability of the learning and way of working.

Ongoing collaboration with LNR CLAHRC has resulted in the development of a CKD improvement programme known as IMPAKT™ [C]. Uptake of the IMPAKT™ programme has spread beyond the original development sites as confirmed by the National Clinical Director for Kidney Disease [A]: *"This approach to improvement has now been incorporated into a software package (IMPAKT™), which is being used more widely across the UK, including in Yorkshire, London and Wales."*

ii. Impaired Glucose Tolerance (IGT)

In the UK, the prevalence of type 2 diabetes is predicted to increase due to the rising prevalence of obesity. IGT describes a condition with raised blood glucose but not high enough to warrant a diabetes diagnosis. Research shows that without any lifestyle or medical intervention, about 50% of people with IGT will develop type 2 diabetes (accompanied by

increased risk of cardiovascular disease) within five to ten years. Lifestyle changes have been shown to delay or prevent the onset of type 2 diabetes in people with IGT. This type of intervention has also been shown to be cost-effective, particularly when targeting those within the IGT population who are thought to be at highest risk of developing type 2 diabetes. The GM CLAHRC has applied UoM research in partnership with NHS Bolton (August 2009 – December 2010) and NHS Salford (April – December 2010) to improve the quality of care for people with IGT who are at high risk of progression to diabetes. In both cases, the focus was on offering advice to effect lifestyle changes and improve health outcomes. In NHS Bolton, this advice was provided using the existing Health Trainer service and in NHS Salford via a telephone-based support service (Care Call), run by trained health advisors. In both cases, evaluation findings suggest that the projects enabled patients with IGT to attain personal health goals, including changes to diet, increased exercise and weight loss. This in turn, resulted in improvements in a repeat 2h oral glucose tolerance test (OGTT), which is used as an indicator of IGT. For example, in NHS Bolton, 134 patients from 15 GP practices participated; of these 89 per cent achieved or partly achieved their personal health goal. 70 per cent lost weight, with an average of 4.8kg, and 65 per cent showed an improvement in the OGTT. Since then, over 2500 people with IGT have seen a Health Trainer in Bolton [D]. In NHS Salford, 55 patients from 7 GP practices participated; 77 percent achieved and sustained an overall lifestyle goal, 74 percent achieved a weight loss of an average 4.9kg per person and 75 per cent improved their OGTT score [E,F]. The Clinical Lead for Diabetes in Salford CCG [F] states: *"The project has been successful in improving the health of targeted patients, reducing the number of IGT patients in the Salford area who could progress to type 2 diabetes."* Follow up 6 months after the end of the project demonstrated that changes made and improvements to health outcomes were sustained.

The IGT Care Call project has won the Quality in Care (QiC) award for 'Best Type 2 Diabetes Prevention Initiative' in 2011 [G] and was highly commended in the diabetes category of the 2012 Care Integration Awards [H].

**5. Sources to corroborate the impact**

Sources are cross-referenced in section 4

**Chronic Kidney Disease**

A. National Clinical Director for Kidney Disease (2007-2013) and Consultant Nephrologist, Salford Royal Foundation Trust
B. Medical Director, NHS Ashton, Leigh and Wigan (at time of the project)
C. IMPAKT™ website http://www.impakt.org.uk/

**Impaired Glucose Tolerance**

D. Health Improvement Specialist, Health Trainer Team, Bolton NHS Foundation Trust
E. Head of Commissioning, NHS Salford
F. General Practitioner/Diabetes Clinical Lead, Salford CCG
G. Quality in Care (QiC) award for 'Best Type 2 Diabetes Prevention Initiative' in 2011. (http://www.qualityincare.org/awards/diabetes/qic_diabetes_results/qic_diabetes_2011_results/Best_Type_2_diabetes_prevention_initiative)
H. Highly Commended in the diabetes category of the 2012 Care Integration awards. http://www.careintegrationawards.com/424865)