Institution: BRUNEL UNIVERSITY (H0113)

Unit of Assessment: 3 – Allied Health Professions, Dentistry, Nursing and Pharmacy

Title of case study: Pain research: Impact on guidelines, policy and health promotion

1. Summary of the impact (indicative maximum 100 words)

A high quality clinical trial, systematic reviews and meta-analyses performed by a team at Brunel University have directly informed key international clinical practice guidelines, policies and on the management of low back pain and neuropathic pain and have been cited by users (NHS Trusts: Addenbrookes) in response to such guidelines. In this way our research is directly informing clinical practice.

2. Underpinning research (indicative maximum 500 words)

Professor Lorraine De Souza, the lead academic of the research group, has held the post of Professor of Rehabilitation at Brunel University throughout the REF research and impact periods.

Spencer (dates 2003 to 2010 and O'Connell (2002 to 2013) have held lecturer posts at Brunel University. McAuley (1995-2002) and Wand (1998-2003) were PhD students at Brunel and since leaving have continued to collaborate on pain research with Brunel academics.

Clinical collaborators in the UK have included Frank (Royal National Orthopedic Hospital, Stanmore), Bird and Macdowell (Central Middlesex Hospital). Academic collaborators have included Main (Keele University), Marston (UCL), Thacker (KCL) and Doré (MRC clinical trials unit) in the UK, and Wand (University of Notre Dame, Australia), Moseley (University of South Australia), Luomajoki (Zürich University of Applied Sciences), McAuley & Parkitny (Neuroscience Research Australia).

Pain research has been a major theme within the School of Health Sciences and Social Care for fifteen years. This began with a large cohort study, which was published in 2000 and clarified the characteristics of patients referred for low back pain to a district rheumatology service [3.1] . Work continued with a substantial clinical trial of early versus late intervention for acute low back pain that was published in "Spine" in 2004 [3.2]. This trial was supported by a grant (PI De Souza) of £237,598 (2001-04) from the NHS R&D National Programme for Physical and Complex Disabilities.The findings showed that early physiotherapy intervention enhanced short term outcome compared to assessment and advice. The study has generated a range of further research directions within the school and a number of international research collaborations with the University of Sydney, University of Notre Dame Australia (Wand), Neuroscience Research Australia (McAuley, Parkitny, Moseley), and the University of South Australia (Moseley).

Research themes have included investigating the lived experience of chronic pain [3.3], the neurophysiology of back motor control and perceptual disturbances in chronic low back pain [for review see 3.4], the development of novel interventions for chronic low back pain and rigorous evidence synthesis in chronic pain [e.g. 3.5, 3.6].

Our group continues to be actively involved with the Cochrane Collaboration in producing systematic reviews of interventions for the management of chronic pain conditions. These include, but are not limited to a Cochrane systematic review of non-invasive brain stimulation techniques for treating chronic pain that is the authoritative review in this field [3.5] which concluded that the evidence base is not sufficient to recommend routine clinical use and highlighted specific targets for larger, more robust studies as well as an overview of systematic reviews of all clinical interventions for Complex Regional Pain Syndrome (CRPS) which highlighted the paucity of reliable evidence to guide care in this field [3.6], identified specific interventions that should not be offered and offered clear promising targets for further research).

At the heart of these research efforts is the aim to produce the best quality evidence to guide both patient care and future research and we believe that this multi-stranded approach is making an important contribution on a number of levels to this goal. This is reflected in the clear evidence of impact described below.

3. References to the research (indicative maximum of six references)

3.1 Frank, AO., De Souza, LH., McAuley, JH., Sharma, V., & Main, CJ. 2000, "A cross-sectional survey of the clinical and psychological features of low back pain and consequent work handicap: use of the Quebec Task Force Classification", Int J Clin Pract, vol. 54, no. 10, pp. 639-64 . http://www.ncbi.nlm.nih.gov/pubmed/11221274

3.2 Wand BM, Bird C, McAuley JH, Doré CJ, MacDowell M, De Souza LH. Early intervention for the management of acute low back pain: a single-blind randomized controlled trial of biopsychosocial education, manual therapy, and exercise. Spine 2004; 29 (21):2350-6 http://journals.lww.com/spinejournal/pages/articleviewer.aspx?year=2004&issue=11010&article=00003&type=abstract

3.3 DeSouza LH and Frank AO. (2007) Experiences of living with chronic back pain: the physical disabilities. Disability and Rehabilitation, 29(7): 587-596 http://dx.doi.org/10.1080/09638280600925852

3.4 Wand BM, Parkitny L, O'Connell NE, Luomajoki H, Thacker M, Moseley GL. Cortical changes in chronic low back pain: Current state of the art and implications for clinical practice. Manual Therapy 2011;16(1):15-20. http://dx.doi.org/10.1016/j.math.2010.06.008

3.5 O'Connell NE, Wand BM, Marston L , Spencer S, DeSouza LH. Non-invasive brain stimulation techniques for chronic pain. Cochrane Database of Systematic Reviews 2010: 9: CD008208. http://dx.doi.org/10.1002/14651858.CD008208.pub2

3.6 O'Connell NE, Wand BM, McAuley J, Marston L, Moseley GL. Interventions for treating pain and disability in adults with complex regional pain syndrome. Cochrane Database of Systematic Reviews. 2013;4: CD009416. http://dx.doi.org/10.1002/14651858.CD009416.pub2

4. Details of the impact (indicative maximum 750 words)

Impact 1. International impacts on practitioners and services: clinical practice guidelines and health care policies have been informed by the research.

Our research has directly enhanced professional practice and enabled the delivery of optimal evidence-based patient care through the effective management of patients with painful conditions.

There are clear examples of where our research is being used, at an international level, to inform best clinical practice.

Our Cochrane review of non-invasive brain stimulation techniques [3.6] has achieved substantial international impact. Domestically it has been summarised by the National Institute for Health and Clinical Excellence (NICE) in a document for the Quality Innovation Productivity and Prevention (QIPP) initiative to help the NHS identify practices that could be significantly reduced or stopped completely, releasing cash and/or resources without negatively affecting the quality of NHS care [5.1]. Similarly it formed a substantial amount of the evidence guiding the recommendations of a commissioning report commissioned by the West Midlands Specialised Commissioning Team [5.2]. These are clear examples where the high quality evidence generated by this research impacts on healthcare policy and provision in the UK.

At an international level, last year the South African clinical practice guidelines for the clinical management of neuropathic pain were published. These guidelines are endorsed by the Neurological Association of South Africa (NASA), the South African Society of Anesthesiologists (SASA), the South African Spinal Cord Association (SASCA), Pain Interventions and Regional Anesthesia (PIRA) and painSA [5.3]. They cite our Cochrane review of non-invasive brain stimulation for chronic pain [3.5] as their sole source of evidence regarding these treatment approaches, recommending that the evidence of efficacy is very limited. A number of US health insurance providers have directly used our research to guide policy on whether to fund such treatments [5.4, 5.5, 5.6] and partly as a result of our research do not fund transcranial magnetic

stimulation for chronic and neuropathic pain syndromes including fibromyalgia.

The NICE consultation on low back pain ran from 1 October to 26 November 2008 and aimed to provide a guideline which offered best practice advice on the care of people with non-specific low back pain. Both Addenbrookes Hospital and the British Society of Rehabilitation Medicine (BSRM) cited pain research from Brunel [e.g. 3.1, 3.3] in their response to the consultation. NICE's comments indicated that as a result of the responses to the consultation which cited a cohort study [3.1] from Brunel which found no patients with rheumatoid arthritis presenting with low back pain, they had changed the title of the guideline, removing rheumatoid arthritis from a list of specific causes and noted a suggestion that no mention had been made of prolapsed lumbar disc as a cause of low back pain [5.7, 5.8]. In these ways it can be seen that our research is directly impacting upon the delivery of optimal patient care by providing evidence which informs national guidelines.

Impact 2. Impacts on health and welfare: the public have become better informed about the management of painful conditions through campaigns based on our research evidence.

Our research has also been used by external agencies in efforts to directly inform clinicians and the public about painful conditions. In 2012 the National Ankylosing Spondylitis Society in collaboration with the Abbott Healthcare Company produced an educational booklet aimed at improving the diagnosis of inflammatory back pain [5.9] citing our research [3.3] illustrating the significant burden of back pain on society and on individuals relationships and family roles. Our presentation of new potential models of chronic low back pain, derived in part from existing evidence and our own research into the perceptual correlates of the condition has been cited by a major public health campaign directed at patients and clinicians in the Republic of Ireland. The "Move4Health 2011: Challenging back pain myths" campaign [5.10] aimed to engage the public in the process of debunking commonly held myths regarding low back pain that may be detrimental to recovery. The information brochure that is publicly available cites a review paper [3.4] co-written by one of our research team to challenge the myth that "the more back pain I have, the more my spine is damaged". This is an example of how our research has been directly used to promote better public health. The campaign disseminated through press release, radio adverts and web-based content and was covered on popular health related websites.

Overall these are clear examples where our research has had direct impact on policy, health provision and efficiency at an international level, and has been used by external agencies to enhance practitioner knowledge and public health.

5. Sources to corroborate the impact (indicative maximum of 10 references)

5.1 Cochrane Quality and Productivity Topics. Non-invasive brain stimulation techniques for treating chronic pain. NICE http://arms.evidence.nhs.uk/resources/qipp/958467/attachment

5.2 Dretzke J, Meadows A, Fry-Smith A, Moore D. (2011) The clinical and cost-effectiveness of neurostimulation for relief of chronic/neuropathic pain: an evidence based review. A West Midlands Commissioning Support Unit Report. http://www.birmingham.ac.uk/research/activity/mds/projects/HaPS/PHEB/WMCSU/programme/index.aspx (our research mentioned on pages 27, 36-37, 42-43, 89, 91,100, 105, 114, 129, 178, 181, 214, 215)

5.3 Chetty S, Baalbergen E, Bhigjee AI, Kamerman P, Ouma J, Raath R, Raff M, Salduker S. Clinical practice guidelines for management of neuropathic pain: expert panel recommendations for South Africa. S Afr Med J 2012;102(5):312-325 (our research cited on page 323)

5.4 ANTHEM policy Med.00108 Transcranial magnetic stimulation for non-behavioural health indications. http://www.anthem.com/medicalpolicies/policies/mp_pw_c131914.htm (our research cited on page 2 of 6 and referenced under the heading "Government Agency, Medical Society and Other Authoritative Publications")

5.5 REGENCE Medical Policy Manual. Transcranial magnetic stimulation as a treatment for depression and other disorders. Policy No. 148 http://blue.regence.com/trgmedpol/medicine/

(our research cited on page 5, reference #42)

5.6 United Healthcare Services Inc. Medical Policy. Transcranial Magnetic Stimulation. Policy No. 2012T0536E. https://www.unitedhealthcareonline.com/ccmcontent/ProviderII/UHC/en-US/Assets/ProviderStaticFiles/ProviderStaticFilesPdf/Tools%20and%20Resources/Policies%20and%20Protocols/Medical%20Policies/Medical%20Policies/Transcranial_Magnetic_Stimulation.pdf (our research cited page 9)

5.7 NICE Low back Pain Guideline Comments Table: 1 Oct 2008-26 November 2008 http://www.nice.org.uk/guidance/index.jsp?action=download&o=44314 (our research cited pages 2,3,6 & 9)

5.8 British Society of Rheumatology. Comments on Low back pain: acute management of patients with chronic (longer than 6 weeks) non-specific low back pain. Full guidelines. 26/11/2008

5.9 NASS, Abbott Differentiating inflammatory and mechanical back pain: Challenge your decision making. 2012 www.astretch.co.uk/M208%20IBP%20Module%20Booklet.pdf (our research cited on page 3)

5.10 Move4Health: Challenging back pain myths. www.move4health.ie (our research cited in the full brochure, page 4, reference 47)