Institution: University of the West of England (UWE), Bristol

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

Title of case study: Improving pain and function in people with osteoarthritis using a new exercise and self-management intervention

1. Summary of the impact

The Enabling Self-management and Coping with Arthritis Pain through Exercise (ESCAPE) intervention, refined at UWE Bristol, has led to reduced pain and increased function in people with osteoarthritis (OA). These benefits follow a brief exercise and self-management intervention based on developing self-efficacy, facilitated by a physiotherapist in primary care. This intervention is cited within the NICE guidelines, and has been adopted at sites across the NHS as an evidence-based, clinically effective and cost-effective intervention. The intervention is within the NICE cost-effectiveness threshold for investment and has resulted in savings in healthcare budgets. It has also achieved Quality, Innovation, Productivity and Prevention (QIPP) status – an evidence-based, peer reviewed case study evaluated on quality improvements, savings, evidence and ease of implementation, thus providing a resource for staff and commissioning bodies charged with making quality improvements and savings within the NHS.

2. Underpinning research

Context: Osteoarthritis (OA) affects 8.5 million people in the UK. It is predicted to be the 4th most prevalent cause of disability by 2020, and costs the UK economy an estimated equivalent of 1% of GNP annually. Reducing the personal suffering of the individual and the financial burden to society are therefore high priorities. In order to achieve that, interventions that are both clinically effective and cost-effective are required to ensure more people get treatment that reduces pain and increases function within the financial constraints of the NHS.

Previous research and clinical approaches to managing OA focused either on didactic education combined with exercise, or self-management programmes without a participative exercise element. We developed a novel six-week integrated exercise and self-management intervention based on self-efficacy approaches and behavioural change theories delivered by a physiotherapist to groups of people with OA. This early work (2000-2004), developed at Dr Nicola Walsh's previous institution, had shown ESCAPE to be a clinically effective and cost-effective intervention (compared to continued GP management) within a research context for people with knee OA.

Since 2004, Dr Walsh (Senior Lecturer, 2004-2011, Arthritis Research UK Career Development Fellow 2011-2016 (grant 5) and Associate Professor of Musculoskeletal Rehabilitation 2013-current) has led the UWE team and undertaken further research to refine the intervention in accordance with patient feedback (ref. 1); trialled the intervention within a clinical context compared to standard physiotherapy for knee OA, establishing its clinical and cost-effectiveness (ref. 2); demonstrated the feasibility of the intervention for people affected by hip OA (ref.3); highlighted the long-term benefits of the intervention in people with knee OA (ref.4); and confirmed the effectiveness of the intervention in a trial that integrated ESCAPE with Transcutaneous Electrical Nerve Stimulation (ref. 5) – a study led at UWE by Professor Shea Palmer (Principal Lecturer 2005-2011, Reader 2011-2012, Professor of Musculoskeletal Rehabilitation (2012-current). The principal external collaborators were at St George's University of London, Kingston University, Kent Community Health NHS Trust, King's College London, De Montfort University, Manchester Metropolitan University, University of Bristol and University Hospitals Bristol.

Our research at UWE (2004-2013) has demonstrated that ESCAPE can benefit people with hip OA [ref. 3, grant 1]. Following the intervention, individuals reported improvements in both pain and function.

A further study compared the benefits of ESCAPE with standard physiotherapy provision. It found that whereas the clinical benefits from each of these were similar, ESCAPE resulted in significant cost savings compared with the standard treatment [ref. 4, grant 3].

A qualitative analysis of participants on the ESCAPE programme has also demonstrated the effectiveness and acceptability of the intervention from a patient perspective [ref. 5]. Since the development of ESCAPE, other studies have investigated this combined treatment approach, but

most only report limited follow-up periods. In 2012, Walsh and colleagues [ref. 4] reported a long-term follow-up of participants on the original ESCAPE trial, 2½ years after they completed the intervention. This study showed maintained clinical improvements from baseline, and confirmed ESCAPE's cost-effectiveness over a prolonged period.

Another study led by Palmer investigated the added benefits of Transcutaneous Electrical Nerve Stimulation (TENS) with ESCAPE in people with knee OA. Its results suggested no added benefit of the electrotherapy technique, but did confirm the positive effects on pain and function from the ESCAPE programme [ref. 5, grant 2].

3. References to the research

1. Hurley M, **Walsh N**, Bhavnani V, Britten N, Stevenson, F (2010) Health beliefs before and after participation on an exercised-based rehabilitation programme for chronic knee pain: Doing is believing. *BMC Musculoskeletal Disorders* 11; 31 http://dx.doi.org/10.1186/1471-2474-11-31
2. Jessep S, **Walsh N**, Ratcliffe J, Hurley M (2009) Long-term benefits and costs of an integrated rehabilitation programme compared with out-patient physiotherapy for chronic knee pain. *Physiotherapy* 95; 94-102 http://dx.doi.org/10.1016/j.physio.2009.01.005
3. Bearne L, **Walsh N**, Jessep S, Hurley M (2011) Feasibility of an Exercise-Based Rehabilitation Programme for Chronic Hip Pain. *Musculoskeletal Care* 9 (3); 160-168 http://dx.doi.org/10.1002/msc.209
4. Hurley M, **Walsh N**, Mitchell H, Nicholas J, Patel A (2012) Long-term outcomes and costs of an integrated rehabilitation program for chronic knee pain: A pragmatic, cluster randomized, controlled trial. *Arthritis Care and Research* 64 (2); 238-247 http://dx.doi.org/10.1002/acr.20642
5. **Palmer S**, Domaille M, **Cramp F**, **Walsh N**, **Pollock J**, Kirwan J, Johnson M. (2013) Transcutaneous Electrical Nerve Stimulation as an adjunct to education and exercise for knee osteoarthritis: a randomised controlled trial. *Arthritis Care and Research* http://dx.doi.org/10.1002/acr.22147

Key grants

1. Physiotherapy Research Foundation (£39,531). Effective physiotherapy management of hip osteoarthritis: A preliminary study. **Walsh N,** Hurley M, Rose L, 2004-2007
2. Physiotherapy Research Foundation (£88,221) Effects of Transcutaneous Electrical Nerve Stimulation (TENS) and exercise on knee osteoarthritis (OA): a randomised controlled trial. **Palmer S, Cramp F,** Domaille M, Johnson M, 2007-2010
3. Physiotherapy Research Foundation (£15,000). Improving rehabilitation for patients with chronic knee pain. Jessep S, **Walsh N**, Hurley M, 2005-2008
4. Chartered Society of Physiotherapy Charitable Trust (£249,999). Exercise and self-management for people with chronic knee, hip or lower back pain. A study of clinical and cost effectiveness. **Walsh N, Pollock J, Cramp F, Palmer S,** Green C, Gooberman-Hill R, Hampson L, Hurley M, 2012-2015
5. Arthritis Research UK Career Development Fellowship (£346,000). Developing effective, deliverable and affordable community based models of care for people with chronic knee pain and osteoarthritis within a community setting. **Walsh N, Hewlett S**, Dziedzic K, Hurley M, 2011-2016
6. Arthritis Research UK Educational Grants Programme (£41,182). Helping more people ESCAPE pain. Development of an online exercise and self-management resource for people with osteoarthritic pain. Hurley M, **Walsh N**, 2014-2015

4. Details of the impact

In order to facilitate implementation, novel interventions must be acceptable to patients and professionals, and be at least equally effective as current management but delivered at a lower cost. The compelling nature of the research evidence regarding the clinical effectiveness (refs. 2-5), cost-effectiveness (refs. 2,4) and user acceptability (ref. 1) of the refined ESCAPE programme trialled within a clinical context (refs. 2, 3, 5) has resulted in NICE Quality, Innovation, Productivity and Prevention (QIPP) approval [source 1]. The QIPP programme is a national Department of Health/NICE strategy aimed at improving the quality and delivery of NHS care while reducing costs. The quality of the evidence to support the inclusion of the ESCAPE intervention was independently evaluated by the programme and reported as achieving 58% cost savings and 66% improvements in treatment quality compared to standard physiotherapy practice [source 1]. Consequently, the intervention is now flagged up to commissioners, managers and clinicians across the NHS, as an intervention that should be considered for replication to improve the quality of care for people with this condition whilst contributing to the £20 billion efficiency savings by 2014/15.

QIPP approval will assist with further translation of ESCAPE into practice. Meanwhile, the intervention has already been adopted in departments across the UK including Kent [source 2] and Bristol [source 3]; and the intervention has also been adapted for use in Caerphilly and Edinburgh. Inclusion in NICE guidelines for OA has also raised the profile of the intervention [source 5].

The impact on clinical departments is noted in changes to service delivery [sources 2-3], beneficial patient outcomes [sources 2-4], resultant cost savings [source 2], development of an evidence-based culture [sources 2-3] and continuing professional development opportunities for staff engaged in research programmes [source 2-3].

Clinical departments in Kent and Bristol note that ESCAPE has become the 'intervention of choice' for people with chronic joint pain [sources 2-3]. Service managers across Kent have endorsed the programme resulting in roll out across the whole county (population approximately 1.75 million), whilst GPs in that area are specifically referring patients for the ESCAPE programme rather than standard physiotherapy [source 2]. The cost savings apportioned to ESCAPE adoption are significant, approximated at a 50% saving to the physiotherapy budget for chronic joint pain across one county [source 2].

The recognised benefits of the ESCAPE programme have also resulted in development of similar interventions for other pathologies based on the ESCAPE content and ethos. University Hospitals Bristol Rheumatology Department have implemented a programme for people with Ankylosing Spondylitis [source 3]. A similar approach has been taken for chronic back pain patients in Kent [source 2]. Furthermore an innovative 'Pay As You Go' approach has been adopted in Kent whereby individuals who have benefited from the ESCAPE programme can continue attending the physiotherapy department gymnasium to maintain exercise participation. These sessions are self-funded, thus providing a financial return to the department [source 2].

The importance of the clinical benefit of ESCAPE is evidenced by feedback from individuals who have participated in the programme. Testimonials from individuals state 'I gained the knowledge that I could continue to move safely despite the pain'; 'I was more mobile and able to walk further and do the stairs with less pain'; 'It was good to be part of a group and to feel I was not the only one suffering bad back pain' [source 2]. Furthermore a promotional video of the ESCAPE intervention produced by Arthritis Research UK (ARUK) featured other individuals who had benefited from the programme, stating 'It gives you information that you'd never known before'; 'I've become more mobile and have less pain'; 'It's been enlightening' [source 4]. This video is used by ARUK to educate individuals regarding the benefits of the programme and to encourage individuals to participate in physical activity, and has been published by ARUK on YouTube as a resource for people with OA [source 4].

The success and further potential of the ESCAPE programme has resulted in ARUK awarding £41,000 [grant 6] to Dr Walsh and colleagues to develop an online version of the programme to enable more people to access the intervention (education and an online exercise programme); and further funding from ARUK [grant 5] and the Chartered Society of Physiotherapy Charitable Trust [grant 4] has facilitated further development and roll-out of the intervention.

5. Sources to corroborate the impact

1. NICE (2013) Self-management for chronic knee pain: using group physiotherapy to teach exercises and coping strategies. (Listed at https://www.evidence.nhs.uk/qipp/whats-new/search?s=date&am=[{%22srn%22:[%22 qipp %22]}]&fs=qippcat.WhatsNew.) Full text (PDF) at http://arms.evidence.nhs.uk/resources/qipp/978947/attachment; cites UWE research on p9.
2. **Testimonial** from a Clinical Specialist Physiotherapist, Kent Community Healthcare Trust, regarding benefits of implementation and service development.
3. **Testimonial** from a Clinical Specialist in Rheumatology, University Hospitals Bristol, NHS Foundation Trust, regarding benefits of implementation and influence on developing practice.
4. Arthritis Research UK funded promotional video on YouTube of patients discussing the impact of the programme on their osteoarthritis http://www.youtube.com/watch?v=OI46zoaX-vs; features UWE's Dr Nicola Walsh.
5. NICE (2008) CG59 Osteoarthritis: The care and management of osteoarthritis in adults http://publications.nice.org.uk/osteoarthritis-cg59