

<b>Institution: Keele University</b>
<b>Unit of Assessment: 2</b>
<b>Title of case study:</b> Improving health outcomes and primary care services for osteoarthritis in primary care
<b>1. Summary of the impact</b> (indicative maximum 100 words) <p>Osteoarthritis affects 8.5 million people in the United Kingdom, accounting for a third of all years lived with disability. Our research has provided commissioners and third-sector organisations with accurate estimates of the size of the problem, policy-makers with evidence on groups at particularly high-risk, and clinicians with original evidence on better approaches to assessing and managing osteoarthritis in patients presenting to primary care. These key insights have supported advances in public health and health care policy debate, changes in legislation, and improvements in the quality of patient care through training and new national, European, and global guidelines for health professionals.</p>
<b>2. Underpinning research</b> (indicative maximum 500 words) <p>The key insights from our Centre's research have led a shift in the concept of osteoarthritis from a structural disease characterised by changes on an x-ray to a clinical syndrome of persistent joint pain and disability, and provided rigorous evidence on the effective contributions of a range of active nonpharmacological treatments.</p> <p>Specifically, our multidisciplinary team has combined quantitative and qualitative methods with public involvement in our studies to:</p> <p>(i) <u>Describe the nature and scale of the problem in the population and how it is currently managed in primary care.</u> We have combined evidence synthesis, analysis of routine recording in a network of general practices (registered population=100,000) with new population surveys of 35,959 residents of North Staffordshire, to provide accurate, national estimates of the burden of painful osteoarthritis and associated disability [1]. [Programme Grants from the Medical Research Council (Croft) and Arthritis Research UK (Peat); 2000-2012].</p> <p>(ii) <u>Identify possible contributing causes.</u> Our studies have focused on lifestyle factors. Between 1993 and 2001, Croft (Professor of Primary Care Epidemiology, Keele University, 1995-) and collaborators in Southampton University discovered several high-risk occupations (farming, mining, carpet-fitting) and demonstrated that prolonged kneeling and squatting were specific, potentially modifiable exposures associated with developing knee osteoarthritis [2].</p> <p>(iii) <u>Develop and test new methods for improving patient assessment in primary care.</u> Pain and its effects on individuals with osteoarthritis are often under-recognised in general practice. Our clinical studies, using intensive clinical and imaging assessments in over 2000 adults with joint pain, developed and validated new and practical tools to support assessment in primary care. We recently demonstrated that 3 simple questions asked by the GP during the consultation can improve their judgement of whose symptoms are unlikely to respond to routine care [3] [402 patients, 5 GP practices, ARUK Primary Care Fellowship, 2004-2008: Mallen].</p> <p>(iv) <u>Evaluate and implement new interventions aimed at more effective primary care management.</u> Care was traditionally focussed on what the general practitioner and the orthopaedic surgeon could offer. Our TOPIK trial [325 patients, 15 GP practices, 2001-2004; ARUK project grant: Hay] was undertaken in response to gaps in evidence identified by local clinicians. Short-term improvements</p>

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in health outcomes, reduced use of anti-inflammatory drugs, and high patient satisfaction were achieved by giving patients with knee osteoarthritis greater access to community physiotherapy (individualised exercise programme; advice on activity and pacing), and pharmacists (face-to-face medication review and advice) [4]. In separate trials we have confirmed the benefits of advice and exercise for knee osteoarthritis, that acupuncture yields no additional benefit [5] [352 patients, 37 NHS physiotherapy centres, 2003-2005; ARUK project grant: Hay], and that for hand osteoarthritis joint protection education offered by occupational therapists is beneficial [6] [257 patients, 5 general practices, 2008-2009; ARUK project grant: Dziedzic].

We are now combining qualitative interviews and observations with practitioners and patients with large-scale trials to evaluate approaches to enhance adherence to exercise [526 patients, 55 NHS physiotherapists], and implement NICE recommended management into everyday routine primary care [525 patients, 8 GP practices] [2008-2013; NIHR Programme Grant for Applied Research: Hay].

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

1. Peat G, McCarney R, Croft P. Knee pain and osteoarthritis in older adults: a review of community burden and current use of primary health care. *Annals of the Rheumatic Diseases* 2001;60(2): 91–7. DOI: 10.1136/ard.60.2.91
2. Coggon D, Croft P, Kellingray S, Barrett D, McLaren M, Cooper C. Occupational physical activities and osteoarthritis of the knee. *Arthritis Rheum.* 2000;43(7):1443-9. DOI: 10.1002/1529-0131(200007)43:7<1443::AID-ANR5>3.0.CO;2-1
3. Mallen CD, Thomas E, Belcher J, Rathod T, Croft P, Peat G. Point-of-Care Prognosis for Common Musculoskeletal Pain in Older Adults. *JAMA Internal Medicine.* 2013;173(112):1119-25. DOI: 10.1001/jamainternmed.2013.962
4. Hay EM, Foster NE, Thomas E, Peat G, Phelan M, Yates HE, Blenkinsopp A, Sim J. Effectiveness of community physiotherapy and enhanced pharmacy review for knee pain in people aged over 55 presenting to primary care: pragmatic randomised trial. *BMJ* 2006;333:995. DOI: 10.1136/bmj.38977.590752.0B
5. Foster NE, Thomas E, Barlas P, Hill JC, Young J, Mason E, et al. Acupuncture as an adjunct to exercise based physiotherapy for osteoarthritis of the knee: randomised controlled trial. *BMJ* 2007; 335(7617):436-48. DOI: 10.1136/bmj.39280.509803.BE
6. Dziedzic K, Nicholls E, Hill S, Hammond A, Handy J, Thomas E, Hay E. Self-management approaches for osteoarthritis in the hand: a 2x2 factorial randomized trial. *Annals of the Rheumatic Diseases* 2013; DOI: 10.1136/annrheumdis-2013-203938

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

#### Key insight: Osteoarthritis as a clinical syndrome of persistent joint pain and disability

Our epidemiologic estimates of joint pain, osteoarthritis, and severity of disability have *informed central government and directed the commissioning of clinical services for osteoarthritis across England* by underpinning the costing reports and templates produced by NICE and rolled out nationally [1]. In specially commissioned work that Jordan, Peat & Croft undertook for the Policy & Public Affairs Unit of Arthritis Research UK in 2012-2013 presented in the report “Osteoarthritis in General Practice” to Parliament in June 2013, cited in national health economic reports, and in national press releases in July 2013, we have provided information for policy-makers and third-sector organisations that has helped *advance the policy debate* on health priorities for the nation and the NHS, specifically towards greater recognition of the disability attributed to musculoskeletal

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disorders and osteoarthritis in particular [2].

Our research has also directly influenced *health professional guidelines and training on clinical assessment, diagnosis and prognosis*. Members of our research team sat on national (NICE - Dziedzic, 2008; NICE Update – Dziedzic, Porcheret 2013) and European (EULAR Hand – Dziedzic, 2009; EULAR Knee – Peat, 2010) guideline development groups where, in addition to our epidemiologic estimates, our research on clinical diagnosis and assessment underpinned recommendations for clinical (as opposed to x-ray) diagnosis of osteoarthritis in routine practice [3]. Dissemination of this core message for practitioners has been actively pursued by us through advising on the national Map of Medicine (Peat [4]) and NHS Patient Decision Aids (Wood, Myers) with these in turn forming the basis for national knowledge summaries used by clinicians at the point of care [5] as well as featuring in NHS Evidence and Osteoarthritis Research Society International's OA Primer - an online educational resource for practitioners and patients worldwide.

Key insight: High-risk occupations and causal exposures

The research on physical occupational exposures associated with knee osteoarthritis was frequently cited and highly influential in the Industrial Injuries Advisory Council's (IIAC) 2008 report on osteoarthritis of the knee in miners [6] and in helping *advance the national policy debate* to consider other similarly affected occupational groups, notably carpet fitters and carpet and floor layers – the subject of a later IIAC report in 2010. Both IIAC reports were presented to Parliament by the Secretary of State for Work and Pensions and resulted in a *change in legislation* with Parliament approving the addition of osteoarthritis of the knee in these occupational groups to the prescribed list of industrial injuries (PDA14) with effect from 13 July 2009 [7] and 30 March 2012 respectively, resulting in *benefits to health and welfare for over 16,000 coalminers* who were successfully awarded claims [8].

Key insight: central importance of self-management and active nonpharmacological management and the effective contribution of allied health professionals to delivering these in primary care

Our research on the effectiveness of high-quality advice and supervised exercise programmes for osteoarthritis and our commitment to seeing the implementation of these in routine primary care contributed to exercise becoming a core treatment recommended in successive NICE [3] and European guidelines for all persons with osteoarthritis and directly challenging both the belief that exercise is bad for joints with osteoarthritis by accelerating 'wear and tear' and the idea that 'nothing can be done'. Members of our research team sat on these guideline development groups (Dziedzic, Porcheret, Mallen).

Our impact has extended beyond influencing *health professional guidelines to training health professionals* to support the implementation of these evidence-based changes to care. Working with Arthritis Research UK and the Royal College of General Practitioners, Porcheret (GP research fellow and RCGP Clinical Champion for Osteoarthritis 2008-2011) and co-workers at Keele developed

- (i) a new e-learning module on osteoarthritis for primary care health professionals [9] that to date has been completed by 606 individuals since its launch in February 2013
- (ii) a series of all-day workshops run across UK sites training 230 GPs to date, and
- (iii) a series of health care professional leaflets and topical evidence digests [circulated to >44,000 GPs] [10].

Regionally, our clinical researchers have provided practical, face-to-face training for 44 GPs, 141 physiotherapists, 12 occupational therapists, and 17 practice nurses from across the West Midlands and Cheshire on the practical delivery of best evidence treatment for osteoarthritis as part of our osteoarthritis studies, organised and run 'Sharing Best Practice' days, hosted a series of clinical appraisal topic sessions with local health professionals, and shaping local clinical

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algorithms and patient pathways. Our Osteoarthritis Guidebook, developed and co-authored with members of the public together with health professionals and researchers at our Centre, has been made available through our institutional website and that of Arthritis Research UK. In a set of local general practices it has been provided to over 500 people consulting with osteoarthritis.

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

1. National Institute for Health and Clinical Excellence. Osteoarthritis. Costing report. Implementing NICE guidance. February 2008. Available at: <http://www.nice.org.uk/nicemedia/live/11926/39712/39712.pdf>. Last accessed: 4 October 2013.
2. Medical Director. Tel: 0300 790 0400. Arthritis Research UK. Copeman House, St Mary's Gate, Chesterfield, Derbyshire S41 7TD, UK.
3. National Collaborating Centre for Chronic Conditions. (2008). Osteoarthritis: national clinical guideline for care and management in adults [NICE guideline CG59]. London: Royal College of Physicians. Available at: <http://guidance.nice.org.uk/CG59>. Last accessed: 4 October 2013.
4. Map of Medicine – Osteoarthritis suspected. Available at: <http://healthguides.mapofmedicine.com/choices/map/osteoarthritis1.html> Last accessed: 4 October 2013.  
<http://healthguides.mapofmedicine.com/choices/map/osteoarthritis2.html> Last accessed: 4 October 2013.
5. Clinical Knowledge Summaries – Osteoarthritis. Available at: <http://cks.nice.org.uk/osteoarthritis#!references> Last accessed: 4 October 2013.
6. Industrial Injuries Advisory Council. Osteoarthritis of the knee in coal miners. Report by the Industrial Injuries Advisory Council in accordance with Section 171 of the Social Security Administration Act 1992 considering prescription for osteoarthritis of the knee in coal miners. Aug 2008. Available at: [http://iiac.independent.gov.uk/pdf/command\\_papers/Cm7440.pdf](http://iiac.independent.gov.uk/pdf/command_papers/Cm7440.pdf) Last accessed: 4 October 2013.
7. The Social Security (Industrial Injuries) (Prescribed Diseases) Amendment Regulations 2009. Available at: <http://www.legislation.gov.uk/uksi/2009/1396/contents/made> Last accessed: 4 October 2013.
8. Hansard Written Answers (17 January 2012, Column 648W). Available at: <http://www.publications.parliament.uk/pa/cm201212/cmhansrd/cm120117/text/120117w0001.htm> Last accessed: 4 October 2013.
9. Royal College of General Practitioners, Arthritis Research UK, and Arthritis Research UK Primary Care Centre. E-Learning course on Musculoskeletal Care, February 2013. Available at: <http://elearning.rcgp.org.uk/course/view.php?id=118>
10. Porcheret M, Healey E, Dziedzic K, Corp N, Howells N, Birrell F. Osteoarthritis: a modern approach to diagnosis and management. Hands On Series 6, Issue 10, Autumn 2011. Available at: <http://www.arthritisresearchuk.org/health-professionals-and-students/reports/hands-on/hands-on-autumn-2011.aspx>