

<b>Institution:</b> Keele University		
<b>Unit of Assessment:</b> UoA3 Allied Health Professions, Dentistry, Nursing and Pharmacy		
<b>Title of case study:</b> Transforming musculoskeletal therapies and services in primary care		
<b>Period when the underpinning research was undertaken:</b> 2015 - 2018		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b>	<b>Role(s) (e.g. job title):</b>	<b>Period(s) employed by submitting HEI:</b>
Professor Krysia Dziedzic	Professor of Musculoskeletal Therapies	1998 - present
Professor Nadine Foster	NIHR Professor of Musculoskeletal Health in Primary Care	2000 - 2020
Professor Jo Protheroe	Professor of General Practice	2011 - current
Dr Jonathan Hill	Reader in Physiotherapy	1999 - current
Dr Annette Bishop	Senior Research Fellow	2003-2019
Dr Gwenllian Wynne-Jones	Reader in Epidemiology and Clinical Trials	2005 - current
Jane Hall	Research User Group	n/a
<b>Period when the claimed impact occurred:</b> 2014-2020		
<b>Is this case study continued from a case study submitted in 2014?</b> N		
<b>1. Summary of the impact</b> (indicative maximum 100 words)		
<p>Our programme of musculoskeletal (MSK) pain research has transformed services and care for those with common muscle and joint pain presenting to primary care. Our research has enhanced the information available to patients, supporting self-management and guiding those with MSK pain in seeking help, accessing treatment, and staying well. We have developed interventions, innovations and training to improve the way healthcare professionals help patients with MSK pain. These include new models of care and health service changes that have demonstrated return on investment and have impacted on policy, nationally and internationally, including being recommended by NICE and Public Health England.</p>		
<b>2. Underpinning research</b> (indicative maximum 500 words)		
<p>Our musculoskeletal (MSK) pain research (2.1-2.6), developed with patients and the public through our Research Users Group, investigates the impact of common aches and pains, promotes pro-active approaches to <b>seeking help, accessing treatment, and staying well</b>; with our research in health literacy forming our guiding principles. We have used knowledge gained from our research to stimulate action providing benefits for patients affected by MSK pain, influence policy, drive health service change, and underpin measures of the impact of MSK pain.</p> <p><b>Seeking help</b>  Seeking help is the first step in receiving healthcare for MSK conditions. However, our research has identified that in some regions &gt;50% of the population have low health literacy, leading to challenges in seeking help, accessing support and self-management (2.1, 2.2). Patient information leaflets are routinely used to “signpost” health services and provide health information; they have been shown to affect patient health outcomes: however, many are poorly written. Our research</p>		

across 17 general practices found that leaflets do not meet health literacy guidelines, therefore information is only accessible to higher skilled patients, leading to inequalities in healthcare (2.1). Our research has demonstrated that simplified MSK health communication, more time to process health information and supportive social networks help people understand and manage their MSK health on a day-to-day basis (2.2).

### Accessing treatment

After patients have sought help for their MSK conditions they need to be able to access the best evidence-based treatments. We conducted one of the largest studies of occupational therapist-led treatment for MSK pain and demonstrated the clinical- and cost-effectiveness of their treatment approaches (2.3). The SMOOTH trial, with 257 participants, found that occupational therapists effectively supported self-management by patients with hand pain and osteoarthritis (OA). Patients receiving education about joint protection were more likely to respond to treatment than those that did not (33% versus 20% at 6 months,  $p=0.03$ ), and hand exercises were cost-effective over 12 months (cost-per-QALY £64.51) (2.3).

We have also shown that a new model of primary care that involves direct access to physiotherapists for MSK pain is both clinically- and cost-effective (2.4). The STEpping up the Evidence for Musculoskeletal Services (STEMS) trial, included 978 patients with MSK pain, set in general practice, 90% of patients needing physiotherapy used the service, with no safety issues. STEMS achieved similar clinical and cost outcomes as usual GP-led primary care and did not increase waiting times for physiotherapy, this work has resulted in policy-led service changes across the UK.

### Staying well

Having sought help and accessed treatments it is important that patients are supported to continue their daily lives including work and monitoring of their MSK condition. We have developed, tested, and implemented a vocational advice intervention delivered in primary care that can reduce days lost from work due to MSK pain. The Study of Work And Pain (SWAP) trial (2.5), with 338 patients, demonstrated that adding a brief vocational advice service in primary care led to fewer days off work (mean 5 days less absence over 4 months), yielded net societal savings of £733 per person (£748 work absence gain at a healthcare cost of £15), with a return-on-investment of £49 for every £1 invested. This vocational advice service supported patients to self-manage their MSK pain and work, demonstrating significant improvements in self-efficacy to return-to-work. SWAP intervention training materials were developed to support scaled-up online learning and the vocational advice service has been implemented across 2 First Contact Practitioner (FCPs) services (I-SWAP study).

To support monitoring of MSK conditions, we have developed and tested new outcome measures for use with patients with MSK pain. The Musculoskeletal Health Questionnaire (MSK-HQ) provides clinicians and patients with an innovative tool to assess and monitor the impact of MSK pain (2.6). It was co-produced with healthcare professionals, academics, and patients to ensure it considers the outcomes most important to them. A validation study, with 570 patients, found high completion rates, excellent test-retest reliability, good validity when compared with reference standards, and high levels of acceptability to patients (2.6).

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

**2.1** Protheroe J, Estacio EV, Saidy-Khan S. Patient information materials in general practices and promotion of health literacy: an observational study of their effectiveness. *Br J Gen Pract.* 2015 Mar;65(632): e192-7. doi:10.3399/bjgp15X684013.

**2.2** Adams J, Lowe W, Protheroe J, Lueddeke J, Armstrong R, Russell C, Nutbeam D, Ballinger C. Self-management of a musculoskeletal condition for people from harder to reach groups: a qualitative patient interview study. *Disabil Rehabil.* 2018, Oct (28):1-9. doi: 10.1080/09638288.2018.1485182.

**2.3** 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 randomised trial. *Annals of Rheumatic Diseases*, 2015, 74(1):108-118, doi10.1136/annrheumdis-2013-203938

**2.4** Bishop A, Ogollah RO, Jowett S, Kigozi J, Tooth S, Protheroe J, Hay EM, Salisbury C, Foster NE; STEMS study team. STEMS pilot trial: a pilot cluster randomised controlled trial to investigate the addition of patient direct access to physiotherapy to usual GP-led primary care for adults with musculoskeletal pain. *BMJ Open*. 2017 Mar 12;7(3): e012987. doi: 10.1136/bmjopen-2016-012987.

**2.5** Wynne-Jones G, Artus M, Bishop A, Lawton SA, Lewis M, Jowett S, Kigozi J, Main C, Sowden G, Wathall S, Burton AK, van der Windt D, Hay EM, Foster NE. Effectiveness and costs of a vocational advice service to improve work outcomes in patients with musculoskeletal pain in primary care: a cluster randomised trial (SWAP trial ISRCTN 52269669). *Pain*. 2018;159(1):128–38.

**2.6** Hill J, Kang S, Benedetto E, Myers H, Blackburn S, Smith S, Dunn KM, Hay E, Rees J, Beard D, Glyn-Jones S, Barker K, Ellis B, Fitzpatrick R, Price A. Development and initial cohort validation of the Arthritis Research UK Musculoskeletal Health Questionnaire (MSK-HQ) for use across musculoskeletal care pathways. *BMJ Open*. 2016;6: e012331.

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

##### **Patient information**

To support self-management of hand pain and OA, we have worked with patients to produce patient information that has been implemented internationally through the European League Against Rheumatism (EULAR)'s Rheumatology Academy, with over 32,000 views of the informational video (5.1). Our work in health literacy has been cited as a national exemplar and 'pioneering' in the All Party Parliamentary Group Primary Care report (5 year Forward View, 2016) (5.2) and the Public Health England (PHE) report Health Literacy and Health Inequalities (2015) (5.3).

##### **Transformed models of care and influenced policy**

Our new models of primary care have been shown to have good return-on-investment (ROI) and are recommended by PHE (5.4), with STEMS (2.4) (patient self-referral) reporting a societal level ROI of £98.54 and SWAP (patient vocational advice) reporting an ROI of £11.14 (5.4).

Our work on improving access to physiotherapy has influenced the First Contact Practitioner (FCP) direction of policy in NHS England, with the new MSK pathway including self-referral to FCP services being rolled out across England's Clinical Commissioning Groups and the devolved administrations (5.5). Recommendations by Versus Arthritis and the Royal College of General Practitioners that patients should be able to self-refer to MSK services have been supported by our research, which has evaluated NHS England's FCP pilot and national roll-out (5.5).

The SWAP trial was highlighted as a key case study by PHE in its call for action to support healthy productive later life, which sets out the commitments to promote MSK health and prevent MSK conditions, aiming to achieving impact by 2023 (5.6). It was also included in the National Institute for Health Research (NIHR) Moving Forward document, showcasing the most high-quality evidence based MSK interventions with a direct call to implement these interventions in practice (5.7). SWAP intervention training materials were developed to support scaled-up online learning and the vocational advice service has been implemented among FCPs (I-SWAP study funded by the Joint Health and Work Department). This intervention is now being adapted and tested in a new research study, an NIHR funded randomised controlled trial (WAVE), with primary care patients also receiving fit-notes for time off work due to any health condition.

##### **Influencing clinical guidelines and professional practice**

The findings from our MSK pain research are embedded in national and international clinical guidelines and used to guide commissioners in planning and managing services to support patients (i.e., EULAR Guidelines for hand OA) (5.9). Our SMOOTH trial demonstrated that an occupational therapist (OT)-led joint protection intervention programme is effective. This was highlighted in a debate in Parliament during National Arthritis Week in 2016 (5.8) and incorporated in the European (5.9) and Canadian guidelines on the management of hand OA.

Furthermore, the intervention from our trial is now advocated internationally by healthcare professional organisations (i.e., Royal Australian College of General Practitioners) (5.10) and nationally (i.e., Royal College of General Practitioners). Video materials have been developed as part of the EULAR training programme for non-medical health professionals and have received over 28,000 views (24/12/20). A recent twitter campaign has led to 25,738 views of the OA hand exercises (4/12/20).

### Evaluating MSK Health Status

Our MSK-HQ is fast becoming the preferred Patient Reported Outcome Measure (PROM) for use with patients with MSK pain. This measure seeks to better understand the impact of MSK pain and the effectiveness of interventions. The MSK-HQ is now recommended by NHS England [<https://www.england.nhs.uk/ourwork/clinical-policy/ltc/our-work-on-long-term-conditions/musculoskeletal/>], and is available to licence from NHS Digital's National Clinical Content Repository for collection of data into National datasets. It is recommended by the National MSK Health Data Group (5.11) and National Rheumatology Register (<https://www.rheumatology.org.uk/practice-quality/audits/neia-audit>) to evaluate the performance and value for money of a wide range of interventions, and to improve the quality of healthcare services at a national level. It has been endorsed by the Chartered Society of Physiotherapy to improve monitoring of the progress of patients treated by physiotherapists, and it is the recommended MSK pain outcome of choice for Versus Arthritis (5.12). Individual licenses to 440 healthcare organisations (with the majority of licences allowing use with up to 1,000 patients) have been issued since 2017, supporting academic studies and healthcare organisations throughout the world (150 of the 440 licences are to UK NHS Trusts). The MSK-HQ has been translated into 8 languages, with 9 further translations in development. Completed translations are; Arabic, Chinese, Danish, Hungarian, Italian, Norwegian, Swedish and Turkish. Under development are; Bengali, German, Malay, Maori, Nepalese, Portuguese, Russian, Tamil and Welsh.

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

5.1 Eular Hand Pain videos#: [https://www.youtube.com/watch?v=MKqbN\\_pnz8c](https://www.youtube.com/watch?v=MKqbN_pnz8c) (download held within Keele's repository)

5.2 All Party Parliamentary Group Primary Care and Public Health Inquiry Report into NHS England's Five Year Forward View: Behaviour Change, Information and Signposting March 2016. [https://www.pagb.co.uk/content/uploads/2016/06/5YFV\\_Behaviour\\_Change\\_Info\\_Signposting\\_15March16.pdf](https://www.pagb.co.uk/content/uploads/2016/06/5YFV_Behaviour_Change_Info_Signposting_15March16.pdf)

5.3 Local action on health inequalities: Improving health literacy to reduce health inequalities. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/460709/4a\\_Health\\_Literacy-Full.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/460709/4a_Health_Literacy-Full.pdf)

5.4 Return on investment of interventions for the prevention and treatment of musculoskeletal conditions. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/670211/musculoskeletal\\_conditions\\_return\\_on\\_investment\\_final\\_report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/670211/musculoskeletal_conditions_return_on_investment_final_report.pdf)

5.5 First Contact Physiotherapy posts in General Practice: A guide for implementation in England, May 2018 [https://www.csp.org.uk/system/files/001404\\_fcp\\_guidance\\_england\\_2018.pdf](https://www.csp.org.uk/system/files/001404_fcp_guidance_england_2018.pdf)

- 5.6** Public Health England. Productive healthy ageing and musculoskeletal (MSK) health (2017): <https://www.gov.uk/government/publications/productive-healthy-ageing-and-musculoskeletal-health/productive-healthy-ageing-and-musculoskeletal-msk-health>
- 5.7** NIHR Dissemination Centre Themed Review: Moving Forward, Physiotherapy for Musculoskeletal Health and Wellbeing, <https://content.nihr.ac.uk/nihrdc/themedreview-02995-MF/Moving-Forward.pdf>
- 5.8** Hansard, National Arthritis Week, 2016 <https://hansard.parliament.uk/Commons/2016-10-20/debates/16102051000001/NationalArthritisWeek?highlight=dziedzic#contribution-8EC274E9-B4CA-46C8-B9A3-10F48E69A3AD>
- 5.9** M Kloppenburg, FPB Kroon, FJ Blanco, M Doherty, KS Dziedzic, E Greibrokk, IK Haugen, G Herrero-Beaumont, H Jonsson, I Kjeker, E Maheu, R Ramonda, MJPF Ritt, W Smeets, JS Smolen, TA Stamm, Z Szekanecz, R Wittoek, L Carmona; 2018 update of the EULAR recommendations for the management of hand osteoarthritis; Ann Rheum Dis 2019;78:16–24. doi:10.1136/annrheumdis-2018-213826 <https://ard.bmj.com/content/78/1/16>
- 5.10** RACGP recommendations for pain from hand OA <https://www.racgp.org.au/clinical-resources/clinical-guidelines/handi/handi-interventions/musculoskeletal/education-about-joint-protection-strategies-hand-o>
- 5.11** Musculoskeletal Health: A 5 year strategic framework for prevention across the life course [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/810348/Musculoskeletal\\_Health\\_5\\_year\\_strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810348/Musculoskeletal_Health_5_year_strategy.pdf)
- 5.12** Arthritis Research UK, Recommended Musculoskeletal Indicator Set <https://www.versusarthritis.org/media/2125/recommended-msk-indicator-set-report.pdf>