

<b>Institution:</b> University of Aberdeen		
Unit of Assessment: UoA1: Clinical Medicine		
<b>Title of case study:</b> Understanding the burden of chronic pain and enhancing service provision through improved pain management.		
<b>Period when the underpinning research was undertaken:</b> 2001-2015		
<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>
Blair Smith	Professor	Start of period, to 2013
Alison Elliott	Senior Research Fellow	Start of period, to 2017
Phil Hannaford	Professor	Start of period, to 2020
Paul McNamee	Professor	2002 to current
Gary Macfarlane	Professor	2005 to current
Gareth Jones	Reader	2005 to current
Tatiana Macfarlane	Reader	2005 to 2015
Pat Schofield	Senior Lecturer	2007 to 2012
Graham Scotland	Reader	2001 to current
Gordon Prescott	Senior Lecturer	Start of period, to 2018
Margaret Watson	Senior Research Fellow	Start of period, to 2016
<b>Period when the claimed impact occurred:</b> August 2013 and onwards		
<b>Is this case study continued from a case study submitted in 2014?</b> No		
<b>1. Summary of the impact</b> (indicative maximum 100 words)		
<p>Large-scale epidemiological studies conducted at the University of Aberdeen demonstrated that around 14% of adults report 'significant chronic pain'. Following this research, the Scottish Government acknowledged that 'chronic pain should be recognised as a long-term condition in its own right'. With advocacy from Nicola Sturgeon (then Cabinet Secretary for Health and Wellbeing), the Scottish Chronic Pain Steering Group was convened which, citing Aberdeen work, developed the 'Scottish Service Model for Chronic Pain', and GBP1.3m was provided for implementation of these new management pathways. More recent Aberdeen work underpins national guidelines for the management of pain, including from SIGN (Scotland) and NICE (England).</p>		
<b>2. Underpinning research</b> (indicative maximum 500 words)		
<b>Demonstrating the population burden of chronic pain</b>		
<p>Historically, the understanding of the epidemiology of chronic pain had been described as 'fragmented and inadequate'. Some research focused on highly specific groups with results that were not generalisable to the general population. Others had focused on specific conditions and prevalence estimates ranged wildly, from 7% to &gt;50%.</p> <p>Recognising that chronic pain in the community remained poorly understood, researchers at the University of Aberdeen undertook a large population-based epidemiological study [R1]. This research demonstrated that in a general population sample of over 3600 individuals, approximately 14% reported 'significant chronic pain', and 6.3% reported 'severe chronic pain', with many impacts on life, including reduced ability to work. A four-year follow-up study demonstrated that the average annual recovery rate was around 5%, and nearly 80% of people with chronic pain at baseline still had symptoms at follow-up [R2].</p>		
<b>Demonstrating treatment effectiveness</b>		
<p>This research has contributed to the evidence base underpinning recent national management guidelines regarding osteoarthritis pain, temporomandibular joint disorder pain and chronic widespread pain/fibromyalgia.</p> <p>Many patients with chronic widespread pain are subject to multiple investigations along an extended secondary care pathway but receive few effective treatments. For those who end up in chronic pain services, interventions are costly and often too late. Building on systematic reviews</p>		

identifying cognitive behavioural therapy and exercise as two potential interventions, researchers at the University of Aberdeen conducted a factorial-design randomised controlled trial of these therapies in 442 patients with chronic widespread pain [R3]. This research showed that both treatments are associated with substantial, statistically significant improvements in pain, and follow up research showed long-term improvements to pain compared to treatment as usual [R4]. Furthermore, the cost-effectiveness of these treatments means that they can be delivered in primary care and thus, potentially, could be available to a large number of patients early in their patient journey.

As part of a wider review determining the effectiveness of complementary and alternative medicines and therapies for rheumatoid arthritis, osteoarthritis, fibromyalgia, and back pain, Aberdeen researchers demonstrated the benefits for capsaicin gel for osteoarthritis pain. The research showed a doubling in pain reduction after 12 weeks, compared to placebo, with benefits also regarding pain on movement and patient global assessment [R5].

Temporomandibular disorders are a group of often painful disorders affecting the jaw, ear and temple. They are commonly treated with a wide range of drugs although the extent to which the use of these drugs is based upon evidence is unknown. Aberdeen researchers conducted a systematic review of all available literature and found insufficient evidence to support or refute the effectiveness of the reported drugs for the management of pain due to temporomandibular disorders [R6].

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

The quality of the research is deemed to be at least of 2\* quality as corroborated by the following peer-reviewed, international publications (with Google Scholar citations) and highly competitive grants awarded:

[R1] **Smith BH, Elliott AM, Chambers WA, Smith WC, Hannaford PC** and Penny K.

The impact of chronic pain in the community. *Family Practice* 2001; 18, 292-9.

<https://doi.org/10.1093/fampra/18.3.292> (565)

[R2] **Elliott AM, Smith BH, Hannaford PC, Smith WC** and Chambers WA. The course of chronic pain in the community: results of a 4-year follow-up study. *Pain* 2002; 99, 299-307. [https://doi.org/10.1016/s0304-3959\(02\)00138-0](https://doi.org/10.1016/s0304-3959(02)00138-0) (416)

[R3] **McBeth J, Prescott G, Scotland G, Lovell K, Keeley P, Hannaford PC, McNamee P, Symmons D, Woby S, Gkazinou C, Beasley M** and **Macfarlane GJ**. Cognitive behaviour therapy, exercise, or both for treating chronic widespread pain. *Archives of Internal Medicine* 2012; 172, 48-57. <https://doi.org/10.1001/archinternmed.2011.555> (146)

[R4] **Beasley M, Prescott GJ, Scotland G, McBeth J, Lovell K, Keeley P, Hannaford PC, Symmons DP, MacDonald RI, Woby S** and **Macfarlane GJ**. Patient-reported improvements in health are maintained 2 years after completing a short course of cognitive behaviour therapy, exercise or both treatments for chronic widespread pain: long-term results from the MUSICIAN randomised controlled trial. *RMD Open* 2015 <http://dx.doi.org/10.1136/rmdopen-2014-000026> (26)

[R5] **De Silva V, El-Metwally A, Ernst E, Lewith G, Macfarlane GJ** and the Arthritis Research UK Working Group on Complementary and Alternative Medicines. Evidence for the efficacy of complementary and alternative medicines in the management of osteoarthritis: a systematic review. *Rheumatology* 2011; 50: 911-20.

<https://doi.org/10.1093/rheumatology/keq379> (110)

[R6] **Mujakperuo HR, Watson M, Morrison R** and **Macfarlane TV**. Pharmacological interventions for pain in patients with temporomandibular disorders. *Cochrane Database of Systematic Reviews* 2010, Issue 10. Art. No.: CD004715.

<https://doi.org/10.1002/14651858.cd004715.pub2> (165)

### Key grants

- Hannaford, P. CHRONIC PAIN IN PRIMARY CARE; ITS DETERMINANTS; IMPACT AND MANAGEMENT NEEDS; SOHHD (CSO); 2000-2003; GBP58,350.

## Impact case study (REF3)

- Macfarlane, G., McNamee P. Managing unexplained symptoms (chronic widespread pain) in primary care: involving traditional and accessible new approaches (MUSICIAN). Arthritis Research Campaign; 2007-2012; GBP659,174.
- Smith B, Schofield P, McNamee P, et al. Engaging with older people to develop and deliver interventions for the self-management of chronic pain (EoPIC). MRC Lifelong Health & Wellbeing Initiative; 2010-2014; GBP549,275.
- Macfarlane, G., Complementary Medicine, Arthritis Research Campaign; 2007-2012; GBP148,708.

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

The way in which this Aberdeen research demonstrated the burden of chronic pain in the general population led to a cascade of Government reports and policy initiatives on the issue. By enhancing the underpinning evidence base, both with primary research and systematic reviews, this research influenced health policy and improved how pain services are provided in Scotland.

##### Increased government investment in chronic pain, and reorganisation of pain services

In 2004, the 'McEwan' Report 'Chronic Pain Services in Scotland' was published [S1]. This report, commissioned by the Scottish Executive, directly cites the Aberdeen epidemiological work [R1] to conclude that chronic pain is a major medical and social problem and a massive drain on national resources. It went on to make 16 recommendations for the provision of chronic pain services in Scotland – including that each health board should establish an Integrated Pain Service, or separate Chronic Pain Service.

In 2007, the NHS Quality Improvement Scotland published the GRIPS report [S2]. In the reprint (2008) Nicola Sturgeon, then Cabinet Secretary for Health and Wellbeing, highlighted the “lack of national commitment that recognises chronic pain as a key area of work” and acknowledged that the Scottish Government now recognised chronic pain as a condition in its own right.

In recognition of this issue, the Scottish government provided new funding of GBP60,000 a year to fund the Scottish Government Lead Clinician on Chronic Pain and GBP50,000 a year for two years to establish a managed clinical network for chronic pain in NHS Greater Glasgow and Clyde, which is now supported long-term by the Health Board [S3]. In England also, this epidemiological work [R1] was cited in the UK Chief Medical Officer's Report 2008 where it was argued that a model pain service or pathway of care with clear standards should be developed [S4].

The Scottish Government Lead Clinician on Chronic Pain led the development of the Scottish Service Model for Chronic Pain, a model that involves reorganisation of resources to deliver pain management across four tiers:

- i. Supported self-management;
- ii. Allied Health Professionals and primary care services;
- iii. Specialist multidisciplinary pain management; and
- iv. Specialist services and intensive residential services.

When a review by Healthcare Improvement Scotland found limited evidence of implementation of the model, Scottish Government decided to provide GBP1.3 million in new funding from 2014-2016 to embed it, a process which was supported by the establishment of Service Improvement Groups in all 15 Scottish Health Boards [S5]. Aberdeen staff served on the National Chronic Pain Steering Group (Blair Smith) and the Service Improvement Groups (Paul McNamee) to provide expert guidance and advice on embedding this model.

This funding was spent differently in different Health Boards according to locally determined priorities – including recruitment of additional pain specialists (Orkney / Forth Valley); pain service reorganisation (Lothian); and GP-led chronic pain reviews (Greater Glasgow and Clyde) [S6]. In one example of a funded project, the West Dunbartonshire Chronic Pain Management Pilot found that having pharmacist-led holistic pain reviews halved the number of secondary care pain clinic reviews that patients undertook, conserving GPs' time and saving on medication costs as well [S6]. This initial investment in chronic pain management on a national scale has been sustained

by these Scottish Health Boards who continue to operate this multi-disciplinary model of care [S6].

### **Informing international guidelines on non-pharmacological interventions for chronic pain management (Tiers 1-3 of the Scottish Service Model)**

Following the implementation of the Scottish Service Model, work at Aberdeen directly contributed to the development of authoritative guidelines on chronic pain management:

- **SIGN-136: Management of chronic pain in adults:** This guideline produced by the Scottish Intercollegiate Guidelines Network (SIGN) provides evidence-based recommendations on the management of adults with chronic non-malignant pain, and cited three pieces of Aberdeen research to support their recommendations [S7]. Psychological interventions [citing R3] are mentioned as a key clinical recommendation that should be prioritised for implementation, and [citing R5] the benefits of capsaicin for osteoarthritis pain are described. The guideline failed to make an explicit recommendation for the use of antidepressants in patients with temporomandibular joint pain, instead noting the insufficient evidence to determine their effectiveness [citing R6].
- **NICE guidelines for chronic pain:** Aberdeen work [R3 and R4] have also been key in formulating the recommendations for cognitive behavioural therapy in the preliminary NICE guidelines for chronic pain [S7].
- **Guidance on the management of pain in older people:** Aberdeen researchers collaborated with the British Geriatric Society and British Pain Society to produce the first UK guideline on the management of pain in older people [S7]. The recommendations followed an extensive systematic review of the available literature and help health professionals consider the options available when managing pain in older patients

### **Development of educational materials with patients and patient partners**

As part of the EoPIC study, Aberdeen researchers (McNamee and Schofield) developed new education materials that were co-designed with research participants, including a Facebook learning object for health professionals and a comic book to help children understand others' chronic pain. The latter featured in the Times Higher Education "20 new ideas from UK universities that will change the world" [S8]. Educational materials were also developed in collaboration with Pain Concern, the leading UK chronic pain patient organisation. This included episodes of the on-line programme "Airing Pain," such as:

- Programme 1: Introduction to Pain (Sep 2010)
- Programme 2: Nerve Pain and how to manage it (Oct 2010)
- Programme 13: Culture, epidemiology, and back pain (Feb 2011).

Reported usage is 25,000 listens across all programmes during the first quarter of 2015 [S8].

### **Putting chronic pain on the national agenda**

Following the use of University of Aberdeen research in the UK Chief Medical Officer's Report 2008, chronic pain moved up the national agenda. Based on his recommendations, data on pain is now collected as part of the Health Survey for England to provide annual estimates of chronic pain in the community. The Health Quality Improvement Partnership, the British Pain Society and Dr Foster have delivered a comprehensive National Pain Audit to discover the quality and coverage of pain services.

In November 2011, the British Pain Society, Chronic Pain Policy Coalition, Faculty of Pain Medicine and Royal College of General Practitioners came together in the first English Pain Summit. One of the key recommendations emerging from the Summit was that a data strategy for chronic pain should be agreed through creation of an Epidemiology of Chronic Pain working group [S9]. This working group was convened and chaired by Professor Macfarlane, with a sub-group chaired by Dr Jones; both researchers at University of Aberdeen.

Since 2014, studies show that there has been greater investment in nursing and clinical psychology posts dedicated to pain management, and 10 new multi-disciplinary pain clinics / programmes now operate in Scotland in 2018 [S10]. Furthermore, NHS patient outcomes have

improved; in a before-and-after implementation study conducted in the NHS, statistically significant and clinically meaningful improvements in health-related quality life were demonstrated using this approach of multidisciplinary pain management [S10].

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

- [S1] The McEwan report. McEwan J. Chronic pain services in Scotland. Edinburgh: Scottish Executive 2004. [www.sehd.scot.nhs.uk/mels/HDL2004\\_48.pdf](http://www.sehd.scot.nhs.uk/mels/HDL2004_48.pdf)
- [S2] The GRIPS report. Getting to GRIPS with Chronic Pain in Scotland. NHS Quality Improvement Scotland (2<sup>nd</sup> edition); July 2008. [http://www.healthcareimprovementscotland.org/our\\_work/long\\_term\\_conditions/programme\\_resources/getting\\_to\\_grips\\_with\\_chronic.aspx](http://www.healthcareimprovementscotland.org/our_work/long_term_conditions/programme_resources/getting_to_grips_with_chronic.aspx)
- [S3] S3W-37844: Jackie Baillie, Dumbaron, Scottish Labour (24/11/2010). To ask the Scottish Executive what new funding has been provided to tackle chronic pain since May 2007 and how it has been spent. Answered by Nicola Sturgeon (06/12/2010)
- [S4] Donaldson L. Chief Medical Officer Report 2008. [https://webarchive.nationalarchives.gov.uk/20130105045448/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_096231.pdf](https://webarchive.nationalarchives.gov.uk/20130105045448/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_096231.pdf)
- [S5] Healthcare Improvement Scotland. Chronic Pain in Scotland – where are we now? NHS Board Local Report Compendium (2014).
- [S6] FOI responses on use of £1.3m in chronic pain funding:  
FOI response from Professor Alex McMahon, Lothian NHS Board, April 2020  
FOI response from NHS Orkney, March 2020  
FOI response from Hilary Chalmers, NHS Forth Valley, March 2020  
FOI response from Kay Douglas, NHS Greater Glasgow and Clyde, March 2020
- [S7] Chronic pain management guidelines influenced by Aberdeen research: Scottish Intercollegiate Guidelines Network (SIGN). Management of chronic pain. Edinburgh: SIGN; 2013. (SIGN publication no. 136). Revised edition published August 2019. [https://www.sign.ac.uk/assets/sign136\\_2019.pdf](https://www.sign.ac.uk/assets/sign136_2019.pdf)  
<https://www.nice.org.uk/guidance/gid-ng10069/documents/draft-guideline>
- Abdulla A, Adam N, Bone M, Elliott A, Gaffin J, Jones D, Knaggs R, Martin D, Sampson L, Schofield P. Guidance on the management of pain in older people. Age and Ageing 2013; 42: i1-57. (356 citations)
- [S8] Media impact:  
Times Higher Education “20 new ideas from UK universities that will change the world”. <https://www.timeshighereducation.com/news/20-new-ideas-from-uk-universities-that-will-change-the-world/2013812.article>
- Viewing statistics from the Scottish Public Health Network 2018.
- [S9] Pain on the agenda – the report of the First English Pain Summit. <https://www.policyconnect.org.uk/research/putting-pain-agenda>
- [S10] Studies demonstrating use & effectiveness of multidisciplinary pain management in NHS: Mellor et al. Scottish Public Health Network (ScotPHN) Health Care Needs Assessment of Adult Chronic Pain Services in Scotland. 2018. [https://www.scotphn.net/wp-content/uploads/2017/04/2018\\_10\\_11-Chronic-pain-HNA-Final.pdf](https://www.scotphn.net/wp-content/uploads/2017/04/2018_10_11-Chronic-pain-HNA-Final.pdf)
- Anderson JK and Wallace LM. Evaluation of uptake and effect on patient-reported outcomes of a clinician and patient co-led chronic musculoskeletal pain self-management programme provided by the UK National Health Service. Br J Pain 2018; 12: 104-12.