Institution: Keele University

Unit of Assessment: UoA3 Allied Health Professions, Dentistry, Nursing and Pharmacy

Title of case study: Implementing high quality stratified care for low back pain

Period when the underpinning research was undertaken: 2011-2020

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Professor Elaine Hay	Professor of Rheumatology	1994-present
Professor Nadine Foster	NIHR Professor of Musculoskeletal Health in Primary Care	2000-2020
Professor Kate Dunn	Professor of Epidemiology	2000-present
Dr Jonathan Hill	Senior Lecturer	1999-present
Dr Martyn Lewis	Senior Lecturer	1997-present
Dr Kika Konstantinou	Senior Clinical Lecturer	2005-present
Dr Simon Somerville	General Practitioner Research Fellow	2000-2019
Honorary Professor Kay Stevenson	Honorary Professor in Musculoskeletal Care and Leadership, Impact Case Study co-author	2002-present
Mr Mike Brooks	Research User Group	n/a

Period when the claimed impact occurred: 2014 - 2020

Is this case study continued from a case study submitted in 2014? N

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

Back pain accounts for 10% of all years lived with disability. Our 'risk stratification' approach for back pain (STarT Back), and its implementation (IMPaCT Back) has led to fundamental changes to policy and patient care nationally and internationally. NICE recommends use of the approach, which links risk of persistent disability (low, medium, high) with matched treatments. Public Health England determined that STarT Back has a Return on Investment (ROI) of up to £226.23 for every pound spent, with estimated annual societal savings of £46 million. STarT Back was selected by Universities UK in the top 100 key UK innovations (2018).

2. Underpinning research (indicative maximum 500 words)

The biopsychosocial model for low back pain has long been recognised, but evidence of how to incorporate this into clinical practice was lacking. As a result, guidelines did not include recommendations relating to management of psychosocial aspects of back pain. We produced ground-breaking research in 2011, published in the Lancet, which demonstrated that stratified primary care management, nested in a biopsychosocial framework, led to significant

improvements in clinical outcomes, improvements in health-related quality-of-life, cost savings from reduced health-care use, and fewer back pain-related days-off-work [3.1].

In order to examine whether trial-based findings were applicable to real-life clinical practice, we conducted the IMPaCT Back study to test implementation of the STarT Back approach [3.2]. 922 patients from 64 GPs and linked physiotherapy services were followed-up; 368 identified prior to stratified care implementation, and 554 following implementation. Findings corroborated those from the STarT Back trial, demonstrating that time-off-work halved, and 30% fewer patients received sickness certification. Economic evaluation indicated that the approach led to cost savings of £34 per patient coupled to an improved quality of life, plus savings from reduced work absence (£400 per employed patient) [3.3].

To maximise the benefits of the STarT Back approach, a substantial shift in General Practitioner and Physiotherapy clinical behaviour was required. To understand these perspectives, qualitative research gave vital insights into GP [3.4] and physiotherapists' [3.5] views of adopting the STarT Back approach. Interviews with thirty-two GPs revealed low levels of interest in low back pain, and a potential lack of engagement with a new treatment approach. This highlighted the support that would be needed for working practices to enhance continued use of the approach outside of trial settings. Thirty-two interviews were conducted with physiotherapists to elicit views of implementing change [3.5]. These revealed the conditions and consequences of change that would aid translation into other settings and highlighted perceived benefits to clinicians and patients. In moving to a new approach, issues such as willingness to change, perceived benefits, and the process of adjustment must be considered.

To examine the longer-term economic benefits of the STarT Back approach, beyond the usual 1-year follow-up, statistical modelling of data from the clinical trial and implementation study was carried out [3.6]. This study demonstrated long-term cost-effectiveness of the approach, delivering 0.14 additional quality-adjusted life years (QALYs) at a cost-saving of £135.19 per patient over a ten-year period. The work showed that the predicted cost-savings and improvements in quality of life were likely, even if healthcare costs were different to the original study, giving further evidence of the generalisability of the findings, and identified that the greatest benefits and cost-savings could be found in high-risk patients.

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

3.1. Hill JC, Whitehurst DG, Lewis M, Bryan S, Dunn KM, Foster NE, Konstantinou K, Main CJ, Mason E, Somerville S, Sowden G, Vohora K, Hay EM. Comparison of stratified primary care management for low back pain with current best practice (STarT Back): a randomised controlled trial. Lancet 2011;378(9802):1560-71. DOI: 10.1016/S0140-6736(11)60937-9.

3.2. Foster NE, Mullis R, Hill JC, Lewis M, Whitehurst DG, Doyle C, Konstantinou K, Main C, Somerville S, Sowden G, Wathall S, Young J, Hay EM on behalf of the IMPaCT Back Study team. Effect of stratified care for low back pain in family practice (IMPaCT Back): a prospective population-based sequential comparison. Annals of Family Medicine 2014;12(2):102-11. DOI: 10.1370/afm.1625.

3.3. Whitehurst DG, Bryan S, Lewis M, Hill J, Hay EM. Exploring the cost-utility of stratified primary care management for low back pain compared with current best practice within risk-defined subgroups. Annals of Rheumatic Diseases 2012;71(11):1796-802. DOI: 10.1136/annrheumdis-2011-200731.

3.4. Sanders T, Foster NE, Ong BN. Perceptions of general practitioners towards the use of a new system for treating back pain: a qualitative interview study. BMC Medicine 2011;9:49. DOI: 10.1186/1741-7015-9-49.

3.5. Sanders T, Ong BN, Sowden G, Foster N. Implementing change in physiotherapy: Professions, contexts and interventions. Journal of Health Organization and Management 2014;28:96-114. DOI: 10.1108/JHOM-10-2011-0102.

3.6. Hall JA, Jowett S, Lewis M, Oppong R, Konstantinou K. The STarT Back stratified care model for non-specific low back pain: a model-based evaluation of long-term cost-effectiveness. Pain 2020 Aug 27. DOI: 10.1097/j.pain.0000000000002057.

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

STarT Back is recommended by NICE and Public Health England. The Return on Investment (ROI) for society is up to £226.23 for every £1 spent, with ~£46 million saved annually. In the past 6 years STarT Back has fundamentally changed policy and patient management nationally and internationally. It has improved quality of life for patients and helped return-to-work. Through its implementation, clinicians now have an evidence-based approach to guide care, supported by bespoke online training (Stevenson).

Transforming Health Care Policy

Policy makers, guideline developers, health purchasers, and public bodies have adopted STarT Back in national and international clinical guidelines (5.1-5.3). For example, for the first time NICE back pain guidance (2016) recommended STarT Back, leading to a steady increase in uptake in primary care (2014-2018) (5.1). Public Health England used health economics analysis in their ROI report (5.4) to support their recommendation for STarT Back throughout England. The report suggested that for every £1 spent on STarT Back, £226.23 is saved at a societal level (5.4). Report findings were used to support transformation of UK Musculoskeletal and Back Pain Pathways (5.5-5.7).

Transforming Services

Services have been redesigned to maximise benefits across the UK and internationally. Following the recent introduction of STarT Back in New Zealand, 21% of surveyed physiotherapists are using the approach (5.8). Across primary care 45% of general practices (specifically AURUM practices - 7 million patients registered at EMIS Web® 2018) had used STarT Back (2014-2018) (5.1). In the West Midlands through the Academic Health Science Network, 15 Clinical Commissioning Groups and 15 Provider Trusts have been engaged in implementing STarT Back, with 2378 patients benefiting (5.7). In East Staffordshire, 226 patients had significant health improvements when using STarT Back (5.9). A NICE Shared Learning Case (5.10) demonstrated greater patient satisfaction and quicker appointments when services were reorganised using STarT Back. In Gloucestershire (5.11), "*patients received significantly more treatment sessions as the risk-rating increased, in line with the anticipated impact of targeted treatment pathways. Physiotherapists were largely positive about using the model. The potential annual impact of rolling out the model across Gloucestershire is a gain in approximately 30 QALYs, a reduction in productivity losses valued at £1.4 million and almost no change to NHS costs*."

Support for Industry

In 2018 STarT Back research was identified in the top 100 impacts (5.12) by Universities UK. If used in half the patients in England, estimated annual savings equate to £46 million. To increase use by GPs in Primary Care, we have developed and implemented successful electronic STarT Back reminders with industry partners (e.g. 5.1) (EMIS Health, TPP, SystemOne). A large NHS Trust in the West Midlands mandated use of the STarT Back reminder system, and analysis of >4000 patient interactions (EMIS) indicated that the tool was completed in 87% of cases. Connect Health took an innovative approach to introduce STarT Back into large commercial Occupational Health settings from 2018, to assist employee return-to-work.

Support for Clinicians

We have changed what clinicians do for patients with back pain. We have trained over 300 national and international physiotherapists to deliver STarT Back (e.g. 5.7, 5.8, 5.9, 5.11). We recently developed online training to support uptake; the website received 17,328 visits on launch day. Currently, 1,499 users have registered for and used STarT Back Online Training, 1,128 attempted the final quiz with 685 successful completions. Overall, the STarT Back website has received 236,407 visits, and the training/resources page 23,021 visits (data extracted 31.12.2020). (5.9) The approach is included in the Royal College of General Practitioners (RCGP)/Versus Arthritis Curriculum (5.9) (Care of People with Musculoskeletal Problems, 2016) https://startback.hfac.keele.ac.uk/clinicians/ and four RCGP modules. To assist international clinicians, the STarT Back tool has been translated into 40 languages; our translation webpage had 1,402 visits and online calculator accessed 14,684 (31.12.2020) (5.9). Our website and online survey show the tool is being used in Europe, Africa, Australia, South Africa, New Zealand, Ireland, Hong Kong and North America (5.9).

Support for Patient information

We have changed the way information for patients with low back pain is created and shared. Keele's LINK Group (Lay Involvement in Knowledge Mobilisation) co-produced an evidence-based patient leaflet (5.9). Underpinned by STarT Back research, this has been endorsed by NICE (E208); received a British Medical Association Commendation Award; been shared with colleagues in Australia, Ireland, Malaysia, New Zealand and downloaded 9,679 times (extracted 24.9.2020). Our innovative STarT Back animation has had over 1,800 Twitter views and 4,126 on YouTube. Patients are enhancing implementation across in Staffordshire as key members of a Community of Practice to embed STarT Back.

In summary, STarT Back implementation has fundamentally changed policy and patient management nationally and internationally, with substantial cost effectiveness and returns on investment.

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

5.1. NICE Back pain in adults: early management https://www.nice.org.uk/guidance/cg88 Specific Reference to STarT Back NICE https://www.nice.org.uk/guidance/NG59/chapter/Recommendations#assessment-of-low-back-pain-and-sciatica 1.1.2 And corroborating audit data for uptake of STarT Back in primary care from AURUM

5.2. Dr Bree Collaborative: Collaborative Care for Chronic Pain Report and Recommendations https://www.qualityhealth.org/bree/wp-content/uploads/sites/8/2019/01/Recommendations-Chronic-Pain-Final-2018.pdf Washington State USA (page 4)

5.3. NHS England Pathfinder Project - https://www.ukssb.com/improving-spinal-care-project - Specific reference to STarT Back Pg 4 and 15 Project outcome https://www.flipsnack.com/Cynergy/necsu-back-pain-programme-ftjezeelu.html - Page 11

5.4. Return on Investment https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/670211/musculoskeletal_conditions_return_on_investment_final_report.pdf

5.5. Public Health England Make Every Contact Count for Low Back pain Tool Kit http://www.makingeverycontactcount.co.uk/media/1040/012-mecc-pocketbook-for-healthcare-staff-june-15.pdf (page 20)

5.6. National Institute of Health Research Themed Review Moving Forward Physiotherapy for Musculoskeletal Health and Wellbeing July 2018

https://evidence.nihr.ac.uk/themedreview/moving-forward-physiotherapy-for-musculoskeletal-health-and-wellbeing/ DOI: 10.3310/themedreview-02995

5.7. West Midlands Academic Health Science Network Annual Report 2015-16 page 28 http://wmahsn.org/storage/resources/documents/Annual_Report_2015_2016.pdf

5.8. Hill, Julia & Bedford, John & Houston, David & Reid, Duncan & Baxter, G. & Ellis, Richard. (2020). Exploring physiotherapists' use of clinical practice guidelines, screening, and stratification tools for people with low back pain in New Zealand. New Zealand Journal of Physiotherapy. 48. 59-69. 10.15619/NZJP/48.2.02.

5.9. https://startback.hfac.keele.ac.uk/ and website analytics as of 31/12/20.

5.10. NICE Shared Learning Case https://www.nice.org.uk/sharedlearning/best-evidence-for-a-better-back-be-fabb-a-triage-assessment-and-education-service-for-patients-with-low-back-pain-with-or-without-sciatica#results

5.11. Paper by Bamford _Gloucester audit Implementing the Keele stratified care model for patients with low back pain: an observational impact study. Bamford A, Nation A, Durrell S, Andronis L, Rule E, McLeod H. BMC Musculoskelet Disord. 2017 Feb 3;18(1):66. DOI: 10.1186/s12891-017-1412-9. PMID: 28158985 Free PMC article.

5.12. 100 top impacts from universities START BACK identified in top 100 https://madeatuni.org.uk/keele-university/treating-lower-back-pain And https://www.keele.ac.uk/discover/news/2018/december/best-breakthroughs/made-at-uni.php