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| <b>Institution:</b> Brunel University London   |  |  |
| <b>Unit of Assessment:</b> 03 Allied Health Professions, Dentistry, Nursing and Pharmacy       |  |  |
| <b>Title of case study:</b> Persistent Pain: Shaping Policy, Practice and Public Understanding |  |  |
| <b>Period when the underpinning research was undertaken:</b> 2010-2018                         |  |  |
| <b>Details of staff conducting the underpinning research from the submitting unit:</b>         |  |  |
| <b>Name(s):</b><br><br>1. Dr Neil O'Connell<br>2. Prof Lorraine DeSouza                        | <b>Role(s) (e.g. job title):</b><br><br>1. Senior Lecturer in<br>Physiotherapy<br>2. Professor | <b>Period(s) employed by submitting HEI:</b><br>1. 07/2002-present<br>2. 09/1981-01/2019 |
| <b>Period when the claimed impact occurred:</b> 2015 – Dec 2020                                |  |  |
| <b>Is this case study continued from a case study submitted in 2014?</b> N                     |  |  |

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

Dr O'Connell's and Prof DeSouza's research has improved healthcare policy for people in pain with health insurance in the USA. This has facilitated more efficient clinical provision and reduced patient exposure to ineffective and unproven treatments for between 5,300,000 to 10,600,000 people.

It has informed the web-content of a range of health information providers with a reach of millions of users enabling access to reliable information for a condition that affects 10-20% of adults globally. Dr O'Connell has co-created patient-facing information on the management of pain that has had international reach, including 60,000 visitors per year benefitting from access to trustworthy information

**2. Underpinning research** (indicative maximum 500 words)

10-20% of adults report moderate to severe long-standing pain with serious implications for their social and working lives and placing substantial burden on healthcare and social systems. Patients, clinicians and policy-makers are faced with a maze of options only some of which might offer benefits. Reliable evidence regarding which treatments are effective and safe is vital to guide clinical decisions to ensure the delivery of high-value care. Dr O'Connell and Prof De Souza have produced a body of high-quality evidence syntheses of treatment effectiveness in persistent pain which have influenced policy and informed public/clinician-facing information sources.

The evidence regarding which interventions are effective and safe is highly variable in terms of volume and quality. This represents a substantial challenge to policymakers, clinicians and to people with pain; and novel, up to date and robust syntheses of the evidence are vital to reduce unwanted variation in care and to inform better policy and clinical decision making.

Dr O'Connell has undertaken and published a body of systematic reviews and overviews relevant to the management of persistent pain, including reviews of pharmacological, interventional and rehabilitation-based treatments. These reviews [1.1-1.5], conducted and published between 2009 to 2018 were led by Dr O'Connell in collaboration with Prof DeSouza [1.1] and an international team of collaborators and were produced with Cochrane, a global organisation recognised as the standard leader in this type of research. Dr O'Connell is a reviewer and the Co-ordinating Editor of the Cochrane Pain Palliative and Supportive Care review group.

## Impact case study (REF3)

The projects that have led to the described impacts include original systematic reviews of the effectiveness of non-invasive brain stimulation for chronic pain [1.1], local anaesthetic sympathetic blockade for complex regional pain syndrome (CRPS) [1.2], physiotherapy interventions for CRPS [1.3], Transcutaneous electrical nerve stimulation (TENS) for neuropathic pain [1.4] and a systematic overview of reviews of all clinical interventions for CRPS [1.5].

Each of these reviews was based upon a pre-published protocol and reported to meet the accepted standards outlined by the internationally recognised Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and the Cochrane Methodological Expectations for Cochrane Intervention Reviews (MECIR) standards at the time that they were conducted.

Each of these reviews represents the most reliable synthesis and summary of the effectiveness and safety for these interventions that was available at the time of publication and produces valuable, internationally relevant information to guide policy with regards to clinical commissioning and treatment reimbursement and to support people in pain and their clinicians to make valid clinical decisions. The reviews highlight a critical lack of high-quality evidence to support the effectiveness of commonly used interventions such as local anaesthetic sympathetic blocks [1.2] and some physiotherapy-based approaches for CRPS [1.3] and transcutaneous electrical nerve stimulation (TENS) for neuropathic pain, a condition that is considered one of the main clinical indications for that technology. One review identified a lack of clinically important benefits of emerging novel treatments such as non-invasive brain stimulation techniques [1.1] and illustrate where the most promising evidence of effectiveness is across all interventions for CRPS [1.5]

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

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1.1 O'Connell NE, Marston L, Spencer S, DeSouza LH, Wand BM. Non-invasive brain stimulation techniques for chronic pain. Cochrane Database of Systematic Reviews 2018, Issue 3. Art. No.: CD008208. DOI: 10.1002/14651858.CD008208.pub4. (listen to the podcast <https://www.cochrane.org/podcasts/10.1002/14651858.CD008208.pub5> )

1.2 O'Connell NE, Wand BM, Gibson W, Carr DB, Birklein F, Stanton TR. Local anaesthetic sympathetic blockade for complex regional pain syndrome. Cochrane Database Syst Rev. 2016 Jul 28;7:CD004598 <https://doi.org/10.1002/14651858.CD004598.pub4>

1.3 Smart, KM, Wand BM, O'Connell NE Physiotherapy for pain and disability in adults with complex regional pain syndrome (CRPS) types I and II. Cochrane Database of Systematic Reviews 2016; 2: CD010853. <https://doi.org/10.1002/14651858.CD010853.pub2>

1.4 Gibson W, Wand BM, O'Connell NE. Transcutaneous electrical nerve stimulation (TENS) for neuropathic pain in adults. Cochrane Database of Systematic Reviews 2017; 9:CD011976. 1.5 O'Connell NE, Wand BM, McAuley J, Marston L, Moseley GL Interventions for treating pain and disability in adults with complex regional pain syndrome. Overview Cochrane Database of Systematic Reviews 2013: 4 CD009416 <https://doi.org/10.1002/14651858.CD009416.pub2>

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

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A number of major health insurance providers in the US have developed their reimbursement policies in light of these reviews. Based on the combined recent membership figures for these 4 insurance schemes (53,400,000 members) and a prevalence of persistent pain of 10-20% these policies apply to between 5,300,000 to 10,600,000 people with health insurance. The reviews have enabled important evidence-based policy decisions which allow for more efficient clinical provision and reduce patient exposure to ineffective and unproven treatments.

## Impact case study (REF3)

Between 2017 and 2019, policies from United Healthcare [2.1], Regence [2.2], UCare [2.3] and the Government Employers Health Association (GEHA) [2.4] used the review on the topic [1.1] to justify not routinely offering non-invasive brain stimulation techniques for chronic pain. A range of information resources have been designed, underpinned by the evidence in these reviews, for people in pain and clinicians to inform their understanding of the condition and their treatment choices.

The PainHEALTH website [2.5] is a Western Australia (WA) Department of Health government funded website developed through a collaboration of researchers, clinicians and consumers, with the specific goal of promoting timely access to reliable and practical pain management resources for all Western Australian health consumers and improving access to good information to people with musculoskeletal pain in remote and hard to reach communities. At the invitation of colleagues in WA, Dr O'Connell led the development of patient facing online information relating to CRPS for the website.

This information on CRPS was directly based on Brunel reviews [1.3, 1.5] and summarises for the lay reader which treatments show promise and which appear to be unsafe and/or ineffective across the full range of treatments including drugs, invasive procedures and non-pharmacological options. The pages went live in 2017. Tracking use statistics show the website is well accessed with over 1,000,000 visitors per year benefitting from trustworthy, accessible and up to date information about their pain, and has a global reach, with users accessing the resource from over 150 countries. The page on managing CRPS received over 5,000 visitors in January 2019 alone suggesting a reach of approximately 60,000 users per year for this rare condition. A formal mixed methods evaluation of the painHEALTH project included 414 users of the resource and found that users perceived it as filling an important gap in holistic pain care, and that it provided holistic and credible information to support self-management and co-care of pain. Health professionals reported that they perceived it to be a useful tool to complement clinical care and training [2.6]. The website has now been approved for a further 5 years of government funding (2018-2023 AUD125,000, equivalent to GBP70,000 (11-2020)) and Dr O'Connell will continue to work with the painHEALTH team to further enhance the information on CRPS based upon this research.

Patients and clinicians increasingly turn to internet-based information sources to inform decisions about care and it is important that information based on the best evidence to date is freely available. A range of patient and clinician facing online resources independently developed information resources and recommendations relating to various treatment options for persistent pain that are underpinned by these reviews. Patient-facing resources include the respected and award-winning UK-based "Patient.info" website (formerly patient.co.uk) who cite the Brunel review of TENS for neuropathic pain [1.4] in their patient information resource on TENS [2.7], the US Women's National Health Network who cite the same review in their information on alternatives to drugs for chronic pain [2.8]. Information resources for clinicians include the "Uptodate.com" [2.9] and "Practical pain management" [2.10] websites who provide clinician updates on best clinical practice for CRPS, and ketamine use with the evidence in reviews 1.2 and 1.5 as critical evidence sources. These resources have considerable global reach. According to information on their websites, Patient.info has over 6,000,000 users; UptoDate is used by approximately 1,700,000 clinicians to stay abreast of current evidence across over 190 countries, and Practical Pain Management has a print circulation of more than 41,000 with over 700,000 unique website visitors per month.

This research has directly helped improve healthcare policy for between 5,300,000 to 10,600,000 people in pain with health insurance in the US. It informs trustworthy, accessible information to clinicians and people with pain about pain management that has global reach.

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

2.1 United Healthcare Community Plan Medical Policy Transcranial Magnetic Stimulation Feb 12020; PDF provided.

<https://www.uhcprovider.com/content/provider/en/viewer.html?file=https%3A%2F%2Fwww.uhcpr>

[ovider.com/content/dam/provider/docs/public/policies/medicaid-comm-plan/transcranial-magnetic-stimulation-cs.pdf](https://www.ovid.com/content/dam/provider/docs/public/policies/medicaid-comm-plan/transcranial-magnetic-stimulation-cs.pdf)

2.2 Regence Medical Policy Manual 2019 Cranial Electrotherapy Stimulation. PDF provided. <http://blue.regence.com/trgmedpol/dme/dme83.06.pdf>

2.3 UCare (Minnesota) Clinical and Quality Management Medical Policy. Transcranial Magnetic Stimulation. July 2015 PDF provided.

2.4 Government Employees Health Association (GEHA). Policy document 2017: Transcranial Magnetic Stimulation. PDF provided. <https://www.geha.com/~media/Files/Documents/Health-Documents/coverage-policies/Transcranial-Magnetic-Stimulation.pdf?la=en>

2.5 PainHEALTH. Western Australia Government Department of Health. 2020; Complex regional pain syndrome PDF provided. <https://painhealth.csse.uwa.edu.au/pain-module/complex-regional-pain-syndrome/>

2.6 PainHEALTH formal evaluation. Executive summary. PDF provided.

2.7 TENS Machines. Patient 2018. PDF provided. <https://patient.info/treatment-medication/painkillers/tens-machines>

2.8 Rx for Change: Alternatives for Chronic Pain. Women's National Health Network 2018; PDF provided. <https://www.nwhn.org/rx-change-alternatives-chronic-pain/>

2.9 Complex regional pain syndrome in adults: Prevention and management. Uptodate.com 2019; PDF provided. <https://www.uptodate.com/contents/complex-regional-pain-syndrome-in-adults-prevention-and-management>