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PAIN NEWS

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THE BRITISH PAIN SOCIETY
EXPERTISE WHERE IT MATTERS

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Third Floor Churchill House
35 Red Lion Square
London WC1R 4SG United Kingdom
Tel: +44 (0)20 7269 7840
Email info@britishpainsociety.org
www.britishpainsociety.org

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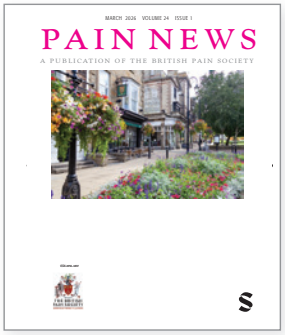

The Editor welcomes contributions including letters, short clinical reports and news of interest to members.

Material should be sent to:
Dr Rajesh Munglani
PAIN NEWS Editor
The British Pain Society
Third Floor Churchill House
35 Red Lion Square
London WC1R 4SG United Kingdom
Email rajeshmunglani@gmail.com

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https://www.britishpainsociety.org/for-members/pain-news/

President's Message

Pain News
2026, Vol 24(1) 2–3

Professor Roger Knaggs

As I write this in the depths of January, winter still has a firm hold. Yet by the time you are reading this issue of *Pain News*, spring will be just around the corner, with longer, lighter evenings and a renewed sense of energy and possibility. It feels an apt metaphor for the momentum building across our Society and the wider pain community.

One of the highlights in near future is our 2026 Annual Scientific Meeting in Harrogate, which will welcome us next month from 21 to 23 April. The programme promises rich discussion, shared learning and the chance to reconnect with colleagues from across disciplines. I am particularly excited by the excellent line-up of outstanding plenary speakers, who will offer insight, inspiration and thought-provoking discussion. Again, there was much interest in submitting proposals for the parallel sessions. The Scientific Programme Committee had long discussions to ensure balanced programme. I am sure that there are some sessions in the programme that will be of interest to all members.

Our pre-ASM Education Days are also approaching, with a wide range of topics of much relevance to our multidisciplinary membership: effective communication for patient-centred care; women in pain; sleep and pain; and managing drug dependence and addiction in an acute pain setting. There is still time to sign up for the ASM and education days, and I would warmly encourage you to take advantage of these opportunities to refresh your knowledge, gain practically applicable insights and strengthen networks. I am sure that Harrogate will be a wonderful venue to host these events at this time of year.

I would also like to thank the organisers and contributors to the Neuropathic Pain Special Interest Group Education Day, which took place at the end of February. Thank you to Mark Aganthangelou, Paul Farquhar-Smith, Alan Fayaz, Neil O'Connell, Nick Richardson and Jan Vollert for putting together an excellent programme. It was a strong example of member-led collaboration and enthusiasm. Neuropathic pain, affecting an estimated 7%–10% of the global population, is also the focus of the IASP Global Year. As a significant global health issue, it reminds us of the importance of continued advocacy, education and research in this area. We look forward to supporting the IASP Global Year as led by Neil O'Connell and Angelika Lampert.

We were pleased to welcome the IASP Council to London recently for their Annual Council Meeting. Our links with IASP are vital in strengthening our voice as a chapter, sharing best practice internationally and ensuring that UK perspectives continue to inform global conversations about pain.

A few weeks ago, we shared the news about the death of our much loved and respected friend and colleague, Flick Cox. Many thanks to all who have posted messages and memories in the online memorial book. Due to the publication deadlines for *Pain News*, it has not been possible to include a celebration of Flick's achievements in this issue of *Pain News*. However, we plan to have a fuller tribute in the next issue. We will also be considering further opportunities in which the Society can create a lasting legacy for Flick's contributions to the Society and pain community both nationally and internationally. In times of such sadness, it is great how we have come together as a community to mark the achievements of such an influential person.

Finally, as you read this, the GIRFT stream for Chronic Pain will have undertaken its site visits and preparing their initial

President's Message

report. It feels like GIRFT only just got started, yet they have already achieved so much. There will be an opportunity to hear about their findings so far and plans for the future in a workshop at the ASM. We look forward to their continued leadership and to supporting their work as it moves into its next phase of reporting and beyond.

Thank you, as always, for your commitment to the Society and to improving the lives of people living with pain. I look forward to seeing many of you in the months ahead at the ASM and AGM.

With very best wishes,

roger.knaggs@nottingham.ac.uk

A new era for the BPS: office update

Pain News
2026, Vol 24(1) 4–5

Sage

The British Pain Society (BPS) has had a varied and interesting journey when it comes to our physical home, reflecting the needs of the society at each stage of its development.

For many years, the BPS was located within the now Association of Anaesthetists (formerly the AAGBI), a period that coincided with significant growth in our multidisciplinary community. In 2007, we moved to the Royal College of Anaesthetists (RCoA), where we benefitted from close proximity to important partners and provided a hub for members to attend meetings, committees and events. Many members have shared fond memories of visiting our office over the years, attending meetings, committees or just dropping by for a chat over coffee. These moments reflect the vibrant community and connections that have always been at the heart of the society.

As our ways of working began to shift, we downsized within the RCoA in 2023. This reflected broader changes across the sector: outsourcing the Secretariat to Kenes Associations Management, greater digital working and more virtual collaboration. During this time, the BPS team adopted a remote working approach.

The RCoA's recent decision to sell its building has required all tenant organisations, including the BPS, to relocate. We are very grateful to the staff at the RCoA for their support over the years, and for helping make our time there productive and enjoyable. This moment gave us the opportunity to reflect on our history and consider how best to organise the society to meet members' needs.

We have therefore transitioned fully to a virtual office, with the BPS's historical items carefully preserved in storage. Much has changed since the days when a physical headquarters defined an organisation. Our virtual setup reflects the way we already work – flexibly, collaboratively and focused on delivering value wherever our members and stakeholders are.

The BPS has adapted successfully through each chapter of its history, and this latest change positions us to meet the future with clarity, connection and confidence.

We remain very much available, active and accessible. As always, you can contact us at info@britishpainsociety.org. If you would like any further information about the transition, please do get in touch.

Jo Brown

Annual scientific meeting

The 59th Annual Scientific Meeting of the British Pain Society will be held from 21 to 23 April 2026 at the Harrogate Convention Centre.

The programme will highlight the multidisciplinary nature of pain management with keynote lectures, topical debates, workshops and interactive sessions designed to stimulate both scientific and clinical discussion. Delegates will also have opportunities to engage with leading researchers, experienced clinicians and industry partners through dedicated networking events.

More details are available via the BPS website.

Looking ahead – EFIC Congress 2027

The theme of #EFIC2027 highlights communication as the essential bridge between science, practice and society. Despite advances in pain research and treatment, translating knowledge into clinical application remains a challenge. The congress will foster meaningful dialogue across disciplines – connecting researchers, clinicians, healthcare providers, patients, policymakers and society at large.

Erratum

The December 2025 edition of Pain News omitted to publish the names of some authors alongside the title of their articles. We would like to record the authorship of:

'Pain Medicine in New Zealand' by Dr Jan Rudiger.

'The Ferret Walker', 'All Drug Addicts Lie' and '2020 What GPs got up to during COVID' by Dr Steve Johnson.

We are grateful for these contributions.

Editor

Honorary memberships

THE BRITISH PAIN SOCIETY
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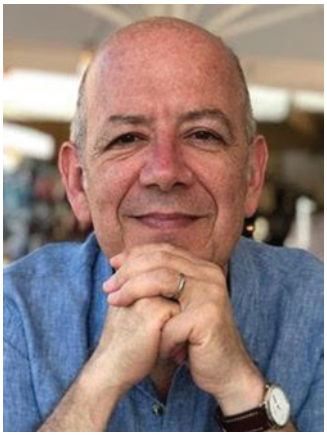
Pain News
2026, Vol 24(1) 6–8

Sage

The British Pain Society has been delighted to recognise the outstanding contributions of members by awarding two Honorary Memberships to Dr Patrick Hill and Sam Ahmedzai.

Citation for Dr Patrick Hill



If you ask around the pain community – across clinics, classrooms, committees and conference halls – you're unlikely to find anyone who hasn't been influenced, directly or indirectly, by Patrick Hill. Quietly pioneering, consistently generous with his knowledge, and unwaveringly focused on the lived experience of people in pain, Patrick has spent decades shaping both the practice and philosophy of modern pain care in the United Kingdom.

His journey began in Gloucestershire, where, as a newly qualified clinical psychologist, Patrick faced a challenge few others would have accepted: offering psychologically based treatment to a cohort of patients facing long waits for orthopaedic surgery. Drawing inspiration from 'The Heart Manual' in cardiac rehab, he developed a new group intervention, built a collaborative MDT around it and planted the seed for what would become established as a highly respected pain service at Gloucestershire Royal Hospital. It was also the launchpad for a remarkable, pioneering career.

Patrick quickly became a leading figure in the emergence of Pain Management Programmes (PMPs) as mainstream treatments in UK pain services. A founding member of the British Pain Society's PMP Special Interest Group, he helped shape the clinical and conceptual foundation of PMPs, tirelessly sharing his knowledge through teaching, supervision and workshops. His role was instrumental in securing PMPs' place in the modern multidisciplinary model of pain care.

His impact has always extended beyond individual services. In Bath, he developed the Patient Care Development Programme – a visionary, patient-centred organisational strategy involving patients, carers and clinicians in co-producing services. It was commended by the Commission for Health Improvement and led to his appointment in 2001 to the NHS Modernisation Agency, where he served as Associate Director of both the Public and Patient Involvement Programme and the Patient Experience Team. Patrick was also a key figure in the Expert Patients Programme (EPP), working at a national level to support people with long-term conditions to manage their health and deliver peer-led interventions. In 2006, he became Programme Director and steered the EPP's transformation into a Community Interest Company – the first CIC of its kind in the United Kingdom – helping embed self-management into mainstream NHS practice. Patrick continued to apply his skills in leadership, innovation and direct clinical care across the country. His work has spanned Gloucester, Bath, Somerset, Bristol, Oxford, Plymouth and four NHS Trusts in the Birmingham area, as well as national contributions through remote supervision and consultancy. His career has connected him with a remarkably wide range of MDTs, with former colleagues often saying they still solve problems by asking themselves: WWPD – What would Patrick do?

Patrick's calm, thoughtful presence and clarity of communication are universally valued. He has become known across services as someone who not only brings a psychological perspective but makes it accessible and actionable – often translating complexity into shared understanding and, crucially, shared solutions. From 2008 to 2015, Patrick worked in Birmingham as Professional Lead for Clinical Health Psychology Services and advised on long-term condition commissioning. He contributed to the Co-Creating Health programme led by the Health Foundation, working at both strategic and clinical levels to embed genuine patient-professional collaboration into chronic pain services.

His commitment to education is long-standing. For over three decades, he has taught, supervised and presented extensively –

including as part of the Pain Society's Annual Scientific Meetings, PMP SIG conferences and the development of the BPS Learning Management System. His contributions have ranged from landmark presentations on patient involvement and chronic disease management to training junior doctors, clinical psychologists and regional burns specialists. Most recently, at Southmead Hospital in Bristol, he has developed innovative clinical protocols for acute pain in burns care – including the use of virtual reality technology during wound care procedures, now progressing to research evaluation.

In 2019, Patrick joined the British Pain Society Council, continuing to serve with characteristic humility and generosity. He manages to stay rooted in his discipline while acting as a unifying force across professions. He is widely recognised as an imaginative thinker, a calm problem-solver and a thoughtful advocate for psychological insight and patient empowerment.

Above all, Patrick's enduring contribution lies in his unwavering commitment to people living with pain. Whether designing self-management resources, mentoring new clinicians or leading system-level change, he has always placed the voice and experience of the patient at the centre of care. His recent work developing multimedia tools for participant-driven self-management exemplifies this – crafting resources that not only inform but inspire.

Patrick Hill is, quite simply, one of the most respected and quietly influential figures in pain care today: certainly someone I admire enormously. He has changed services, changed minds and changed lives. The British Pain Society is proud to recognise his remarkable contributions with Honorary Membership.

Citation for Sam Ahmedzai

President, Council and members of the British Pain Society, it gives me great pleasure to present this citation for Professor Sam Ahmedzai.

Sam was nominated for Honorary Membership of the British Pain Society by Flic Cox.

On a personal level, as a psychologist, at times, one can feel on the periphery of the medical world, which may be of our own making, but there are some people to whom inclusivity comes so naturally, that working with them is always a fulfilling experience, Sam is one of those people, so I was genuinely pleased to step in and give this citation.

Introduction

Sam is a consultant physician and has been a specialist in palliative medicine since 1985.

He is the most high-profile Palliative Care Academic Physician, whose knowledge, expertise and insights on analgesic medicines and cancer pain management is unparalleled.

From 1994, until retirement in 2015, he was Professor of Palliative Medicine at the University of Sheffield and Honorary Consultant Physician in Palliative Medicine at Sheffield Teaching Hospitals NHS Foundation Trust.

Sam is a Fellow of the Royal College of Physicians of London, the Royal College of Physicians and Surgeons of Glasgow and the Royal College of Physicians of Edinburgh.

Sam has held many influential roles including:

- Lead Clinician for the Royal College of Physicians End of Life Care Audit;
- Chair of the guideline development group for the 2015 NICE guideline on Care of the Dying Adult;
- Clinical Advisor for the 2019 NICE guideline on service delivery for end-of-life care for adults.

From 2015 to 2021, Sam was employed by the National Institute for Health research as National Specialty Lead for Supportive Care and Community-based Cancer Research.

Publishing

Sam has published over 140 papers and more than 25 chapters in edited volumes and numerous reports on pain, cancer, palliative care and quality of life. He is:

- The former editor of the international journal 'Progress in Palliative Care';

Current senior co-editor of 'Current Opinion in Supportive and Palliative Care';

Series editor of the Oxford University Press textbook series on Supportive Care;

A member of the Editorial Board for the British Journal of Pain.

Research

Sam's research involvement reflects his commitment to improving care pathways and patient outcomes, his research interests include:

management of symptoms of cancer;

holistic needs and quality-of-life assessment in cancer treatment;

improving supportive and end-of-life care services for cancer and people with chronic conditions and a strong advocate for patient and public involvement in cancer and holistic needs research.

He has provided symptom palliation expertise in myeloma trials and supervised PhDs looking at the impact of opioids in cancer treatment. He was also involved in the first trial of 'multimodal analgesia' in cancer, starting from the time of diagnosis, in mesothelioma patients.

British Pain Society

Sam has demonstrated a consistent and long-term commitment to the British Pain Society, members of the society and particularly to people with lived experience.

In addition to serving as an elected Council Member of the British Pain Society, he has also chaired the Education Committee, been a member of the Communications Committee, the media team and was a serving member of the Scientific Programme Committee for the 2025 and several previous ASMs.

Sam is a member of Expert Patient and Carer Committee (EPCC, formerly TPVC) and one of the projects we worked on together was the EPCC national patient survey.

Sam has made a consistent and unwavering contribution to the British Pain Society and specialist supportive and palliative care societies, being the link between these two specialties.

He is an expert resource, who is always happy to advise, support and collaborate with BPS members, external societies, professional organisations and Royal Colleges. He has been instrumental in raising the profile of pain associated with cancer and cancer treatment, both through leading on BPS specialist guidance, developing press releases, and delivering highly specialist education.

Awards

Sam's experience, insight and knowledge are recognised not only by the British Pain Society, but in 2016 he was awarded Honorary Faculty of Medicine Fellowship and the British Thoracic Oncology Group lifetime achievement award.

Personal

I have known Sam since 2019, when I joined the BPS Council, but realised, because of COVID, that we had not properly met face to face, until the ASM in Nottingham in the summer of 2024. We had met remotely on numerous occasions to undertake BPS committee work, sometimes with a Zoom link between rural Gloucestershire and Bergen in Norway.

Attending conferences in the last year or so has been an odd experience, in that there has been first real contact with many people only previously met on video – I have learned to repress the impulse to say 'Oh you're shorter/taller than I thought' – but it is a strange experience sometimes.

It is a testament to Sam's warmth, humanity and communication skills that it wasn't strange at all when we met last year in Nottingham, we talked over coffee as if we had seen each other the day before.

I feel very honoured to be giving this citation and that the Council of the British Pain Society is awarding you with honorary membership, congratulations Sam, it is well deserved.

Review

Review of the headache SIG meeting November 2025

Pain News
2026, Vol 24(1) 9–10

On the day when Storm Claudia was battering the UK, spreading migraine like symptoms across the transport networks, delegates gathered at the headquarters of the Royal College of Anaesthetists to get an update on all things 'headache'. Organised by the BPS Special Interest Group (SiG), the day covered a range of different topics.

The meeting was organised and introduced by SiG chair Dr Anna Andreou. To begin with, her predecessor as chair, Prof Vivek Mehta, gave a presentation on Clinical Diagnosis with an emphasis on History, History and History! The three historical accounts that clinicians should aim to understand are the patient's demographics, symptoms and past treatments.

This was followed up by the presentation of Dr Modar Kahlil, who had travelled from Manchester to describe when and what to investigate once the history and examination have been carried out. Particular attention was given to the red flag signs and symptoms that warrant urgent further follow-up. Dr Kahlil advocated that imaging isn't necessary for every case and could be counterproductive. So the key is to be attentive and discerning about each patient. Dr Giorgio Lambru presented real-world data on calcitonin gene-related peptide (CGRP) pathways for the treatment of migraine. He also discussed neuromodulation and compared GEPANTS (CGRP receptor antagonists) with CGRP monoclonal antibodies.

After lunch, Dr Andreou took to the podium to discuss issues such as combining treatments to increase efficacy, new treatments on the horizon like monoclonal antibodies against PACAP38 and the potential benefits of bitox (a development of botox). Prof Joanna Zakrzewska gave an overview of facial pain diagnostic factors and characterisation including a look at trigeminal autonomic cephalalgias (TACs). Delegates then moved upstairs for a useful hands-on session to practice some of the techniques described in the lectures.

The day was filled with high-quality teaching that demonstrated some of the benefits of the BPS SiGs. As a delegate whose day-to-day work is not directly involved with headaches, but often overlaps, I found it very helpful. I was able to take away things that I can readily now apply in practice.

Charles Crawford

Review of the headache SIG meeting November 2025

Q and A with Deepak Ravindran

Pain News
2026, Vol 24(1) 11–12

Deepak Ravindran is Deputy Editor of *Pain News*

What is your professional background, and how did you become involved in pain management?

I am a Consultant in Pain Medicine based in the United Kingdom, currently serving as a Pain and Lifestyle Medicine Consultant at Pembroke GP surgery in Berkshire, Locum Consultant at the Hampshire and IOW Trust and Founder/Director of Berkshire Pain Clinic. I started out having completed my training in Anaesthesia, but it was early exposure to patients living with persistent pain that reshaped my professional direction. I completed my SHO training in Yorkshire, registrar training at Oxford and my Pain fellowship at UCL, London. During my fellowship and my first few years as a consultant in Anaesthesia and Pain at the Royal Berkshire in Reading, I became increasingly aware of how many individuals were cycling through investigations, procedures and medications, yet remaining in pain – physically, psychologically and socially.

Pain medicine appealed to me precisely because it sits at the intersection of neuroscience, psychology, rehabilitation and lived experience. Over time, my practice has evolved beyond a purely biomedical lens to embrace a biopsychosocial and trauma-informed approach. Over the last 16 years as a consultant, I have been clinical lead for 8 years and set up the community pain service for Berkshire (IPASS) in 2015 and the Berkshire Longcovid Integrated Service (BLIS) in 2020.

Alongside clinical work and service development, I have been very keen about pain science education and public engagement. I hold research/teaching responsibilities through my roles as Honorary Professor at Teesside University and Senior Visiting Fellow at the University of Reading. I have developed educational resources for both clinicians and the public including the authorship of my book, *The Pain-Free Mindset* and creating open-access digital content as a clinician content creator on YouTube.

What areas of pain research, treatment or policy are you most passionate about?

I am particularly passionate about modern neuroscience-informed models of pain and how these can be translated ethically and pragmatically into real-world care. Embodied predictive processing, central sensitisation and neuroimmune/endocrine interactions offer powerful frameworks for understanding why pain persists, even when tissue healing has occurred – but only if we communicate these ideas clearly and compassionately to patients.

Clinically, I am very interested in trauma-informed care, lifestyle medicine and multidisciplinary rehabilitation/coaching. Too often, pain management becomes siloed: procedures here, psychology there, exercise somewhere else. My focus has been on integration and connecting dots – helping patients understand how sleep, stress, metabolic health, movement, meaning and safety all interact with pain systems.

From a policy and research perspective, I am passionate about equity, access and sustainability. Chronic pain is one of the leading causes of disability in the United Kingdom, yet services remain under-resourced and fragmented. I am particularly interested in scalable models such as group consultations, community-embedded services and digitally supported education, incorporating the patient voice and collaboration, that align with National Health Service (NHS) long-term priorities and neighbourhood health strategies.

Q and A with Deepak Ravindran

What are you most excited about for the future of *Pain News*?

My involvement with the *British Pain Society* has been constant throughout my training and consultant journey. I took up the role on the council in mid-2025. Taking on the role of Deputy Editor of *Pain News* feels like an extension of that commitment – supporting thoughtful dialogue, critical reflection and shared learning across our diverse pain community.

What excites me most about the future of *Pain News* is its potential to act as a true bridge – between disciplines, between evidence and practice and between clinicians and the people living with pain.

Pain News occupies a unique space. It is not constrained by the formalities of academic publishing, nor is it driven by headlines or soundbites. This gives us an opportunity to explore nuance: to discuss emerging science alongside uncertainty, to showcase service innovation alongside honest reflections on what hasn't worked and to elevate voices that are not always heard in traditional journals.

As Deputy Editor, I am keen to see more engagement with policy, public discourse and the wider health system, helping members stay connected to the broader forces shaping pain care in the United Kingdom.

What's one thing you wish more people understood about pain management?

If there is one thing I wish more people – clinicians, policymakers and the public alike – understood, it is that pain is not a reliable indicator of tissue damage, nor is it a simple measure of pathology. Pain is a lived, protective emergent experience shaped by biology, context, memory, expectation and meaning.

This misunderstanding has real consequences. Patients often feel dismissed when scans are 'normal', while clinicians can feel frustrated when treatments aimed solely at tissues fail. Recognising pain as an emergent output of the nervous system's interaction with the environment does not make it 'psychological' or 'imaginary'; it offers a very different lens to embracing newer solutions.

Effective pain management therefore cannot be reduced to a single intervention. It requires education, trust, time and a collaborative therapeutic relationship. It also requires shifting conversations away from 'fixing' pain towards building safety, function and confidence.

Perhaps most importantly, I wish more people understood that recovery is possible, even after years of pain. When we communicate this honestly and compassionately, we empower patients rather than inadvertently disempowering them. Newer approaches including coaching, neuroscience-based models that enable neuroplasticity offer genuine hope for recovery, which need to be studied and scaled rather than be dismissed as anomalies.

Is there a book, article or piece of research that has had a significant impact on your work in this field?

Rather than a single paper, my work has been shaped by a convergence of ideas from multiple other health fields and even industries. The modern neuroscience of pain – particularly work on central sensitisation, epigenetics, immunoendocrine and predictive processing – has profoundly influenced how I conceptualise persistent pain and explain it to patients.

If I had picked a book that has been a game changer and catalyst in my thought process, then that would be Bessel Van Der Kolk's *The Body Keeps the Score*. An idea/framework of equal impact has been the *Cynefin* approach for understanding complexity and sense-making.

Equally impactful have been patient stories – both in the clinic and from lived experience advocates. Listening to how people make sense of their pain, what helps them feel safe and what undermines their confidence has taught me as much as any journal article. These narratives continually remind us that we need to find the way to ensure evidence-based medicine is still person-centred.

Outside of your professional role, what are some of your hobbies or interests?

Outside of work, I try my best to spend time with family and friends. I am a keen runner and love watching Bollywood/Tollywood and Hollywood fare and spending time getting better at badminton and padel.

Article

A scoping review of the facilitators and barriers to café initiatives

Pain News
2026, Vol 24(1) 13–17

W Hinton *Trainee Clinical Psychologist, Cambridge and Peterborough Foundation Trust*
w.hinton@uea.ac.uk

J March *Research Psychologist*

K Richardson *Principal Clinical Psychologist, Cambridge University Hospital*

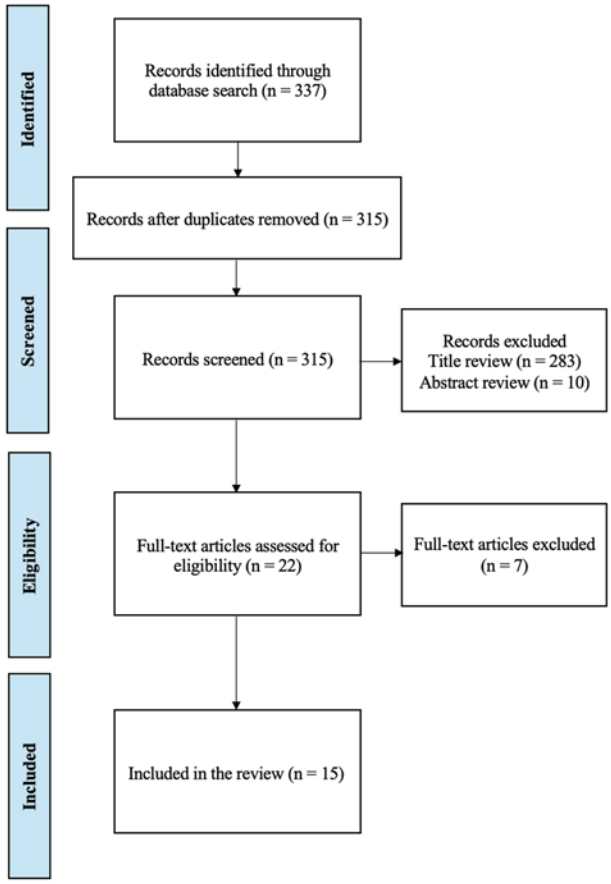
E Harrold *Consultant Clinical Psychologist, Cambridge University Hospital*

There is an increasing call for innovative services for people with chronic pain.[1] Emerging evidence highlights the limitations of pharmacological (such as opioids and non-opioid medications) and interventional approaches (including percutaneous interventions and implantable devices) citing poor efficacy, adverse events and inconsistent findings.[2,3] In light of these limitations, the National Institute for Health and Care Excellence[4] recommends a biopsychosocial approach to pain management. Aligning with this, the NHS Long Term Plan[5] commits to embedding biopsychosocial models of care, such as social prescribing, into routine care.

Social prescribing involves the use of non-clinical approaches to promote well-being, typically funded by local authorities or integrated care boards.[6] While most studies indicate that social prescribing has a positive effect, the evidence base remains limited by small-scale, poorly designed studies.[7] A systematic review on facilitators and barriers to social prescribing services highlighted notable conclusions. While developing a shared understanding between professionals, achieved through public campaigns or Trust newsletters, is important for social prescribing, limited resources, temporary contracts and high staff turnover can often hinder success.[8] Such facilitators and barriers have broad implications for implementation, governance, organisational design, human resources, and local infrastructure. Consequently, further research is needed into the factors driving or inhibiting the success of social prescribing initiatives, alongside a more coordinated approach to their planning, implementing and evaluating.[7]

Café initiatives are gatherings where education and support is given in a friendly café like environment, an approach which began in the Netherlands in 1997, with the introduction of dementia cafés.[9] Since then, Memory Cafés are now

Figure 1. Selection flow diagram



Note: All (seven) full-text articles were excluded due to the full text being unavailable.

Table 1. Number of articles by characteristic.

Characteristic	N
Publication date	
2020	3
2021	6
2022	4
2023	2
Café type	
Dementia	11
Death	3
Baby	1
Population	
Attendees	8
Organisers	5
Carers	2
Countries	
Japan	5
United States	3
Italy	2
England	2
Wales	1
Ireland	1
Australia	1
Design	
Interview	7
Case study	3
Survey	3
Pre-post	2

commonly included in social prescribing schemes in dementia services.[10] This model has inspired range of similar initiatives such as Health Cafés,[11] World Cafés,[12] Baby Cafés,[13] Crisis Cafés[14] and Pain Cafés.[15]

Pain cafés were first establish in Cornwall in 2019 and have since expanded to 22 locations, employing baristas trained in chronic pain management.[15] Early findings indicate Pain Cafés have contributed to reduced opioid prescription and GP appointments, and increasing knowledge and confidence in self-managing pain.[15] Although the evidence base is still growing, emerging findings from Pain Cafés and other café initiatives may provide valuable insights to inform future service design. Accordingly, this scoping review explores facilitators and barriers across a range of café initiatives with the aim of informing the development of a Pain Café framework by drawing on lessons from related approaches.

Methods

Search strategy

Systematic searches of PubMed and PsycINFO were conducted to identify relevant articles for the review. The final search terms were based on café initiatives for patient populations and included the following terms: 'café' AND ('death' OR 'baby' OR 'dementia' OR 'Alzheimer's' OR 'memory' OR 'pain') NOT 'café-au-lait'. The term 'café-au-lait' was excluded search this is a medical term unrelated to the focus of this review.

Eligibility criteria

The scoping review included articles published since 2020 that reported on barriers and facilitators to café initiatives. This timeframe was chosen to obtain the most recent information, recognising that the COVID-19 pandemic may have influenced the operation of cafés. Articles focusing solely on health professionals were excluded. However, articles that included professionals, organisers and carers were included if the café intervention targeted patients, as the non-patient population have valuable insight into facilitators, barriers and co-designing cafés. The review excluded World Café studies as this represents a specific dialogue method rather than a café-based initiative. Only full-text articles accessible to the authors were included.

Data collection

The lead author (W.H.) extracted data from included studies for analysis. Methodological quality was not assessed, as this scoping review aimed to provide a broad overview of existing literature to inform future research and practice.

Data analysis

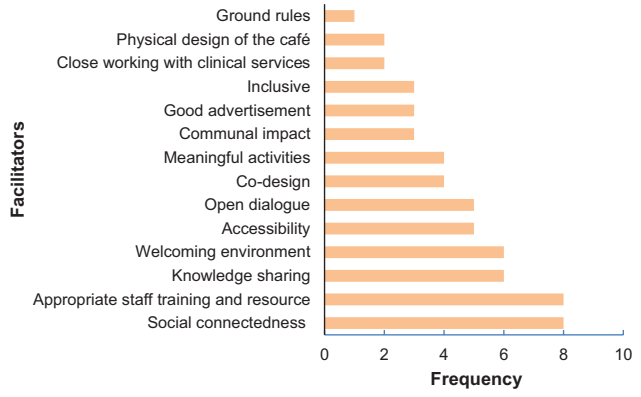
Content analysis was used to examine the data, allowing the identification of qualitative categories and the quantification of their frequency. A summative content analysis was used to count key word frequencies, followed by the interpretation of their meaning.[16] Qualitative and quantitative data were synthesised using data-based convergent synthesis, with both types analysed using the same summative content analysis approach.[17]

Results

Facilitators

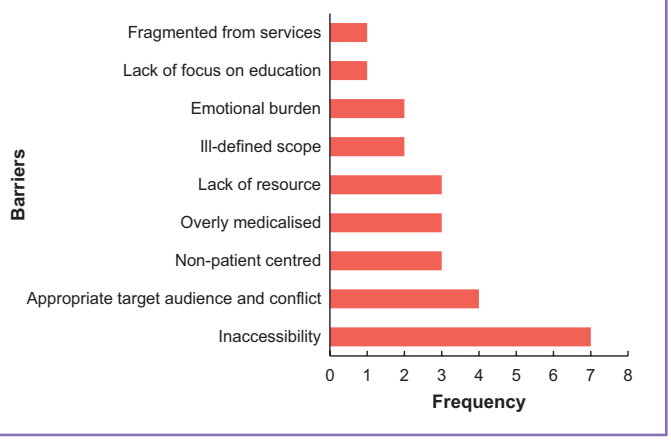
Café initiatives are supported by meaningful social connections, an emotionally safe and welcoming environments (sometimes involving humour) and an emphasis on open dialogue rather

Figure 2. Facilitators of café initiatives



Note: The number of studies for each barrier may not sum to the total frequency as a code may appear more than once in each study. Social connectedness.[18–25] Appropriate staff training and resource.[22,26–29] Knowledge sharing.[19,23–25,30] Welcoming environment.[21–23,30,31] Accessibility.[20,22–24,29] Open dialogue.[19,30–32] Co-design.[21,23,25,26] Meaningful activities.[21,24–26] Communal impact.[23,32] Good advertisement.[20,22,28] Inclusive.[21,23,24] Close working with clinical services.[28] Physical design of the café.[23,25] Ground rules.[20]

Figure 3. Barriers of café initiatives



Note: The number of studies for each barrier may not sum to the total frequency as a code may appear more than once in each study. Inaccessibility.[19,23–26,28] Appropriate target audience and conflict.[20,30,32] Not-patient centred.[22,23] Overly medicalised.[22,23,25] Lack of resource.[24,29] Ill-defined scope.[22,30] Emotional burden.[27,30] Lack of focus on education.[18] Fragmented from services.

than a seminar-style approach. Facilitating factors also include practical elements such as staff training, pay and retention, participant involvement, physical design and accessibility, which encompasses both physical aspects (e.g. location and transport) and structural aspects (e.g. inclusivity for a diverse range of people and needs).

Barriers

A key barrier was inaccessibility, which included both physical (e.g. poor transport links, rural location) and structural barriers (e.g. services not meeting diverse and potentially severe needs, stigma). In parallel with the identified facilitators, additional practical barriers included limited resources and fragmented implementation. Despite the emphasis on open dialogue and inclusiveness as facilitators, common barriers also included a lack of structured education and an unclear target audience. Other challenges included the emotional burden on staff and participants, interpersonal conflicts and an ill-defined scope.

Discussion

This scoping review highlights a range of facilitators and barriers that influence the development and sustainability of café-based initiatives. The most common facilitator was the provision of spaces that foster social connectedness, alongside appropriate staff training and resources. As expected, initiatives built on psychosocial principles thrives on human connection. Notably, staff training and resources were mentioned as frequently as social connectedness, indicating that café organisers are crucial in creating an environment that promotes well-being. This aligns with findings from the Department of Health's evaluation of integrated care pilot trials, which emphasised that adequate staff training and stability for employees is a key facilitator to healthcare initiatives.[33]

The most common barrier was inaccessibility, which is particularly concerning given that the aim of café initiatives is to increase access for traditionally underserved groups. Inaccessibility can be broadly categorised into practical (e.g. poor transport links, limited disability access), structural (e.g. lack of support for people with severe or complex needs), and social (e.g. stigma or unrepresentative café name). A poorly defined scope and unclear target audience also present challenges. For example, an organiser of a death café reported difficulty meeting the needs of one attendee wishing to discuss bereavement while another wanted to explore death philosophically in the same session.[32] In addition, café names may be stigmatising, for example, a dementia café chose

'Forget-Me-Not' over 'Memory Cafés', due to negative associations for people with memory loss.[22] The NHS Long Term Plan[4] highlights the necessity of integrated care systems that connect primary and specialist services. These services can collaborative with community initiatives, such as café initiatives, to improve the quality of patient services and prevent fragmentation, which is identified as a barrier.

Some facilitators and barriers reflect opposite ends of the same issue. For example, while accessibility can support engagement, inaccessibility can limit it. Others are more nuanced, for instance, knowledge sharing can enhance, while a lack of educational focus may hinder it. This suggests that, although informal knowledge sharing (e.g. techniques people use to self-manage their condition) may be useful, incorporating a structured educational component (e.g. clinical service information or psychoeducation) may further strengthen café initiatives. It would be important for a Pain Café to consider how knowledge sharing is facilitated, as this has implications for whether the initiative is delivered as an informal meeting, an educational group or a hybrid model.

However, some of the findings appear contradictory. For example, inclusivity is described as a facilitator, but an inappropriate target audience is seen as a barrier. This suggests that while café initiatives should aim to be inclusive, theory requires clarity about their target audience to ensure the space feels relevant and supportive. The literature reflects this complexity. While café initiatives aim to provide accessible, cost-effective support to broad populations,[34] evidence suggests that psychosocial interventions are more effective when targeted to homogeneous groups, such as those at high risk of chronic pain.[35] Addressing this issue may require careful consideration of the initiative's scope, including the type of café and its target population.

A potential solution to the above contradictions may lie in facilitators, such as co-design. Involving service users in shaping café initiatives, through interviews or surveys, can help identify preferences around design and accessibility.[36] However, underserved groups may experience unique facilitators and barriers to patient and public involvement,[37] so it is important that café initiatives consider how inclusive co-design is in practice.

Limitations

This scoping review did not assess the quality of included articles, such as risk of bias. While this is standard for scoping reviews,[38] it limits the strength of the conclusions that can be drawn. Similarly, there were more than twice as many codes for facilitators than barriers, suggesting a positivity bias. This is particularly concerning, as most studies are qualitative and may carry a greater risk of bias.[39] Although it is understandable authors aim to promote café initiatives, this pattern may reflect publication biases and a file drawer effect.[40] Finally, because scoping review uses a summative content analysis approach, it was not possible to determine facilitators and barrier specific to café types. For example, lack of an educational element may be a more important barrier for baby cafés than pain cafés.

Takeaway messages

- Café initiatives thrive on social connection, well-trained staff and sufficient resources.
- Inaccessibility is a major barrier, including physical (e.g. transport) and structural (e.g. stigma, scope) aspects/.
- Facilitators and barriers can be complementary or conflicting, for example, accessibility is essential but a broad or vague target audience can reduce effectiveness.
- A clearly defined, inclusive scope shaped by patient and public input can reduce stigma and improve reach.
- Future research should explore apparent contradictions in the evidence, differentiate between café types and challenge positivity bias in the literature.

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Article

A personal reflection on leaving the NHS and relocating to New Zealand in 2022 part 2

Jan Rudiger *Rotorua Hospital*

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Starting work in New Zealand, Rotorua Hospital

I officially commenced my new consultant anaesthesia role in Rotorua in November 2022. As part of my relocation package, Rotorua Hospital provided a fleet vehicle for our use during the first 4 weeks, and we stayed in a hospital-arranged accommodation over that period. After our extended road trip around New Zealand in October 2022, we experienced a somewhat challenging start adjusting to daily life in Rotorua. The economic impact of the COVID-19 pandemic was evident in certain areas, and we were struck by the relatively poor living conditions affecting parts of the local community.

Practical aspects of everyday life also required some adjustments. Food prices were noticeably higher than they were in the UK, with inconsistent quality. Housing standards, in particular, were disappointing: many homes lacked insulation, suffered structural issues, had no double glazing and were typically without central heating. Social norms differed too; most cafés closed by 3–3.30 pm and many restaurants and venues would shut by 8–10 pm. International postage, especially to and from Europe, was expensive and slow, often taking 3–4 weeks for delivery. Certain consumer goods were not available locally, with Amazon servicing New Zealand only via Australia, making imported or specialist items more costly and less accessible. That said, we quickly accepted that some compromises would be needed and adapted by purchasing locally available alternatives or being patient with longer delivery times.

Tragically, only 2 weeks into my new role, I received a midnight phone call from my brother informing me that our mother had collapsed at home in Germany. I remained on the phone throughout the emergency response, including a prolonged attempt at cardiopulmonary resuscitation, until she was pronounced dead at the age of 79. A coroner's investigation later confirmed the cause of death as a massive pulmonary embolism secondary to a deep vein thrombosis. I immediately took compassionate leave and arranged to travel to Germany to attend her funeral in December 2022, just prior to Christmas.

In practical terms, we managed to resolve some essential logistics before my trip to Germany: we purchased a reliable, nearly-new Honda CR-V imported from Japan and secured a rental property in good condition after viewing around ten properties, a challenging task given the general housing quality in the area. This occurred just one day before our temporary hospital-provided accommodation expired. Meanwhile, the household goods we had shipped from the UK arrived after 3 months, shortly before Christmas 2022.

By February 2023, 4 months into my new job, I sat an interview with representatives from the Australian and New Zealand College of Anaesthetists (ANZCA) as part of the process to obtain the Fellowship in Anaesthesia (FANZCA), which involved a subsequent 12-month supervised practice period and a practical assessment in February 2024.

In August 2023, I established my own limited company, *Lakes Pain Care Limited*, to undertake locum anaesthesia work and later, from 2024 onwards, additional pain medicine

services. My wife became a shareholder and took responsibility for assisting with administrative and organisational matters for the business.

At the time of my arrival at Rotorua Hospital, there was no established chronic pain service. Initially, I appreciated the change of pace and enjoyed focusing solely on anaesthesia, having a break from chronic pain medicine for about 18 months of absence. However, I soon realised that I missed this area of clinical practice. In May 2023, 6 months into my new job, I was appointed Acute Pain Lead at Rotorua Hospital, a role that provided a natural opportunity to re-engage with complex perioperative and acute-on-chronic pain management.

It subsequently took 6 months for my UK pain medicine qualifications (FFPMRCA) to be recognised and a further 6 months to formally restructure my job plan to accommodate a 50:50 split between anaesthesia and pain medicine. During this period, I applied for provisional vocational registration in pain medicine and undertook another interview with the Faculty of Pain Medicine of ANZCA in February 2024.

In May 2024, I held my first outpatient pain clinic at Rotorua Hospital, working under distant supervision from an established pain medicine specialist based at Tauranga Hospital, approximately 60 kilometres away from Rotorua. This was followed by a comprehensive 1-day clinical assessment by ANZCA's Faculty of Pain Medicine in May 2025, and in June 2025, I was awarded the Fellowship of the Faculty of Pain Medicine of the Australian and New Zealand College of Anaesthetists (FFPMANZCA).

As a result of my expanded dual-role job plan in anaesthesia and pain medicine, my professional workload increased substantially from May 2024 onwards. I now work an average of 50–60 hours per week across four different healthcare settings: three public hospitals and one semi-private rehabilitation facility specialising in chronic pain and post-accident care.

By early 2023, we found life in New Zealand to be generally easier, more flexible and less stressful than in the UK, offering a considerably better work-life balance. This prompted us to make an early decision to settle in Rotorua on the North Island. Our son quickly adapted to his new school environment, enjoying the emphasis on outdoor activities and benefitting from a less pressured approach to early literacy, which had been a challenge for him in the UK at the ages of four and five.

Settling in New Zealand and building our new home

My excellent income allowed us to save a significant proportion of my monthly salary, up to 50%, which we earmarked towards the purchase of a home. However, house hunting in Rotorua proved challenging. Many existing homes were old, poorly insulated, structurally compromised and still built with single-glazed windows. By contrast, we learned that newly built homes, while slightly more expensive, would comply with updated 2023 building regulations mandating outer-wall insulation and double glazing, and our house would be equipped with a modern ducted heat pump and an optional solar system. On balance, a new house was an investment that promised much better long-term living conditions.

After visiting a show home with *Classic Builders*, a company offering house-and-land packages, we realised that a new-build property would cost only about 20% more than an existing home requiring substantial renovations. The added

value, quality and design flexibility made this a straightforward decision.

In July 2023, we began designing our future four-bedroom house with a double garage, large terrace and total floor area of 186 square metres, situated on a 580-square-metre plot, at a turnkey price of approximately GBP 500,000. It was an exciting and rewarding project, allowing us to be actively involved in the architectural layout, interior fittings, plumbing and electrical plans, appliances, floor finishes, colours and garden landscaping. The process of finalising contracts, architectural drawings and securing council approval took until December 2023.

Construction commenced in January 2024, and I personally visited the building site daily to monitor progress against the approved plans. A few minor issues arose during the build, but these were addressed promptly. The house was completed in July 2024, and we moved into our new home the following month.

At that time, I formally resigned from the NHS in the UK. The favourable work-life balance, excellent salary and attractive career opportunities available within the New Zealand public healthcare system, without the need to work in private practice, reaffirmed our decision to make this our permanent home.

Article

Consensus standards on adult inpatient pain assessment and monitoring: an All Wales quality improvement initiative

C Wilton *Hywel Dda University Health Board*

G Dunn *Cwm Taf Morgannwg University Health Board*

G Roberts *Cardiff and Vale University Health Board*

F Beadle *Digital Health and Care Wales*

S Khot *Cardiff and Vale University Health Board*

Neeraj Saxena *Cwm Taf Morgannwg University Health Board*
drneesax@yahoo.co.uk

THE BRITISH PAIN SOCIETY
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Sage

Introduction

Poorly controlled acute pain, especially post-surgical or post-trauma, is associated with increased morbidity, delayed recovery times, prolonged hospital stays, impairment of function and quality of life and higher overall health-care costs.[1] Inadequately managed acute pain can also lead to chronicity of pain and subsequent suffering.

A crucial first step in optimal pain management is consistent, timely and responsive pain assessment. Pain assessment currently remains self-reported, at least in conscious and communicative humans. A range of pain-assessment tools, focusing on sensory element of pain, include numerical rating scales (NRS), verbal rating scale (VRS) and visual analogue scale (VAS). These commonly used tools have their own advantages and limitations, making them useful in different settings.[2] Similarly, a range of tools are available and used for pain assessment in cognitively impaired people, who are unable to verbally report their pain experience. While pain remains one of the commonest presenting symptoms, both its assessment and documentation remain poor throughout the hospitals in Wales (*based on local service evaluations, unpublished data*). Inadequate pain assessment and documentation can result in sub-optimal pain management, leading to patient harm.

National and international guidance on pain assessment recommends regular and appropriate pain assessment.[3–6] However, these guidelines do not stipulate the frequency of pain assessment or the tools to be used, leaving those to local discretion. Documenting acute pain scores represent a fundamental quality-assurance facet of inpatient care, both during perioperative period and nonsurgical admissions, guiding further management. This is essential not only to facilitate the best analgesia for patients but also presents opportunities for pain teams to make efficiency savings for staff and potentially mitigate expensive legal cases for hospitals.[7] Frequency of assessment, in relation to analgesia administration, in an emergency setting, has been recommended.[8] Local guidelines by individual trusts have also been developed and are freely available on the Internet,[9] yet no national consensus guidance on these exists.

South Wales Network of Acute Pain teams (SwNAP) was launched in 2013, with a key objective of promoting highest standard of acute pain management through collaboration between pain teams of the health boards of South and West Wales (www.swnap.org.uk), among other national collaborative objectives. Development of digital documentation has been an area of priority for Welsh Government and the Digital Health and Care Wales (DHCW) (previously known as NWIS-NHS

Wales Informatics Service). Welsh nursing care record (WNCR) team recognised the potential of significant benefits through standardising nursing forms and transitioning from paper documentation to a digital alternative. The national nursing team streamlined core documentation and pain-assessment documentation was prioritised for national standardisation across Wales in collaboration with SwNAP.

This provided an opportunity to undertake this All Wales standard setting initiative, to facilitate development of inpatient pain assessment and monitoring standards. The aims of this quality improvement project were,

- To identify the range of pain-assessment tools used for adult inpatient use in Wales and standardise their use.
- To standardise pain-monitoring frequency and documentation in Wales, through development of key audit and performance indicators

Methods

A sub-group of SwNAP representatives (with CW as the group facilitator) was established to review the literature, establish pain-assessment standards/metrics, and produce pain-assessment guidance to facilitate consistency in pain assessment and documentation, among acute hospitals in Wales. The group included expert clinical nurse specialists in pain management (Band 7 and above, who had been practising in their specialist field for >5 years) from each participating health board, and they were invited for the standards development work. An informal modified Delphi methodology was used to reach the consensus standards, where no clear guidance/evidence existed.

An initial email survey was conducted to identify the pain-assessment tools, monitoring frequency and documentation used within the five main acute health boards of South and West Wales. The email was sent out to acute pain nurses, identified through SwNAP membership.

Survey results showed that the assessment tools used within different hospitals ranged from a 4-point NRS, 11-point NRS to a 4-point VRS. For the cognitively impaired group of patients, PAINAD (Pain Assessment in Advanced Dementia scale) and Abbey scale were being used. The monitoring frequency was not always specified within local guidelines. This survey and subsequent standard development work was limited to adult inpatient ward care (thereby excluding Accident & emergency department, Intensive care unit, obstetrics and paediatric wards).

The initial meeting explored the rationale of current practises within different services. The first draft of the guidance was prepared and circulated within the team members. At this stage, the pain teams of North Wales (Betsi Cadwaladr health board) were also invited to join the working group. There was further input from Medical acute pain leads at their respective hospitals. Following feedback from the working group members, a final version – 'All Wales guideline on the assessment and documentation of pain in adults in the acute hospital setting' – was circulated, to be ratified by all the health boards.

These standards were shared with the WNCR team with a view of incorporating within the 'All Wales nursing record'.

Results

Pain-assessment tools

A consensus was achieved about use of a categorical 4-point VRS (no pain, mild pain, moderate pain and severe pain). For practical, transitional considerations, the clinical teams could still use an 11-point NRS, but the digital output would facilitate its conversion to the 4-point VRS.

The benefits of both PAINAD and Adapted Abbey Scale were identified, and therefore, the group agreed to retain both tools.

Monitoring frequency

The group agreed on a minimum baseline assessment and documentation frequency of twice daily (12 hourly), even in the presence of 'no pain'. In the presence of 'mild pain', following appropriate intervention, a 4-hourly assessment was agreed. In the presence of 'moderate pain', a reassessment after 30–60 minutes, following appropriate analgesia, was recommended. Once the pain intensity was reduced to 'mild', then the monitoring frequency would revert to 4-hourly. In the presence of 'severe' pain, following appropriate analgesia, a reassessment after 30 minutes and then after 60 minutes was agreed. As the pain intensity reduced to lower categories, the monitoring frequency would reduce accordingly. As opioids are much more likely to be used in the presence of 'severe' pain, monitoring frequency of 30 and 60 minutes was agreed to accommodate their peak pharmacokinetic effect.

Specific interventional analgesia techniques such as epidural infusion analgesia or local perineural/fascial plane local anaesthetic infusion modes require additional monitoring and were, therefore, not standardised as part of this project.

Key audit and performance indicators

The group agreed that there should be evidence of pain-assessment documentation at the following intervals.

- On admission to ward in 100% of cases, where pain is a presenting complaint
- Ongoing 12-hourly pain-assessment alongside routine NEWS (National early warning score) scoring in 95% of cases
- In patients with mild to moderate pain, a minimum of 4-hourly reassessment in 95% of cases
- In patients with moderate pain, reassessment within 30-60 minutes of analgesia administration in 100% of cases
- In patients with severe pain, reassessment within 30 and 60 minutes of analgesia administration in 100% of cases

Incorporation within WNCR

The All Wales inpatient pain-assessment tools have been incorporated in the WNCR (paper and digital format), including recommendations for reassessment. This assessment currently forms part of the daily risk-assessment records and has been endorsed as the national standard by the Chief Nursing Officer and Executive Nurse directors with the issue of a Welsh Health Circular, a policy mandate issued by Welsh Government[10] to instruct health and care organisations in Wales to comply with a standard.

Discussion and future directions

These standards are the first step towards raising the importance of consistent, timely and responsive pain assessment and providing benchmarking metrics. These standards bring together the range of current practices into a cohesive practical approach and filling in knowledge gaps using a consensus methodology. It is expected that these standards will serve to guide clinical teams to audit their pain-assessment frequency and documentation against.

As the goal of the project was to streamline and align existing local policies, the expert group was limited to representatives from within the different acute hospitals of Wales.

The current guidelines for analgesic administration still adhere to the traditional WHO ladder approach. However, the focus is shifting towards choosing appropriate analgesia and aiming for functional improvement rather than merely reducing pain intensity.[5] It has also been suggested that aggressive monitoring of pain may lead to over-treatment and subsequent complications. Indeed, this risk must be weighed against the significance and advantages of regular monitoring. This can be facilitated through widespread education regarding the appropriate and safe use of analgesics while ensuring that patients receive humane care.

Since the project was started, Best Practice Guidelines on opioids in surgical patients and Consensus statements on perioperative pain management in adults both recommend functional pain assessment,[5,6] along with unidimensional pain assessment. Future updates of these standards should therefore incorporate functional assessment (including appropriate generic and condition-specific tools, monitoring frequency and response analgesia). The digital documentation workstream (WNCR) is also expected to build upon its basic framework to allow regular and procedure-specific pain assessment and seamlessly link with electronic prescribing to provide timely prompts and advisory clinical feedback.

Conclusions

This article describes the work undertaken to standardise pain-assessment tools for adult inpatient use along with setting standards for pain-monitoring frequency and documentation in Wales. The All Wales inpatient pain-assessment tools have been incorporated in the WNCR, including recommendations for reassessment. Key audit and performance indicators will help benchmark future local and national audits in this area.

Key points

- The article describes the development of standards on adult inpatient pain assessment and monitoring, in Wales, by South Wales Network of Acute Pain teams (SwNAP).
- Initial survey identified the range of pain-assessment tools being used within the acute hospitals in Wales. The monitoring frequency was not always specified within local guidelines.
- A sub-group of SwNAP was established to review the literature, explore differences in local practice, establish pain-assessment standards/metrics and produce pain-assessment guidance to facilitate consistency in pain assessment and documentation, among acute hospitals in Wales.

- Using an informal modified Delphi approach, consensus was achieved about the use of a categorical 4-point VRS (no pain, mild pain, moderate pain and severe pain). It was agreed to maintain both PAINAD (Pain Assessment in Advanced Dementia scale) and Abbey Scale for cognitively impaired populations.
- A minimum monitoring and documentation frequency, at 12-hourly (if 'no pain'), 4-hourly (If any pain) and more frequently for higher degrees of pain and in response to analgesia, was agreed. In line with these, key audit and performance indicators were agreed.
- The All Wales inpatient pain-assessment tools have been incorporated in the Welsh nursing care record (WNCR), including recommendations for reassessment. This assessment currently forms part of the daily risk-assessment records.

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Ethics approval

Ethics approval was note required for this work.

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Article

Cervical radiofrequency ablation survey

THE BRITISH PAIN SOCIETY
EXPERTISE WHERE IT MATTERS

Pain News
2026, Vol 24(1) 25–30

Sage

Dr Mohammed Ebeid *ST6 anaesthetics and advanced pain trainee, East and North Yorkshire*

Dr Vinod Sanem *Consultant Anaesthetist and Pain management–Pain clinical Lead, Hull University Teaching Hospitals*
m.ebeid.md@hotmail.com

Background

The practice of medial branch radiofrequency ablation (MBRFA) in the United Kingdom is currently guided by the national NICE guideline for low back pain, which primarily addresses the lumbar spine.[1,2] The approach to lumbar MBRFA is subject to regular updates concerning timing, repeat procedures and outcomes, as monitored by the British Pain Society (BPS) and other relevant professional bodies.[3,4]

Although there is growing evidence supporting the use of cervical facet joint denervation for a range of cervical spine pathologies, including whiplash-associated disorders (WADs),[5–7] UK-specific recommendations remain absent compared with the lumbar spine. Consequently, many centres have adopted the American consensus guidelines published in 2021[8] for cervical MBRFA, while others have implemented institution-specific protocols.

Aim

Collecting data from different pain-management centres across the UK to potentially support the development of national recommendations or a consensus on cervical MBRFA in the future.

Methodology

To achieve this aim, a Google Form was developed incorporating both open-ended and structured questions to capture current practices within each respondent's pain unit, including details of their technique and protocols for repeat procedures.

The form included 23 questions in total as summarised in Figure 1.

The survey was distributed via the national trainee WhatsApp group, the official Faculty of Pain Medicine (FPM) Twitter account and the Google Consultant group, with thanks to Dr. Barani (*Consultant and Clinical Lead in Pain medicine, Leeds Teaching Hospitals*).

Responses were then extracted to a google sheet, from which data analysis was performed.

Figure 1. Survey form

Cervical Medial Branch RFA Survey – Summary

There is currently no national consensus or guideline in the UK for cervical (C3–C7) medial branch radiofrequency ablation (MBRFA). Most centres rely on the 2021 American guidelines, leading to considerable variation in clinical practice across UK pain services. This survey aims to quantify those variations and support future development of UK-wide recommendations or consensus.

Contact: mohammed.ebeid@nhs.net

Survey Content Overview

Participant Information

- Name/Email (to avoid duplication)
- Grade (Trainee, Fellow, Consultant, etc.)
- Hospital/Trust
- Whether they perform cervical RFA

Current Practice Parameters

1. **Diagnostic Blocks**
   - Number of diagnostic MBBs before RFA (1, 2, other, or clinical/radio-based)
2. **Sedation Use**
   - For MBB and RFA (all, selected, none, on request)
3. **Response Threshold**
   - Minimum pain relief percentage to proceed with RFA (>50%, >75%, etc.)
4. **Anticoagulation**
   - Whether stopped or continued for MBB/RFA

Procedure Details

- **Patient Positioning:** Prone, supine, lateral
- **Imaging Modality:** Fluoroscopy, CT, Ultrasound
- **Needle Approach:** Lateral, posterior, oblique, varies
- **Image Views Saved:** AP, lateral, oblique, none
- **Testing:** Sensory, motor, both, none
- **Lesion Parameters:**
  - Temperature (80°C, 90°C, other)
  - Duration (60s, 90s, other)
- **Equipment:**
  - Needle gauge (16G–22G)
  - Active tip length (5mm, 10mm, other)
  - Number of lesions per level (1–3, other)
- **Steroid Use Post-RFA:** Dexamethasone, Triamcinolone, or none

Treatment Frequency

- Bilateral RFA: In same session (yes, selectively, no)
- Repeat RFA: Every 3, 6, or 12 months; or after repeat diagnostic blocks

Further comments

Figure 2.

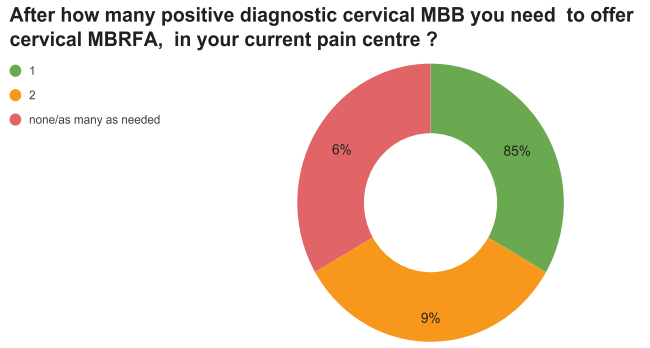


Figure 3.

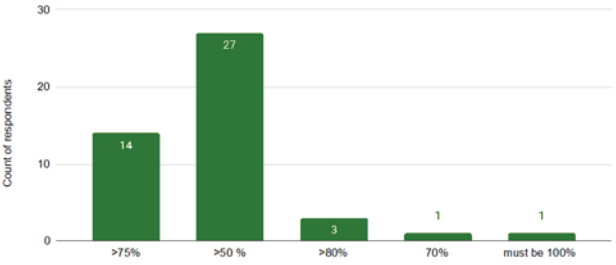
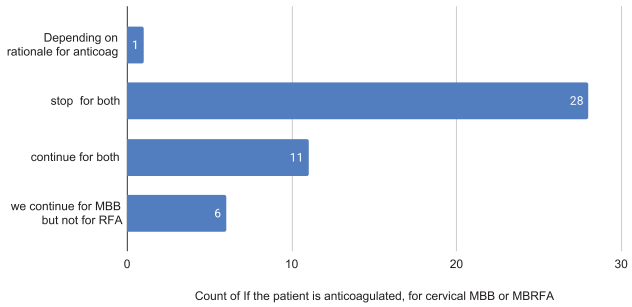


Figure 4.



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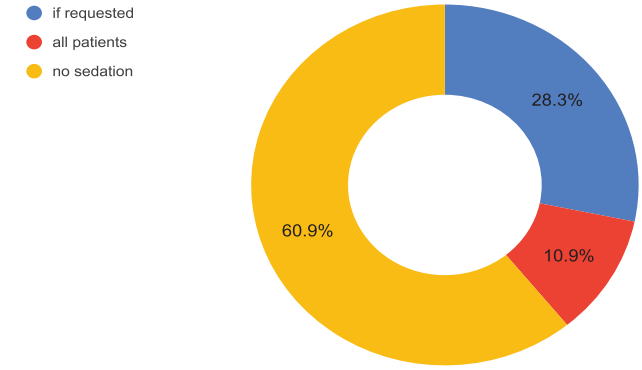


Results

A total of 48 responses were received.

- Two respondents indicated they either do not currently offer cervical MBRFA or have discontinued the service. These were excluded from the analysis, resulting in 46 valid responses.
- **General Findings**
  - The majority of responses were from consultants, with only two from Advanced Pain Trainees (APTs) performing procedures under supervision.
  - Responses were geographically diverse, representing hospitals across England, Scotland, Wales and the private sector, with minimal duplication from the same institution.
  - Eighty-five percent would proceed to MBRFA after a single positive medial branch block (MBB) (Figure 2).
  - A positive diagnostic response was defined by 60% of respondents as >50% pain relief after MBB; while 30% required at least 75% relief to consider an MBB being positive (Figure 3).
  - The majority did not offer sedation for either MBB or RFA (Figure 4) and would withhold anticoagulation for both procedures (Figure 5).
- **Technical Aspects**
  - Forty-six percent of respondents perform the procedure with patients in the lateral position; 20% prefer their patients prone; others allow mixed or even supine positions (Figure 6).
  - Fluoroscopy is universally used, with some incorporating ultrasound as a complementary modality.
  - Posterior oblique needle approach was most common (45%), while others varied their approach guided by patient habitus or used lateral/posterior oblique combinations (Figure 7).

Figure 6.

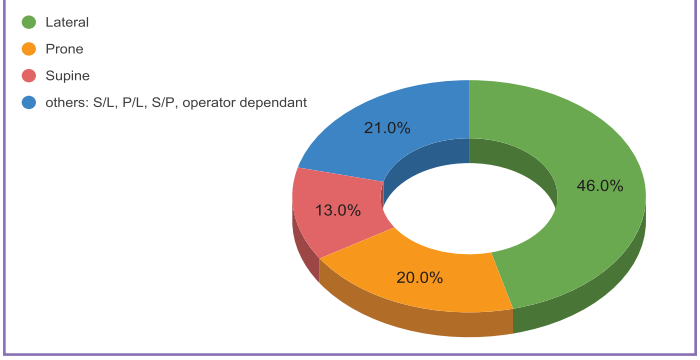
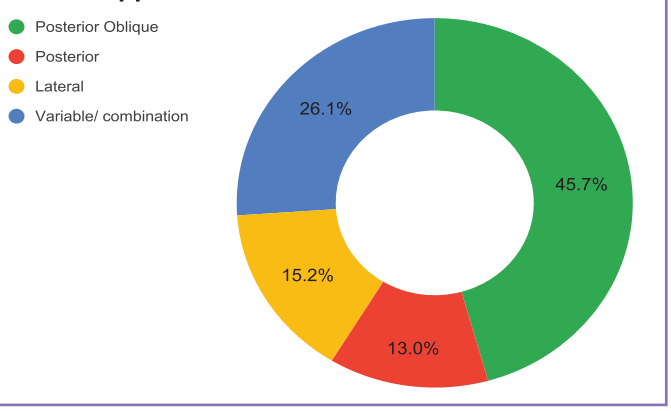


Figure 7.



- Eighty-two percent saved at least two or more fluoroscopic views – typically anteroposterior, lateral and foraminal/oblique (Figure 8).

- **Ablation Technique**
  - More than 86% will perform at least motor testing (50% will do both sensory and motor) (Figure 9).
  - Nearly 90% use 80°C as the target ablation temperature. Forty-seven percent ablate for 90 seconds, and 43% for 60 seconds. However, approximately 50% perform a single lesion, regardless of lesion time (Figure 10).
  - 20G was the most common needle gauge (44%), with 51% again performing only one lesion regardless of gauge (Figure 11).
  - Active tip lengths (5 mm versus 10 mm) were nearly used equally, though many operators (about 50%) still perform a single lesion regardless of tip size.
  - Steroids were injected after the procedure by 54%, most commonly dexamethasone; three respondents reported using triamcinolone.

- Additional Findings:
  - Seventy-six percent do not perform bilateral cervical MBRFA in a single setting (Figure 12).
  - In patients with good outcomes, 70% offer a repeat procedure every 12 months (Figure 13).

Figure 8.

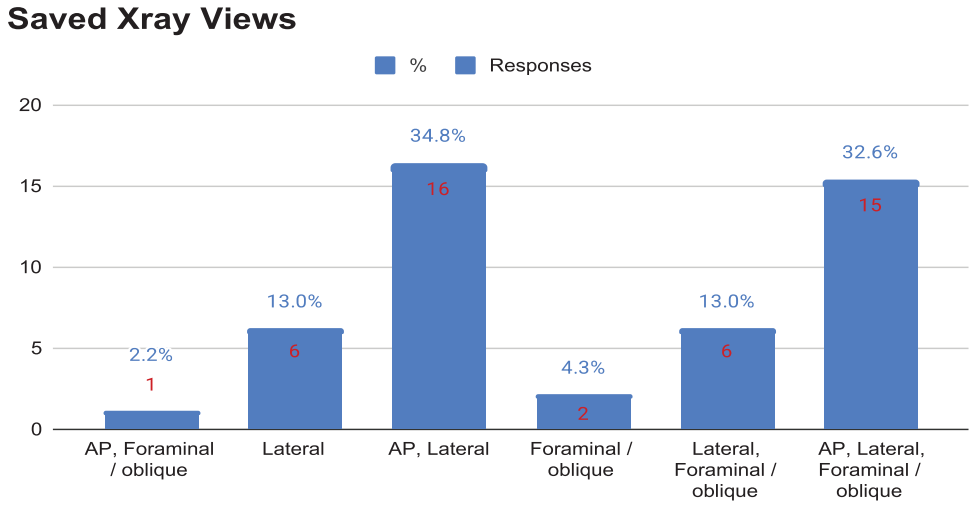


Figure 9.

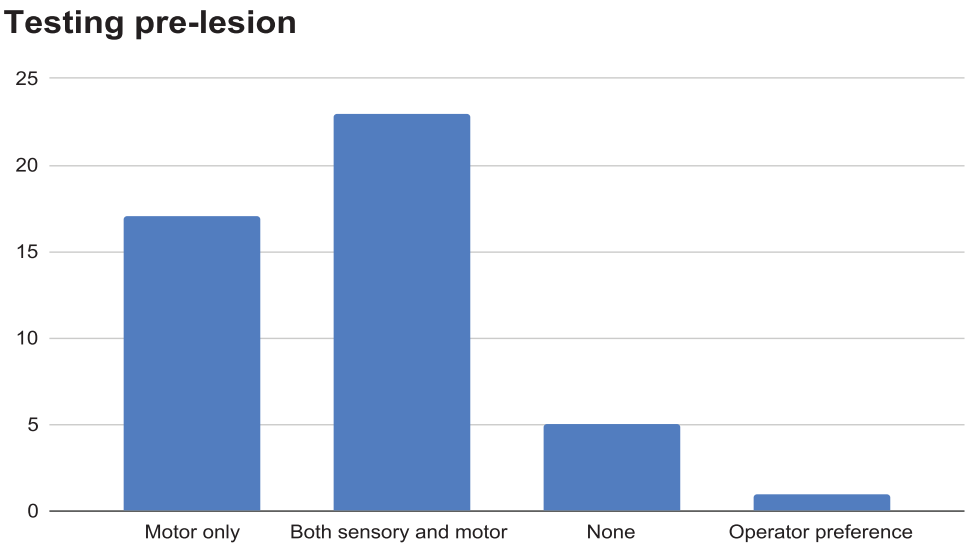
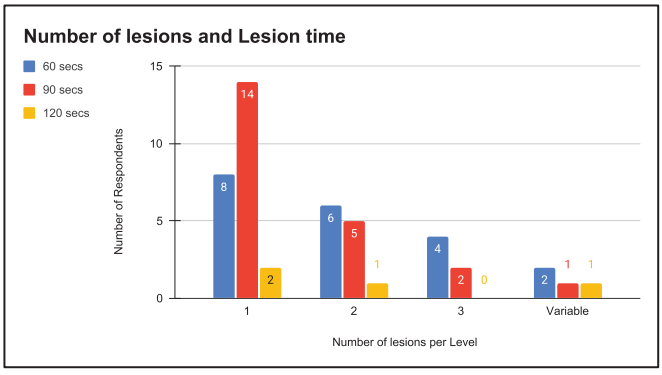
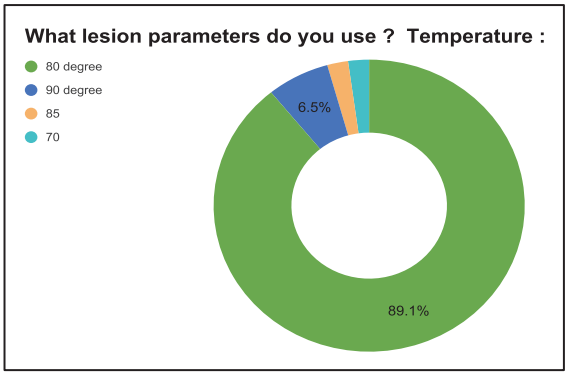


Figure 10.



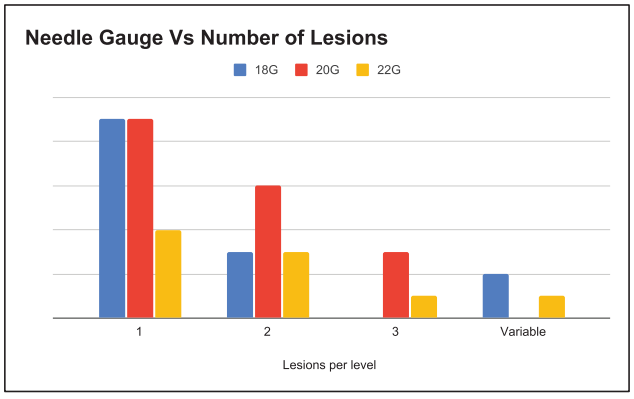


Additional observed variations in practice

Respondents provided comments indicating further variability in clinical approaches, highlighting the absence of a unified national standard. Key points included:

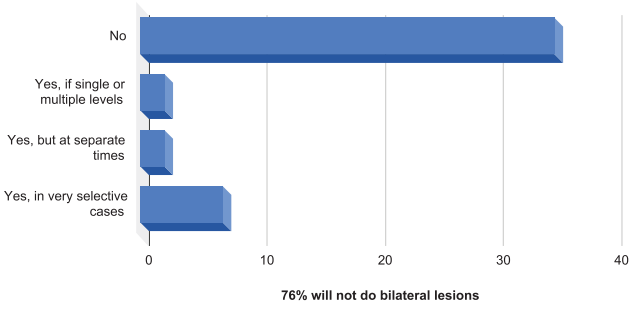
- Number of diagnostic blocks: Some clinicians prefer two positive diagnostic MBBs before proceeding to MBRFA. However, waiting list pressures often influence this decision.
- Imaging techniques: One practitioner has started integrating ultrasound guidance alongside fluoroscopy, particularly for anatomical confirmation and needle placement.
- Needle types: Respondents reported using a range of needles, including sidestick and trident-tip designs, based on operator preference or anatomical challenges.
- One respondent reported using 120 seconds of pulsed radiofrequency (PRF) during the interval in which the local anaesthetic takes effect. This technique was noted to produce analgesic effects anterior to the needle tip, in contrast to the more lateral lesioning pattern typically associated with conventional thermal radiofrequency lesioning (RFL).

Figure 11.



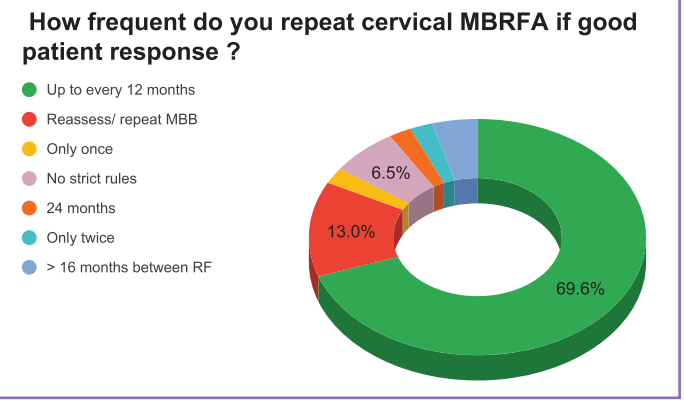
Lesions per level	18G	20G	22G	Number of lesions %
1	9	8	5	**51%**
2	4	6	2	28%
3	0	5	1	14%
Variable	2	0	1	7%
Total responses	15	19	9	
% of needle use (Total 43 responses)	35%	44%	21%	

Figure 12.



- Alternative management approaches: A subset of respondents indicated a preference to continue with MBBs combined with steroid injections in patients achieving good pain relief, avoiding RFA altogether.

Figure 13.



- In select cases, some units proceed directly to MBRFA based on clinical presentation and radiological findings, bypassing diagnostic blocks.
- It was noted the ability to perform bilateral procedures by scheduling one side in the morning and the other in the afternoon session, particularly in resource-limited settings.

Conclusion

- Based on the survey findings, it can be concluded that while not all hospitals currently offer cervical MBRFA, the procedure is commonly provided by interventional pain specialists across the UK following a single positive MBB – typically defined as >50% pain relief.
- The majority of centres advise withholding anticoagulation and do not routinely offer sedation for either MBB or RFA.
- With the patient typically positioned laterally, the procedure is performed under fluoroscopic guidance using a posterolateral needle approach. Regardless of needle gauge or active tip length, most practitioners perform ablation at 80°C, for a single cycle lasting either 60 or 90 seconds, followed by an injection of dexamethasone.
- Patients demonstrating a good clinical response are most often offered a repeat cervical MBRFA at 12-month intervals.

Limitations

- The findings are operator-dependent, reflecting individual practice variations and preferences.
- Patient outcomes were not assessed, limiting the ability to correlate procedural techniques with clinical effectiveness. However, it is reasonable to assume that each unit continues to follow its current practice based on satisfactory clinical outcomes within their local context.
- The survey may benefit from broader participation, particularly from additional proceduralists to enhance representativeness of different units.
- One survey item regarding needle gauge was introduced after the first three responses, which may have led to incomplete data for that question.

Implication and future directions

The common findings identified in this survey closely align with the American consensus guidelines published by Hurley et al.,[8] with the notable exception being steroid injection after the procedure remains a common practice across UK centres. In addition, some practitioners appear to have extrapolated aspects of their technique from lumbar RFA protocols.

Based on these results, there is a clear opportunity to begin developing a national consensus or guideline for cervical MBRFA within the UK. Establishing such recommendations could offer several benefits:

- Improved standardisation of care, leading to more consistent and evidence-aligned patient outcomes.
- Facilitated auditing of procedural practice and complication rates.
- Enhanced clinical governance, supporting quality-improvement initiatives.
- Support for trainee development, providing a clear and validated approach that accelerates the learning curve and ensures a safe, reproducible practice.

Despite the limitations, these survey findings can serve as a provisional step and a foundation for more expert input and collaborative development of a national guidance specific for the cervical MBRFA.

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Essay Competition – Introduction

Pain Relief Foundation student essay competition

Pain News
2026, Vol 24(1) 31

We are delighted to showcase in this edition the winning essays in the Pain Relief Foundation student essay competition.

The winning essays selected by the panel were:

1. **Samuel William Brown**, University of Cambridge

'The "Gut–Brain–Pain Axis" in Chronic Migraine: The Therapeutic Role of Diet and Probiotics'

2. **Vernon Fernandes**, Barts Medical School

'Digital Twins & Artificial Intelligence: Redefining Equitable Chronic Pain Management'

3. **Fintan Conway**, Imperial College London

'Rethinking Pain: The Gut Microbiome as a Novel Target in Inflammatory Arthritis'

An honourable mention goes to the runners up:

1. **Robert Rigby**, University of Birmingham

'Virtual Reality as a Therapeutic Modality in Chronic Pain Management: promise and pitfalls'

2. **Tim Harvey**, University of Southampton

'Exploring Chronic Pain in Conflict Settings'

3. **Emily Zerrin Bell**, Royal Holloway, University of London

'Living in Limbo: Chronic Pain and the Loss of Future Self'

Editor

Essay Competition

The ‘Gut–Brain–Pain Axis’ in chronic migraine: the therapeutic role of diet and probiotics

Samuel William Brown

THE BRITISH PAIN SOCIETY
EXPERTISE WHERE IT MATTERS

Pain News
2026, Vol 24(1) 32–37

Sage

Reframing migraine as a ‘Gut feeling’

Migraine has long been treated as a strictly neurological disorder. However, this medical label has always been at odds with the lived experience of patients, many of whom express a ‘gut feeling’ that their chronic, debilitating headaches are not just a problem with their brains. As international guidelines note and any migraine sufferer could tell you, attacks are often accompanied by gastrointestinal (GI) symptoms such as nausea and bloating.[1] In turn, over 70% of migraineurs exhibit one or more GI disorders, such as inflammatory bowel disease or coeliac disease.[2,3] Attending a migraine clinic on placement recently, I was struck by how every patient articulated their pain as an intensely visceral and whole-body experience, with their headaches often triggered by certain foods or accompanied by these GI symptoms. Further validating this, in a survey I conducted for this essay, respondents repeatedly emphasised how their headaches were closely tied to their gut health: ‘my IBS flares with my attacks’; ‘my stomach is in agony during my migraines’; ‘nausea is common with every episode’.[4]

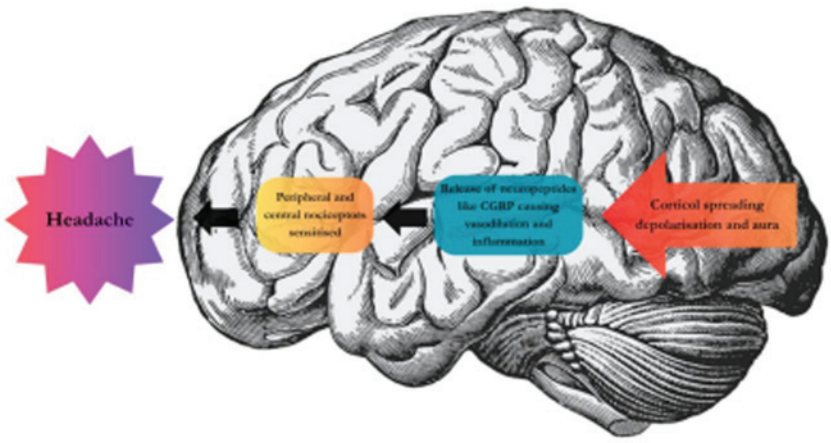
It seems that research in this field is now catching up with long-endured patient experience. The so-called ‘Gut–Brain Axis’ has been an area of intense recent investigation, and growing evidence suggests that imbalances in the microbiota – also called ‘dysbiosis’ – can contribute to migraine susceptibility.[5] The links between gut and brain are complex and intertwining; here, we’ll focus on how the intestinal microbiome communicates with the brain through its metabolic products.[6] With our greater understanding of the role of the microbiota comes the potential for new therapies for conditions such as chronic migraine to which dysbiosis contributes. In this light, this essay aims to place the gut at the centre of migraine pathophysiology and to further explore how the concept of the ‘Gut–Brain–Pain Axis’ could pave the way for personalised, microbiota-based therapies for migraine, such as dietary changes and probiotics.

Migraine: epidemiology, causes and treatment

Migraine is a headache disorder, with a global prevalence of one in seven people.[7] It is characterised by a debilitating headache, lasting 4–72 hours, often accompanied by nausea, vomiting and photophobia. It can be sub-divided into ‘migraine with aura’ and ‘migraine without aura’, referring to a transient visual, sensory or language disturbance that precedes the attack. The condition can then be further classified as chronic, as opposed to episodic, if the migraine occurs eight or more times per month for more than 3 months.[8] Around 8% of total migraine sufferers have chronic migraine, and these migraineurs are twice as likely as those with episodic migraine to be depressed or to have another chronic pain condition.[9] Migraine more generally is three times more common in adult women than men and can arise at any age, although the most common first presentations are between the ages of 25 and 55 years.[10] Like many chronic pain conditions, migraine’s social impacts exacerbate preexisting inequalities, with sufferers from lower socioeconomic backgrounds suffering the most from its impact on daily life.[11]

The pathological of the acute migraine attack has been a subject of intense debate among neurologists throughout history. The most widely accepted theory is that the migraine attack begins with a wave of depolarisation across the brain, followed by a period of suppression. Inflammatory chemicals are then released, stimulating the trigeminal nerve, which in turn activates the release of neuropeptides like calcitonin gene-related peptide (CGRP).[12] These neuropeptides cause

Figure 1. The pathophysiology of migraine.



Source: My own.

vasodilation and neurogenic inflammation of the meninges of the brain, resulting in the sensitisation of nociceptors, ultimately leading to a throbbing headache.[13] The initial wave of depolarisation is seemingly triggered by a whole range of factors, which are highly variable to each individual: stress, hormone fluctuations, diet, weather and sleep disruption are among the most commonly cited.[14]

The current treatment for an acute migraine attack is a combination of simple analgesia and a triptan, a class of medication that constricts the dilated vessels of the brain, inhibits nociceptor transmission of pain signals and stops the release of the neuropeptides mentioned above. A newer class of monoclonal antibodies block the action of the CGRP referenced above.[15] Prophylactic drugs include the beta-blocker propranolol and the drug topiramate, which reduces the excitability of neurones in the brain.[16] While these pharmacological interventions have undoubtedly brought meaningful relief to many migraineurs, they do, however, come with significant side effects. Moreover, they tend to manage symptoms as opposed to targeting the root cause of the disease. Contrastingly, intervening at the level of the gut microbiome promises a genuinely disease-modifying approach, potentially rebalancing the dysbiosis that may be driving the condition in the first place.

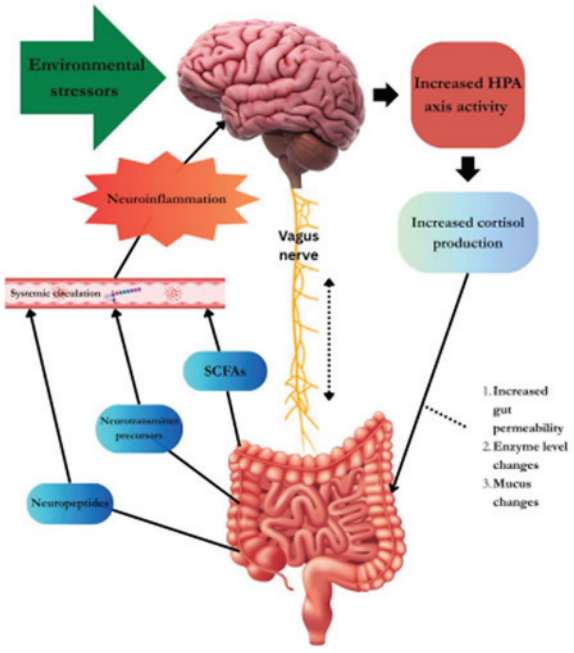
The healthy 'Gut–Brain Axis': the vagus nerve and chemical messengers

Each human hosts around 4 trillion microbes in their gut flora, which is made up of around 1,000 different species, and in a healthy person, these microbes exist in a helpful symbiosis with the human host.[17] Certain bacteria species dominate the environment, such as the anaerobic bacteria *Bacteroidetes*.[18] The mechanisms by which this microbial community can communicate with the brain can be broken down into two main categories: stimulation of the vagus nerve and related nerves of the enteric nervous system; and the production of chemical messengers, such as short-chain fatty acids (SCFAs), cytokines and neurotransmitters. This communication is crucially a two-way street: in response to vagal stimulation and molecules such SCFAs, the brain modulates the production of cortisol through the hypothalamic–pituitary–adrenal (HPA) axis, as seen in Figure 2, which changes the permeability of the gut wall, the secretion of enzymes and the production of mucus.[19] In short, the brain and gut microbiota are in a state of constant communication in order to maintain homeostasis.

The unhealthy 'Gut–Brain–Pain Axis': dysbiosis and migraine

If this carefully balanced system of microbes, nerves and chemical messengers becomes stressed at any point in its circuitry, problems can emerge. One way in which this system can be strained is through stressors such as poor diet and environmental stress, both of which stimulate increased cortisol production by the HPA axis. Increased cortisol accentuates the permeability of the gut lining and changes the levels of different enzymes and mucus in the intestines.[20] It is speculated that these changes encourage the growth of pathogenic microbes in the gut microbiota, and that, furthermore, these microbes are linked to the development of migraine. For instance, bacteria

Figure 2. The 'Gut–Brain–Pain Axis' explained.



Source: My own.

like those of the *Tissierella*, *Veillonella* and *Coprobacillus* geni have been shown to live in greater numbers in the guts of adult chronic and episodic migraine patients.[21] Indeed, in one study, the eradication of the pathogenic bacteria *Helicobacter pylori* was directly linked with the relief of all migraine symptoms.[22] In contrast, some microbes have been suggested to have a protective and anti-inflammatory effect on the brain, including *Bifidobacterium* and *Faecalibacterium*, which researchers have found to grow in much lower levels in the guts of migraineurs.[23] There is therefore clear evidence that certain 'types' of microbes are associated with different rates of migraine across the population.

Of course, we must be cognisant of the limitations here in this form of associative research. While many trials have shown that migraineurs and non-migraineurs have consistently different gut microbiomes, this is simply drawing attention to a correlation, and we should be cautious about assuming a causative mechanism without further research. The same is true when we draw attention, as we have above, to the high rates of migraine in those who have GI pathology. While, for instance, it is true that evidence shows that patients with coeliac disease have higher prevalence of migraine compared with healthy controls and vice versa, this does not establish a mechanism of causality.[24] This precautionary note notwithstanding, researchers have speculated on various potential mechanisms by which beneficial and pathogenic bacteria may be differentially influencing the brain – and ultimately impacting migraine susceptibility. Several plausible pathways have been proposed, as also outlined in Figure 2.

SCFAs

Migraineurs have been found to have lower levels of *Faecalibacterium* and *Bifidobacterium* in their guts. These bacteria are known to ferment dietary fibre to produce SCFAs, such as butyrate and acetate.[25] These SCFAs maintain gut epithelial integrity, exert anti-inflammatory effects and interact with the vagus nerve, potentially altering central pain pathways.[26] Lower levels of SCFA production by microbes in the gut could therefore give rise to greater intestinal wall permeability and increased neuroinflammation, potentially triggering or exacerbating migraine episodes. This is supported by a study in which the signs of chemically induced migraine were reduced in mice that were injected by SCFAs, although clearly human studies would be needed to validate this.[27]

Neurotransmitter precursors

Different gut microbes synthesise various amino acids such as tryptophan, tyrosine and glutamine, precursors to the key neurotransmitters involved in migraine pathogenesis: serotonin, dopamine, noradrenaline and gamma-aminobutyric acid (GABA). Changes in microbial populations could therefore lead to altered neurotransmitter availability locally in the enteric nervous system and centrally. It is notable, in this light, that serotonergic dysfunction has long been implicated in migraine, with gut-derived serotonin comprising most of the body's total pool.[28]

Neuropeptides

Although this is a nascent research area, some studies have speculated that the neuropeptide CGRP could be one of the chemical bridges between the gut microbiome of migraineurs and their brains.[29] As we discussed above, CGRP is a potent vasodilator and is also involved in gut motility and pain signalling through the vagus nerve, and the microbes of the gut can directly influence this neuropeptides production through their stimulation of vagal nerve afferents and production of inflammatory chemicals.[30]

This emerging evidence therefore suggests that pathogenic gut bacteria may influence migraine susceptibility through

multiple pathways: reduced SCFA production, altered neurotransmitter precursor availability and modulation of neuropeptides like CGRP, ultimately increasing neuroinflammation, which has recently been elucidated as the final common factor in all these pathways.[31]

The patient perspective

This burgeoning scientific evidence for the importance of the gut microbiome in migraine is exciting, but we cannot lose sight of the most significant stakeholder in this discussion: the migraine sufferer. Prior to writing this essay, I conducted a survey exploring patient experiences of the links between GI symptoms and migraine, as well as dietary and probiotic interventions that worked or did not work to alleviate migraines. A recurring trend in responses to this survey is that among migraineurs reporting dietary triggers, there are consistent culprits: chocolate, red wine, cheeses and caffeine. The inconsistency in food triggers from person to person suggests that individual differences in gut microbiome and metabolism might determine whether a given food is a trigger, again underscoring the gut's mediating role.[32] No respondent to the survey had tried probiotics, but many had changed their diets to eliminate triggers. Fewer had tried specific diets, such as a ketogenic diet, but those who had expressed positive results.

From pathology to treatments: the evidence for dietary changes and probiotics

Dietary Changes

With both this patient insight and the proposed biochemical links between the gut microbiome and migraine pathology in mind, we can now explore the evidence behind whether interventions on the level of the gut can indeed help migraine sufferers with their debilitating condition. There is a sizable pool of studies examining the effect of diet on migraine. Backing up what respondents to my survey said, a variety of studies have shown that dietary triggers can be selectively manipulated to reduce migraine. In a study by Hering-Hanit from 2003, for instance, reducing cola consumption in 36 individuals eliminated migraine in 33 participants.[33] Another study from 2004 suggested that caffeine withdrawal significantly raised the likelihood of migraine initiation.[34]

A 2025 systematic review focused on whether the ketogenic diet – which involves very low carbohydrate, high fat and moderate protein intake – and the Dietary Approaches to Stop Hypertension (DASH) diet – which emphasises fruit, vegetables, wholegrains and reduced processed food consumption – changed migraine risk. It found that both diets reduced migraine severity and frequency across various studies.[35] The success of the ketogenic diet may be down to the positive effects of ketone bodies, which result from the lack of dietary carbohydrates, on oxidative stress and inflammation in the brain.[36] In turn, the review suggests that the DASH diet may derive its success from reducing participant's blood pressure, which is often implicated in migraine, as well as having also some anti-inflammatory effects.[37]

Another systematic review from 2019 similarly found that a ketogenic diet and a low glycaemic diet – involving very low carbohydrate consumption – consistently reduced migraine intensity, frequency and painkiller use, with the authors suggesting that decreased neuroinflammation was the crucial final mechanism.[38] On a more general level, a 2023 study found that a highly processed, high-sugar Western diet was perhaps unsurprisingly associated with increased risk of migraine, while a Mediterranean diet of vegetables, fruit, legumes and fish was protective.[39] Of course, improving diet will naturally lead to other positive changes in a person's health, over and above reducing their risk of debilitating migraines.

This evidence appears promising, although several caveats must be emphasised. As we have already discussed, the actual mechanisms behind which migraine risk is reduced remain unelucidated and under-investigated. In turn, studies involving dietary changes always struggle with the difficulty of ensuring participant compliance to strict parameters, with a lack of oversight. Finally, the lack of nationally or internationally recognised clinical guidelines on nutritional interventions for migraine mean that these studies have no foundation to work from and progress will be limited until professional bodies do establish such guidelines.

Probiotics

Probiotics are defined as live microorganisms, typically bacteria or yeast, that have a positive health impact when consumed.[40] There has been an increase in research into probiotic usage and migraine following in the wake of burgeoning scientific and popular interest in the 'Gut–Brain Axis' and its implications for health. A 2025 systematic review found that probiotics showed efficacy in reducing painkiller consumption by migraineurs across many studies. Interestingly, the bacteria *Bifidobacterium*, discussed above in relation to its production of SCFAs, was commonly used in the probiotic formulas of the studies that the review included.[41] Again, this highlights the important role that beneficial bacteria such as this may play in decreasing neuroinflammation through the varied mechanisms that we have already outlined.

To highlight the results of one particularly interesting study by Martami et al,[42] this showed a 40% decrease in migraine frequency in the group of participants in the probiotic treatment group, demonstrating a reduction in migraine frequency of 2.6 days per month, which is a greater decrease than another study achieved using the widely utilised migraine prophylactic drug topiramate.[43] Adding to this, research by Xie et al.[44] and Ghavami et al.[45] has shown that a probiotic intervention can reduce migraine attack frequency, painkiller usage and levels of inflammatory markers. There is some evidence, therefore, that probiotic interventions can significantly improve the lives of those living with migraine, by reducing the regularity of attacks and thus the need for painkillers.

However, some studies have been less conclusive, with de Roos et al.[46] failing to find any benefit to migraine sufferers of probiotic supplementation in a randomised controlled trial of 63 participants. This conflicting data may be a result of markedly different bacterial strains used in the probiotics of each study, as well as differences in follow-up monitoring times. As with research into dietary interventions for migraine, probiotic research suffers from a lack of consistency in the probiotic formulations and microbial strains used across studies. Further large-scale investigation into its impacts need to take this into account for the efficacy of probiotics to be fully validated and integrated into clinical guidance.

Conclusion: the future of microbiota interventions

My concept of the 'Gut–Brain–Pain Axis' therefore offers a new framework for understanding chronic migraine and exploring novel treatment options. What was once seen as a disorder confined to the brain is increasingly recognised as a condition influenced by dynamic interactions between gut microbes, the immune system and neural signalling. Mounting evidence supports the idea that gut dysbiosis contributes to migraine pathogenesis via neuroinflammatory mechanisms, impaired intestinal barrier function, and altered neurotransmitter and neuropeptide activity. Patient voices, too often marginalised in medicine, have long gestured towards this link, with migraineurs regularly reporting dietary triggers, coexisting GI conditions and achieving significant symptom relief through dietary adjustments. These lived experiences are now being echoed by the emerging data, which demonstrate that dietary changes and probiotic supplementation may alleviate migraine frequency and severity, while in some cases surpassing pharmacological treatments in efficacy.

Looking beyond migraine, substantial evidence now suggests that the gut microbiota plays a key role in regulating chronic pain.[47,48] In the same way that the complex metabolites of gut microbes can cause neuroinflammation and instigate or exacerbate migraine attacks, these same metabolites have been recently investigated as direct activators of peripheral nociceptors, as sensitisers of neurones and as pro-inflammatory molecules on a body-wide scale.[49] Gut dysbiosis may therefore not just be associated with migraine, but rather a whole host of other chronic pain disorders, including visceral pain, neuropathic pain and fibromyalgia. Moreover, this realisation of the importance of the 'Gut–Brain–Pain Axis' has led to a raft of new studies into microbiome-based interventions for chronic pain conditions, such as faecal bacteria transplantation and antibiotic use.

We stand at the cutting edge of a growing scientific effort to examine the complex, intertwining relationship between gut and brain. However, crucial research questions relating this connection to migraine and other chronic pain conditions remain unanswered. Beyond just associations, what are the mechanisms linking gut health and migraine? How can we intervene at the level of these mechanisms to more effectively treat migraine? Thinking more widely, are the underlying microbiota-related mechanisms consistent across different types of chronic pain or do they vary? Through which signalling pathways does the gut microbiota influence pain perception? In short, our understanding of the 'Gut–Brain–Pain Axis' must move from an insight into correlations to a mechanistic understanding of this fascinating system. With that shift, personalised, microbiome-based interventions for migraine and other chronic pain conditions may just become a real possibility.

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Essay Competition

Digital twins and AI redefining equitable chronic pain management – Vernon Fernandes

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Sage

Imagine a world where data-driven applications, integrating artificial intelligence and virtual patient simulations, redefine our modern understanding of chronic pain management. Known to be one of the greatest unsolved problems within the United Kingdom's medical sphere, chronic pain affects between 30.3% and 50.1% of adults, surmounting to 28 million people.[1,2] With a further 7.247 million people projected to suffer from chronic pain by 2040, it is clear that chronic pain medicine must transition beyond merely managing symptoms and adopt the principal focus of anticipation, prevention and targeting the biological and psychosocial mechanisms that underpin its prevalence.[3]

The NHS has relied heavily on its prescription of opioids as a management protocol for chronic pain patients, with a 2019 study highlighting 12.9% of all patients receiving them in a primary care setting.[4,5] The risks of opioid addiction, dependence and misuse raises serious concerns about the reliability of this treatment option, where the concept of 'doing more harm than good' in the context of pain management comes to light. The NHS also faces crude systemic limitations. Waiting times of up to 12 weeks affect 49.3% of chronic pain patients, contributing to worsening conditions and delayed access to care. As a result, the nature of chronic pain is such that patients seeking delayed treatment are adversely affected with mental health compromises and risk depression and anxiety related disorders; insurmountably reducing Quality-Adjusted Life Years (QALY).[6,7]

Given the limitations of pharmacological and systemic approaches, innovative, data-driven technologies may offer a safer and more precise alternative. Thus, what is the proposition? . . .

The next frontier in chronic pain management may not lie in another pill but in data driven medicine where digital twin technology, powered by artificial intelligence offers an exciting paradigm shift!

Why perilously test the efficacies of iatrogenic drugs: codeine, tramadol and morphine on patients at the cost of the principles of equitable medicine? AI-driven systems may predict and anticipate pain flare ups, model patient-specific responses to medical interventions, and optimise treatment strategies where possible.[8] Digital twin technology, already implemented in cardiology to forecast myocardial infarction, heart failure and stroke incidences,[9] could revolutionise our attitudes towards chronic pain; offering virtual replicas of patients and simulating how their pain pathways would respond to various therapies.[10,11]

This essay proposes that the future of chronic pain medicine must break away from its current reliance on reactive, trial-and-error decision-making and embrace AI-driven digital twin technology as a means to deliver predictive, personalised and data-informed care. By leveraging virtual patient simulations and advanced modelling, drug administration in the context of chronic pain could shift from symptom suppression to anticipatory interventions that directly address the biological and psychosocial drivers of nociception. Such an approach not only promises to reduce harm associated with opioid over prescription and delayed access to multidisciplinary services, but also redefines chronic pain management as a proactive, equitable and precision-based discipline.

Figure 1. A schematic highlighting the nation-wide epidemic that opioid overprescribing presents as a means to manage chronic pain.[4]

Chronic pain neurobiology: central sensitisation, maladaptive plasticity

According to the International Association for the Study of Pain (IASP), chronic pain is defined as persistent, lasting for periods longer than 3 months; a time beyond which normal tissue healing can occur.[12,13] Causes of such pain lie in deep interneural hyperexcitability pathways chiefly pertaining to theories such as central sensitisation; which in turn, characterise chronic pain as maladaptive.[14,15] This is where peripheral nociceptors relay sensory information to spinal dorsal horn neurons that exhibit heightened over responsiveness; reducing the pain threshold for activation, and contributing to chronic hyperalgesia and allodynia at varying levels of the neuroaxis.[16] It is through these pathways that somatosensory transmission is abrogated resulting in subjective chronic pain exhibition.[16] With time, central sensitisation pathways can even occur independently of the sensory input from nociceptors, just as in the example of phantom limb pain. As a result, persistent pain sensitisation, at the level of amputated limbs, pose difficulties in chronic pain treatment.[17]

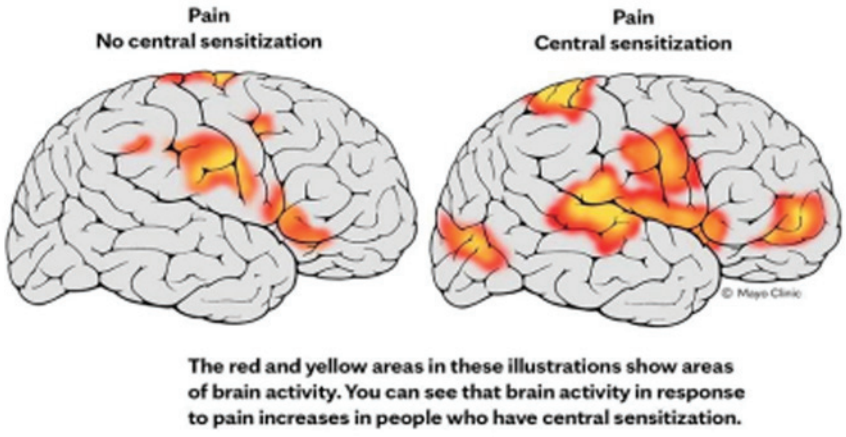
Furthermore, maladaptive neuroplasticity is central to the chronification of pain. Persistent nociceptive input induces profound neurophysical and functional changes across the central nervous system, a process termed cortical reorganisation. Prominent brain regions such as the somatosensory cortex, limbic-sensory regions and motor areas of the prefrontal cortex collectively perpetuate the chronic pain state.[18] This process is driven by peripheral nerve injury–induced activation of dorsal horn microglia, which release proinflammatory cytokines and neurotrophic factors which amplify synaptic transmission; in turn driving persistent changes in neural excitability and circuit function. Over time, this sustained microglial activation shifts the brain from a protective, adaptive state into one of maladaptive plasticity, perpetuating hypersensitivity and abnormal pain processing.[18,19] The result is a nervous system that becomes primed to over-respond to stimuli, locking patients in a cycle of persistent pain even in the absence of ongoing peripheral damage.

The Biopsychosocial Model of pain

It is paramount to approach chronic pain management through the lens of the biopsychosocial model, which recognises pain as a multifactorial and a dynamic phenomenon rather than a purely biological symptom. This model conceptualises chronic pain as the result of a reciprocal interaction between physiological mechanisms, psychological states and social determinants, each amplifying the others, contributing to chronic pain's complexity.[20] Patients worldwide catastrophise pain psychologically, have fear-avoidance behaviours and integrate anxiety and depressive mental states to perceive pain, entrenching disability. Comorbidities such as deprivation, occupational stress and social isolation also serve as key active modulators and social determinants.[21] This inherent multidimensionality of pain exposes the limitations of current pharmacological approaches, where anticonvulsants, antidepressants and opioids target neural transmission but fail to address the psychological and social drivers sustaining the pain state.[22] Consequently, a treatment paradigm based solely on symptom suppression risks being both reactive and reductionist, failing to achieve durable outcomes of chronic pain processing, further contributing to altered CNS pain networks.

The United Kingdom's approach to chronic pain management seems inordinately biomedical and reactive where the aforementioned biopsychosocial characteristics of pain are disregarded. With a fragmented approach, NHS patients are first administered primary pharmacological treatment interventions: opioids, antidepressants and anticonvulsants, which although cost effective in the short term, carry large risks of dependence, adverse effects and nociplastic pain.[23] This is

Figure 2. An illustration of brain regions subjected to accentuated neuroplasticity as a result of elevated chronic pain sensitisation.



Patients with theoretically intensified nociceptive pathways experience hallmark symptoms such as chronic pain, shooting pain, muscle stiffness and weakness.[17]

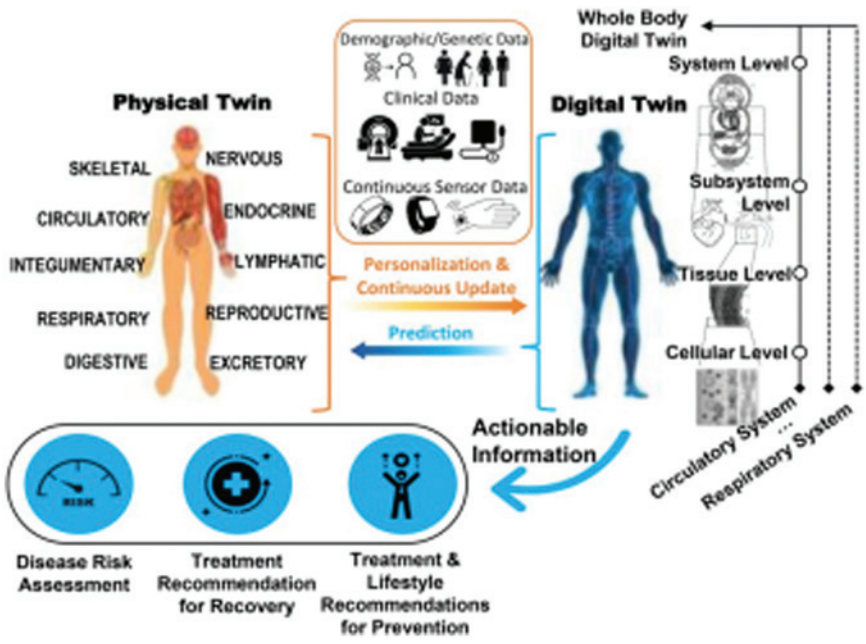
shortly before patients are referred to secondary pain clinics offering interventional approaches such as Cognitive Behavioural Therapy (CBT) and physiotherapy.[24] Key limitations include accessibility and resource issues, insufficient staffing, limited availability of pain clinicians and physiotherapists, and prolonged wait times > 12 weeks. Nonetheless, the NHS continues to offer once size fits all modes of care falling short of the personalised approach that the biopsychosocial regulatory frameworks recommend.[25] This is a system that primarily fails to address psychosocial drivers of pain but also entrenches health inequalities; leaving women, ethnic minorities and socioeconomically deprived populations disproportionately affected and sub optimally treated.

Digital twin technology: laying the foundations

To break free from the trial-and-error paradigm of chronic pain medicine, there is a pressing need to move beyond symptomatic firefighting and towards a system that predicts, prevents and personalises care. Digital twin technology, an innovative virtual patient replica, powered by real-time data may hold the key to this shift. Originally innovating within the engineering and aviation industries, digital twins were used to model dynamic systems, predict mechanical failures and optimise performance in high-stakes settings such as aircraft engine maintenance.[26] The success of this predictive approach has catalysed its translation into healthcare, where digital twins are already being applied to model tumour responses to chemotherapy and simulate cardiac electrophysiology, to anticipate arrhythmias and optimise interventions.[27] More recently, glucose-insulin dynamics have been replicated using digital twins to optimise insulin therapy, demonstrating the technology's potential for highly personalised interventions.[28] By utilising patient specific models to simulate treatment pathways, digital twin technology has proven to 'enhance therapeutic outcomes while minimising side effects' within oncological drug administration protocols.[29]

The application of these advances to chronic pain medicine is profound. By constructing patient-specific models that integrate genomic profiling, neuroimaging (fMRI, DTI) and clinical history, a digital twin could simulate an individual's central sensitisation, nociplastic pain characteristics and psychosocial drivers.[30] This inadvertently creates a 'living model of pain' that progressively evolves with iterative data inputs. With chronic pain largely remaining heterogenous and dynamic at present, assets such as genomic profiling, imaging modalities, MRI and CT, and psychometric assets will serve to build a multimodal data set. A clinician would be able to trial and test, in silico, a patient's response to pharmacological treatments, cognitive behavioural therapy (CBT), neuromodulation, or combined approaches before administering them in practice. Such a protocol would not only highlight effective treatment pathways but those with the highest risk profiles; ruling out those with major iatrogenic harm and resource insufficiencies.

Figure 3. A schematic representation of the virtual twin replica generated from multimodal databases from existing patients.



Digital twin technologies incorporate all clinical system levels as key metric indicators for treatment intervention suggestion.[29]

Such simulations offer several advantages over current interventions. First, they allow for reduced reliance on opioids and anticonvulsants by adopting personalised interventions; minimising exposure to ineffective therapies. In conjunction with drug risk mitigation, neurobiological patient-specific mechanisms driving pain would be highlighted, such as maladaptive neuroplasticity or psychological amplification, empowering clinicians to confidently administer targeted therapy.

To conclude, the implementation of digital twins also addresses systemic limitations. By modelling therapy response virtually, healthcare providers could introduce risk stratification by prioritising access to interventions for patients most likely to benefit, reducing strain on under-resourced NHS pain clinics. Such technology offers a pathway towards equitable, precision-based care, basic pillars of the NHS' approach to personalised medicine, where interventions are guided by mechanistic understanding rather than generalised protocols. Thus, digital twin technology presents a feasible paradigm shift in chronic pain management. While still in its infancy, tender integrations of twin technology and AI provide a compelling rationale for further exploration and research, serving as an asset in multidisciplinary pain management pathways.

Current implementations of artificial intelligence in healthcare

Myriad areas of healthcare have already benefitted from transformative applications of Artificial Intelligence (AI). Its mechanism of learning and replicating includes employing machine-learning algorithms to process large datasets to mimic human cognition, enabling pattern recognition and predictive decision-making.[31] In acute medicine, AI has demonstrated tangible benefits where NHS England rolled out an AI chest X-ray tool across more than 40 NHS trusts allowing for over 2.8 million images annually to be analysed. Remarkably, average diagnostic accuracy in X-rays nationwide increased by approximately 45%.[32] AI's implementation stretches to acute medicine too, where sepsis risk stratification achieved an AUC of 0.94 according to the KATE Sepsis model, outperforming conventional screening methods tremendously.[33] Ultimately, these applications highlight how AI is reshaping predictive,

Figure 4. Interface screenshots from the cutting-edge wearable technology, WHOOP.

Patient centric data includes key metrics such as heart rate variability, strain, BMI and sleep scores to quantitatively assess patient health outcomes.

personalised care within NHS medicine offering a strong foundation for its future integration into the management of chronic pain.

AI and digital twins in chronic pain: an exciting proposition

AI has the potential to address some of healthcare's most inveterate challenges; but indefinitely within chronic pain medicine. Currently the NHS spends £4.7 billion annually on back pain alone and chronic pain driving 5.6 million GP consultations each year.[34] Yet outcomes remain monumentally suboptimal, with opioid prescribing continuing despite limited management efficacy. AI offers a fundamentally different approach.

One promising application lies in shifting the paradigm of chronic pain to one of predicting pain flare-ups. By utilising existing physiological technology such as wearable devices like WHOOP, high-resolution data on sleep quality, heart rate variability, physical activity and stress physiology can all be utilised to generate recovery metrics, predicting the likelihood of pain flare ups. This has been proven successfully in musculoskeletal pain cohorts where machine learning models achieved 75%–80% accuracy.[35] In chronic pain outpatient clinics, clinicians could thereby intervene before symptom escalation, by potentially adjusting medication prescriptions and prescribing Cognitive Behavioural Therapy well in advance. Such predictive tools would also alleviate pressure on GPs, who see chronic pain disproportionately encountering preventable pain patients often without meaningful therapeutic options.

AI also enables categoric patient stratification within chronic pain clinics, challenging the one-size-fits-all model embedded in current NHS pathways. AI implemented algorithms could succinctly alienate patients most likely to benefit from opioids as a last resort from non-pharmacological interventions such as CBT or physiotherapy. Considering that only one in four chronic pain patients reports meaningful benefit from opioids worldwide,[36] patient stratification protocols mitigate iatrogenic effects from opioid mis prescription, cut prescribing costs and provide personalised and equitable medicine to patients. AI-driven stratification could hence standardise fairer, needs-based referral across the system.

Another key application of AI and digital twin implementation lies in identifying the risk of post-operative surgical patients developing chronic pain. A 2022 study highlights 20%–30% of

surgical patients develop chronic post-surgical pain.[37] Here, digital twin technology could mimic a patient's post-surgical management journey, qualitatively generating results of patients with medium high risk chronic pain symptoms. Preventing chronic pain incidences at this inflection point would bring insurmountable economic and quality-of-life benefits to pain patients, further accentuating patient-clinician trust and alleviating burdens on the NHS.

The unprecedented dangers of AI and digital twin implementation

The applicability of AI and digital twin technologies to chronic pain medicine is limited in its nature primarily by the quality and sovereignty of the data it utilises. Patient data is tender, subjective and should be comprehended with utmost equity. Machine learning is based on robust, representative datasets with any bias or lack of representation in NHS records, particularly of women, ethnic minorities, or socioeconomically disadvantaged groups exacerbating existing inequalities, rather than mitigating them.

Privacy and ethical concerns are also deeply to be considered here where datasets employed to model chronic pain, say in digital twin models, will often include sensitive information on mood, levels of activity and habit. Without strong data governance and information accessibility, patients may not respond or simply refuse to take part in the utilisation of such predictive technology, undermining model validity and ethical acceptability. Furthermore, access and equity present further challenges. Digital twin systems are computationally intensive if modelled accurately to represent pain patients; if restricted to tertiary or academic centres, it is a result of socioeconomic constraints that such technology may not be accessible succinctly within the NHS.

It is also important to portray that digital twins and AI are not a panacea for chronic pain but merely an advancement in attitudes towards its management: from acute to chronic. They are vehicles for prediction-orientated medicine, designed to improve symptom management, optimise decision-making for treatment and minimise iatrogenic harm. Reversal of disease expectations at this stage within treatment intervention pathways in the NHS is thereby unrealistic, given the referral-based system that GPs adopt to filter patients in need of specialist exposure.

Finally, clinical translation remains scant. Existing digital twin models for pain are theoretically founded, with merely small-scale feasibility studies to back them up. There are as yet no large-scale longitudinal trials confirming predictive precision within the United Kingdom, clinical usefulness or economic balance in NHS settings. Integration into regular care remains theoretical until rigorous evidence exists, and unwanted effects like overreliance on predictive models or misclassification of patient risk must be considered.

Conclusion

Chronic pain remains the United Kingdom's most prevalent and costly health disorder, affecting 28 million adults and requiring over 5.6 million GP visits annually. Despite these figures, existing NHS treatment pathways in pain remain plagued by organisational inefficiencies such as extended waiting times and inappropriate opioid dispensing with minimal long-term effect. The biopsychosocial nature of chronic pain continues to be inadequately addressed, disproportionately impacting women and socioeconomically disadvantaged individuals.

Digital twin and AI technology offers a revolutionary answer. Utilising multimodal patient data: genomics, neuroimaging, wearables and psychosocial measurements, digital twins can be harnessed to simulate pain pathways for individual patients, predict flare-ups, order treatment priorities and predict chronic post-surgical pain within NHS pathways. In theory, clinicians could virtually test pharmacological, behavioural or neuromodulatory interventions, achieving maximum efficacy with minimal harm.

The potential is profound: revolutionising the treatment of chronic pain from reactionary symptom suppression to equitable medicine; the primary objective by which the NHS was established to begin with. Like MRI did for pain medicine, digital twins may one day allow us not only to further understanding on chronic pain but also to anticipate and personalise its treatment, ushering in an era where concealed suffering is no longer relegated to the shadows. For the NHS, its patients and society as a whole, this is not only a technological advance but a moral one: to finally redefine chronic pain from an unresolved epidemic to a treatable, manageable condition.

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Essay Competition

Rethinking pain: the gut microbiome as a novel target in inflammatory arthritis

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Pain News
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Sage

Fintan Conway

Introduction

To live with chronic pain is to live with daily challenges around simple tasks that others take for granted.[1] From the ages of 14 to 17, I suffered debilitating pain at the base of my spine that made sitting, studying and even simple activities such as meeting friends a constant challenge. Over time, the pain spread to my hip, shoulder and neck. Despite long-term use of anti-inflammatory drugs and corticosteroid injections, the pain improved only partially and continued to linger, leaving me feeling frustrated and searching for alternative solutions.

Chronic pain is defined not only by its persistence beyond normal tissue healing but also by its multi-dimensional impact on psychological, personal and social functioning.[2] It affects approximately 20% of adults worldwide.[3] Within this spectrum, inflammatory arthritis (IA) represents a particularly challenging cause of chronic pain, often persisting even when inflammation is clinically controlled.[4] Pain in these conditions arises not only from joint damage but also from immune and systemic processes. Notably, a recent systematic review suggests that gut microbiota dysbiosis (an imbalance in gut bacteria) contributes to the pathophysiology of IA and neuropathic pain.[5] In my personal experience, implementing an evidence-based, anti-inflammatory diet and targeted gastrointestinal (GI) supplementation was associated with a gradual reduction in inflammation and an eventual resolution of my symptoms – an outcome that has fuelled my curiosity to explore the gut microbiome as a potential therapeutic target in chronic pain.

IA provides a useful lens for this exploration, as it exemplifies how immune dysregulation drives pain. Among these conditions, ankylosing spondylitis (AS) – a form of IA affecting the spine – stands out not only for its profound impact on patients' quality of life but also for its reported association with intestinal dysbiosis, including a higher prevalence of *Klebsiella pneumoniae*.[6]

This essay will first briefly explore the limitations of current treatments for IA and their consequences, before examining emerging evidence that links the gut microbiome to pain modulation. It will then evaluate personalised microbiome-based strategies – including dietary interventions, targeted supplementation and stool-guided GI profiling – as potential approaches to managing chronic pain in IA. Finally, it will consider the role of lifestyle factors in shaping the microbiome and, in turn, improving pain outcomes.

Current treatment of IA

Limitations

Despite remarkable progress in rheumatology, many patients remain trapped in pain.

Approximately one-third of those with AS still have symptoms even on optimal nonsteroidal anti-inflammatory drug (NSAID) and biologic therapy.[7] The current 'treat-to-target' model – NSAIDs and steroids to relieve pain and stiffness, and disease-modifying antirheumatic drugs (DMARDs) or biologics such as

Figure 1. Author-generated.

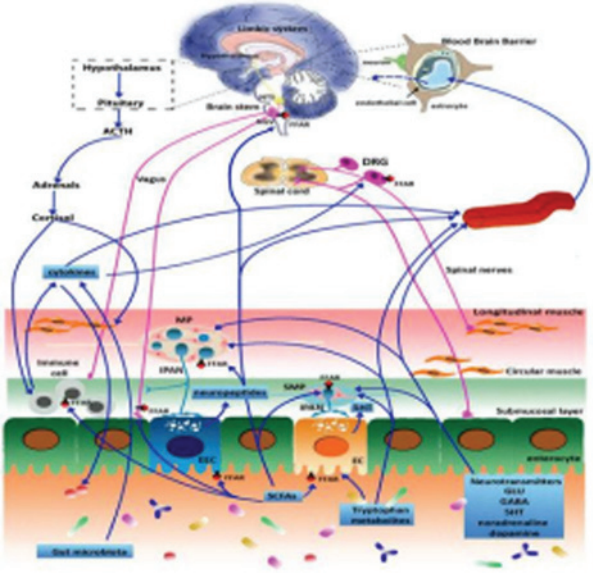
Derived from Cooksey et al.[16]

tumour necrosis factor (TNF) or interleukin (IL)-17 inhibitors to suppress inflammation – can certainly slow disease and improve function.[8,9] However, these drugs carry risks such as infection and organ toxicity[7] and up to 40% respond poorly to TNF inhibitors.[10] Even when inflammation is controlled, pain often persists: 30%–50% of rheumatoid arthritis (RA) patients in DAS28 remission (<2.6) continue to experience clinically significant pain.[11] Opioids are sometimes prescribed, but long-term use risks dependence and tolerance.[12] In short, while pharmacotherapy has transformed arthritis care, it often fails to extinguish pain and sometimes creates a heavy toll. My own experience echoes this: these treatments can help, but for many, they do not bring lasting relief.

Consequences

The consequences ripple beyond joint inflammation. Patients report severe disability and poorer quality of life, with physical functioning and social participation particularly affected.[13] Independence in daily life erodes; work and relationships suffer as a result. The psychological burden is profound: those with AS have roughly a 1.5-fold greater risk of depression and anxiety, which in turn heightens pain perception and reduces coping ability,[14,15] illustrating the bidirectional link between pain and psychological distress. The economic costs are staggering: a UK study using linked routine and patient-reported data estimated £19,000 per patient per year with most losses not driven by National Health Service (NHS) hospital spending but by missed work, unpaid care and early retirement[16] (see Figure 1). These physical, emotional and societal burdens show why arthritis cannot be managed by drugs alone and demand new strategies that look beyond the joints themselves and into the gut–brain axis.

Figure 2. Schematic representation of the microbiota–gut–brain axis. Dysregulation in this axis can influence inflammation and pain processing.



Source. Morreale et al.[20]

The gut microbiome and pain

Phenomena such as allodynia (pain experienced from typically non-painful stimuli) and hyperalgesia (an unusually strong reaction to painful stimuli) occur in RA without any obvious injury to the area,[17] reflecting an overactive central pain network. These observations highlight the need to look beyond the joints themselves when tackling chronic pain. The intriguing possibility is that gut dysbiosis might sensitise pain pathways, or, conversely, that restoring a healthy microbiome could help dampen these signals.

Gut–brain axis and its relevance to pain perception

The microbiota–gut–brain axis, illustrated in Figure 2, is a vital two-way communication system linking intestinal microbes to the nervous system through immune, endocrine and metabolic pathways.[5] To help understand why this matters, here are three ways an imbalanced gut can mechanistically contribute to pain:

- **'Leaky gut'**

Psychological stressors that activate the hypothalamic–pituitary–adrenal (HPA) axis increase intestinal permeability,

allowing bacterial products such as lipopolysaccharide (LPS) to enter circulation, triggering systemic inflammation and glial (supportive brain cell) activation that amplifies pain signalling.[18]

- **Microbial metabolites**

Dysbiosis elevates TNF-α and IL-17, sensitising nociceptors, while a healthy microbiome produces short-chain fatty acids (SCFAs), such as butyrate, that reinforce the gut barrier and exert anti-inflammatory and analgesic effects.[5] RA patients have significantly lower butyrate levels and restoring it reduces arthritis severity in animal models.[18]

- **Neurotransmitter modulation**

Reduced *Lactobacillus* and *Bifidobacterium* can lower GABA (gamma-aminobutyric acid, a calming brain chemical) production, while disrupted tryptophan metabolism shifts precursors from serotonin to pro-inflammatory kynurenine, thereby weakening inhibitory pain control and promoting central sensitisation (an increased sensitivity of the nervous system).[19]

Ultimately, disruption of the gut microbiota can entrench central sensitisation processes, amplifying both the perception and persistence of pain.

Gut–joint axis

While the gut–brain axis explains how microbes influence pain processing, the gut–joint axis shows how the intestinal communities can directly fuel inflammation. In AS, early work reported an overabundance of *K. pneumoniae* along with anti-Klebsiella antibodies and evidence of cross-reactivity between Klebsiella antigens and human tissues.[21] Newer sequencing studies suggest a broader, community-level dysbiosis, characterised by reductions in Bacteroidetes in certain cohorts of AS patients.[22] Thus, *Klebsiella* is best viewed as a possible contributor in subsets rather than a sole driver. Nevertheless, the central idea remains; the health of the gut microbiome is closely linked to the inflammatory activity of AS.

In RA, evidence is also emerging for a gut–joint connection. *Prevotella copri*, a type of gut bacteria, is enriched in untreated, new-onset RA and correlates with high disease activity[23] possibly by stimulating pro-inflammatory Th17 cells. RA patients also exhibit higher levels of *Collinsella* and *Eggerthella* (microbes known to promote inflammation) and lower levels of *Faecalibacterium* (microbes known to reduce inflammation) compared to healthy controls.[24] These shifts likely alter gut-derived metabolites and immune tone leading to joint inflammation.

Compelling mechanistic evidence also comes from a 2025 study, which found that inducing gut inflammation in mice predisposed to spondyloarthritis led to bacterial DNA appearing in joint tissues, carried by pro-inflammatory macrophages. Transferring these bacteria-laden macrophages into healthy mice triggered severe arthritis.[25]

Overall, the gut–joint axis suggests that gut dysbiosis can drive immune dysregulation in RA and AS, positioning the gut as a potential lever to reduce autoimmune attacks and the pain they cause.

Interventions: evidence-based approaches

Given these links, targeting the gut microbiome offers a promising new therapeutic avenue. It is essential to note that many of these strategies are still in the experimental stage; however, early research offers optimism that they may complement conventional pharmacotherapy.

Personalised gut profiling (stool tests and GI mapping)

Advances in sequencing technologies, such as 16S rRNA to shotgun metagenomics, can now enable comprehensive mapping of thousands of gut microbes.[26] In theory, this could reveal dysbiosis patterns linked to chronic inflammation and pain, enabling a shift from one-size-fits-all therapy to truly tailored interventions.

Proof-of-concept studies are emerging. A 2021 Mayo Clinic study found that gut microbial profiles could predict RA outcomes: using machine learning, researchers could forecast with ~90% accuracy which patients would respond to treatment based solely on their baseline microbiome.[27] However, there was no independent validation set, so this raises the possibility that the model may not generalise to broader patient populations and requires larger multi-centre trials. Other studies have linked specific bacterial taxa and metabolites to RA severity through Mendelian randomisation,[28] while early metabolomics studies suggest that stool markers, such as butyrate, may reflect inflammation status.[29]

However, stool profiling is not yet used in clinical practice. Even in AS, where *K. pneumoniae* has long been suspected,[6,21] routine testing is not recommended due to a lack of interventional evidence.

Overall, personalised gut profiling offers an exciting and compelling glimpse of precision medicine for IA. Studies like those at the Mayo Clinic suggest that microbiome data could help predict disease course and guide therapy, but large, longitudinal trials are needed before stool analysis becomes a standard part of arthritis care.

Evidence-based diet

Diet is one of the most powerful levers for shaping the gut microbiome. It is no surprise, then, that evidence-based dietary interventions are at the forefront of microbiome-centric strategies for influencing pain and inflammation.

- **The Mediterranean Diet**: Rich in vegetables, fruits, whole grains, legumes, fish and olive oil, it has well-documented anti-inflammatory effects. In RA, a systematic review found that adherence improved pain, physical function and even modestly lowered disease activity scores.[30] These benefits are partly microbiome-mediated: Mediterranean diets increase fibre, which serves as a prebiotic substrate and boosts SCFAs like butyrate. Polyphenols from olive oil act as selective antimicrobials, suppressing pathobionts while promoting commensals.

- **Anti-inflammatory and Nutraceuticals:** Foods with bioactive compounds can complement treatment. Curcumin, from turmeric, reduced pain and inflammation across 29 randomised controlled trials (RCTs) in RA, with efficacy similar to NSAIDs but fewer side effects.[31] It likely works via direct anti-inflammatory effects on the gut microbiota. Omega-3 fatty acids from fish oil have also been shown to enrich anti-inflammatory gut bacteria by directly acting on the gut–brain axis[32] and reducing the need for anti-inflammatory drugs in patients.[33]

Overall, diet offers a pragmatic route to reduce systemic inflammation. The Mediterranean diet stands as the most evidence-backed adjunct option, with omega-3s and curcumin offering modest, low-risk benefits to pain, making them sensible food-first adjuncts alongside standard therapy.

Targeted, personalised supplementation

While diet broadly shapes the microbiome, supplements can more directly address dysbiosis as adjuncts to standard therapy:

- **Prebiotics and probiotics:** Evidence for microbial supplementation in IA is promising but mixed. Systematic reviews of small RCTs in RA suggest that certain probiotic strains (e.g. *Lactobacillus casei* and *Bifidobacterium bifidum*) can modestly reduce inflammatory markers and improve pain scores,[34] although effects vary. Due to heterogeneous benefits, current guidelines do not recommend routine use. Prebiotics such as inulin and resistant starch enhance the production of SCFA and promote the growth of anti-inflammatory species, including *Faecalibacterium prausnitzii*. Early trials have shown improvements in systemic inflammation and fatigue.[35] Because responses differ widely, future use will likely involve personalised regimens guided by stool profiling.

- **Lactoferrin**: This milk-derived immunomodulatory protein shows dual anti-inflammatory and analgesic actions. In arthritis models, oral lactoferrin reduced joint swelling and bone erosion by shifting the immune balance away from Th17-driven inflammation and towards regulatory T-cell activity.[36] Beyond direct immune effects, lactoferrin supports gut health by restoring microbial balance, strengthening intestinal barrier integrity and reducing systemic endotoxin leakage, as shown in chronic inflammation models.[37] Together, these various actions (summarised in Figure 3) suggest lactoferrin could dampen the gut–pain axis and offer a novel means of relieving pain in IA. My own anecdotal experience with lactoferrin, which correlated with a gradual easing of my pain, offered a small glimpse of the potential hinted at in this emerging research.

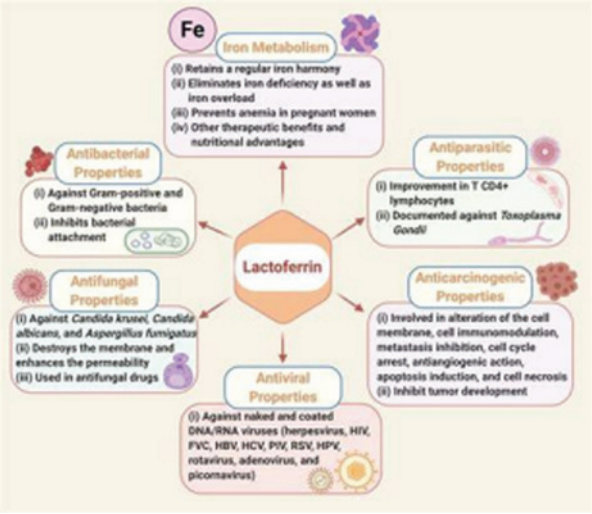
- **N-acetylcysteine (NAC):** As a precursor to the antioxidant glutathione, NAC can reduce oxidative stress and may reduce gut–joint inflammation.[38] It also has biofilm-disrupting properties, which may help break down the protective matrices formed by pathogenic gut bacteria, potentially clearing the way for beneficial microbes to thrive.[39]

Personalisation is key: rather than generic probiotic blends, future strategies may target specific microbial deficits – an approach that is still experimental but aligned with personalised medicine.

Lifestyle factors

Beyond diet and supplements, lifestyle behaviours strongly influence both the gut microbiome and chronic pain. Exercise stands out as a consistently effective, low-cost intervention. It reduces pain, improves mobility and enhances quality of life in arthritis. Less obviously, it also modifies the gut microbiome in pain-protective ways: moderate activity boosts microbial richness and SCFA production, especially butyrate, which

Figure 3. Diverse biological functions of lactoferrin.



Source: Ahmed et al.[40]

strengthens the gut barrier and dampens inflammation.[41] A 2025 meta-analysis of 20 RCTs in axial spondyloarthritis showed exercise significantly reduced disease activity and pain without drugs.[42] Importantly, this follows a U-shaped curve: moderate exercise nurtures the gut, while extreme endurance training can increase gut permeability and endotoxin release.[43] For arthritis, consistent low-impact activities – such as swimming, yoga and strength training – offer the best balance.

Lifestyle also encompasses sleep and stress, both of which are tightly intertwined with pain and gut health. Poor sleep is common in IA and not only heightens pain sensitivity but also disrupts the microbiome. Even a single night of sleep loss can induce hyperalgesia in healthy volunteers.[43] Sleep deprivation has been shown to reduce beneficial commensals, increase gut permeability and elevate pro-inflammatory cytokines.

Conversely, improving sleep hygiene or treating conditions such as sleep apnoea may indirectly stabilise gut–brain signalling and reduce pain flares. Stress exerts a similarly potent influence: activation of the HPA axis and sympathetic nervous system during chronic stress increases gut permeability, shifts microbial composition and amplifies central pain pathways via microglial activation.[21] Clinically, many patients report flares during periods of high stress, even when objective inflammation is stable. Mindfulness, cognitive-behavioural therapy (CBT), gentle yoga, smoking cessation and time in nature can all lower stress, enhance microbial diversity and ultimately strengthen the gut microbiome.

Taken together, these insights highlight that sleep, stress and exercise are not peripheral lifestyle options but central components of an integrative, microbiome-conscious strategy for managing chronic arthritic pain.

Limitations and challenges

While the gut microbiome is an exciting frontier in the study of chronic pain and IA, it is essential to acknowledge the current challenges that exist.

First, much of the human evidence remains associative rather than causal. While RA and AS patients consistently exhibit altered microbial profiles, animal studies suggest how gut microbes may modulate arthritis. However, results in germ-free mice do not always accurately reflect the complexity of human conditions, where psychosocial factors and the placebo response can significantly influence outcomes.

Furthermore, access to and equity in healthcare resources matter. Initial microbiome profiling often costs hundreds of pounds and, without proven clinical utility, risks widening disparities. Yet, if microbiome-guided care could reliably predict treatment response, it might reduce the use of ineffective biologics and save scarce healthcare resources.

However, in humans, large-scale interventional RCTs remain scarce, and analytic methods are not yet standardised, making findings hard to compare. The UK National Institute for Health Research has allocated £12 million for microbiome research in inflammatory conditions, with results expected by 2027.[44] Until then, clinicians can incorporate low-risk interventions (dietary modification, stress management) while awaiting definitive evidence for more aggressive approaches.

In summary, progress now depends on rigorous, large-scale trials and multi-disciplinary collaboration. The potential is exciting, but expectations must remain measured.

Conclusion

Chronic IA and the persistent pain it brings demand that we think beyond traditional treatments. This essay has explored how the gut microbiome may help explain why many patients continue to experience pain despite taking powerful anti-inflammatory drugs. Emerging evidence suggests that modulating the microbiome can influence both immune activity

and central pain processing. For me, this shift to actively reshaping my health was transformative – it gave me back the life that pain had quietly taken, and it is this hope for lasting relief that I now wish to share with others living with pain too. However, at present, microbiome therapies should be viewed as adjuncts to, not replacements for, standard treatments such as DMARDs and biologics.

Looking forward, we can envision a future where rheumatology care incorporates a new therapeutic triad:

1. **Immune control** pharmacotherapy using the treat-to-target model.
2. **Personalised Microbiome Modulation** through adequate fibre, omega-3s, Mediterranean-style diet and targeted pre-/probiotics in selected cases.
3. **Integrative Lifestyle Support** (exercise, sleep, stress reduction) to fortify the gut–brain axis.

The task now is to rigorously validate this model in large-scale human RCTs with measurable reductions in pain interference and improvements in quality of life. Immediate opportunities lie in designing multi-arm diet-microbiome trials and microbiome-stratified drug comparisons. These studies could inspire further engagement by providing insights into specific interventions that enhance treatment efficacy. If those trials are successful, we can integrate proven microbiome adjuncts, moving from managing chronic disease to delivering reproducible, clinically meaningful outcomes.

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Interview

Interview with EPCC Chair and Burning Nights founder Victoria Abbott-Fleming

Pain News
2026, Vol 24(1) 52–55

Sage

We sat down with Victoria Abbott-Fleming MBE to talk about her own pain story, her role in the BPS and her work with the charity she founded, Burning Nights.

Thank you for speaking with us Victoria. You didn't enter the pain world voluntarily, did you? Could you tell us a bit about your story?

No, it was definitely not voluntary. So 22 years ago, I had an accident at work. I slipped down 30 concrete stairs, and though I didn't break anything, I had major soft-tissue damage. The pain was definitely different, and it was like nothing I'd ever felt before. I was a hockey player. That's what I did at university and at school, so I knew what an injury was. I was an ice skater, so had regular injuries, but this was something else completely different, and it started me on the road of what's wrong? Why am I not healing?

You know the bruises all went away quite happily, but pain never went away. And it was a bit like having some, you know, really sharp knives thrown at your bone constantly.

That must have been difficult to take for someone who had been fit and healthy. What did you do next?

I was on the road of seeing multiple specialists, no one knew why. I kept being told 'Are you sure it's not you. You know it's in your head?' And you just start to question yourself, is it me? Am I really feeling this? So you have multiple scans and X-rays. Well, everything's fine. And in the end, I saw 39 different doctors and specialists, NHS and private.

So how did you come to a diagnosis?

I was seeing a physiotherapist, and she was coming to the end of her rotation. She said, 'I'm not happy with how this is going. I need you to see someone in the pain clinic'. I'd never heard of a pain clinic, didn't even know what it was. And she said, I'm going to get you an appointment. I saw a specialist there, and he said, 'I think I know what this is, in fact I'm 90% certain. You've got a condition called Complex Regional Pain Syndrome'.

What kind of treatment was offered?

Everything from vitamins to blocks. Then I moved to Salford for a spinal cord stimulator. I was in and out of the hospital, kept getting infections and then I got a very small ulcer one Christmas. Then another one, and another one. Eventually I had basically skin breakdown from the knee to the toes. I went through every antibiotic known, they tried combining them and I was just becoming resistant. Eventually they said there's no choice. It's either amputate your leg now or risk sepsis again and it not recovering. So that was the decision, and that summer, it was amputated above the knee.

Were you given a prosthetic?

I did get a prosthetic. I went to a private clinic down in Dorset for it. But it didn't work. I couldn't withstand the pain and the touch of it. And I was passing out just to have the leg put on. So I used crutches, sometimes in my wheelchair, but mainly crutches.

Did things stabilise from there?

No, I was hit with pneumonia. I had pneumonia near enough every year for about 7 years, and I thought can anything else really be thrown at me right now? We went to New York for Christmas. I got pneumonia again. I was admitted to the ER with sats of about 60; my heart rate was 150. I had swine flu, influenza A and five strains of pneumonia in both my lungs. They put me on ECMO (extracorporeal membrane oxygenation). You're given a maximum of 5 days, and after that they turn it off. I had it for their prescribed time, and I believe I was in the 24-hour zone where they were going to turn it off.

So obviously my husband's over there, in a foreign country. But I did start coming round that final day.

How was your CRPS in all this?

I started getting the familiar pain. The really, really harsh nightmare pain. Then I started getting the hypersensitivity, and I'm thinking, no, please not again. I got diagnosed with CRPS again in the other leg. I got the familiar ulcer, and it was amputated above the knee two days before my birthday. So I was 35 and spent my birthday in ICU.

I am in a wheelchair, but touch wood, it's not gone anywhere else. So I've still got CRPS, still got it in both my legs, well what's left of them, and I've got phantom pain in both.

You decided to reach out into the wider world, how did that come about?

Well I thought that I wasn't going to be able to pull myself through it again, so I set up a web page about CRPS. I did a little leaflet, did all my research, you know what it was, where it was, what could you do about it, and put it all on the website and social media, all within 3 months of my amputation.

I was getting inundated with questions and messages of 'Can you help me?'. It was literally from all over the world. We had people from South Africa, New Zealand, the Mediterranean, Canada, America, Mexico, even Japan.

That's when we started on the road to becoming a charity, Burning Nights. We became a registered charity in 2016, and it's just literally gone from strength to strength.

So what kind of work does the charity do?

We've got a variety of support services, support groups, a helpline, live chat, things like that. But we also do a befriending service. It's a weekly call with one of our lived experience team that have got CRPS, and it's just a way to get to be able to talk to someone that understands and gets it.

I never had that chance when I was going ahead with the op. I never had that opportunity of speaking to someone else that knew what I was talking about without having to go around the whole explanation.

That is fantastic, is there anything else that Burning Nights offers?

We also now have a counselling and psychotherapy service, so we offer 20 hours of therapy, whether that's talking therapy, CBT EMDR, yoga therapy, art therapy, psychotherapy and now a dance and movement therapist.

Obviously CRPS has its specific aspects, but are there commonalities with other long-term pain conditions?

Yes, a lot of it is the nonbelief, and also the disparity between the sexes and how they're treated. Women are often treated with a lot more, 'Why can't you handle it? You have kids. You should handle it', whereas men don't seem to be as harshly treated.

There is also a lot of loneliness and isolation, and that again is common throughout whatever chronic illness someone might have. Because it is an invisible illness, people are not understanding that it can also be a roller coaster. One day you're doing really great, one day you're doing absolutely rubbish and you can't manage it.

That isolation must make it even harder to cope?

Not being able to talk to other people is hard. You might be told you're the only one. Yes, you might be the only one in that practice, you know. But I mean, in Chinley, we're a small town of less than 10,000 people, but there are five in my practice alone. So it's more common than you expect.

And is it common for people to have something like your experience, where it is a long journey via different departments and waiting lists to get to your diagnosis?

What we're finding is about 2 years generally, or longer. What we also see a mixture of departments. You know, it might be orthopaedics, it might be in rheumatology, might be neurology.

And then it comes to an end when they say, 'Well, I'll refer you back to your GP'. The GP doesn't know how to deal with it because they're a generalist, and we're stuck in the middle as patients. The lack of communication I always find is really hard.

A common question we get asked here is 'What is the pain clinic and how do I get to it?' You know, because the GP has been trying to deal with it themselves, and because

they know the pain clinics are full and there are long, long waiting lists.

For you now what does pain management on a day-to-day basis look like?

So I've got a box full of tricks and tips that I use, you know, everything from journaling to mindfulness. I do try and do a mixture, but learning self-management has been something that I've had to teach myself along the way. It's something that again needs to be looked at. Nobody knows what it is, and you're stuck on meds and you're like, okay they're not working. Now what? I do take medication, but I have a limit.

I'm guessing that a lot of the work of the Burning Nights is helping people to navigate for themselves to find their toolkit

Right, you can say this is what I do, but it might not work for you. Sometimes people do want you to give it to them as 'This is what you have to do, go do it'. But it doesn't work like that. Years ago, 'pacing' was about the only thing. But you learn about things, a lot of it from Australia or America; there wasn't a huge amount from the UK, but obviously now things are different.

Patients are still left to navigate on their own, and sometimes they just need a bit of guidance.

And our health system is not built for that kind of management approach, is it?

No, not for long-term conditions. It's not really built for that. You know the mental health side, that's one of the reasons why we did start the counsellor psychotherapy service. It was based on our experience, a collective experience.

Locally, once you've done your six or eight sessions, you've then got to have at least a month off before going back to them again. And you've got to go back with a different reason. Well, it doesn't work like that with chronic pain. That is your reason, but that sometimes isn't enough for them.

How did you get involved with the British Pain Society?

That was all down to a past President, Arun Bhaskar. He invited me to apply. He'd seen the work that I'd done for CRPS when no one was talking about it. He said, would I consider doing it? The opening came up for the patient advisory group, or what is now EPCC, and it was as the chair position. So I gave it a go, and I'm coming to the end of my term now, my second term. I'm finishing at the next AGM. There have been a lot of changes for the better, and a lot more about lived experience is central to BPS now, which is nice to see.

You were awarded an MBE for your work, how did you find out about that?

It was completely shocking, to be honest, so mine came by e-mail and I did think that it was spam. I really did. I was really shocked, but humbled. My investiture was with Princess Anne at Windsor.

I cannot believe what I actually said to the Princess Royal. I mean, I still cringe about it now. I said, 'I'm sorry, ma'am, but you really look tired'. Why? This was my one opportunity and my mouth goes to that. So she was obviously stunned by what I'd said, but she did say, 'You know what I'm shattered!'

Then we proceeded to then talk about Derbyshire and then obviously the charity, and I was just amazed what she knew about it and about me.

Have you noticed that it generated more awareness? Has it had an impact in that sense?

In a way, yes, because more people ask what you got it for, and then it's an inroad to say, well, this is the charity.

Looking into the future or what are the areas you want to develop?

Yes, we want to do a lot more on policy, you know, certainly on chronic pain definitely and disability. I mean I've seen all angles of disability in terms of being in a wheelchair, on crutches, without crutches with a walking stage. And I just want to be treated the same as everyone else. So why can't I go into, you know, the local shop? Just because I'm in a wheelchair doesn't mean to say I can't.

With the charity, we want more pain clinics to be aware of what we do, you know, because we've got services there that

they can easily tap into. They don't have the time to give, whereas we can. So we can offer those services for people. And obviously we want to grow the charity. This year we supported just short of 5,000 people.

In terms of the individuals who can access the service, is that UK only?

Yes, so the counselling and the befriending are UK only. It's mainly because of the safeguarding and the insurance as well. If somebody needs support then we'll help them as much as we are able, within our limits. The support groups are online, so it makes it easy for people to attend, and we do get people from over the world for those, which is always nice to see because at the end of it, CRPS is CRPS.

It has been great to speak with you, are there any last words?

Just to say thank you really to everyone at BPS for all their support over the last 6 years. I've met a lot of amazing people. They don't know they're amazing, but we see it. I've enjoyed my time here.

Research and media

Pain News
2026, Vol 24(1) 56

With all the peer review research and media output, it can be easy to miss good content. Here the Pain News editorial team gather up items that have caught their eye.

Peer reviewed journals

Wang ZY, Ding YQ, Wen JM, et al. Trigeminal root demyelination is sufficient to induce trigeminal neuralgia-like facial pain in adult rodents. *J Headache Pain* 2025; 26(1): 264.

In this study, Wang et al. develop a novel model of trigeminal neuralgia in mice and rats through focal demyelination of the trigeminal nerve. The animals exhibit facial pain-like behaviours which resembles trigeminal neuralgia in several ways including asymmetry of pain, greater reduction of pain-like behaviours with carbamazepine compared to pregabalin and the requirement of nociceptive afferents for pain-like behaviours. Importantly, this article presents a reproducible model towards investigation of potential underlying mechanisms of trigeminal neuralgia that might present opportunities for improving diagnosis and treatment of the condition.

Habib AM, Li S, Zhang C, et al. MDFIC2 is a PIEZO channel modulator that can alleviate mechanical allodynia associated with neuropathic pain. *Proc Natl Acad Sci U S A* 2025; 122(45): e2512426122.

MDFIC2 is a protein expressed in some nociceptor sensory afferents that modulates PIEZO1 and PIEZO2 channels such that a higher force is required for activation, suggesting a role in modulation of mechanical sensitivity. Habib et al. go on to show that in mouse models of neuropathic pain, MDFIC2 levels drop in correlation with the onset of mechanical allodynia. However, intrathecal injection of MDFIC2 partially reverses this mechanical allodynia, without affecting thermal hyperalgesia or cold allodynia. Taken together, these results indicate a potential therapeutic avenue for mechanical allodynia.

Elise Ajay

From the media

Phantom pain

Broadcast as part of Curious Cases series on BBC Radio 4, on Monday 15th December 2025 and now available on BBC Sounds or as a podcast: (Length 28 minutes)

Dara Ó Briain and Professor Hannah Fry investigate phantom pain and other sensations with Professor Tamar Makin, Professor of Cognitive Neuroscience at the MRC Cognition and Brain Sciences Unit at the University of Cambridge, where she leads the Plasticity Lab; Lynn Williams, a qualified therapist and upper-limb amputee who volunteered as a subject for one of Tamar's research programmes; Carlos Roldan, Associate Professor in the Department of Pain Medicine at the University of Texas MD Anderson Cancer Centre and Keren Fisher, a Consultant Clinical Psychologist who's worked in the NHS for more than four decades, largely in pain management at the Royal National Orthopaedic Hospital.

Patrick Hill

Chronic Pain and the Limits of 'Lifestyle' approaches by Dr David Blane. *Pain Matters* (2025)

A wonderful note of compassionate caution as modern pain healthcare seeks its perceived Holy Grail of an intervention that is suited to everyone and works for everyone (and ideally at low cost)

Martin Hey

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