

SEPTEMBER 2022 VOLUME 20 ISSUE 3

# PAIN NEWS

A PUBLICATION OF THE BRITISH PAIN SOCIETY



The Good Samaritan, after Delacroix. Vincent van Gogh. 1890

How to set up an MHRA approved Cannabis Trial

What motivates us?

What can be done to prevent pain?

Pain News roundup

#PainAwarenessMonth

Cristallo

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PAIN NEWS SEPTEMBER 2022

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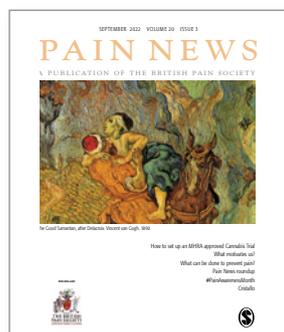
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<https://www.britishpainsociety.org/for-members/pain-news/>

# Healing the healers part 2: motivation

Rajesh Munglani



*Saint Pantaleon the Healer. Пантелеймон Целитель* Nicholas Roerich. 1916: Imperial Academy of Arts, Saint Petersburg, Russia.

*When you are asked why you want to study Medicine, under no circumstances say you want to help people – because then they will say so why then don't you become a nurse?*

I swallowed hard, my mouth dry and my hands sweating, and looked at the three stern faces opposite me across the table. This was my mock interview practice organised by my grammar school. I had four interviews lined up from various medical schools, and the sole purpose of the three teachers in front of me was to prepare a naïve and very spotty 16-year-old to be offered a place at one of them.

The thin, fierce-looking biology teacher was in the middle of the three. On each side, an overweight male teacher, one smelling of smoke and having nicotine-stained fingers who taught physics in between going out for puffs on his cigarette, and the chemistry master called Rasputin (he had a thick dark beard – I jest not – ok, I do jest, his name was Rispoli, but Rasputin is what we called him – he took it in good humour, even for the 10,000th time). I think in the 7 years I was at the grammar school and sixth form, I saw a smile once escape from the face of Ms Fierce, the biology teacher; only once did her lips soften from their usual tight-lipped expression. She went on to say,

*Doctors have to display a high degree of manual dexterity – what have you done that can demonstrate to us that you have the required level of skill?*

I fidgeted in my seat, sitting on my sweat-drenched hands. All I could think about was sewing, knitting and crochet – and I hadn't done any of those. Oh, actually I had done a cross stitch when at primary school. It was a complete disaster, and the fruits of my labour were noticeably absent from the display board on parents' evening. Suffice it to say, *the girls'* efforts were beautiful, imaginative and now filled me for the first time with a deep longing. I suddenly had a brain wave. 'Well', I said, 'I'm very good helping my dad at sorting out vegetable seedlings'.

The three teachers looked at each other with a pained expression. At the last moment, I had decided on studying medicine rather than science at university. I don't quite know why I did so or what I might be letting myself in for. There were no doctors in our family at all. Our family general practitioner (GP) found out my intentions from my father. Dr Brown, tall, always with green tweed jacket which contrasted his pale white skin and shockingly bright frizzy red hair, which I always stared at, and that booming cheery Scottish voice. Dr Brown invited me for a 10-minute chat. I was so relieved he didn't ask me *why* I wanted to do medicine – to be honest, I didn't really know.

Flame-haired Dr Brown talked about helping generations of the same families, of bringing into and helping them out of this world and caring for them on the way. He talked about sorting through various vague and obscure symptoms and looking for signs and elucidating patterns to what was the cause of *their* sickness and then providing the necessary salve. He smelt of antiseptic and there were glass syringes and big shiny instruments on the mantel piece in his surgery. He showed me how to take a blood pressure, wrapping the cuff firmly around my arm with those big reassuring Scottish hands. He had spent of course far more than the allotted 10 minutes with me and as usual was running late for his clinic. I am still grateful to him.

When I saw the acetates of the layers of the human body in Encyclopaedia Britannica being turned by the door-to-door salesman, with me trying not to blush in front of my parents at the vivid nudity which was displayed in far too graphic detail for an awkward teenager, I was struck, as I saw deeper into the body as one coloured acetate was turned after another, that there weren't any spaces in the body – no big gaps between

the organs, and certainly not like the stereo system I had just taken apart. Everything fitted so neatly together. Why didn't the blood just leak out of the vessels where they joined together? Why did the heart continue to pump – *always*? And how did the heart know how to speed up when I had to race on the school fields? Why didn't I ever forget to breathe – especially at night? Why did I *need* to sleep and, really importantly, where did I think? Where was *me* in me? How did I know it was really *me* in my brain?

Why didn't the three teachers enquire me about any of that, rather than if I could sew or knit?

I did as you can guess by me writing here, enter medical school. I had three offers to choose from; the A-level grades required were CCC, BCC or BBC. I put the BBC offer first and CCC as my reserve. I don't think Charing Cross and St Mary's every forgave me for *not* putting them first.

At my medical school interviews, I was asked what I was interested in. At St George's, I was encouraged to talk about the human body and I remember saying, 'It's really only a machine, so let's apply physical and electronic principals to it'. They asked me what I might do if I was offered a year to do part of another degree in addition. I said I would like to study engineering to be applied to such biological systems. I described what I had just built with my electronics kit. After 20 or so minutes of me talking enthusiastically of how badly the body seemed to be designed *in my opinion – it was ripe for going wrong ...* (oh the arrogance of youth!), the lady in charge (who I later found out was the Dean) suddenly interrupted me:

*'Well, I think we are all agreed'*, she said, looking at the other three men and three women around the table. She smiled at them and in return they all smiled and nodded:

*We would like to offer you a place here to study medicine.  
We look forward to seeing you next Autumn.*

'Thank you', was my astonished and hesitant reply, and each in turn shook my hand. There was going to be no anxious interminable wait for a letter here to drop through the letter box. That was it, assuming I got the grades (anyway, I was predicted far higher). I thought to myself – *so this is me and the rest of my life*. They had believed in me at the interview and therefore without hesitation I put them first on the UCAS (Universities and Colleges Admissions Service) form. Not once in all my interviews was I ever asked why I wanted to do medicine. A smile – the first I'd ever seen – painted itself across the face of Ms Fierce, the biology teacher, when I told her I had been offered a place to study medicine that day.

Thirty-eight years after that interview at St George's, as I now approach home straight of my professional career, I suppose I could also call it the Autumn of my medical life (as long as it is the anticipation of a long, warm and golden late Indian summer). I realise there is no one good or right reason why people go into the healing arts, but the more important question for me now is: why do people stay in such a demanding career when they find out what it really involves? If we can answer that then perhaps, we can answer why so many of us are leaving as soon as they possibly can, with no intention of coming back. All but one of my local medical friends in the village are retiring often well before or at the age of 60. A report in *The Times* (2 August 2022) revealed 3,440 midwives left in the period 2021–2022 and just 3,144 joined<sup>1</sup> (and this is on top of pre-existing national shortage). One report stated we are short of 84,000 full-time equivalent staff in the National Health Service (NHS).<sup>2</sup> The Nuffield Trust calculated we are short of 12,000 doctors and 50,000 nurses and midwives.<sup>3</sup>

So what motivates us to stay once we find out what it's really like working in healthcare? Positive interactions with our patients, colleagues and a positive workplace environment are the simple answers.<sup>4</sup> This has been studied in more detail in relation to Maslow's Hierarchy of Needs, which states that when we get beyond the basics of food and drink, we turn our attention to safety, security and shelter – at this level, you can also add in money and job security. Higher up, emotional and social needs are next, including the need for belongingness and love. We satisfy our social needs through interacting with colleagues and we need to be able to work in peace. Good working relationships are a powerful motivator.<sup>5</sup> It goes further, we will then seek self-esteem,<sup>6</sup> reputation, recognition and appreciation.<sup>7</sup> Eventually, possibly near the end of our life's career, we seek transcendence or, in Hindu philosophy, the fourth stage known as Sannyasa, where we let the responsibilities of the earlier years' life, family and work fall away and we put on a saffron robe and wander into the hills.

No wonder we are in such dire straits in the NHS. The relationships with our patients are fraught, they are angry at not being seen soon enough and being heard. As staff, we also don't feel seen and heard, and certainly not appreciated by our managers, and definitely not by politicians.

It follows then if we are to think again about the service we provide, we have to first care as much for the healers as for those we heal. It is more likely than not that the professional colleague you first met when you entered your workplace today is at either moderate or serious risk of burnout, according to the General Medical Council's (GMC) recent survey.<sup>8</sup> Being burnt

Healing the healers part 2: motivation

out mentally and physically, dealing with desperate and often angry patients, working beyond your shift to look after a sick patient when no-one else is around and then being told you can't be paid for staying late (as it would be contractually illegal to stay late, and you can't be paid for doing something illegal) is not a long-term sustainable scenario, but it is the new norm.



Trinity of the Broken Body. Robert Campin 1410. Renaissance Oil Panel. Städelsches Kunstinstitut, Frankfurt am Main, Germany.

Where would I start to change things? The NHS staff are not the problem, they are *the only solution*, but you have to nurture and care for them also. What is the problem in NHS staffing levels in the face of overwhelming demand and a system which cannot cope with managers and politicians who deflect and project the problems onto the front-line staff, the latter who bear the ultimate responsibility for care but without the power to bring about required change.

We in the health services need to have *our* symptoms and signs looked at, to find out what troubles *us* and for our sickness to be diagnosed for a salve to be provided. Then in turn we can care for our patients.

After all these years, I want to say that the reason I carried on doing Medicine was because I *did* care and I *did* want to help people, but I have also learnt that I and my colleagues around me also need to be cared for.

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# Jenny Nicholas



Hello and welcome to the September issue of *Pain News*. Did you know that September is Pain Awareness Month? The International Association of the Study of Pain (IASP) has developed a range of resources to help promote #PainAwarenessMonth which can be found on their website at: <https://www.iasp-pain.org/advocacy/pain-awareness-month/>.

Read more about Pain Awareness Month in Margaret Dunham's news roundup article later in this issue.

A sneak peek of what else we have in store for you this issue ...

- We commence this issue with part two of a series looking at 'Healing the Healers'. In this piece our Editor, Dr Raj Munglani looks at 'Motivation' and gives a personal account of his motivations to work in medicine.
- Prof. Roger Knaggs, President Elect outlines his view on the future vision and strategy for the Society and would welcome hearing from our members.

- How to set up a MHRA approved cannabis trial for chronic pain in the United Kingdom by Arthur Wakely, Managing Director of Celadon Pharmaceuticals Plc. This article looks at the need for such a trial in the United Kingdom, what the trial will focus on and what steps were undertaken to establish it.
- Margaret Dunham, our Associate Editor provides us with this editions roundup of all things pain news! We would be delighted to hear your news that we may feature in this section of *Pain News*, so do keep us informed on that is happening to improve your work and practice wherever you are.
- We have a call for expression of interest: The Pain and Opioids after Surgery (PANDOS) study-supported by the European Society of Anaesthesiology and Intensive Care (ESAIC).
- Sophie Rainbow, winner of the 2022 Andrew Lawson Prize at the RSM, shares her winning paper on 'What can be done to prevent pain?'

We do hope that you enjoy this issue of *Pain News*, and we are always glad to hear your feedback!

## Have your say

We would welcome your view and letters on any of the topics we have covered in this, or previous issues of *Pain News*.

We also welcome articles, so if you have a story to share, please contact us at [newsletter@britishpainsociety.org](mailto:newsletter@britishpainsociety.org). We would be delighted to hear from you!

# President's message

Dr Arun Bhaskar



Dear Friends

I trust this finds you well.

I hope you have had a well-deserved break with the summer holidays with the heat waves bringing Mediterranean climate to



Changing Horses. Charles M. Russell (Public Domain)

our shores. I had mentioned in my previous message that the increasing workload compounded by the waiting list pressures has been mounting, and this is despite many of you burning the candle at both ends to meet this demand. It is important to look after yourselves and each other to ensure that support is given to prevent exhaustion and burnout that is being currently seen in various specialties. It would be helpful to bring this to our attention if you have any issues where you are not been supported locally.

## New faces

It gives me great pleasure in welcoming Prof Roger Knaggs as the President-Elect of the British Pain Society (BPS) and in this forum, he will be sharing his thoughts and vision on how to take the Society forward in the coming years. Roger brings in a wealth of experience not only from his numerous interactions in various capacities, but he is also well versed in the inner workings of the BPS as previously he has been an Elected Council Member, Hon Secretary and Vice-President. The current executives will be working alongside Roger and Dr Neil Collighan, Hon Secretary-Elect to make plans for the future and also to chart out a smooth transformation process to the new team. I would like to take this opportunity to congratulate not only the newly elected office-bearers, but also those who put themselves forward for the election. Once again, I would like to put forward a call to all of you who want to engage and contribute towards the development of the Society to get in touch me or anyone of the Council members as there are plenty of opportunities to lead on exciting projects that are in the pipeline. I have previously written about one of the issues that keep cropping up is the lack of representation in the membership of the BPS from some parts of the United Kingdom and also how few member we have from some disciplines and this obviously needs addressing.

I am sure most of you would have had either personal, virtual or email contact with Ms Dina Almuli at the BPS Secretariat or during the ASM or other meetings. Dina has been our office manager at the BPS for almost a decade and has been working together with Ms Jenny Nicholas, CEO of the BPS in the day-to-day functioning of the Secretariat. I very much appreciate all the support Dina has given me while I was Council member, Chair of the Communications Committee and more lately as President. Dina has been offered and accepted at another organisation and leaves for that post at the time of writing. I would like to take this opportunity to thank Dina on behalf of the

Council and all the membership and also on personal level for all her support and contributions to The British Pain Society.

### Plans for the ASM

It was an absolute pleasure meeting some of you at the ASM at the Hilton, Wembley. Some of you joined the meeting online and the online platform enabled everyone to view all the sessions at their leisure over the following weeks. I was honoured to chair the British Pain Society Lecture given by Dr Tim Deer and also the Patrick Wall Lecture given by Prof Esther Pogatzi-Zahn. I found stimulating the debate between Prof Rachelle Buchbinder and Prof Andrew Moore. I would like to take this opportunity to thank Dr Stephen Ward and the Scientific Programme Committee for putting together varied and exciting plenaries and parallel sessions. I thank Dr Ashish Gulve, our various industry partners, Kenes and the Secretariat in their support in organising a successful ASM. Dr Stephen Ward and the Scientific Programme Committee are already working towards the next ASM programme and Kenes is looking at potential dates and venue. I am hoping that you will have received communications regarding this by the time this edition of *Pain News* reaches you.

### The future



Simultaneous Visions Umberto Boccioni 1912; Milan, Italy  
Location: Von der Heydt Museum, Wuppertal, Germany

I have a few more months left as President before I hand over to Roger and as I had highlighted in my first message, that my

priority was to ensure loss mitigation and stabilise the finances. I have had considerable support from Dr Ashish Gulve, Hon Treasurer and Dr Ayman Eissa, Hon Secretary along with Prof Knaggs and the Council members in addressing this pressing issue. The global pandemic was a curve ball that was unexpectedly bowled and impacted us all and it also derailed our original plans. We were already facing the challenge of a decreasing membership and attendance in our ASM and other meetings even before the onset of Covid-19. The cancellation of the 2020 ASM and the enforced change to a virtual meeting in 2021 did not improve the finances. We eventually had a hybrid meeting in 2022 and thanks to the excellent support from our industry partners, we were able to offset some of the additional expenses we incurred by making it a hybrid meeting. It is with optimism that I look forward to the 2023 ASM, that it will be a face to face meeting and we shall be aiming for joint meetings with other societies from within the United Kingdom and beyond. As with anything in pain management, collaboration is the key. Nothing will be possible without appropriate finances in place and in this regard, I will continue to promote the various ongoing initiatives. It is imperative that we look at alternative options to the ASM and membership fees as income sources and implementing an Industry Support Scheme and the 5-year plan envisaged by Dr Ayman Eissa. Also I will aim to deliver the guidance documents on Neuromodulation and Cancer Pain Management.

The long summer and the coming winter poses new challenges national and international, with new strains of Covid, the economic downturn, the political uncertainties within the government, the ongoing war in Eastern Europe and even the threat of a global conflict. However, we are committed to deal with our patients whose physical and mental health has also been detrimentally affected by delayed treatments. It is imperative that we focus on this matter and work together to support our patients and colleagues.



States of Mind I: The Farewells Umberto Boccioni 1911; Milan, Italy  
Location: Museum of Modern Art (MoMA), New York City, NY, US

# From the President-Elect

Professor Roger Knaggs *University of Nottingham & Primary Integrated Community Services*



It is a great honour and privilege to be appointed President-Elect of The British Pain Society, one of the oldest pain organisations worldwide, at the Annual General Meeting earlier in the year. Many of you may recognise me or my name as I have been a Council member or Executive Officer for a considerable number of years.

As there were no other nominations for President-Elect and therefore no election was required, I am sharing the election statement that I had prepared:

*The vision and strategy for the British Pain Society must support all members from different professions to support the many people that experience pain in the UK. It is vital that the BPS continues to promote individualised evidence-based treatments to provide the best clinical care for all. Our knowledge and expertise need disseminating to non-specialist and primary care healthcare professionals. Looking to the future, the BPS needs to provide members with what they value and need most; particularly networking opportunities, interprofessional education events and vibrant Special Interest Groups.*

*I have contributed to the work of the BPS for many years as a Council member, Honorary Secretary and Vice President. Over this time, I have gained an in-depth understanding of the working and governance of the Society. I have contributed to numerous projects and publications, led responses to consultations on medicine-related issues, responded to media enquiries and am co-editor of our Society's British Journal of Pain.*

*I am not afraid of hard work and will work collaboratively with the other Executives and Council members. It would be a great honour to represent you as President-Elect and*

*I welcome the opportunity to contribute further to the work of our Society.*

We all know the impact that pain has on people's lives and the consequences not just for the individual, but their family, friends and the whole of society. The British Pain Society is an alliance of professionals advancing the understanding and management of pain for the benefit of patients. Primarily as a member organisation, it is essential that The British Pain Society provides what its members value and need. I intend to review how the Society communicates with you, our members, to ensure that you are aware of the work undertaken by the Council and its Committees on your behalf and to give you more opportunities to contribute to the work of The British Pain Society. We all are very grateful for the ongoing work of the Secretariat to support the day-to-day running of the Society and the numerous workstreams.

The work of our current President and Treasurer, Arun Bhaskar and Ashish Gulve, has maintained the financial viability and sustainability of the Society during a pandemic that few could have predicted would have such an impact on the National Health Service (NHS) and national and global economies. The pandemic has revolutionised the way in which we interact with each other, and the Society needs to adapt to meet these changing needs. In addition, the Special Interest Groups (SIGs) of the Society provide opportunities for groups of individuals with an interest in a specific topic to come together and discuss in more detail. At a recent SIG Chairs meeting, there were numerous exciting and innovative approaches that highlighted these achievements, but it would be nice to see highlights shared more widely with all members of the Society.

However, pain is a feature of almost all medical specialities. We need to ensure that we use and apply our specialist knowledge to ensure that we support our non-specialist colleagues and those working in primary care. The NHS has always been a political football and we need to ensure that we align with current priorities to maximise opportunities to ensure the best care for people with pain. To do this, we need to engage with other independent and third-sector organisations that deliver care to or work with people with pain. The work

started in this area by the Honorary Secretary, Ayman Eissa, needs to be developed and progressed.

At the centre of all we do must be the welfare of many millions of people living with pain in the United Kingdom – whether this is due to pain after surgery, the numerous types of chronic pain, or pain associated with cancer. I intend to ensure that remains the case throughout my term as President and I

value the contributions that all members of the multidisciplinary team bring to support the Society's aims and values. If you have ideas or comments regarding anything pain-related or how The British Pain Society can strengthen its position, I would like to hear from you, so please do get in touch.

The British Pain Society is YOUR Society and it needs YOU to flourish.

# Pain News Round up

Margaret Dunham *Associate Professor, Edinburgh Napier University*



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## Pain Awareness Month September 2022 #PainAwarenessMonth

After the heat of this strange summer of 2022, the soft lit shorter autumn days are hopefully pleasing. The pandemic has highlighted the notion of nature as healer; its benefits in psychological wellbeing are being more widely appreciated and there is growing evidence for the use of outdoor spaces in the management of chronic pain. In a recent study bringing nature indoors, use of a nature based virtual reality intervention for older people in residential care has been strongly associated with reduction in stress, improved cognitive function and general well-being.<sup>1</sup>

If you are reading this pain news section, you have a vested interest in pain and pain management, most probably from a professional perspective. However, the idea of pain as an area of importance and certainly as a delineated profession within health expertise is still quite novel and should not be taken for granted as it is always vulnerable to review by people less well engaged or who just don't 'get pain'.

The modern history of pain management and pain services will be within the lived memory of many reading this section, and the writer. A time when four hourly injections provided a very unsatisfactory approach to post-operative pain relief. Merely 32 years ago, the 1990 joint working party paper on 'Pain after Surgery',<sup>2</sup> was a welcome report on what should and could be done for post-operative pain management. This timely report prompted a flurry of supportive research, including in the same year a study supporting the notion that poor preparation and education of both patients and staff led to poor pain relief.<sup>3</sup> Alarming, only 50% of the staff interviewed in this study thought that post-operative analgesia should relieve pain completely. Thus hailed the launch of a generation of patient-controlled analgesia devices.<sup>4</sup> Associated with the ethical humanitarian justification for improved post-operative analgesia was a theory proposing that surgical trauma could induce nervous system sensitisation thereby contributing to the development of chronic pain.<sup>5</sup>

Many eloquent and vigilant colleagues have worked hard to raise the importance of managing all forms of pain across the

lifespan, no easy task. So, we must never take this progress for granted, especially as in the midst of the recent pandemic pain services have been vulnerable to severe pressure to reform and at times reduce their provision. And as health professionals we welcome September's Pain Awareness Month endorsed by the World Health Assembly, IASP and The British Pain Society.<sup>6</sup> The campaign is being supported with 30 personal accounts of living with pain and will freely be available as a strategy to build empathy, awareness and understanding of the implications of living with chronic pain <https://uspainfoundation.org/news/30-days-30-stories/>

The June 2022 World Health Organization (WHO) statement on menstrual health and rights<sup>7</sup> is also to be applauded especially the promotion of a right to medical leave when experiencing pain, discomfort and other symptoms related to menstruation. Another area where those of us in the industrialised world forget that such fundamental humanity is not enjoyed by all.

In 2022, we have seen a long overdue collaboration between the British and Irish Pain Societies to create a patient leaflet, *Managing Pain After Surgery*, that encourages the development of a personal pain management plan and promotes the reduction of opioid use. This approach to engaging with patients as partners in their own plan of care through education complements The British Pain Society's document *Understanding and Managing Pain After Surgery* (2018).

The US leads the world in many things, and we learn much from their pain research centres. Unfortunately, this is not the case in relation to anti-opioid litigation related to 'medical malpractice'. The persecution of doctors legitimately prescribing opioids continues to be an area of great concern. However, there does appear to be some common sense in the US supreme court. The court has ruled recently on the bizarre case of two doctors who had been convicted of drug trafficking because they prescribed opioids in the course of their 'normal medical practice'.<sup>8</sup> Six of the 9 supreme court justices found that a doctor cannot be convicted of drug trafficking if he acted in 'good faith'

when prescribing opioids. This maligning of doctors acting in good faith, and the associated censure of appropriate opioid prescribing, is something that needs to be urgently reversed.

Novelty in pain management is welcome and non-pharmaceutical approaches in post-operative care are particularly acceptable to these opioid wary times, so the development of a new water-soluble pain implant is intriguing. Implantable devices have been around for a number of years, and in the United States a research team at the Northwestern University, Illinois, has developed an implant that purports to 'relieve pain on demand without the use of drugs'.<sup>9</sup> This soft, tiny object is an implantable cooling device that is intended to temporarily block nerve conduction, human trials are expected soon.

In the coming months, we need to take stock of how pain services across the United Kingdom can be supported to meet

the needs of a growing aged population and the effects in over 2 million people affected by long-covid ...

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# How to set up a Medicines and Healthcare products Regulatory Agency–approved cannabis trial for chronic pain in the United Kingdom

**Arthur Wakeley** *Managing Director, Celadon Pharmaceuticals Plc*

## Our story

For those leading the company, this has been a very personal mission to produce a high-quality trial for cannabis-based medicines. James Short (CEO and co-founder of Celadon Pharmaceuticals Plc) saw his sister's experience of living with multiple sclerosis for years and also witnessed first-hand the potential benefits of cannabis-based medicines for her condition. James also spent months talking to patients across the United Kingdom – as well as travelling to Canada – who were already using such medicines for a variety of conditions and decided to found Celadon in 2018, with a focus on evidence-based medicines for chronic pain. Despite witnessing these accounts of how cannabis-based medicinal products (CBMPs) could transform the lives of those suffering pain, James was acutely aware of the lack of published high-quality evidence in the United Kingdom to support doctors in prescribing CBMPs.



James Short CEO & Co-Founder, Celadon Pharmaceuticals Plc

As the author of this article (Arthur Wakeley), I come from a family of doctors stretching back generations: my father was the President of the British Society of Skeletal Radiologists (BSSR), and my great-grandfather was the President of the Royal College of Surgeons between 1949 and 1954. I am now the Managing Director of Celadon Pharmaceuticals. Helping patients and making a difference in the world run in the DNA of

my family. Many of our company's employees have personal experience of living with the daily realities of chronic pain, and we are all very much aware of the difference it can make to the quality of life of an individual (and those around them) when symptoms are well managed.



Arthur Wakeley Managing Director, Celadon Pharmaceuticals Plc

LVL Health is supported in the majority by Celadon Pharmaceuticals. Together we are on a mission to improve quality of life for patients with non-cancer chronic pain. We hope that our Medicines and Healthcare products Regulatory Agency (MHRA)–approved CANPAIN trial using cannabis-based medicines will prove to be a game changer for patients, regulators and the medical community.

LVL's CANPAIN trial for non-cancer chronic pain using CBMPs was launched in 2022, and currently, it is the only MHRA-approved trial of its kind in the United Kingdom. Put simply, it aims to provide the most robust data set to date on CBMPs for doctors, patients and regulators, which in turn will enable doctor confidence in the safety and efficacy of the medicines. We hope the achievement will facilitate further trials

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and, importantly, potentially encourage the National Institute for Health and Care Excellence (NICE) and the National Health Service (NHS) to cover the cost of CBMP prescriptions for appropriate indications in the next few years.

We started with the knowledge that CBMPs, in real-world case studies and overseas, have shown promise in the management of the multitude of symptoms that make up the chronic pain patient experience, if administered at the right dose, for the right patient, at the right time and using the right method.

LVL's trial is supported by Celadon Pharmaceuticals, which not only cultivates and extracts cannabis-based medicines but is also committed to the research, trials and further development of breakthrough CBMPs. Celadon recently became the only company since GW Pharma, who developed the licensed cannabis-based medicines Epidiolex and Sativex, to list on the Alternative Investment Market (AIM) market of the London Stock Exchange, with Home Office and MHRA approvals.



Celadon Pharmaceuticals Controlled Environment Cultivation Rooms (indoor hydroponics)



Celadon Pharmaceuticals laboratories

### The need for cannabis-based medicines

There are an estimated 28million adults living with chronic pain in the United Kingdom;<sup>1</sup> many of whose pains are not well controlled with current treatments. At the same time, NICE has been whittling away at even these available treatments,<sup>2</sup> leaving doctors and patients uncertain about the future.

Cannabis-based medicines have the potential to provide a new therapeutic tool for those patients, for whom current symptom control strategies are not working. Evidence suggests that tetrahydrocannabinol (THC) and cannabidiol (CBD) may be helpful for management of neuropathic and nociceptive pain, fatigue, muscle relaxation, anxiety, mood elevation, sleep and inflammation (*Cannabis: The Evidence for Medical Use*<sup>3</sup>). A large evidence base has been developed since the discovery of the human body's natural cannabinoid receptors (CB1 and CB2) by scientists in the 1980s. Our endocannabinoid system (ECS) plays a central role in maintaining homeostasis and normal bodily functions, as well as responding to environmental stimuli, stress, injuries and infection.

In 2019, NICE reviewed data available at the time on CBMPs for pain management, and they concluded that there was not sufficient evidence to recommend it and called for more data on the benefits of CBMPs in chronic pain to help inform them about the possibilities for reimbursement on the NHS. LVL's CANPAIN trial is a direct response to NICE's recommendation in 2019 for further research into cannabis-based medicines, by successfully designing a trial that has MHRA approval to study the effects of whole cannabis flower on non-cancer chronic pain.

This is the culmination of 2 years and £4 million of (very hard!) work and expense, including navigating the complex regulatory and Home Office landscape. It has required on our part the collaboration of expert clinical researchers, pain specialists, pharmaceutical companies, cannabis medicine producers and distributors.

### Background as to why this trial is needed in the United Kingdom

In November 2018, the Home Office rescheduled cannabis-based medicines to Schedule 2 status in response to guidance from the Chief Medical Officer and the Department of Health. This enabled these medicines to be prescribed under a 'Specials Licence' to help patients with an unmet need who had exhausted all other established treatment options. This significant change in classification was a recognition of this real unmet clinical need of millions of patients with a wide range of conditions, including Epilepsy, Multiple Sclerosis, Crohn's Disease, Rheumatoid Arthritis, Fibromyalgia and Ehlers Danlos Syndrome, and the potential benefit of CBMPs.

The change in legislation was also supported by the reported success of the use of cannabis-based medicines into clinical practice elsewhere in the world. Following their legalisation in 2016 in Australia on a prescription basis, over 248,000 patients are now being managed with cannabis

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medicines, with a rapid growth in general practitioner (GP) prescriptions since 2019.<sup>4</sup> In Germany, 128,000 were receiving such medicines on prescription in 2021.<sup>5</sup> The major indication for all of these prescriptions was chronic pain.

In the United Kingdom, the number of opioid prescriptions has doubled in the past 20 years.<sup>6</sup> A recent UK study commissioned by the BBC, using Ipsos data from 4,435 adults, showed that over 40% of chronic pain patients on opioid prescriptions had been on them for more than 5 years.<sup>7</sup> Moreover, only 5%–10% of opioid users are estimated to be gaining long-term benefits.<sup>8</sup>

Pain specialists in the United Kingdom are very much aware that the existing care is not working well for many of their pain patients. They are also trying to manage the side effects of treatments such as opioids, gabapentinoids and antidepressants, causing many patients to be unable to engage in work and family life with a risk of overdose, either accidental or deliberate. Furthermore, currently there seems to be dwindling capacity and resources available, leading to increasing pressures which are being felt by patients, doctors and the NHS as a whole.

Statistics like these underscore the need for more effective treatment to become available in the field of pain medicine in the United Kingdom. But while there may be great potential for cannabis-based medicines, there is still scepticism in the medical community regarding their efficacy. Advocates of CBMPs may speak in hyperbole about them and present them as a ‘silver bullet’; they are often patients who have experienced dramatic improvements in quality of life due to cannabis-based medicines. While these personal and often emotionally charged accounts should be heard, healthcare also has to be built on evidence-based practice, and currently, this is lacking for CBMPs.

### What makes LVL’s approach so different to everything else out there

While there are observational and registry studies currently being undertaken in the United Kingdom, NICE has already stated that currently these do not provide the evidence required to make further recommendations for practice. The reasons for this are as follows:

1. Different formulas used.
2. Different doses.
3. Different routes of administration.
4. Different diseases.
5. Different standards of care.

6. Inappropriate end points.
7. Time frame of study too short.
8. Non-homogenised patient groups.
9. Number of patients in studies.

The LVL CANPAIN proposed trial is a CTIMP (Clinical Trial in the Investigation of a Medicinal Product) using cannabis whole flower for chronic pain management. Its title is as follows: ‘A pragmatic non-randomised, non-blinded, real-world trial of safety, tolerability and effectiveness of CBMP for treatment of chronic non-cancer pain compared against matched controls receiving standard of care management’. The study design is similar to a pharmaceutical product trial. One formulation, one dose, one delivery device and one disease being studied, compared with a control group.

The active group will receive a consistent dose per day of 8% THC:8% CBD cannabis flower. This will be delivered via an inhalation device. The data collected from this group will be compared with the control group receiving standard of care via the NHS. The primary end point is the difference between groups measured by a daily Numeric Rating Scale (NRS) pain score. Secondary end points include quality of life questionnaire differential, reduction in opioids, sleep improvement and time taken to go back to work.

### The journey so far and the difficulties of getting an MHRA-approved trial for CBMPs

LVL’s journey to achieving MHRA approval and launching the CANPAIN trial has been an enormous undertaking, with the status of cannabis in the United Kingdom adding significant complications. The main areas of challenge have been across the domains of regulatory, cost, medication and device.

#### Regulatory

Given the pioneering nature of the trial, LVL has had to work closely over the past few years with the MHRA and the Ethics Committee in order to design a trial that was robust enough to provide the data required by NICE. This process is still ongoing and requires continued interaction and modification to get everyone comfortable with the myriad of complexities involved in such studies.

One result of the interactions with the Ethics Committee was aligning on a feasibility study for 100 patients. This is to provide ethics with some early data around patient recruitment that could inform the larger study for up to 5,000 people that has already been conditionally approved by the MHRA.

The other major complication of using CBMPs has been that, even with the legalisation for medicinal purposes in

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2018, cannabis remains a highly controlled drug in the United Kingdom. As such, the company has had to work carefully to ensure all Home Office requirements are met. Product distribution is tightly monitored, and patients can only receive their set dosage twice a day as prescribed by the clinic's doctors (due to the smart device release mechanism).

### The medication

LVL worked hard to develop a balanced formulation that would achieve efficacy while lowering the potential adverse effect profile of CBMPs. What followed was a huge amount of research, looking at real-world data from such medications in different geographies, as well as different scientific studies and clinical trials. The company thereafter settled on an 8% THC and 8% CBD formulation, to allow for rapid symptom relief and increase its safety profile. This would be via inhaled administration.

Over 200 cannabinoids have been identified, but the two cannabinoids with the most clinical and scientific data are THC and CBD; these cannabinoids also have complementary pharmacological profiles. Moreover, rapid kinetics of inhaled administration allow for faster dose titration and shorter duration of activity, reducing the risk of long-lasting side effects and accidental (non-fatal) overdose.

The safety profile of cannabis was one of the major factors that the trial aimed to solve. Extensive studies have revealed that the majority of adverse events with CBMPs are attributable to THC, which may induce, in certain classes of patients, acute adverse effects such as anxiety, and chronic effects such as increased risk of psychosis and addiction/dependence.<sup>9</sup> The acute effects are largely avoidable if either the dose is kept low (<3mg per day) or the cannabis extract has enough CBD to counteract THC-induced anxiety.<sup>10</sup> This role of CBD in counteracting THC is why the balanced 8% THC and 8% CBD formulation for the trial is so important.

Moreover, all the medicines for the trial have undergone the full rigorous process of any pharmaceutical medicine: manufactured to GMP (Good Manufacturing Practices), full stability testing and batch-to-batch consistency and quality.

### The device

Selecting the best device for the trial was a significant undertaking, with extensive research, discussion and testing with several leading companies around the world. The device needed to be tamper-proof, easy to use, allow for accurate dosing and temperature control, help with robust data collection and crucially ensure the safety of the user. Moreover, as stated above, inhaled administration was the chosen route to allow for faster dose titration and shorter duration of activity.



The company ultimately chosen to provide the device was RYAH, an established leader in dose-control technology for plant-based medicines. It is a safe and user-friendly world-class inhalation device conforming to ISO 13485:2016 standards. This device is connected to a mobile application that allows for parameters specifically set for the CANPAIN trial. In order to collect the appropriate data, LVL spent 2 years creating an appropriate app and back-end systems. LVL collects data at multiple stages of the study: a baseline questionnaire at the beginning, a pain score and how the patient feels after every vaping session, weekly NRS scores and quarterly quality of life questionnaires. Combining these data sets in a unique data warehouse along with genetic data of that patient, LVL is able to quickly use these data to identify key treatment patterns, and thus present these patterns to government bodies (which will, in turn, help inform the treatment of CBMPs to a wider audience). Doctors can therefore be assured that from a safety and efficacy perspective, the patient is receiving the dose that is intended. This was one of the main challenges to overcome, given the stories emerging from some clinics of patients storing up cannabis medicines to consume in greater dosages.

Extensive testing was undertaken to land on the precise temperature to heat the cannabis medication, and the device modified to deliver cannabinoids at this precise temperature every time. This is of critical importance because the appropriate cannabinoids will decarboxylate at certain temperatures, and so the device plays a vital role in releasing the correct cannabinoids that provide effective chronic pain management to the patient. Moreover, the diffused mouthpiece on the inhaler provides an extended vapour pathway ensuring a pleasant draw at high temperatures. This combined with a cylindrical heating chamber maximises the heating surface area to evenly decarboxylate the contents of each cartridge at the precise set temperature for the study, ensuring that nothing is ever wasted or burned.

### Cost of the trial

A major issue in doing a trial of this nature is its costs. Designing and producing gold standard clinical research are a costly undertaking, and even more so, given that cannabis-based medicine is a very nascent sector in the United Kingdom.

In the first instance, the trial protocol is the result of over 2-year work and costs approximately £4 million to develop. This was a huge expense for a small company like ours to take on, not least when securing investment in a new sector like cannabis-based medicines, and it was (and is) challenging to find such funding. This is also a major reason why extensive co-operation with MHRA, NICE and doctors was so critical – to ensure that a trial was developed in a way that the clinical results will be of real benefit to patients and clinicians.

In terms of the ongoing costs of supporting the trial, it is a costly undertaking. This is especially true when LVL is providing standardised and quality product not offered elsewhere in the United Kingdom, a market-leading device, trial infrastructure and data collection, and full doctor and nurse support for patients.

LVL will only accept pharmaceutical-grade product, and this has to be imported into the United Kingdom, with secure and costly logistics and full Home Office import clearance. It then has to be ground and processed in the United Kingdom, as a fully GMP product, before filling the cartridges that go into the device with the precise dosages. These cartridges are then made fully tamper-proof. The medicine and experienced clinical team are a significant and ongoing cost during the trial. Moreover, the upfront cost for every patient involves the device itself and the patient onboarding (including genetics, pregnancy and cannabis drug tests). It also includes the cost of finding and recruiting patients – more challenging and expensive than a normal trial, given the nascent stage of the sector.

Normally, these costs will be borne by the medicine owner or manufacturer, because through patents and licensing arrangements, they can secure exclusive supply of their medicine for a period of time to recoup their investment costs of developing the medicine. However, since legalisation of medicinal cannabis, these protections are not available as cannabis has been made, in effect, a generic medicine. Hence, no manufacture or owner of the medication can afford to pay for a clinical trial without the protections normally afforded to medicines.

LVL is attempting to break the impasse here. This is why only patients of the LVL clinic can enter into the trial, and there is a cost associated with being a patient at the LVL clinic. Currently, this cost is £99 up front (to subsidise some of the device cost and all testing), with a monthly cost of £299 for the product and full specialist doctor and nurse service. This paid element was very carefully worked through, alongside the MHRA, during the protocol design; while not typical in pharmaceutical trials, there is no ethical prohibition to this element and helps to make the trial viable at this early stage. As one doctor said recently, ‘a paid element is better than no trial at all’.

However, as soon as the trial can gather the data set and demonstrate its efficacy, safety and cost-effectiveness to the regulators, LVL’s aim is for the NHS to continue to cover the cost of medications following the end of the trial; both for the initial patients, but most importantly for the wider patient population that cannot afford these costs today.

Far from the trial being a money-making exercise for LVL, the £4 million it spent on developing the protocol and the ongoing costs of the trial are all investments in developing the most robust data set to date for regulators and the medical community. Moreover, where LVL (supported by its UK partner Celadon Pharmaceuticals Plc) can widen access to patients over time, it is fully committed to doing so. This is the message LVL is trying to convey to the medical community, and it is hoping to receive its co-operation in addressing what is currently a ‘broken market’ for cannabis-based medicines.

### Further information for doctors/patients who wish to consider this MHRA-approved trial

LVL is a Care Quality Commission (CQC)-registered clinic with a location in London but can consult remotely as well. The trial is only available to patients registered at LVL clinics. The cost of being a patient at the clinic consists of a one-off payment of £99 (covering initial consultation, inhalation device delivered to patient’s home, laboratory processing of sputum genetic test and delivery of urine tests to home) and a monthly payment of £299 (covering cost of medication processing, delivery of medication via secure courier to patient’s home and 24/7 access to the specialist nursing team).

### Inclusion criteria

Male or female aged 18–85 years; diagnosed with non-cancer chronic pain condition; currently receiving standard of care for

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chronic pain; no longer wishes to receive standard of care; currently unmanaged pain levels above 3 on NRS score.

### Exclusion criteria

Pregnancy, major organ failure, active liver disease or unexplained persistent elevation of serum transaminases >3 times the upper limit of normal, a creatinine clearance <60mL/min, organ transplant in last 2 years, history or presence of substance abuse, any known or suspected history or family history of schizophrenia, or other psychotic illness, and history of severe personality disorder or other significant psychiatric disorder other than depression associated with their underlying condition, known hypersensitivity or allergy to cannabis or cannabis medicines.

All patients who approach the clinic, or are referred to LVL, will be reviewed by the multidisciplinary team (MDT) prior to final prescribing decision. As is the case with all medications, cannabis-based medicines may not be appropriate for everyone.

### Next steps

If you are currently seeing patients who fit the above criteria who you feel could benefit from coming to the clinic, then they can either self-refer by contacting the clinic directly on 0333 366 1033 or uploading their medical records via the LVL website link <https://lvlhealth.co.uk/> or you can send a referral letter direct to [info@lvlhealth.co.uk](mailto:info@lvlhealth.co.uk).

LVL patients may be able to join the 3-month feasibility study, testing the design of the larger CANPAIN trial. Any patients enrolled in the feasibility study will be able to join the larger CANPAIN trial when that commences and are able to opt out if they do not wish to continue.



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# Call for expression of interest: the Pain and Opioids after Surgery (PANDOS) study – supported by the European Society of Anaesthesiology and Intensive Care (ESAIC)

**Chair: Prof. Patrice Forget** *Institute of Applied Health Sciences, School of Medicine, Medical Sciences and Nutrition, University of Aberdeen, UK*

**Vice-Chair: Prof. Esther Pogatzki-Zahn** *University Hospital of Muenster, Muenster, Germany*



*The aim of Pain and Opioids after Surgery (PANDOS) is to document persistent opioid use after surgery and its safety, in Europe, and to describe its association with adverse events and persistent pain.*

*This is a call for expression of interest for this 1-week international, prospective, observational cohort study. Our goal is to include as many hospitals as possible in Europe.*

*This study could help develop strategies to improve the quality of care and the safe use of opioids. Because we need better data to fill a knowledge gap, PANDOS could be a major reference in the future.*

## Aim

To improve pain management and perioperative opioid use after surgery.

## Objectives

The objectives of Pain and Opioids after Surgery (PANDOS) are as follows:

### 1. Research Coordination Objectives

- Support the development, the conduct, the analysis, the interpretation and the dissemination of the PANDOS study.
- Development of a roadmap to highlight the priorities, key components, and solve the problem of the opioid crisis based on the PANDOS findings.
- Support the creation of an interdisciplinary and multi-stakeholder network (formalised in publicly accessible lists and open to collaboration) working on the identification, documentation and implementation of the best practices, from local to multinational level.
- Create and support a structure to solicit sufficient funding for a large international implementation trial (e.g. testing the widespread introduction of opioid stewardship programmes).
- Disseminate our results actively to laypeople (through social media), policymakers (white papers and/or joint actions with organisations active in the field) and research results in high-impact, peer-reviewed medical literature.

### 2. Capacity-building Objectives

- Foster our ability to undertake epidemiological studies where opioid use may be associated with harm, especially if it is preventable. Example: Creation of a

Call for expression of interest: the Pain and Opioids after Surgery (PANDOS) study – supported by the European Society of Anaesthesiology and Intensive Care (ESAIC)

network of centres and researchers interested in the field.

- Formally collaborate in defining the main outcomes in the area of long-term opioid use.
- Facilitate and enable the implementation of an appropriate methodology in the field.

*If you would like to be part of this new study, or just to find out more, do not hesitate to apply by expressing your interest by e-mail to/to contact the Chief Investigator (Professor Patrice Forget, Clinical Chair in Anaesthesia, Aberdeen, UK, pandos@abdn.ac.uk; patrice.forget@abdn.ac.uk or forgetpatrice@yahoo.fr).*

*To find out more about PANDOS | ESAIC visit*

<https://www.esaic.org/research/research-groups/pandos/>



# Winner of the 2022 Andrew Lawson Prize at the Royal Society of Medicine: What can be done to prevent pain?

Sophie Rainbow *Imperial College London*



Sophie Rainbow receiving her prize from Dr Sibtain Anwar, President of the Pain Medicine Council. Royal Society of Medicine

The treatment of pain exerts a significant economic burden on the health service each year<sup>1</sup> with approximately a third of people in the United Kingdom experiencing chronic pain at any one time.<sup>2</sup> Therefore, it may seem logical to emphasise on prevention rather than cure. While it may be unrealistic to completely prevent any form of pain, there are many stages where better preventive measures can be implemented.

Ultimately, better avoidance of disease and pain will not only improve patient health outcomes but will also lessen the workload and current financial pressures facing the health service.

It is first useful to explore what is meant by the term 'pain' and understand the many different forms it may take. Pain can originate from many different systems in the body and is broadly categorised into acute or chronic pain.<sup>3</sup> The International Association for the Study of Pain defines pain as 'an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage'. It also highlights that each individual's perception of pain is influenced by a range of biopsychosocial factors, meaning healthcare professionals should manage pain holistically rather than solely focusing on the physical manifestations.<sup>4</sup>

The prevention of pain can be broadly split into three categories: primary, secondary and tertiary prevention. Primary prevention aims to avoid acute pain and mainly focuses on patient education, for example, advice on healthy lifestyles, smoking cessation and routine vaccinations. Secondary prevention aims to prevent acute pain from becoming chronic and is typically a mixture of pharmacological treatments for disease like antibiotics and analgesics, and non-pharmacological treatments like physiotherapy and occupational therapists. Finally, tertiary prevention aims to reduce the impact that established chronic pain has on patients, incorporating similar treatment modalities to secondary prevention with a larger emphasis on psychological therapy to reduce the emotional pain from associated mental health problems.<sup>5</sup> Yet despite all these preventive measures against pain and its progression, pain still presents itself as a substantial global burden and the most common reason for patients to seek healthcare.<sup>6</sup> Examining the stages at which preventive measures can be put in place is therefore fundamental, not only for the benefit of patients but also for lessening the substantial burden on the health service.

## Winner of the 2022 Andrew Lawson Prize at the Royal Society of Medicine: What can be done to prevent pain?

The primary prevention of pain tries to avoid pain in the first instance and mainly comprises public health campaigns and patient education within the primary care setting. Examples include nationwide smoking cessation advice, offering routine vaccinations and general diet and exercise guidance. These campaigns could be said to indirectly prevent primary pain by advocating for prevention against the diseases that pain can be associated with. For example, the annual 'Stoptober' campaign urges patients to stop smoking to avoid the risk of developing diseases such as lung cancer, heart attacks and strokes. By preventing these diseases, patients can reduce their risk of experiencing the chest pain, headaches and neuropathic pain that commonly result from these issues.<sup>7</sup> Despite the success of the annual 'Stoptober' campaign in increasing the number of patients attempting to quit smoking,<sup>8</sup> 14.1% of the United Kingdom's population continued to smoke in 2019.<sup>9</sup> It is therefore a significant challenge to address this issue, but certain aspects of primary prevention can certainly be enhanced to encourage more patients to quit the habit. Studies have shown that financial incentives or closer follow-up of patients have shown success in encouraging them to stop smoking, and while this may be an expensive initial investment, reduction of long-term morbidity may reduce future costs.<sup>10</sup> E-cigarettes have also proven to be more successful than NHS-funded nicotine replacement therapy in smoking cessation, but currently the evidence on their safety is unclear.<sup>11,12</sup> Perhaps in the future, e-cigarettes could be identified as a safe strategy to reduce smoking and prescriptions for them rolled out on the NHS.

The secondary prevention of chronic pain incorporates treatment of acute pain and thus the avoidance of it becoming chronic in nature. This is particularly important when considering pain presenting either post-operatively or as part of a musculoskeletal issue, considering these carry a high-risk of long-term sequelae. Unfortunately, teaching on the management of pain in medical schools is often inadequate, with students receiving much less pain training than other healthcare specialities such as physiotherapists.<sup>13</sup> In the United Kingdom, there is an average 13 hours of pain content for medical students throughout their 5/6-year degree, and a recent study found that many patients feel that healthcare professionals lack knowledge about treating pain.<sup>13,14</sup> When patients are treated in secondary care and admitted onto the wards, junior doctors will have more patient contact than specialised pain services, and therefore, it is important to adequately train this specific subset of healthcare professionals in order to improve patient outcomes. Failure to do so may result in worsening of pain or the opportunity for it to become chronic, thereby inflicting long-term physical and emotional consequences onto the patient. The potential for prolonged

hospital stays, readmission and subsequent long-term pain management in the community also presents an economic burden for the health service, and something which could potentially be avoided with appropriate initial interventions.<sup>15</sup> Therefore, increasing the exposure that students have to pain management in their curriculum may help to prepare them for acute pain presentations, and the ways that this can be managed effectively to avoid long-term consequences for patients.

Chronic post-surgical pain (CPSP) is another example of where secondary prevention can impact long-term pain outcomes. Depending on the nature of the surgical procedure, approximately 10%–50% of adults experience CPSP.<sup>16</sup> Analgesic medication is typically prescribed based on frameworks such as the World Health Organization's analgesic ladder, using a step-wise approach to pain management starting with paracetamol and extending up to strong opioids such as morphine. However, this was originally designed for treating nociceptive cancer-related pain and, therefore, considering that most CPSP is neuropathic in nature, it provides less analgesic benefit for these patients.<sup>17</sup> The immediate period following surgical intervention is the most key for preventing neuropathological progression, and therefore more aggressive, and more appropriate post-surgical analgesia should be employed. Studies have shown that using anaesthetic nerve blocks or neuropathic analgesia such as gabapentinoids in the post-operative period produce better analgesic outcomes for patients compared to those on opioid-based therapies, while additionally reducing the risk of associated opioid dependence and its side effects.<sup>17–19</sup> It should be said that this does not aim to completely disregard the usefulness of traditional analgesic guidelines. However, better appreciation and utilisation of the different analgesic modalities in the post-operative period may provide acute pain relief for these patients and thus better prevention of chronic progression.

The tertiary prevention of pain is when healthcare providers aim to prevent any worsening of chronic pain in patients. Some conditions where this may be relevant could include arthritis, lower back pain and fibromyalgia where full resolution is unlikely. Current recommendations for tertiary prevention incorporate a biopsychosocial approach, utilising analgesic medications, specialised pain clinics, occupational therapists, physiotherapists and cognitive behavioural therapy (CBT) groups.<sup>20</sup> However, with current NHS pressures, there is limited availability for such services and unfortunately many patients are left solely with analgesic medications provided by their general practitioner (GP), contributing to poor overall control and concomitant pain progression.<sup>21</sup> Patients can be on NHS waiting lists for several months to years before they are

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accepted into pain clinics or onto physiotherapy programmes, and often these measures are only taken as a last resort by physicians when pain medications have failed to provide adequate relief.<sup>3,22</sup> It is also important to consider that the demographic of patients statistically more likely to experience chronic pain rely on these NHS services, as they are financially unable to opt for more immediate private treatment instead.<sup>13</sup> The prolonged waiting time for receiving these interventions has further been linked to higher levels of depression, and therefore, the lack of available services is responsible for a deterioration in not only patients' physical but also mental health.<sup>23</sup> With the significant number of patients who currently suffer from chronic pain, it seems imperative to direct additional funding towards setting up more pain clinics and improving access to physiotherapy to avoid any further decreases in quality of life for these patients. The heavy reliance on analgesic medications and lack of adjunctive management ultimately subjects patients to worsening levels of physical pain that could otherwise have been prevented with earlier access to specialised services.<sup>13</sup>

Continuing with the biopsychosocial approach, the psychological component of this strategy also presents some shortfalls when considering the management of tertiary pain prevention. Mood disturbances can present themselves as a side effect of suffering chronic physical pain, but can also manifest as chronic emotional pain in its own right. Methods such as CBT are recommended by the National Institute for Health and Care Excellence (NICE) to prevent the negative emotional impact that chronic pain can exert on patients,<sup>24</sup> being offered in-person or using online platforms with comparable efficacy recorded between both modalities.<sup>25</sup> The theory underlying CBT is that it encourages patients to focus on their present situation and rewire the way that they perceive any negative thoughts or emotions surrounding their condition.<sup>26</sup> It has shown to be effective in managing associated depression and anxiety in patients with chronic pain by enabling them to utilise relaxation techniques and cognitive coping skills to reduce the perception of their pain and the impact it has on their quality of life.<sup>27</sup> It has even shown promise in the prevention of future depressive relapses, as patients in a recent study reported continued implementation of what they had learnt many months after their CBT sessions had finished.<sup>28,29</sup> Encouragingly, waiting lists for psychological therapies such as CBT are shorter than lists for other specialised pain services,<sup>30</sup> but these avenues are often only pursued after the onset of mental health issues and thus not used in a preventive manner. This is surprising considering the strong correlation between chronic pain and mental health,<sup>31</sup> and perhaps utilising more pain-related screening tools would help physicians identify patients at higher risk of developing mood-related symptoms.<sup>32</sup> This would allow earlier

implementation of psycho-protective therapy and help prevent the development of depression in patients with chronic pain.

In conclusion, the successful prevention of pain remains a key concern for improving the overall health of patients in the United Kingdom. The treatment of pain exerts a significant financial burden on the health service, and with an ageing population, this is an issue that is unlikely to resolve over the coming years. Focusing on the prevention rather than the treatment of pain offers an alternative avenue towards successful health outcomes for patients and so identifying at which stages preventive measures can be implemented or improved is crucial for exercising change. As discussed, there are many ways that pain can be prevented from a primary, secondary and tertiary perspective. At all stages, physicians should employ forward planning in their practice and work with patients from an early stage to identify the potential for developing pain and disease. Whether this be encouragement to stop smoking or using mental health screening tools for chronic pain patients, earlier identification will make it easier to prevent both physical and psychological pain and their progression. These strategies should also be undertaken within the context of each patient's situation, since pain can arise from a variety of issues and should be treated with the most appropriate analgesia for that presentation. Failure to consider this may hinder complete pain resolution and unsuccessfully prevent long-term complications. In addition to this, adjustments to the medical school curriculum will better prepare junior staff to manage pain-related presentations and promote the avoidance of long-term consequences. This is important considering that patients often have more contact with doctors than with other specialised pain services, for which the waiting lists are invariably prolonged. However, it is still necessary to direct additional funding to widen the availability of these adjunct services, since these more adequately provide pain management from a biopsychosocial perspective. Better preparation of other healthcare professionals should only act as a bridging mechanism on a patient's journey towards the most suitable pain services for their needs. Overall, it is clear that there are many ways to facilitate the prevention of pain, and healthcare professionals must be vigilant in contributing to this effort. An enhanced focus on prevention of pain and disease rather than treatment is perhaps an effective way to improve the general quality of health of the United Kingdom while lessening the immense burden on the health service to deal with the many patients who present with pain each year.

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# End piece



Cristallo is a glass which is totally clear (like rock crystal), without the slight yellow or greenish colour originating from iron oxide impurities. This effect is achieved through small additions of manganese oxide.<sup>1</sup> Often Cristallo has a low lime content which makes it prone to glass corrosion (otherwise known as glass disease).

The invention of Cristallo glass is attributed to Angelo Barovier around 1450.<sup>2</sup>

## Materials

In addition to common glass-making materials, manganese, quartz pebbles and alume catino, a particularly suitable form of soda ash, are used in the making of cristallo glass.

Rather than using common sand, crushed quartz pebbles were used instead. The quartz pebbles were typically from the Ticino and the Adige rivers. The quartz pebbles went through a rigorous screening process before being selected for use in cristallo production. The quartz pebbles had to be free of yellow and black veins and also had to be able to produce sparks when struck with steel. If the quartz pebbles passed the selection process, then the pebbles were heated to the point where the stones began to glow and then placed into cold water. Then the pebbles were crushed and ground. The typical flux used in the production of cristallo was called alume catino. Alume catino was derived from the ash of the salsola soda and salsola kali bushes that grew in the Levantine coastal region. It was found to contain

high and constant amounts of sodium and calcium carbonates, necessary to make workable and chemically stable glass.<sup>3</sup>

The ash of the plants was carefully sieved and then placed into water to be gently boiled with constant mixing. Then, the ashen mixture was placed into shallow pans to be dried. The alume catino would repeatedly undergo the boiling and drying process until all of the salt was extracted from the ashes.

## Process

The crushed and ground quartz was mixed with the purified alume catino and constantly mixed at high temperatures. The top of the molten batch would then be skimmed off. By skimming the top of the molten glass, unreacted and undissolved chlorides and sulphates in the mixture were removed. The molten glass would then be ladled into vats of water. The water removed chloride and sulphate impurities from the mixture. The process of remelting and placing the molten mixture into vats of water was repeated several times until the glass-makers were satisfied. Next, the glass was placed into a furnace that was heated to the highest temperature possible and left there for several days. The material was stirred continually to eliminate defects, such as bubbles. Then, the refined mixture was taken, heated and shaped into blocks called frit. The frit was then taken and remelted and skimmed once again in order to remove impurities. The batch then had manganese added to the mixture at this time. The addition of manganese helps to rid the cristallo of any colour tints. This step is repeated until the glass-maker is satisfied. Now, the molten mixture is ready to be shaped by glass-makers into pieces of cristallaware.

## Acknowledgements

<https://en.wikipedia.org/wiki/Cristallo>

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