

DECEMBER 2019 VOLUME 17 ISSUE 4

PAIN NEWS

A PUBLICATION OF THE BRITISH PAIN SOCIETY



How effective is the teaching of pain medicine?

Early access to pain relief for palliative care patients

Current practice of sedation for pain procedure

Ultrasound guided dry needling for pain

How aware are we of clinical guidelines that affect our work?

Social deprivation and complications from opioid and cannabis therapy

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PAIN NEWS DECEMBER 2019

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Opioids: observing the pendulum of medical practice

Rajesh Munglani and Michael Coupe *Consultants in Pain Medicine*

On Thursday July 12, Dr Robert Redfield Jr spoke at the National Association of County and City Health Officials in New Orleans. He had just taken over as the Director for the Centers for Disease Control (CDC) earlier that year in March. He stated that the opioid crisis was the 'public health crisis of our time' and announced it would be the priority of the CDC.

In a moment of personal revelation, he stated that '*I almost lost one of my children from it*'.¹ The public records that are available show that his son, a 37-year-old musician, was charged with drug possession in 2016 in Maryland.² Dr Redfield went on to announce that his son almost died from taking cocaine contaminated with the powerful painkiller fentanyl. There is no doubt there has been a hardening of position against the use of opioids for chronic pain.

The thousands-of-years-old observation that opioids, originally derived from the poppy, relieve pain is not in doubt. This pain-relieving property of opioids has been confirmed in many trials and reviews, but critically the original data did not

assess long-term efficacy or outcome, and also such highly controlled trials excluded drug addicts. It is now known that prescription opioid abuse rates, which were thought to be low (say 1%) among patients taking prescribed opioids, are actually about 12%–15%.

Ballantyne also makes it clear that the evidence for *long-term* administration of opioids was never there. She goes on to say that the entire medical community was convinced in the 1980s by evidence consisting of small-scale observational studies,⁴ evidence that would normally be considered marginal. Opioid prescription boomed. However, in the decades that followed, along with the lack of evidence that prescribed opioids work in *chronic* (long-term) pain (as opposed to acute pain and time-limited cancer pain, where there is still a lot of support for such treatment), there was also increasing evidence of complications related to long-term opioid use emerging from a number of sources (see Figure 1).

As the daily morphine equivalent dose (MED) rises (x-axis), the odds ratio of a serious event occurring rises dramatically (y-axis). Care should be taken in patients taking more than 100mg MED per day.

What is clear is that with increasing doses of opioids in the long term, complication rates rise. A further question to be considered is whether the risk of serious complications is evenly distributed among patient groups. Ballantyne points out that 40% of patients prescribed opioids actually voluntarily *stop* their medication as they do not like the side effects.

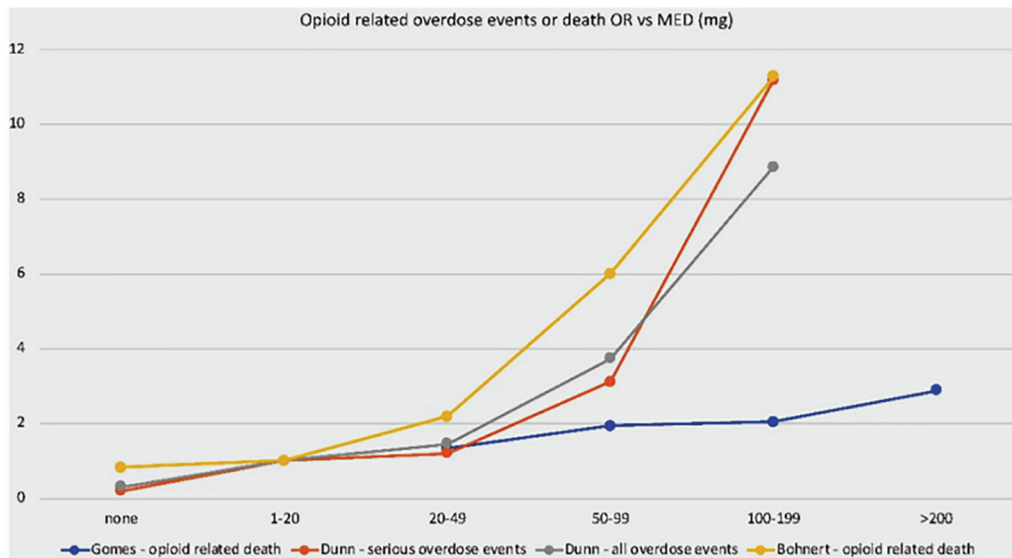
It has been suggested that *some* of those patients taking opioids who inexorably escalate their dose do so because they have deficiencies in their brain 'reward system'. This deficiency is also postulated by some to mean that those patients are more likely to suffer pain in the first place, more likely to overdose, but paradoxically less likely to respond to opioids in terms of pain relief.

To put it another way, it is exactly this distressed population⁸ that often present with severe pain in our clinics who are more likely to be prescribed opioids, but who are the least likely to respond.

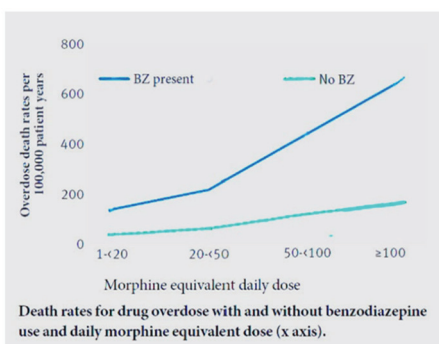
These vulnerable patients also show concurrent addictive behaviour with other compounds such as benzodiazepines.



Source: From Wikiart.³

Figure 1. Death and overdose rates from prescribed opioid medication.

Source: The data in the figure are derived from three authors: Gomes et al.,⁵ Dunn et al.⁶ and Bohnert et al.⁷ Data extracted from the above authors and drawn by Dr M Coupe. Obtained with permission from Dr M Coupe.

Figure 2. Death rates with opioids with and without the concurrent presence of a benzodiazepine.

Source: Data adapted from and drawn after Park et al.⁹

Indeed, this combination of opioids and concurrent benzodiazepines has been shown to be particularly dangerous, causing a quadrupling in death rates⁹ (see Figure 2).

The demographics of opioid use

The recognition of the opioid crisis being concentrated in some deprived communities has been recognised by

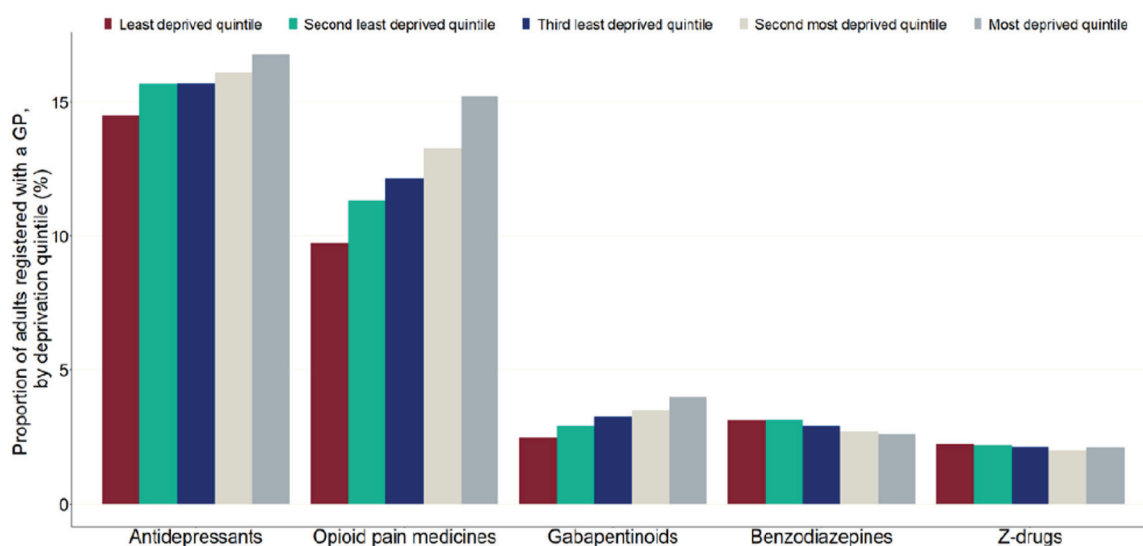
the recent Public Health England (PHE) report.¹⁰ In a surprisingly frank and sobering account, Taylor and their colleagues show how the prescription of such agents such as antidepressants and opioids were linked to broad geographical measures of deprivation (see Figure 3).

The figures are both astounding and frightening. PHE's analysis shows that, in 2017–2018, 11.5 million adults in England (26% of the adult population) had received one or more of the following:

- Antidepressants – 7.3 million people (17% of the adult UK population);
- Opioid pain medicines – 5.6 million (13% of the adult UK population);
- Gabapentinoids – 1.5 million (3% of the adult UK population);
- Benzodiazepines – 1.4 million (3% of the adult UK population);
- Z-drugs – 1.0 million (2% of the adult UK population).

Women were 50% more likely to be prescribed such medication than men and the frequency increased with age. Prescribing rates for opioid pain medicines and gabapentinoids had a strong association with deprivation, being higher in areas of greater deprivation.

Figure 3. Proportion of population registered with GPs in England receiving a prescription in 2017/18 by deprivation quintile and class of medicine.



Proportion of population registered with GPs in England receiving a prescription in 2017 to 2018, by deprivation quintile and class of medicine

Source: From Taylor et al.¹⁰ (Copyright free by permission under the Open Government Licence v 3.0).

The US experience

The CDC has extensively reported on this opioid crisis. From 1999 to 2017, more than 700,000 people have died from a drug overdose in the United States. Around 68% of the more than 70,200 drug overdose deaths in 2017 involved an opioid. In 2017, the number of overdose deaths involving opioids (including prescription opioids and illegal opioids such as heroin and illicitly manufactured fentanyl (IMF)) was six times higher than in 1999. Their final headline was that, on average, 130 Americans die every day from an opioid overdose.¹¹

Recently, the CDC has described the 'three waves' of the opioid epidemic. The first wave began with increased prescribing of opioids in the 1990s, with overdose deaths involving prescription opioids (natural and semi-synthetic opioids and methadone) increasing since at least 1999. The second wave began in 2010, with rapid increases in overdose deaths involving heroin. The third wave began in 2013, with significant increases in overdose deaths involving synthetic opioids – particularly those involving IMF. The IMF market continues to change and IMF can be found in combination with heroin, counterfeit pills and cocaine (see Figure 4).

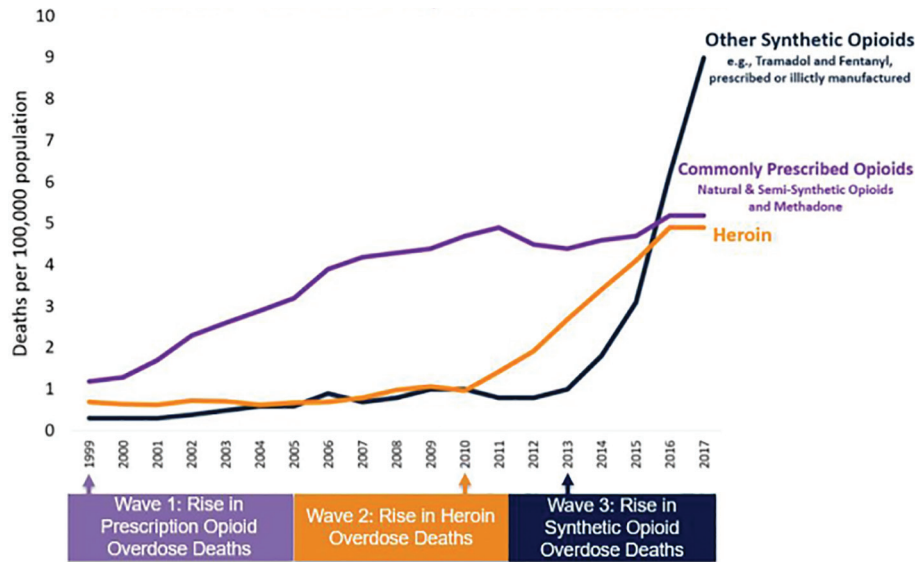
The crisis is described as an *epidemic* by the CDC. This implies a self-sustaining or propagating quality to the phenomenon. Indeed, the word 'epidemic' is said to be derived

from a word attributed to Homer's *Odyssey*, which later took its medical meaning from the *Epidemics*, a treatise by Hippocrates. The Greek *ἐπί* (*epi*) means 'upon or above' and *δῆμος* (*demos*) 'people' and is the descriptor given to the rapid spread of (usually a) disease to a large number of people in a given population within a short period of time.¹³

It seems natural, therefore, that to counter the huge misery caused doctors should limit the issuing of prescription opioids. Unfortunately, the opioid epidemic may now be at a point where this response may be inadequate, as it seems to have a self-propagating quality.

In reflecting upon the near tragedy of Dr Redfield's son, his overdose was caused by the mixture of cocaine with fentanyl. It is not clear from the information whether this was prescription fentanyl or in fact IMF, made in the Far East. This supply chain has strained international relations between the United States and China, with President Trump publicly accusing China of supplying the fentanyl in a Tweet.^{15,16} Chinese officials have refuted such allegations.¹⁷

The (UK) Department of Health is quite rightly trying to avoid such an epidemic. The plan is to change prescriber behaviour and patient expectation and thereby reduce demand of prescription opioids being diverted to vulnerable communities, as indicated in the public health document mentioned earlier.¹⁰ If, however, as in the United States, the UK opioid problem has

Figure 4. 3 Waves of the Rise in Opioid Overdose Deaths.

Source: From CDC¹² (Copyright free).



Source: From Wikiart.¹⁴

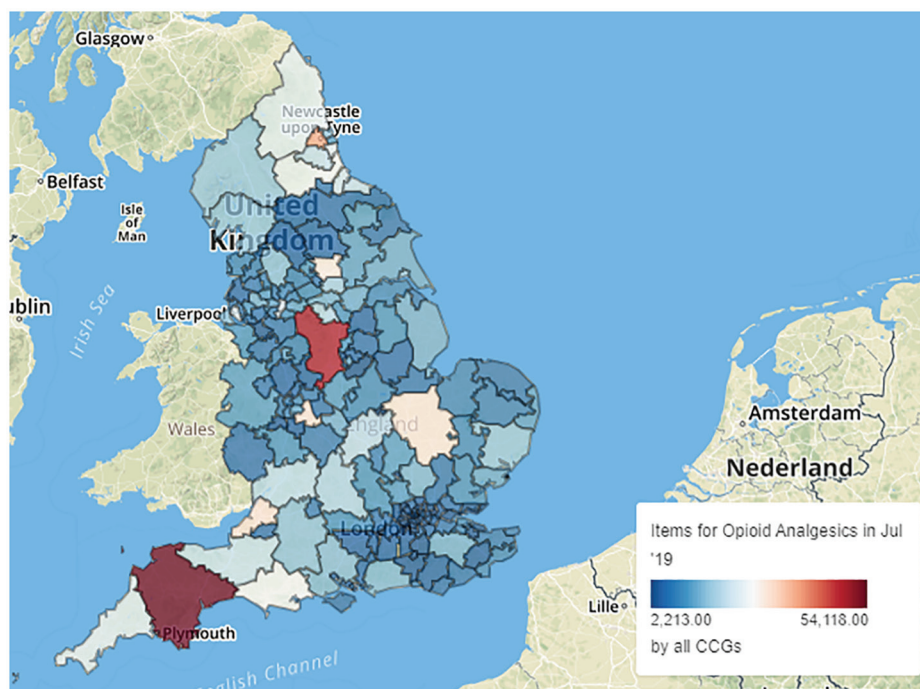
now become self-sustaining and independent of prescription opioids, along with an increased supply of illicit opioids, this plan will be doomed to failure.

The data underpinning such an attempted change in opioid prescribing are strong and show that there is a marked variation in opioid prescribing. Chen et al.¹⁸ reported that deprived communities in Manchester consumed four times the daily dose

of opioids compared to London. Mordecai et al.¹⁹ showed that the total amount of opioid prescribed increased over the study period from August 2010 to February 2014. Furthermore, more opioids were prescribed in the North than in the South of England, and more opioids were prescribed in areas of greater social deprivation. Curtis et al.²⁰ showed a similarly depressing picture, in that between 1998 and 2016 opioid prescriptions increased by 34% in England (from 568 to 761 per 1,000 patients). If the potency of each prescription was accounted for, the actual increase was then 127% (from 190,000 to 431,000mg per 1,000 patients) and the (small) decline in prescriptions observed from 2016 to 2017 was masked by the rising strength of the prescription opioid. The regional variation was again very marked, and the authors calculated that if every practice prescribed high-dose opioids at the lowest decile rate, 543,000 fewer high-dose prescriptions would have been issued over a period of 6 months. Larger practice list size, ruralness and social deprivation were associated with greater high-dose prescribing rates (see Figure 5).

The messages here are clear. There is little evidence that opioids are effective in the long term, high doses are dangerous and we are facing the possibility of an out-of-control epidemic. Something must be done. But the risk is that in the attempt to head off a full-blown crisis patients could be caught in the

Opioids: observing the pendulum of medical practice

Figure 5. Comparative opioid prescribing rates in England, July 2019.

Source: Graph generated and reproduced with permission from OpenPrescribing.net, EBM DataLab, University of Oxford, 2017 (<https://openprescribing.net/>).

crossfire. There is in our opinion a (small) proportion of patients with chronic nonmalignant pain who genuinely benefit from long-term stable doses of potent opioids, whose supplies are being rapidly curtailed. The Internet is littered with their allegations and stories; patients who seemingly have benefitted from opioids have suddenly had their doses cut as doctors have become fearful of regulatory scrutiny. This has been admitted by the influential authors of federal (CDC-approved) guidelines for opioid prescriptions for chronic pain, who stated,

doctors and others in the health care system had wrongly implemented their recommendations and cut off patients who should have received pain medication.^{21,22}

Indeed, the CDC report on future opioid prescribing makes it clear that some patients should continue with their prescriptions after assessment. This is a vital and often ignored part of our duty to our current and future patients and is reproduced here in full²³ (see Box 1).

The pendulum has rightly swung away from the unquestioned prescription of high-dose opioids in our patients, no matter how attractively simplistic it may initially be seen to be, towards a more thoughtful practice of careful assessment prior to prescribing or medication. A knee-jerk approach to stopping opioids in some of our patients who rightly need them to treat their pain and suffering is not compatible with the duty of a physician.

Box 1. CDC recommendations for prescribing opioids for chronic pain outside of active cancer, palliative and end-of-life care.

Determining when to initiate or continue opioids for chronic pain

1. Nonpharmacologic therapy and nonopioid pharmacologic therapy are preferred for chronic pain. Clinicians should consider opioid therapy only if expected benefits for both pain and function are anticipated to outweigh risks to the patient. If opioids are used, they should be combined with nonpharmacologic therapy and nonopioid pharmacologic therapy, as appropriate.
2. Before starting opioid therapy for chronic pain, clinicians should establish treatment goals with all patients, including realistic goals for pain and function, and should consider how therapy will be discontinued if benefits do not outweigh risks. Clinicians should continue opioid therapy only if there is clinically meaningful improvement in pain and function that outweighs risks to patient safety.
3. Before starting and periodically during opioid therapy, clinicians should discuss with patients known risks and realistic benefits of opioid therapy and patient and clinician responsibilities for managing therapy.

Opioid selection, dosage, duration, follow-up and discontinuation

4. When starting opioid therapy for chronic pain, clinicians should prescribe immediate-release opioids instead of extended-release/long-acting (ER/LA) opioids.
5. When opioids are started, clinicians should prescribe the lowest effective dosage. Clinicians should use caution when prescribing opioids at any dosage, should carefully reassess evidence of individual benefits and risks when increasing dosage to 50 morphine milligramme equivalents (MME)/day and should avoid increasing dosage to 90 MME/day, or carefully justify a decision to titrate dosage to 90 MME/day.
6. Long-term opioid use often begins with treatment of acute pain. When opioids are used for acute pain, clinicians should prescribe the lowest effective dose of immediate-release opioids and should prescribe no greater quantity than needed for the expected duration of pain severe enough to require opioids. In total, 3 days or less will often be sufficient; more than 7 days will rarely be needed.
7. Clinicians should evaluate benefits and harms with patients within 1–4 weeks of starting opioid therapy for chronic pain or of dose escalation. Clinicians should evaluate benefits and harms of continued therapy with patients every 3 months or more frequently. If benefits do not outweigh harms of continued opioid therapy, clinicians should optimise other therapies and work with patients to taper opioids to lower dosages or to taper and discontinue opioids.

Assessing risk and addressing harms of opioid use

8. Before starting and periodically during continuation of opioid therapy, clinicians should evaluate risk factors for opioid-related harms. Clinicians should incorporate into the management plan strategies to mitigate risk, including considering offering naloxone when factors that increase risk for opioid overdose, such as history of overdose, history of substance use disorder, higher opioid dosages (50 MME/day) or concurrent benzodiazepine use, are present.
9. Clinicians should review the patient's history of controlled substance prescriptions using state prescription drug monitoring program (PDMP) data to determine whether the patient is receiving opioid dosages or dangerous combinations that put him or her at high risk for overdose. Clinicians should review PDMP data when starting opioid therapy for chronic pain and periodically during opioid therapy for chronic pain, ranging from every prescription to every 3 months.
10. When prescribing opioids for chronic pain, clinicians should use urine drug testing before starting opioid therapy and consider urine drug testing at least annually to assess for prescribed medications as well as other controlled prescription drugs and illicit drugs.
11. Clinicians should avoid prescribing opioid pain medication and benzodiazepines concurrently whenever possible.
12. Clinicians should offer or arrange evidence-based treatment (usually medication-assisted treatment with buprenorphine or methadone in combination with behavioural therapies) for patients with opioid use disorder.

Source: From Dowell et al.²³ (Copyright free).

CDC: Centers for Disease Control.

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Source: From Wikiart.²⁴

Note

- i. We are using the colloquial definition of chronic pain that is persistent pain, not the IASP definition of 'chronic' which is any pain duration of more than 3 months.

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Jenny Nicholas



Winter will be well and truly here by the time this edition of *Pain News* reaches you. Even though I am writing this in October, my thoughts are already turning towards Christmas Shopping as the shops start to play their Christmas music!

Here's a sneak peek at some of this issues articles:

- 'Evaluating the effectiveness of Essential Pain Management Programme as a method for improving healthcare professionals' knowledge of pain assessment and management in a District General Hospital' by M Galligan, B Enriquez and R Shookhye who present their findings.
- Dr Lakshmi Vas talks us through the 'Effectiveness of ultrasound-guided dry needling in treating chronic pain'.

Here, she talks us through the evolution of the practice of ultrasound-guided dry needling (USGDN) in the context of opiophobia, the effectiveness of USGDN versus dry needling and its effectiveness in current clinical practice.

- Dr Hacking tackles the topic of 'Pain Doctors and Opioids: Angels or Demons?' having conducted a brief survey of what's happening in modern pain clinics.
- We also have some further survey findings from M Sinha, G Ratnayake, F Neirami, H Al-Shather and A Doyle on 'Current sedation practices for Interventional Pain Procedures'.

We'd love to hear your feedback on our newsletter. Are there any articles which have inspired you or helped your practice? Please do let us know!

Would you like to write for *Pain News*? We would love to hear from those who have informative, thought-provoking and interesting view points and articles to share.



**THE BRITISH
PAIN SOCIETY**
EXPERTISE WHERE IT MATTERS

Save the date! 2020 ASM

31 March – 2 April
Park Plaza London Riverbank
52nd Annual Scientific Meeting

There will also be pre-ASM Educational Sessions on the 30 March and a Cadaver Workshop on the 3 April.

Why you should attend:

- Network with colleagues
- Raise questions, partake in debates and discuss outcomes
- Keep up to date with latest research and developments relevant to pain
- Meet with poster exhibitors and discuss their research

We look forward to seeing you there!



Dr Arun Bhaskar



Dear Friends

I trust this finds you well.

I am delighted to let you know that Raj is back in full flow and I hope he continues recuperating from what could have been a catastrophic event and we wish him well. There has been a Council meeting in September where we discussed the plan for the future, and I am outlining some of the developments that have happened since I last wrote to you.

Congratulations to both Dr John Hughes and Dr Lorraine

de Gray for being elected as Dean and Vice-Dean, respectively, of the Faculty of Pain Medicine, Royal College of Anaesthetists. Dr Hughes was co-opted to the British Pain Society (BPS) Council representing Faculty of Pain Medicine (FPM) and we look forward to collaborative working with the Faculty for the advancement of Pain Medicine in the UK. Congratulations to Prof. Sam Eldabe who has taken over as the Chair of the Clinical Reference Group for Pain Management; due to his significant work commitments Sam stepped down as the Chair of the Scientific Programme Committee and I am delighted that Dr Stephen Ward has taken over as the new Chair. Dr Andreas Goebel has taken over as the Chair of the Science & Research Committee and also became a co-opted member of the Council. Dr Andrew Davies, Consultant in Palliative Medicine and the Immediate-past President of Association of Palliative Medicine (APM) and President-elect of Multinational Association of Supportive Care in Cancer (MASCC) has been co-opted as member of Council representing Palliative Medicine and Dr Chris Barker has been co-opted as the representative to BPS from the Royal College of General Practitioners. We welcomed Dr Leila Heelas as a co-opted member from the Physiotherapy Pain Association representing the wider physiotherapy colleagues involved in pain management and she has been instrumental in generating interest in expert patients taking the leadership of the Patient Liaison Committee (PLC). The PLC Chair interviews are scheduled, and we would be announcing the PLC Chair, Lay member trustees and committee members who would be supporting the National Awareness

Campaign.

The Annual Scientific Meeting (ASM) 2020 will be held from 31 March to 2 April at the Park Plaza Riverside, London. A refresher day will be held on Monday and a cadaver workshop on Friday 3 April. Monday and Tuesday will also have programmes focusing on acute pain and refresher course depending on the interest from the membership. The Acute Pain Special Interest Groups (SIG), Interventional Pain Medicine SIG and the Headache SIG have already submitted exciting proposals. The aim is to have a focus on acute pain on the Monday and Tuesday so that colleagues doing only acute pain could benefit without registering for the full congress. We are also looking at making the day delegate scheme more attractive. Interestingly, when I asked for proposals in the Google group, I had a couple of emails from well-meaning non-medical colleagues whether the scientific programme content would be heavily in favour of the medics. I can assure you all that though we are mindful that the scientific programme content should be attractive to clinicians and also to international delegates, the plan is to have a balanced programme that caters to the multidisciplinary ethos and membership which underpins our Society, that is, there will be something for everyone. We have received some excellent suggestions so far and we intend to raise the standard of the content. The Scientific Programme Committee met on 14 October and by the time you are reading this, a draft programme will be in circulation.

On behalf of the BPS Dr Ayman Eissa, Hon. Secretary is negotiating with various stakeholders in the changing landscapes of how pain management is delivered across the country. Along with Ayman, Prof. Roger Knaggs is also continuing to support the membership recruitment and retention programme.

The Pain Management Programme SIG had a very successful meeting in Bristol with nearly 200 delegates attending and we have plans to support and develop this further in the coming years. It focuses on a specialised subject in a multidisciplinary setting and we are proud that UK is in the forefront of delivering pain management programmes and we should aim to attract more international delegates to this meeting. The response to regional study days at York and Cardiff has been lukewarm despite efforts from the organisers and Secretariat even though we had good industry support which made it possible to heavily

subsidise the meetings. The same is true for the study days the Educational Committee had planned to organise at the Royal College of Anaesthetists (RCOA). In view of this feedback, future study days have to be carefully considered and we are looking at collaborating with existing regional meetings and industry-led regional roadshows to enable a selective number of high-quality meetings are delivered locally at an affordable cost. The IPM SIG will have their meeting as part of the pre-ASM day on 30 March and Headache SIG will hold their meeting on 31 March as part of the ASM 2020 in London.

I had been contacted by some colleagues who had been made redundant or has had significant changes to their job plans due to the changing landscape in UK pain management. The BPS with Dr Ayman Eissa, Hon. Secretary has been putting together a group to help and support these colleagues and also to negotiate and help with better working relationships with primary and secondary care providers. We are also putting together a group to negotiate with Insurance companies regarding private practice incomes and facilitate better relationships between providers and practitioners.

It was also decided that we continue with the print copies of Pain News and British Journal of Pain for the time being and the cost savings if we go only as online version was not significant. The feeling within Council was that more people would be able to access if we continue with the print copies due to the 'coffee table effect'.

We had several meetings with industry partners as a group as well as individually to see how best we can work together to support the BPS; the response has been positive but also there is an element of scepticism. There was a formal meeting with industry colleagues on 8 October at the BPS and we have submitted our suggestions and proposals for their consideration.

We are planning to introduce the industry support scheme so that we are in receipt of committed funds on an annual basis covering all aspects so that we can budget accordingly to support the multidisciplinary colleagues and junior colleagues. Despite all these measures, we may still have to consider looking at other options to improve the financial situation. Dr Ash Gulve, Interim Hon. Treasurer has initiated some talks about supporting some charitable options (there is a fund-raising run in London on 8 December) and hopefully you could support it. The Hon. Secretary will be speaking to you about the road maps that have been planned to carry out some of the future works of The BPS.

Finally, I would like to update you on what is happening about medical cannabis in the UK. The BPS was on the stakeholders who responded to the National Institute for Health and Care Excellence (NICE) draft guidance on the use of medical cannabis. NICE has looked at high-quality randomised

controlled trials (RCTs) on existing licenced products and understandably there was paucity of evidence and the recommendation was not to use medical cannabis for chronic pain; there has been some research recommendations for cannabidiol (CBD) in certain pain conditions. We have submitted our comments on the Draft guidance from NICE on medical cannabis and I thank Prof. Sam Ahmedzai, Prof. Roger Knaggs and Dr Neil Collighan for their work in this matter. There are several pitfalls in the NICE recommendations as it did not include the newer products and also did not include analysis of real-world data. Many clinical studies are underway in the UK and Europe and better-quality evidence would be coming through with increasing experience in this subject. The BPS has a position statement on Cannabis in pain (available on our website) and we encourage the dialogue between all stakeholders – patients, clinicians, industry, advocacy groups, regulatory bodies, law makers – to have strategy in place where responsible prescription happens by ensuring appropriate monitoring, safeguards and data collection to support better-quality evidence.

We had a meeting with the major interests in the medical cannabis market on 8 October and we are planning to hold a meeting with the wider stakeholders on 14 November. Much as we acknowledge the need to have better evidence base as indicated by NICE, the change in the legal status of cannabis, theoretically, allows it to be prescribed within the UK for various conditions including pain. The priority we have is to ensure that there is transparency while patients can have access to medical cannabis, we need to ensure that patients benefit and also face no harm. The lessons we have learnt from the use of opioids and gabapentinoids in the management of chronic pain are a constant reminder to be aware of the potentiality for more problems if this matter is not handled carefully. I shall be updating you on the developments as they happen in the coming months.

Pain News articles are submitted several months in advance. Despite delaying this piece as long as we could, at least 2 months could have passed when you finally receive it. I would encourage you to keep up with the news feed on Twitter and Facebook along with the various blogs planned to be posted on the BPS website to keep abreast of the various exciting activities and developments happening at the Society. We still need the support of all our colleagues involved in Pain Medicine in the UK and I request you all to encourage your colleagues to join as members of the BPS. Your support in this matter would be invaluable and once again I would request you to speak to any member of the Council or the Executives or write to me personally at akbhaskar@btinternet.com to consider putting yourselves forward for various roles within the Society. I look forward to hearing from you.

Dr Ayman Eissa



Credit: J Constable.¹

Dear Members,

I would like to update you with the steps the Council is taking to prioritise our goals and move forwards. We have agreed to move ahead on a few different fronts as follows:

- Improving membership;
- Long-term planning for ASM and study days;
- Relations with industry and the private sector;
- Building bridges with national and international bodies and organisations;
- Coordination between SIGs and regional activities;
- Progressing with our Awareness Campaign and a nationwide PLC.

There will be a working group for each project with round table discussions, and we are planning to invite experts from wider backgrounds to help. To achieve the high expectations from our members, we are looking to expand our interactive website and build a solid database for all pain activities in the country.

I am very optimistic that we are building a new foundation for a very vibrant society that will bring us all back under the umbrella of the British Pain Society (BPS).

Reference

1. Constable J. Somerset House Terrace and the Thames A View from the North End of Waterloo Bridge with St. Paul's Cathedral in the distance, <https://www.wikiart.org/en/john-constable/somerset-house-terrace-and-the-thames-a-view-from-the-north-end-of-waterloo-bridge-with-st-paul> (accessed 17 October 2019).

The BPS Philosophy & Ethics SIG Annual Summer Retreat



Rydal Hall, Cumbria, UK.
5–8 July 2020.

The British Pain Society (BPS) Philosophy & Ethics SIG is pleased to announce the dates of their Annual Summer Retreat to be held at Rydal Hall, Cumbria.

This long established group meets annually to explore and discuss some of the more challenging aspects of pain management that are often faced but rarely addressed in other meetings. There will be a wide range of plenary speakers from within and outside of pain medicine with group discussions and workshops to facilitate both new insights and reflection on existing practice.

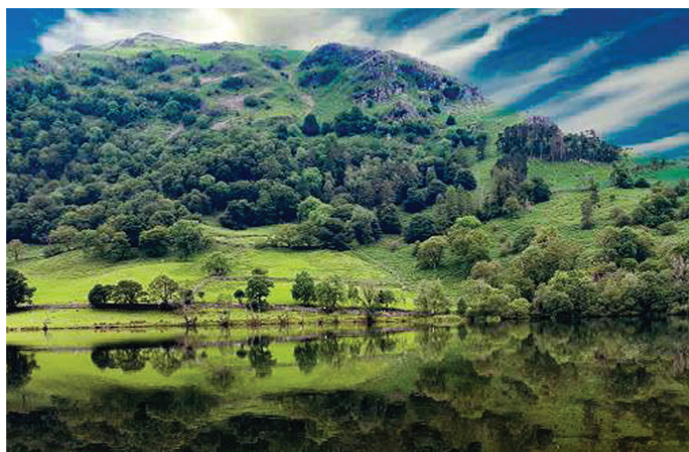
Members of all professional groups within the BPS and non-members are welcome, and you certainly do not

need any knowledge or experience of philosophy and ethics.

Rydal Hall provides tranquil and stunning surroundings that stimulate discussion and debate. The hotel style accommodation and food are excellent, and there is a very well equipped campsite in the grounds for those wishing to get closer to nature or who are on a budget!

Attendees in the past have enjoyed the wide range of activities that are on the doorstep such as open water swimming in Rydal Water, hill walking and yoga and meditation in the beautiful grounds. This is the perfect antidote to the pressures of the wards and clinics!

Look out for the full programme and booking details including costs, which will be announced soon, and if you have any questions in the mean time, email Tim Johnson at johnson@doctors.org.uk, who would be pleased to help you.



Pain doctors and opioids: angels or demons?

Dr Nicholas Hacking *Lancashire Teaching Hospital NHS Foundation Trust*



Credit: Stock Colours.³

In the recent debate about using cannabinoids for the treatment of chronic pain, some of those arguing for the use of cannabis suggested, not all that obliquely, that pain consultants are wedded to the (over) use of strong opioids. It has even been said that we are all in cahoots with big pharma.

Every one of my colleagues with whom I have discussed this topic seems to have been of the same opinion as me: high doses of strong opioids are nearly always inappropriate for chronic benign pain and we spend a deal of time and effort trying to wean our patients off their oxycodone, fentanyl and morphine.

A brief survey seemed to be the most expeditious way of determining what actually goes on in modern pain clinics, at least on this side of the Atlantic, and I distributed an online survey to all the members of the Google Pain Consultants' Discussion Group. I asked my colleagues to answer simple questions about their last new-patient consultation, their general attitude to strong opioids in chronic benign pain and provided space for comments. A total of 120 kind souls replied.

My survey opened by asking respondents to answer 'Thinking about the last new patient that you saw with non-cancer pain ...' and made it clear that 'By "Strong Opioid" we mean opioids other than codeine, dihydrocodeine, buprenorphine, tramadol and tapentadol'.

The first statistic to emerge is a little worrying, if not a great surprise. In total, 70% of new patients were already taking strong opioids when they arrived in the pain clinic (See Figure 1).

Figure 1. Question 1.

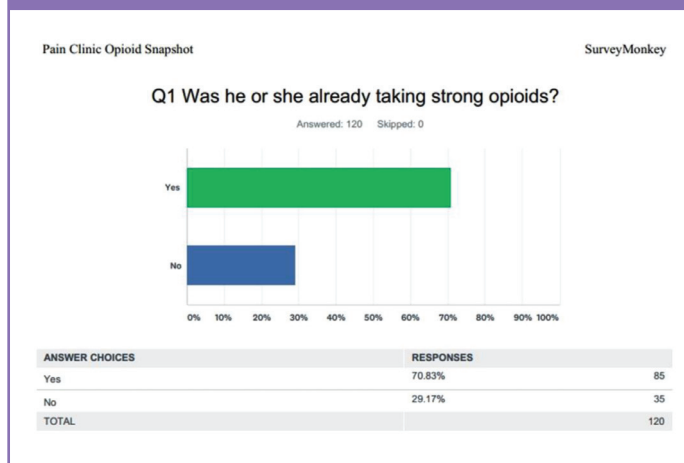
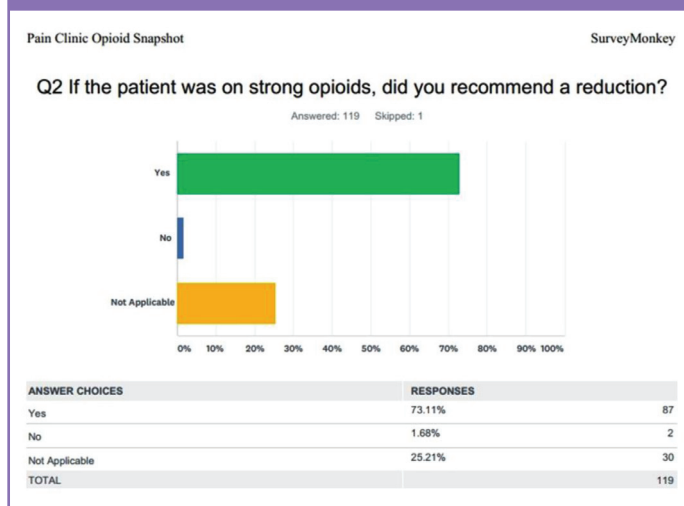


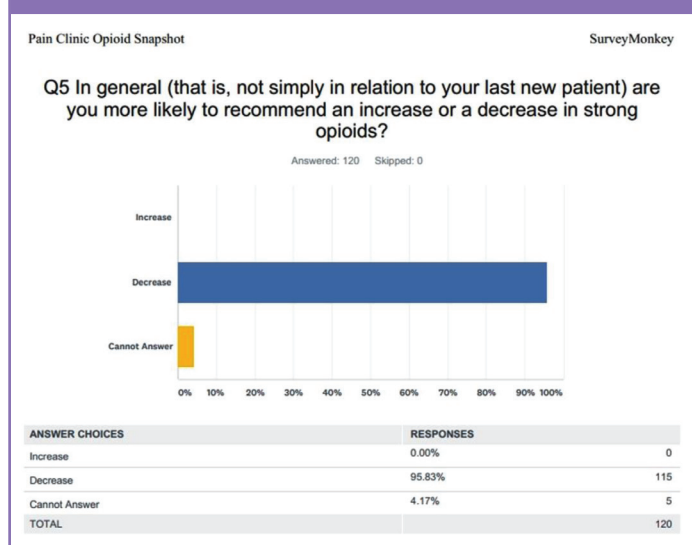
Figure 2. Question 2.



The responses to the next question suggest that the advice given was, almost universally, to reduce the dose (see Figure 2).

Question 3 asked: 'If the patient was on strong opioids, did you recommend an increase?' and, unsurprisingly, the response was an overwhelming 'No' with only 1/118 respondents having told the patient to take a higher dose.

Figure 3. Question 5.



Question 4 asked: 'If the patient was *not* taking a strong opioid, did you prescribe one?' and only one of the 120 consultations recorded showed initiation of strong opioids by the pain clinic.

The last multiple-choice question asked respondents about their general attitude to strong opioids (see Figure 3).

Eighty-five of the respondents made free text comments. A small number of themes were repeated:

Strong opioids don't work for chronic pain.

Strong opioids are usually initiated outwith the pain clinic and, often, in Primary Care.

Pain doctors spend a lot of time explaining to their patients why high doses of strong opioids are harmful in benign pain.

Many said that they could not recall the last time that they had initiated strong opioids for chronic pain. A few people pointed out that cost-saving measures are likely to back-fire and worsen the opioid crisis, as typified by this comment: '... with the decommissioning of acupuncture; hydrotherapy; lidocaine patches – and now injections being threatened – options are limited and opioid prescriptions will increase'.

My short survey can be criticised on several fronts. There was no attempt to blind respondents to the agenda. The answers have not been checked or validated against what

actually happened in any objective sense. Nonetheless, I fail to see how anyone could conclude, from these figures, that pain specialists are in favour of the use of strong opioids for chronic benign pain. We appear to be on the side of the Angels and those attempting to demonise us are wrong. Not that being wrong has, so far, done anything to limit their voluble outpourings.

I don't pretend that I manage to get *all* of patients off opioids altogether. Some manage to cut back to 30 or 40 mg MED and use their drugs intermittently (as per *Opioids Aware*). Some manage to break free completely, but many more end up stuck on regular doses in the range 60–120 mg MED. These are the patients who really need special vigilance: without it, experience shows that they will, eventually, start to escalate their opioid consumption with the unwitting, or well-intentioned but ill – thought-through, connivance of our colleagues.

Quinlan and colleagues¹ paper from December 2018 shows that between 1998 and 2016 there was a 127% increase in opioid prescribing, when one measures opioid burden in terms of MED per head of population. The authors draw attention to the cost savings that could be achieved if all General Practices adopted best practice in opioid prescribing.

We should keep in mind that this is not simply unnecessary expenditure that is of little help to the patients, rather it is money wasted on drugs that are currently *harming* many of our patients and providing no real benefit. There are more efficient ways of funding the National Portrait Gallery that do not require chronic pain patients to increase their all-risk mortality.

More recently still, Professor Dame Sally Davies warned of the risks of long-term opioid prescribing in Primary Care. Let us not, however, allow the issue to degenerate into mud-slinging. Our objectives should be to join in the fight against opioid-misuse and to be seen to be leading that campaign. Simple denigration of our colleagues will do little to advance the cause.

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Awareness of the guidelines published by the Faculty of Pain Medicine and the British Pain Society: a national survey of pain medicine consultants

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Background

The Royal Colleges and Specialist Societies publish good practice guidelines, clinical management pathways and patient information leaflets to promote and support evidence-based practice to improve patient care. However, it has never been quantified as to how many healthcare professionals (HCPs) are aware of these publications and whether knowing these guidelines has helped them alter their clinical practice to provide better patient care. The current survey investigated the awareness and usefulness of the guidelines published by the British Pain Society (BPS) and the Faculty of Pain Medicine (FPM) of the Royal College of Anaesthetists.

Methods

A survey of the awareness and usefulness of the guidelines published by the Faculty of Pain Medicine of the Royal College of Anaesthetists (FPM) and the BPS was distributed to all members of the Pain Medicine Consultants' Discussion Forum in 2016 (Consultants' Google Group). Two questions were asked for each of the guidelines:

1. I am aware of this document: Yes, No.
2. If yes, has this document enabled you to provide better patient care? Yes, No.

The 13 guidelines included in the survey are shown in Table 1.

A general question was asked to evaluate the interest of the participating clinician in the guidelines: 'Has this survey motivated you to look at some of the guidelines published by the FPM and the BPS?'

Results

There were 40 responses, of which 38 were from the United Kingdom.

The results of the survey are shown in Figures 1–3.

The awareness of various guidelines ranged from 38% for the Faculty of Pain Medicine: Conducting Quality Consultations in Pain Medicine (2015) to 90% each for Opioid Aware: A resource for patients and healthcare professionals to support prescribing of opioid medicines for pain (2015) and The British Pain Society and the Map of Medicine Pain Pathways (2012).

Based on the awareness, 65%–80% of respondents were able to provide better patient care for the following four guidelines:

1. Faculty of Pain Medicine: Conducting Quality Consultations in Pain Medicine (2015);
2. Opioid Aware: A resource for patients and healthcare professionals to support prescribing of opioid medicines for pain (2015);
3. Guidelines for Pain Management Programme for Adults: An evidence-based review prepared on behalf of the British Pain Society (2013);
4. Core Standards for Pain Management Services in the UK (CSPMS) (2015).

In total, 89% of the respondents indicated that this survey motivated them to look at the published guidelines.

Discussion

The awareness of national guidelines among pain medicine consultants varied between 38% and 90%. For some of the good practice documents, the awareness was very low. Although it is difficult to confirm, it appears that being aware of the guidelines enabled physicians to provide better and more standardised patient care. The implementation of these guidelines/standards can be challenging within current financial constraints and cost improvement plans (efficiency savings) driven across NHS Trusts.

Table 1. The 13 guidelines included in the survey.

1. BPS and FPM: Standards of Good Practice for medial branch block injections and radiofrequency denervation for low back pain (2014)
2. BPS and FPM: Standards of Good Practice for Spinal Interventional Procedures in Pain Medicine (2015)
3. The British Pain Society and the Map of Medicine Pain Pathways (2012)
4. Guidelines for Pain Management Programme for Adults: An evidence-based review prepared on behalf of the British Pain Society (2013)
5. Opioid Aware: A resource for patients and healthcare professionals to support prescribing of opioid medicines for pain (2015)
6. British Pain Society: Use of medicines outside of their UK marketing authorisation in pain management and palliative medicine. Consensus document prepared on behalf of the BPS in consultation with the Association for Palliative Medicine of Great Britain and Ireland (2012)
7. Core Standards for Pain Management Services in the UK (CSPMS) (2015)
8. Spinal Cord Stimulation for the management of pain – Recommendations for best practice: A consensus document prepared on behalf of the BPS in consultation with the Society of British Neurological Surgeons (2009)
9. Guidance on the Management of Pain in Older People: Evidence-based clinical guidelines published jointly by the BPS and the British Geriatric Society (2013)
10. Cancer Pain Management: A perspective from the BPS, supported by the Association for Palliative Medicine and the Royal College of GP (2010)
11. Faculty of Pain Medicine: Conducting Quality Consultations in Pain Medicine (2015)
12. Faculty of Pain Medicine: The Good Pain Medicine Specialist (2014)
13. Faculty of Pain Medicine and the British Pain Society: Recommendations for Good Practice in the use of Epidural Injection for the management of pain of spinal origin in adults (2011)

With likely resource implications and the need for additional training required of HCPs, and the need for infrastructure investment, it is unlikely to be supported by NHS Trusts unless there is a clear and substantial impact on the safety and efficacy of pain treatments.

There is potential for reducing the variation in practice in pain clinics if these standards/guidelines were to be promoted and implemented in NHS organisations. We are unsure of the barriers to uptake/implementation of these guidelines. This could be explained by an inadequate consideration to allow for local factors and judgement by the clinicians. There may be little attention to the working environment of clinicians during the preparation of the guidelines. It is evident that often there is a lack of clear implementation strategies and support (including understanding of implementation tools). This increases the knowledge to clinical practice gap. Common barriers to implementation could also include professionals perceiving that they have insufficient time to upskill, adopt or implement a new intervention or process which may add to their existing workload and may not be supported by resource allocation and within their job plans.¹

Broughton and Rathbone² considered what makes a good clinical guideline and concluded that good guidelines can

improve clinical practice and improve patient outcomes, but the way they are developed, implemented and monitored influences the likelihood that they will be followed. It seems that carefully selecting clinically relevant topics to be included in guidelines, following common realistic standards and allowing for local clinical judgement are key factors in the successful uptake of newly developed guidelines. On the implementation side, communicating effectively (e.g. to NHS Clinical Director or Medical Director), evaluating/monitoring implementation, dealing with key barriers to implementation and measuring against established key standards are the key factors in achieving desired outcomes from developing guidelines.³ Following good practice guidelines for pain medicine across NHS trusts can reduce the wide variation in clinical practice and thus has the potential to reduce clinical negligence claims. As an example, if there was good awareness and adoption of the guidance of the series of articles published in BPS Newsletter⁴⁻⁶ on 'Consent in Pain Medicine' and GMC's Consent guidance,⁷ then there is the potential to reduce medical negligence claims in relation to consent in pain medicine practice.

Awareness of the guidelines published by the Faculty of Pain Medicine and the British Pain Society: a national survey of pain medicine consultants

Figure 1. The respondents' awareness of the guidelines published by the BPS and FPM (MBB/RFD: Medial Branch Block/ Radiofrequency Denervation; MOM: Map of Medicine; PMP: Pain Management Programme; SCS: Spinal Cord Stimulation).

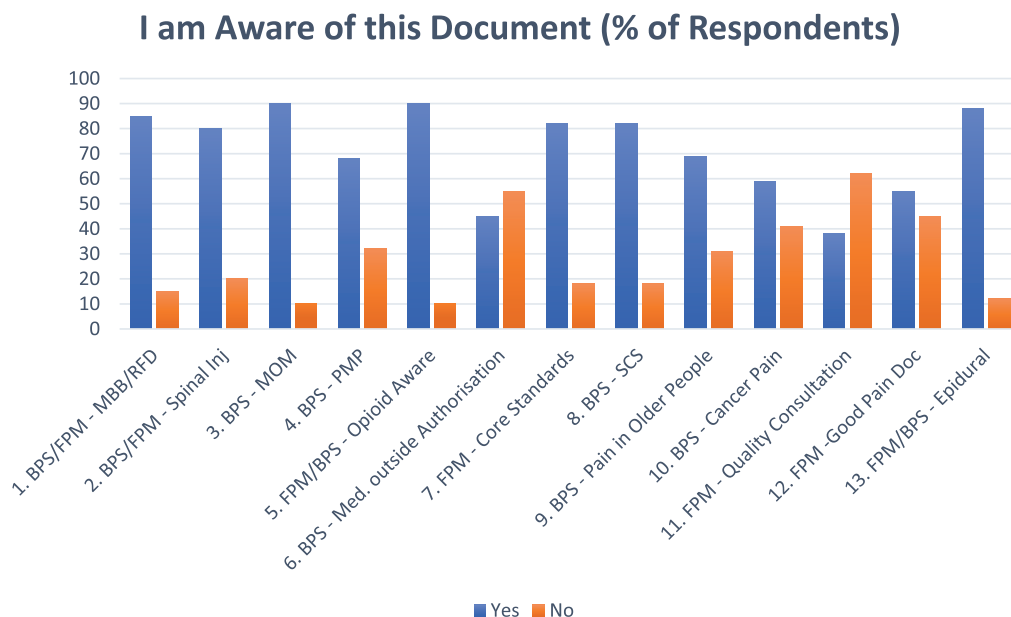


Figure 2. Perceived impact of guidelines on patient care.

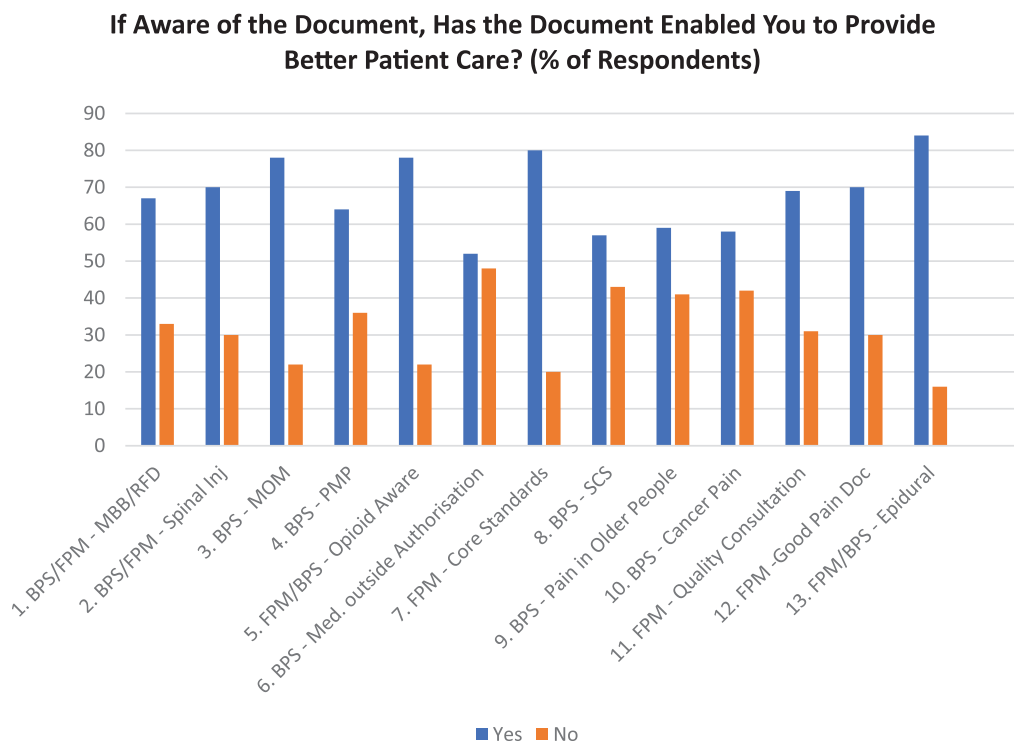
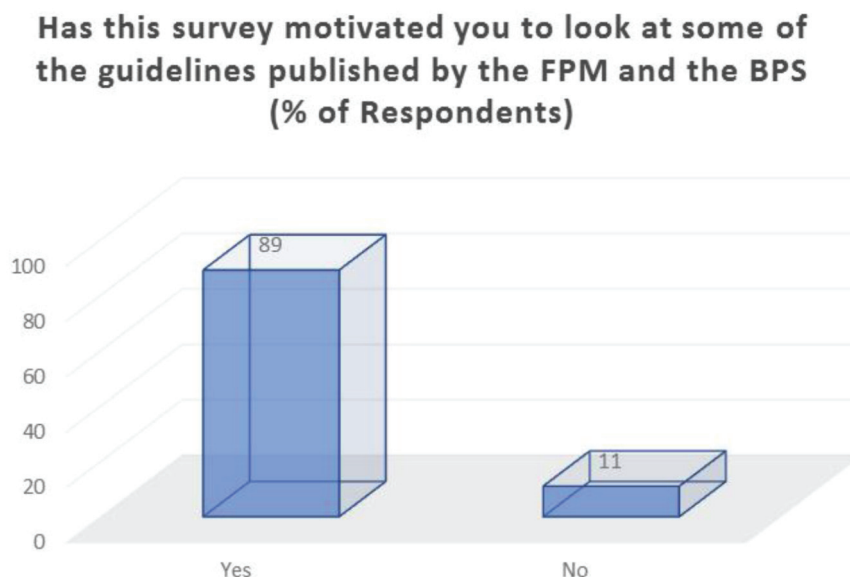


Figure 3. The impact of this survey to look at some of the guidelines published by the BPS and the FPM.

The current survey has highlighted the need for developing a document to guide HCPs to prepare, communicate and implement the guidelines effectively and review outcomes, thus improving patient care. Poor uptake of excellent work by various colleges and charities will undoubtedly require a multi-organisational and multifaceted approach to support (NICE, NHSE Commissioning and CCG commissioning). In addition, the NHS Trust's Governance team should play a vital role in ensuring the success of such an approach, and only then can a positive impact on the standards of care from guidelines on patient care be realised. The literature suggests that it usually takes 17 years for research evidence to reach clinical practice,^{8,9} but we believe that we should aspire to do much better to translate research evidence via guidelines to clinical practice. In our opinion, the Royal Colleges and Specialist Societies that publish good practice guidelines, clinical management pathways and so on should also develop either a generic or speciality-specific implementation tool (document) and support resource to guide members, NHS medical managers and commissioners to improve the utility and impact of these publications to positively influence clinical practice and reduce variation.

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Survey of current sedation practices for interventional pain procedures: UK Pain Specialists

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Introduction

Aim

The aim of this survey was to obtain an understanding of the current sedation practices among UK-based Pain Specialists. This is the first published, nationwide survey looking into sedation practices among Pain Specialists in the United Kingdom and the first discussion within existing literature guidelines.

Methods

A national survey of Pain Specialists in the United Kingdom was carried out using an online questionnaire. Respondents were identified using the UK Pain Specialists' network group, which has more than 450 members.

The survey contained 10 questions and pertained to current practices by Pain Specialists with regard to sedation during any interventional pain procedure. The survey contained a combination of free text responses and discrete options for various questions. The survey was accessed via an online webpage, with all the responses anonymised. The investigators only had access to the collated final data, with no demographic or geographic data about the respondents collected. This was to reduce responder bias.

Table 1 outlines the 10 questions that were used.

The aim of this study was to obtain results from 100 clinicians around the United Kingdom. The responses were collated using a web-based database and transferred to Microsoft Excel 360 for analysis and drawing graphs.

Results

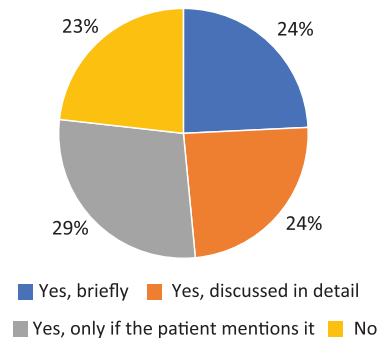
A total of 100 responses were collected from June 2018 to July 2018. The respondents included 94 Consultants and 6 senior trainees undergoing Pain Fellowships. The results for each question are summarised (see Table 1).

Table 1. Summary of the 10 questions used in the survey.

Question no.	Question
1	Do you discuss sedation when consenting patients for procedures?
2	Do you provide sedation for patients undergoing pain procedures?
3	Who provides the sedation?
4	What drugs are used for sedation?
5	Is there an anaesthetic machine in the procedure room?
6	What monitoring is available during sedation?
7	Is supplemental oxygen provided during sedation?
8	Do you believe sedation improves the outcomes of pain procedures?
9	Which cases is sedation offered for?
10	What grade is the person performing the interventional pain procedure?

Figure 1. The number of respondents who provide sedation for interventional pain procedures.

Number who discuss sedation when consenting the patient



Question 1: the number of respondents who consented for sedation

In total 98% of respondents answered the question about consenting for sedation while discussing the interventional pain procedure.

Only a quarter of respondents discussed sedation in detail as a matter of routine. Roughly a half of Pain Physicians either discussed sedation briefly or only if the patient mentioned it, and the remaining quarter did not discuss sedation at all (see Figure 1).

Question 2: the number of respondents who provide sedation for pain procedures

In total, 24% of respondents did not provide sedation for their interventional procedures. This corresponds with the 24% who did not discuss sedation with their patients prior to the procedure.

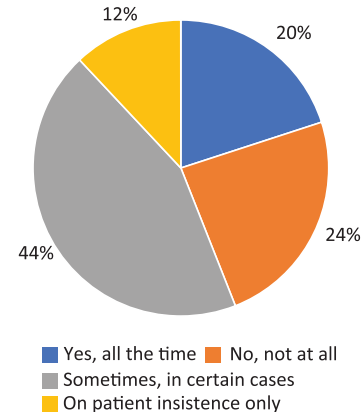
Interestingly, 12% of responders only provided sedation if their patients insisted on it. Almost half of the clinicians were flexible with sedation, providing it for some but not all interventional procedures. Conversely, 20% provided sedation for all interventional pain procedures (see Figure 2).

Question 3: who provides the sedation?

When sedation was provided to patients, there seemed to be a range of people providing it. The majority (40%) appeared to be given by the Pain Specialists who were also performing the procedure. Of the other people providing sedation, Consultant Anaesthetists (17%) and Operating department practitioner (ODP)/Anaesthetic nurses (14%) provided the remainder, with Trainee Anaesthetists only giving 6% of sedation.

Figure 2. What proportion of responders provide sedation for patients undergoing interventional pain procedures.

Do you provide sedation for patients undergoing pain procedures?



Question 4: what drugs are used for sedation?

A variety of drug combinations were described for sedation during interventional procedures. It should be noted that almost half of respondents used other combinations of drugs. The other predominant combinations used were propofol or midazolam with fentanyl followed by midazolam only (see Figure 3).

Question 5: presence of an anaesthetic machine in the procedure room

A quarter of procedure rooms did not contain an anaesthetic machine. The remaining 75% reported an anaesthetic machine in their procedure room.

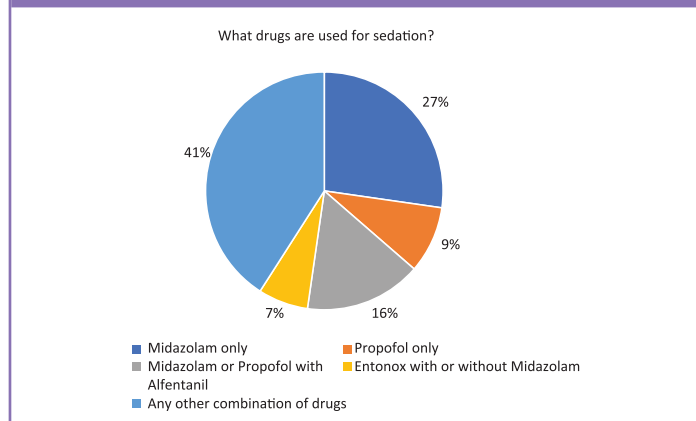
Question 6: monitoring for sedation

It was noted that only half of the patients had a full complement of saturations (SpO₂), blood pressure (BP) and electrocardiography (ECG) applied to them while a quarter of the patients had either SpO₂ or BP monitored. There were no data regarding the monitoring of end-tidal CO₂ (EtCO₂; see Figure 4).

Question 7: provision of supplemental oxygen with sedation

Only half of the patients had supplemental oxygen routinely applied if they were undergoing sedation. A total of 2% of patients did not have oxygen applied at all. A further 28% were given oxygen only if they desaturated.

Survey of current sedation practices for interventional pain procedures: UK Pain Specialists

Figure 3. The choice of sedative drugs used during interventional pain procedures.**Question 8: do Pain Specialists believe sedation improves outcome?**

Only 14% of respondents felt that sedation improved the outcome of pain interventions. Over half of the respondents did not believe that sedation improved the outcome of interventional pain procedures. A quarter of respondents were not sure whether sedation helped with the outcome of interventional pain procedures.

Question 9: the procedures that patients would be given sedation for

Patient request for sedation irrespective of the procedure undertaken was the main reason. This was closely followed by radiofrequency procedures and anxious or needle-phobic patients undergoing a procedure (see Figure 5).

Sedation was also offered to the patients to prevent pain during positioning.

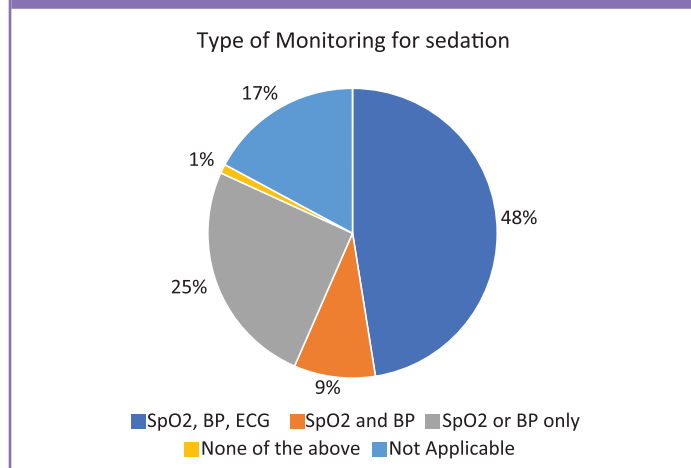
Question 10: who undertakes the interventional pain procedure?

The majority of procedures (94%) were carried out by the Consultants while the remaining 6% were undertaken by trainees.

Discussion

There appears to be a wide variation in the sedation practices of interventional Pain Specialists in the United Kingdom. Only a quarter of respondents discussed sedation in detail.

There is increasing pressure on sedationists to obtain written consent before sedation, to ensure documented proof of valid consent. Sedation helps with allaying anxiety, reducing movement and facilitating cooperation during the procedure,

Figure 4. The types of monitoring applied to patients who have undergone sedation.

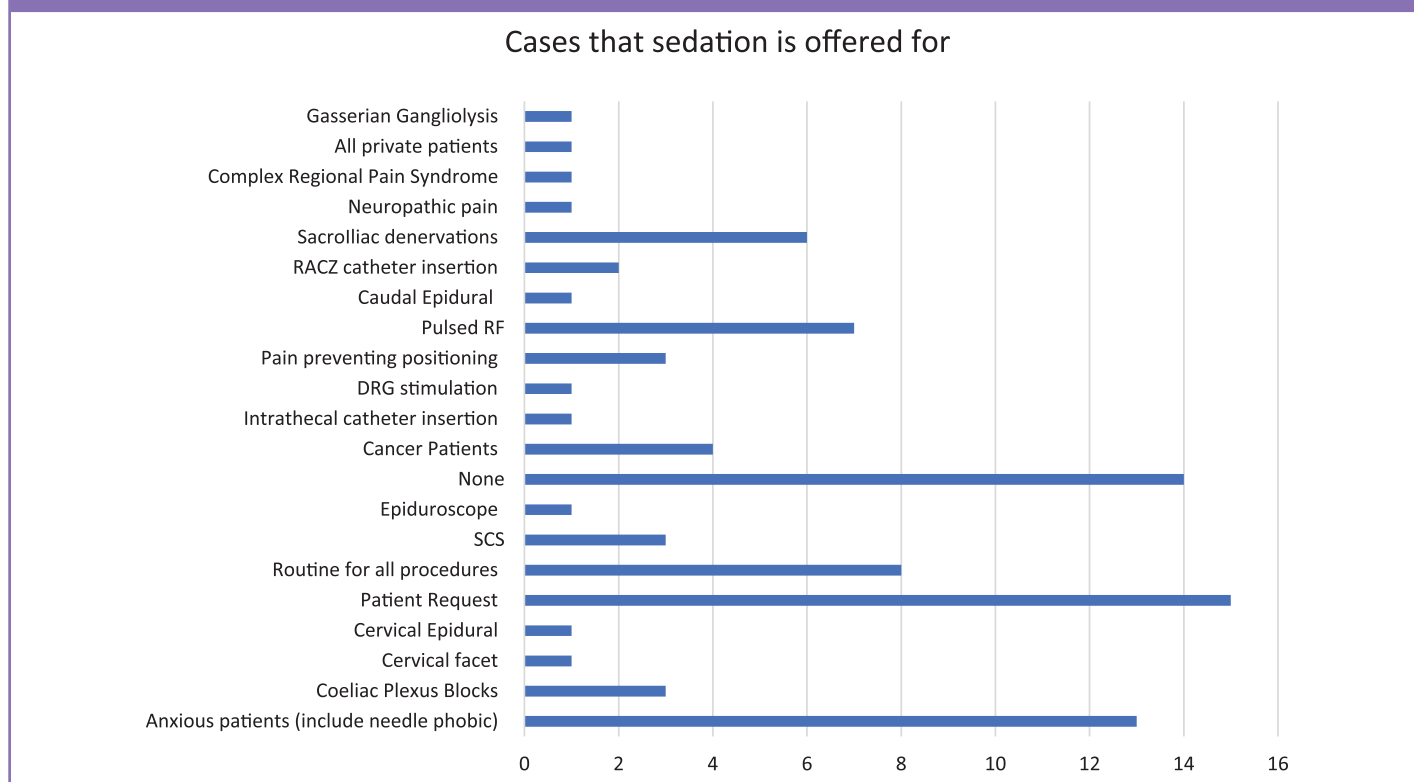
and when combined with analgesics, it can reduce the discomfort during injections. However, it could lead to airway compromise and arrhythmias from hypercapnia (from hypoventilation), which could lead to potentially fatal consequences. In addition, as with any drug administered, there is always the risk of an allergic reaction or adverse drug reaction such as nausea and vomiting (e.g. from opiates).

Sedation could also lead to potential false-positive results with diagnostic pain interventions since some sedatives have analgesic properties (e.g. opiate medications). Some studies have indicated an association between sedation and increased risk of nerve damage as the patient is unable to feed back to the interventionist in the same way as an unsedated patient. There may be legal repercussions from providing sedation without adequate proof of consent if there are complications.

According to the survey, some clinicians are only taking written consent for sedation if the patient asks for sedation. Interestingly, there is some evidence that sedation does not affect patient comfort during interventional pain procedures.¹

It is of some concern that the Pain Specialists are both providing sedation and doing the procedure in 40% of cases. There are guidelines that suggest we should have a dedicated sedationist. However, the guidelines do seem variable depending on the area of the procedure (endoscopy or interventional radiology sedation is often given without a dedicated sedationist).

In the cases where a trainee or ODP/Anaesthetic nurse is providing the sedation, there is a question as to who holds ultimate responsibility for the sedation and management of any complications. This may be the Pain Specialists again, which

Figure 5. Procedures for which sedation is provided.

raises the concerns outlined above regarding management of complications.

Roughly a quarter of Pain Specialists who responded to the questionnaire do not provide sedation for any procedures. This may account for the fact that no anaesthetic machine is present in 25% of procedure rooms. It is assumed that all the people providing sedation either routinely or occasionally had access to an anaesthetic machine. The Royal College has guidelines for the administration of sedation with access to adequate airway and ventilation equipment.²

There does not seem to be a consensus on which sedative drugs are used. The majority (44%) described using a tailored combination of other drugs. The main deviation from the established use of midazolam or propofol with or without alfentanil seems to be superseded in some cases by fentanyl (in combination with either midazolam or propofol). There is a subsection (7%) who stated they used Entonox. This may be the ODP/Anaesthetic nurses using Entonox, as it has a lower risk of airway loss.

Only half of the patients having sedation had their oxygen saturations, BP and ECG monitored. In total, 1% of the patients did not have any monitoring applied. The Association of Anaesthetists of Great Britain and Ireland (AAGBI), Royal

College of Anaesthetists (RCOA) and Faculty of Pain Medicine have issued guidance regarding monitoring during sedation.² It would have been interesting to see how many patients had access to EtCO₂ measurement. In those patients having a combination of midazolam or propofol with an opiate like alfentanil or fentanyl, there is a high risk of apnoea and potentially hypoxia. Difficulties with observing airway patency are compounded with the majority of procedures being performed in the prone position.

Only 50% of patients had supplemental oxygen given as a matter of routine. In 28% of patients, they only received oxygen if they desaturated. This is not ideal as the main reason for desaturation during sedation is hypoventilation or apnoea. Desaturation in these cases is a late sign. In addition, once a patient desaturates it can take a while for the patient to be re-oxygenated. By providing routine oxygenation to patients with sedation, one increases the oxygen reservoir in the functional residual capacity of the lungs. This will reduce the risk of desaturations. If the patient does have an apnoeic period, pre-oxygenation allows longer for the patient to recover their respiratory rate before there is a desaturation.

In total, 2% of respondents never provided oxygen. It is hard to believe this is the case if the patient has desaturated. There

Figure 6. A summary of the procedures outlined in the 2010 American Society of Anaesthesiology statement.⁵

Epidural Steroid Injections
Trigger Point Injections
Epidural Blood Patches
Sacroiliac Joint Injections
Bursa Injections
Occipital Nerve Blocks
Facet Joint Injections

are two possible explanations for this: one is that they do not provide oxygen as they have a separate sedationist who manages the patient's sedation; the other is that 1% of respondents do not place any monitoring on the patient during sedation. Therefore, they may be missing the hypoxic event that would normally trigger supplemental oxygen provision.

The number of interventional pain procedures being performed each year is increasing as the patient population rises and new techniques are developed. According to the 2014–2015 UK Hospital Episodes Statistics (HES) data, there were 82,188 therapeutic epidurals, 13,796 facet joint denervations and 83,308 'other procedures' around the spine performed in the United Kingdom.³ In the United States, there has been an 11% annual increase in select Medicare service beneficiaries, whereas facet and sacroiliac (SI) joint interventions increased by 313% in 10 years.⁴

With the rising numbers of these procedures being performed, there is no UK consensus on how the procedures should be performed, with regard to sedation or analgesia during the intervention. In 2010, the American Society of Anaesthesiology stated, 'the majority of minor pain procedures, under most routine circumstances, do not require anaesthesia other than local anaesthetic'.⁵ The procedures encompassed in this statement are summarised in Figure 6.

Cucuzzella et al.⁶ performed a retrospective survey of 500 patients who underwent cervical, thoracic, lumbar epidural or facet joint injections. They found that only 17% requested sedation if given the choice;⁶ about half of the patients had sedation for their procedure out of the 500 surveyed. In a subsequent follow-up study of the 500 patients, 93% who did not have sedation were happy with their decision to not have sedation.⁷ Only 1.5% of the total said that they would have liked sedation.

There is evidence that moderate to heavy sedation is associated with an increased risk of neurological damage. The risk of spinal cord injury during cervical procedures has been shown to be much higher with general versus local

anaesthetics.^{8,9} Gajraj¹⁰ suggested that sedated patients were unable to report paraesthesia, perhaps significantly increasing the risk of spinal and nerve damage during cervical injections.

Smith et al.¹ discussed the potential drawback of using sedation in diagnostic blocks. Depending on the type of sedation used, if it had analgesic effects itself (such as an opiate – fentanyl being a common option), it may make it difficult to assess the actual effect of the block.

The commonest reason for offering sedation to patients undergoing interventional pain procedures is for patient comfort and satisfaction. However, there is little evidence that using sedation improves patient satisfaction. Diehn et al.¹¹ surveyed patients undergoing transforaminal epidural steroid injections without sedation. They found that the vast majority rated their experience as either good (15%), very good (30%) or excellent (51%). There was only a 0.4% incidence of vasovagal events. The authors argued that the high patient satisfaction rates, coupled with the low vasovagal events, indicated that the procedure could be performed without sedation. They hypothesised that the increased risk of sedation-related neurological injuries far outweighed any potential benefit from patient satisfaction achieved with providing sedation. Trentman et al.¹² had similar findings when looking specifically at rates of vasovagal episodes in patients having cervical and lumbar transforaminal epidural steroid injections.

Cohen et al. further confirmed the potential confounding effects of sedation for diagnostic pain procedures. In a randomised, controlled, crossover trial, they found lower pain scores in patient diaries for diagnostic SI joint injections or sympathetic nerve root blocks in the patients who received sedation versus those who did not.¹³

Overall, there is limited evidence for the use or not of sedation in interventional pain procedures. Although there are no cost analyses into sedation versus no sedation for interventional pain procedures, it would seem logical that offering sedation would increase the cost and complexity of the procedure. The potential for increased cost would be related to drugs, additional equipment and potentially additional personnel.

There are potential complications associated with the use of sedation. There are data that sedation for day-case procedures can increase the risk of falls, driving accidents and aspiration of gastric contents.^{14,15}

One of the difficulties with research in this field is the definition of sedation. The AAGBI guidance on sedation refers to five types of anaesthetic administration. These are outlined in Figure 7.

There are a number of procedures for which the majority of Pain Physicians will routinely offer sedation. These are listed as follows:

Figure 7. The five forms of sedation outlined by the AAGBI.

None
Local Anaesthetic (including regional nerve block)
Light Plane of Sedation
Deep Plane of Sedation
General Anaesthetic

- Caudal;
- Radiofrequency ablation;
- Nerve root injection;
- RACZ catheter;
- Trigger point injections;
- SI joint injections;
- Epidural injections (transforaminal or interlaminar)
 - With local anaesthetic,
 - Without local anaesthetic,
- Diagnostic medial branch blocks;
- Regional nerve blocks;
- Plexus/ganglion blocks.

The aims of sedation are dependent on the procedure being performed. These can be divided into patient-specific and procedure-specific concerns. The procedure-specific issues include the necessity for the patient to stay still, being able to give appropriate feedback during the procedure (pain, paraesthesia, relief of pain) and duration of the procedure (longer procedures may be challenging for the patient to stay still). Patient-specific issues include anxiety, needle phobia, inability to stay still and discomfort being in particular positions.

There are specific considerations for the sedationist such as patient positioning (many interventional pain procedures are performed in the prone position, making access to the airway challenging) and use of special equipment (such as X-ray image intensifiers).

The RCoA has stipulated that even if no sedation is provided:

*The following ancillary anaesthetic equipment must also be available at all sites where patients are undergoing any pain intervention procedure, even if no sedation or anaesthesia is being administered: Oxygen supply, facemasks, suction, airways (e.g. Guedel and laryngeal mask), tracheal tubes and intubation aids, self-inflating bag, trolley/bed/operating table that can be tilted head-down rapidly.*¹⁶

The General Medical Council (GMC) guidance of Good Practice and Managing Medicines and Devices does stipulate that any procedure or intervention that causes significant levels

of pain or distress should be performed under sedation or a general anaesthetic.¹⁷

There are a number of drugs that can be used for sedation. The options are summarised below.

The commonly used drugs for sedation are as follows:

- Midazolam,
- Clonidine,
- Propofol,
- Fentanyl,
- Alfentanil,
- Remifentanyl,
- Entonox (nitrous oxide with oxygen in a 50:50 ratio),
- Sevoflurane.

It should be noted that there are alternatives to sedation. These can include psychological support and the use of local anaesthetics.

To date, there have been no national or international guidelines pertaining to the conduct of interventional pain procedures, especially with regard to sedation for the interventions. There are, therefore, questions about where it should be performed, what equipment should be available, who should perform the sedation and who should supervise the sedationist (if the sedationist is a trainee). There is some general guidance published from the Royal College of Radiologists and Anaesthetists about interventional procedures in general (not specifically related to interventional pain procedures).^{2,16}

There are very few studies that have outlined current practice, and none to date in the United Kingdom have been published. Kohan et al.¹⁸ published an American survey of 337 physicians (out of 4,037 members – 8.4% response rate). They found that 82% of patients had sedation, and most needed a driver post-procedure.

The heterogeneity of practice among interventional Pain Specialists in the United Kingdom highlights the necessity of clear national guidelines. Any such guidelines should be flexible enough to allow individual practitioners to tailor their treatments to their patients and their individual practice. However, there should always be an emphasis on safe sedation. This may require a separate sedationist for the intervention list who can either be a Consultant Anaesthetist, Trainee Anaesthetist undergoing sedation module or trained ODP/Anaesthetic nurse. The presence of a separate sedationist might entail the use of routine monitoring as described by the AAGBI. This would include the use of oxygen saturation probes, ECG, BP and EtCO₂ monitors.

Conclusion

Further study is required to help standardise practice and ensure the safe management of sedation. Part of the proposed

Survey of current sedation practices for interventional pain procedures: UK Pain Specialists

guidelines would be to highlight the cases where sedation may not be necessary. Although individual clinician discretion should always be respected, the less sedation that is provided, the lower the risk of sedation-related adverse events.

Standardising the equipment and protocols required for sedation would be important for any protocols and guidance produced for sedation relating to interventional pain procedures. These protocols could be built on similar protocols and guidelines developed by the RCoA and AAGBI for sedation in other specialties.

Author contributions

M.S. created, designed and distributed the survey, interpreted the results and performed literature search, compilation writing and proofreading; G.R. interpreted the results and performed literature search, compilation writing and proofreading; F.N. designed the survey, interpreted the results and performed proofreading; H.A.-S. designed and distributed the survey, interpreted the results and performed proofreading; A.D. performed proofreading and compilation writing.

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Going beyond the biopsychosocial: the complex person in a complex environment and uncertain world

Betsan Corkhill

As I've learned more about pain, health and wellbeing, I've realised how complex they are and how little I know.

Even the biopsychosocial model doesn't grasp it all. As Cabaniss et al.¹ says, 'It chops the patient into three neat packages'. These artificial boundaries can result in fragmented care and distract our attention away from the person as a dynamic whole embedded in their environment.

I've become increasingly interested in the theory of complex systems and how this can be applied to the human being and pain (see Figure 1).

Here are some facts about complex systems:

- The whole is greater than the sum of the parts;
- Separate out the parts, the whole will be lost, e.g., life;
- You can test all the parts but it doesn't mean the whole will work;
- Looking too closely at the detail can cause you to lose sight of the whole, e.g. X-rays and scans;
- They are dynamic and adaptive – constantly changing in response to experience and context;
- To understand a complex adaptive system, you need to know its history – the person's story;
- They are nonlinear and behaviour can be irregular;
- A minor, simple change can cause a BIG response, e.g. sleep improvement, stress reduction and movement;
- A major stimulus or change can have a little effect, e.g. surgery;

- They are characterised by feedback loops, e.g. the impact of pain feeds back;
- They operate on the verge of chaos and it doesn't take much to tip the balance, e.g. flare-ups;
- Emergent properties are defining qualities, e.g. pain.

The human body consists of a range of complex systems from cell to whole, plus trillions of bacteria that all interact in complex ways, embedded in complex environments in an uncertain, complex world. We can't separate these out:

Complex systems are driven by the quality of the interactions between the parts, not the quality of the parts. Working on discrete parts or processes can proper bugger up the performance at a systems level. Never fiddle with a part unless it also improves the system. (Complex Wales²)

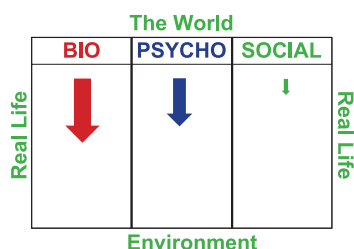
In complex systems when you affect a part you affect the whole, often in ways that are unpredictable. We would do well to heed this. For example, when wolves were re-introduced into Yellowstone Park, there was an unforeseen outcome – it changed the course of rivers and decreased flooding. Wolves predated on, and changed the feeding habits of, elk which fed on young willow growing on riverbanks. This grew more, increasing the population of beavers, changing the flow of rivers and decreasing flooding. It has triggered a 'still unfolding cascade effect' across the whole ecosystem.³

Prescribing opioids is a classic example of attempting to address a part without considering the whole. Humans are ecosystems too. We are organic, dynamic systems constantly changing in a constantly changing background.

From a complex system viewpoint, pain is an emergent property, emerging in the complex conscious person (a dynamic whole) who is embedded and inseparable from their complex environment and wider, complex, uncertain world ... when credible evidence of threat is perceived.

Health, wellbeing and pain never happen in isolation. There is always a context – past, present and predicted future – involving a range of factors associated with the person as a whole and their interaction with their environment and world.

Figure 1. Biopsychosocial.



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The judgement of our protective systems changes as a result of this context. Past trauma or other adverse life events can render them unable to differentiate between what's actually dangerous and what's not, so they respond inappropriately. Unless we consider this wider picture, we can end up medicalising social issues:

Pain does not reside in a mysterious immaterial mind, nor is it entirely to be found in the blood, brain or other bodily tissues. Instead, it is a relational and emergent process of sense-making through a lived body that is inseparable from the world that we shape and that shapes us. (Peter Stilwell and Katherine Harman⁴)

The 1–10 scales can never capture this. Linear pathways of care can't address this. We like them because they're measurable, have boundaries and we know where we are going when we have procedures and pathways to follow. Even the way we approach exercise and rehab is linear. We've all met people who avoid any unnecessary movement yet 'do their physio every day', where the message of being more active in general isn't being translated across to real life.

People and life are messy, and the longer you live with pain, the messier and more complex it gets. Dealing with complex, dynamic, organic systems involves things we don't fully understand; they are hard to get your head around so it becomes easier to simplify, safer to compartmentalise and we can go so far down this route that we lose sight of the complexity.

Those living with long-term health problems often have multiple labels and go down individual care pathways for each of these, with little consideration for the whole or communication between specialties.

The enormity of it all can be overwhelming, so it's helpful to keep reminding ourselves that

- Complexity gives hope because it gives us many avenues in which trigger changes;
- Small changes to one aspect can trigger a big overall effect;
- Simple things can have a big impact.

What can we do?

One of the biggest barriers we face is the ingrained belief that nothing can be done for pain. All that is left is managing or coping with it. That's a pretty depressing thought to live with.

This belief in itself can drive ongoing pain. However, some people *do* recover after many years of pain and we need to be asking them what recovery feels like. When I asked, their comments were remarkably consistent. They still have pain but their relationship with it changes. It no longer dominates their lives. The meaning of pain changes and they lose their fear of it.

They re-discover who they are – finding 'ME'. They regain a sense of agency to live more fulfilled, meaningful, purposeful lives.

These comments tie in with Dr Margaret Hannah's observation – 'Recovery is not simply about function and the activities of daily living, but about personhood, identity, self-worth. So often in current healthcare the focus and attention is on functional improvement'.⁵

Learning about what recovery feels like can help us rethink our aims. Instead of primarily aiming at pain reduction, we should be aiming at improving wellbeing, at recovery as defined by those with experience who *have* recovered, all the time bearing in mind that we are dealing with dynamic systems in an ever-changing context. In addition, we should be looking at ways of supporting those who are unable to recover over the longer term.

It's important to create the right context for recovery to happen. The clinician/patient relationship is key. It makes THE difference and is as important as what we 'do'. Even before we've opened our mouths, we've made an impact and set the scene, the context, which affected a person's anxiety levels and expectations:

Every interaction is an intervention. (Dr Karen Treisman⁶)

From a complex system perspective, think of it as two complex beings engaging, connecting and interacting, and making sense together to enable emergent change and meaning that would not be possible if acting alone. This relationship in itself can be a powerful tool to enable change. Focus on building relationships of mutual trust, respect, belief and kindness, a relationship of equals:

Only once trust is established do the stories behind the stories come out. (Dr Jonathon Tomlinson⁷)

This involves looking after our own wellbeing because when we're stressed it's communicated in our approach, body language, the way we speak, little things that people pick up on. It's important to be fully present, aware and receptive. It makes the difference between reaching a shared understanding of issues and just being a source of medication. Recognising and respecting the humanity of the person seeking our help is vital. These are people who have complex problems, not difficult patients. They want to be seen as a person, not a list of symptoms or labels. We could all end up in the pit, given the right/wrong circumstances. Don't kid yourself that you could never end up there. It's not about 'us and them'.

I highly recommend watching a YouTube interview by Dr Kieran Sweeney,⁸ a GP academic who died from mesothelioma in 2009. He describes medicine as 'being with people at the edge of their human predicament'. He talks about how the inadvertent small humiliations can add up – being instructed to 'take your top off, get on the bed' with no introduction, smile or

humanity. All these things add up to traumatise and humiliate a person when they are already at a low point.

He also warns that 'what's routine for you will be a big life issue for your patients'.

Building relationships is vital because the most valuable information comes from the person living with pain. Taking the time to listen to and hearing their story, *really* listening to gain an understanding, and in this process validating their pain and suffering, we need to know what their world looks like from their perspective:

Patients long for doctors who comprehend what they go through and who, as a result, stay the course with them through their illness. A medicine practiced without a genuine and obligating awareness of what patients go through may fulfil its technical goals, but it is an empty medicine, or, at best, half medicine. (Rita Charon⁹)

When we know their story, we begin to get an understanding of why they are in the place they're in and a realisation that, in many cases, they and their biological systems were behaving logically in response to life events. People are given labels when often they are experiencing normal reactions to adverse life events and this encourages the medicalisation of social issues. Knowing a person's story helps us to better understand the decisions they make and how to fit mutually agreed aims into their real life. It can also help discover what lights their spark.

Knowing their story also stops us making assumptions about their lives based on our own experiences. I was talking to two ladies about why they get low and immobile over the winter months. They told me they can't afford to heat their homes so they stay in bed or lie in sleeping bags on the sofa. These are young women in their 40s. No amount of pills will address this.

It's complex and always happens in context.

Some people carry heavy life loads and we need to know what these are. Often people are telling us 'my life hurts'. Sometimes all we can do is help them find as much sanctuary as possible within this context, helping to ease the load. When life events make it difficult to lessen the load, all we can do is to help them to put it down for a while. Relieving suffering may not always be the same as relieving pain. Those who are unable to recover need ongoing support.

So let's take a look at some simple issues that can influence change. This change need not be in intensity of pain but in other areas of life so their relationship with pain changes over time:

- Security/safety;
- Belonging/social;
- Space;
- Creativity/curiosity;
- General wellbeing.

Security/safety

If you feel safe and loved your brain becomes specialised in exploration, play, and cooperation. If you are frightened and unwanted, it specialises in managing feelings of fear and abandonment. (Bessel van der Kolk¹⁰)

This is my definition of fibromyalgia – a condition where all your protective systems are on high alert and sensitive. These include your alarm (nociceptive) system, stress, sensory and immune systems to produce experiences such as pain, fatigue, generalised aching and a range of other, sometimes strange, feelings that can be quite scary.

Note I'm not using the term 'pain system'. I don't think it's correct. Pain is an experience that emerges from this process. It's your alarm system that becomes over sensitive.

It makes sense for lots of reasons to consider how we improve feelings of security/safety. To look at ways of resetting, recalibrating our protective systems because fear and feeling unsafe makes it impossible to recover or heal:

For our physiology to calm down, to heal and grow we need a visceral feeling of safety. (Bessel van der Kolk¹⁰)

We need to think of creating a sense of security across the board, from the environment of the clinic/surgery and waiting area to answer phone messages and the way we greet and speak to people. Simple things like approaching people with a smile in an open, friendly way promotes feelings of safety, as does using plain English when we speak to and correspond with patients. It's all part of respecting and caring for the human being seeking our help.

These are just some of the issues people living with pain fear (see Figure 2).

Figure 2. Fear words.



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They are also afraid of getting better:

I'm frightened of getting better, of allowing myself to feel I'm improving, because my benefits will be taken away. If that happens, I'll lose my home. I haven't worked for 15 years, who's realistically going to give me a job?

Improving perception of safety is crucial for triggering change. There are some fundamental issues that we as individuals can do little about, apart from raising awareness, and this can be a source of great frustration. The foundation of feeling safe comes from having the basics in life – housing, a living income, good nutrition. Our current Benefits and Social Care systems deter recovery and make people sick by creating an uncertain, unsafe environment that the most vulnerable people in our society are dependent on. It makes life more difficult. Everything becomes a struggle.

Being unable to see the same GP who knows your story creates a sense of fear and uncertainty ... or the same psychotherapist or psychologist, so you don't have to retell your traumatic story over and over, reinforcing it. It prevents you from building stable relationships of trust and respect. The combination of austerity/poverty and cuts to services is making people sicker. I'm sure we all have powerful stories that illustrate this. And not just this generation – it will impact future generations through epigenetic inheritance. This is where we need national/international organisations like the British Pain Society (BPS) and International Association for the Study of Pain (IASP) to raise awareness of the complexity of pain at a governmental/global level:

Poverty has a psychology and identity all of its own. (Kerry Hudson¹¹)

However, there are some things we *can* do to promote an increased sense of security. Giving people knowledge is key to this. Those who have recovered say that understanding the biology and the complexity of pain is important. It helps them understand at a deeper level. You need to know that change is possible – plasticity is a biological fact – for change to happen.

Learning about and managing stress is important. It's a big part of the pain jigsaw.

Comparing the short- versus long-term effects of stress can be really effective in helping people to understand some of their symptoms, and not just focusing on what stress switches on but also the issues, such as digestion and sleep, that it tunes down.

Understanding how pain, and the impact it has on their lives, can loop back and become an ongoing threat they can't escape from. When you can't run or fight to escape trauma or threat, you go into freeze or flop mode. Their biology is telling

them 'if you move, you will be in great danger'. Knowing the biology not only makes it easier to understand why it's so difficult to get going but that it's safe to nudge forward despite pain.

Calming the primitive brain is communication at the deepest level. We can try it from the top down or bottom up, or both simultaneously. In a crisis, trying to do it top down through meditation, for example, is difficult. You can't instruct the mind to 'RELAX!' or 'CALM DOWN!' but you can show it how good it feels through experience. It may be possible to recalibrate protective mechanisms through the *experience* of feeling safe – from the bottom up. Rhythm is a way of achieving this.

I've spent some time researching the therapeutic benefits of knitting. Stories tell of those unable to meditate or practice mindfulness (top down) because they are too stressed, busy, distressed, yet are still able to knit (bottom up and top down) and achieve a meditative-like state. Rhythmic movement seems to be important in this. Rhythmic bodily movement calms the mind.

Examples of rhythm are as follows:

- Rhythmic movement – dancing, tai chi, yoga, knitting, rocking, walking, running and drumming;
- Laughter;
- Singing, poetry and music;
- Breath;
- Heartbeat;
- Stroking a pet and purring of a cat;
- Waves.

The brain likes rhythm because it is predictable. It makes the brain feel safe. I've recommended using a rocking chair to those with complex pain states where any sort of movement is difficult. It introduces the concept of relaxed movement which they find calming. Perhaps, our grannies who knitted in a rocking chair with a cat purring on their lap were on to something?

Movement is closely tied to our sense of safety. Immobilisation increases our primitive sense of fear because, in evolutionary terms, a sedentary being is more likely to be attacked. At the same time, movement can feel unsafe because of a belief that it's harmful. Knowledge is key here. It can teach that pain isn't a reliable measure of what is going, that it's not only safe to move but that movement nourishes the body, lubricating and strengthening joints and muscles. Rhythmic movement can feel like a caress, a means of self-nurturing so we can begin to change a person's perspective from one of movement being harmful to one of it being beneficial and nourishing. Through experience, the person as a whole learns that it's OK. It's safe to go against what their biology is telling them.

We can make movement safer or more challenging by changing the context within which people move. Someone who can walk in the safe environment of a physio department may not be able to walk outside or in a crowded street. When people are ready, we should be giving them experience of moving outside in nature or in social groups and think about moving for general fitness, not just to exercise the body part that is painful in a linear, biomechanical way.

Todd Hargrove¹² advocates moving through play as a way of influencing our complex systems. Play involves exploration, fun, risk taking, uncertainty, variability and creativity. Play, fun and laughter promote feelings of safety. On my 'Wellbeing for People with Pain' course, we have a session playing with Lego™. They get to the end of the session and realise they've had fun, laughed and haven't thought about pain. We learn a lot in this session.

Laughter is rhythmic. I show contagious laughter videos¹³ and it doesn't take long for a room full of people with complex pain conditions to all be laughing out loud. It's heartwarming, emotional and often comes as a shock. Experiencing enjoyment of life, and learning that this is still possible, is powerful:

Laughter – a sudden realisation that there is nothing to fear in the moment ... It is rhythmic, contagious and emotionally bonding. (Chris Knight¹⁴)

Keeping a gratitude diary can reinforce a sense of safety and help recalibrate protective systems by helping to refocus on the good things in life, and to re-attune them to picking up this information. You can get into the habit of only focusing on threat.

I've included sleep in this section because good sleep is closely related to a sense of safety. Your brain will only allow you to sink into deep restorative sleep if you are safe, because you can't run or fight in deep sleep.

Other animals go into unihemispheric sleep where one side of the brain stays alert for danger. This has a cost to the brain. Humans have evolved away from this as our environments have become safer. However, we have retained the ability to keep one area – the left cortical default-mode network – vigilant and alert in a dangerous or new environment. In these circumstances, part of the left hemisphere is not sleeping as deeply as the right. It is more vigilant in an unfamiliar environment or one we perceive to be unsafe.

Learning how to improve sleep can be hugely beneficial. Within this, you can look at establishing routines for sleep, eating and activity. Routines are a form of life rhythm. They make you feel safe because they are predictable.

Belonging/social contact

Social contact and feeling you belong is very closely tied to feeling safe. Referring back to evolution – lone individuals will be singled out by predators, so we feel safer in a tribe or herd. It is often useful to refer back to evolution. Everyone needs a tribe.

John Cacioppo et al.'s¹⁵ work on social connectedness and the neuroscience of loneliness found that the feeling of loneliness puts our brains into survival mode, 'increasing implicit vigilance for social threats along with increased anxiety, hostility, and social withdrawal to avoid predation'.

Loneliness puts a different filter on your lens of life. You see the world as more threatening. As a result, your interaction with others and communication – verbal and body language – changes. This impairs your ability to communicate, make friends and read a situation. People who are lonely can often come across as rude, so we need to bear this in mind. This can take a real toll on you and the relationships you're trying to create. We know, too, that loneliness increases inflammation through the stress response and is highly detrimental to health and wellbeing in many ways.

In recognition of this, there is a move to create compassionate communities. The Frome Model of Enhanced Primary Care¹⁶ was set up in 2013 by GP Helen Kingston and Jenny Hartnoll (Service Lead for Health Connections Mendip) in Frome – a small town just outside Bath. It has reduced emergency admissions to hospital by 30% over 3 years.

It aims to connect people to

- Their own local support networks;
- Networks that support the basic activities of life, such as help with shopping, gardening, looking after pets or providing transport;
- Extensive community activities.

William House, a retired GP in Keynsham near Bath, has set up Keynsham Action Network (KAN)¹⁷ where the community comes together to help each other:

Rather than configuring all health services around deficits and illness, this frame grows an economy of wellbeing, configuring recovery and aspiration through quality relationships. (Dr Margaret Hannah⁵)

Social prescribing, when done properly, can significantly ease the pressure on clinicians who can then become guides, while ongoing support is done in and by the community. But it's not just a case of prescribing anything that's available. Social prescribing needs to be done with the same diligence as prescribing drugs or any other treatment. We should always be

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asking 'will this change this person's story?' 'How will it affect their biology?' 'Will it have side effects?' and 'Is there anything in this person's story that will interact with this, beneficially or detrimentally?'

Ongoing support groups are important. An 8-week course won't heal a lifetime of problems. Support groups leave pathways of communication open and provide an ongoing sense of safety and stability while supporting people on their journey of improvement. They also provide stability for those unable to recover and a safe haven for those who cannot escape the trauma of their real lives, enabling them to forget, laugh and enjoy the company of others, even if it's only for a short time, helping to put the load down for a while. I would recommend popping into these support groups on a regular basis. We can learn a huge amount from the conversations that happen there. If you have a relationship of mutual trust and respect, I've found that boundaries are respected and it doesn't increase the risk of dependency. On the contrary, the sense of stability created helps promote independence.

Social activity groups move the focus onto the activity and so can help people who are fearful of social contact, or on the margins of society, to integrate into their communities. They also provide an opportunity to 'just be' in the company of others without feeling the need to participate.

Space

Space can range from environments where people feel safe to share who they really are, to creating a safe sanctuary in the home or somewhere to escape to. Learning to find safety within yourself when the world is falling down around you is a powerful tool. You can, for example, find moments of safety in your breath, in meditation ... or counting to 10.

Going beyond safety, there are other aspects of *Space* we need to consider. It's important to put space between the YOU that is YOU and your medical condition. Many people who have recovered from pain say, 'I've found ME again'. A programme that focuses on improving wellbeing and reconnecting to what matters to them as a person, their passions, rather than focusing on managing symptoms, helps create this space. It nourishes them as a person without the burden of labels.

Shinrin Yoku translates from the Japanese to 'forest bathing'. There is increasing evidence that being out in nature is beneficial in many ways. Just being in nature can help us begin sorting our own chaos:

I cannot say exactly how nature exerts its calming and organizing effects on our brains, but I have seen in my patients the restorative and healing powers of nature and gardens, even for those who are deeply disabled

neurologically. In many cases, gardens and nature are more powerful than any medication. (Oliver Sacks¹⁸)

Spending time in nature helps re-awaken AWE in the world and this is important because it helps put things into perspective. Enjoying space in nature re-awakens curiosity. Becoming curious about the world focuses the mind on more constructive thoughts. I sprinkle my wellbeing programme with facts that are designed to create an interest and awe in the world again.

Creativity/curiosity

When we are focused on problems and life's challenges, it raises levels of threat which in turn focuses our brains more on the problems in life. Rediscovering our curiosity and creative ability is important because it steers us away from life's problems and relentless negative thinking patterns. Creative activity groups can be hugely beneficial for wellbeing. If you're thinking creatively, you have more options open to you.

Creative activities

- Are constructive in what can seem a destructive life and world;
- Are colourful in what can seem a grey or dark world;
- Open up an avenue for giving gifts, helping charities and volunteering;
- Create feelings of anticipation and excitement – awakening lost emotions;
- Provide a means of enjoying 'Flow';
- Provide a way of learning new skills;
- Develop interests outside yourself, purpose and meaning;
- Provide a means of enjoying moments of solitude.

Where loneliness is detrimental to health and wellbeing, enjoyment of solitude, and learning to 'just be' in your own company, is highly beneficial.

Creative activity groups also reintroduce the feeling of 'being successful'. Many people we see have nothing in their lives they feel successful at. Experiencing success can have a powerful effect. It can change your personal story. It creates a desire 'to do', a springboard to other activities ... hope. All these things help lessen the load on a person to enable them to put their burdens down.

Creative activities can also help a person find their 'reason for being', the reason they get out of bed, something to live for. The Japanese call it your Ikigai,¹⁹ the motivation for living life well. Most of the people we see will have lost this. In fact, many of us may have lost sight of this under a burden of work.

General wellbeing

Approaches that focus on improving general wellbeing are beneficial for many reasons:

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- Take focus away from symptoms;
- Focus on things people *can* do, their values and passions;
- Find purpose and meaning – their reason for being;
- Give hope for meaningful change;
- Can provide the trigger to move from survive to thrive;
- Encourage measurement of success in areas other than pain reduction;
- Social;

and can also share knowledge about

- Pain;
- Living a less inflammatory life;
- Sleep and the importance of light and circadian rhythms;
- Nutrition/hydration – gut biome.

Many people who live with pain, stress and fatigue consume nutrient-poor, high-sugar diets. This makes sense from an evolutionary perspective. If your body thinks it will need to fight or run, you need quick calories. This becomes a vicious circle as fat cells, particularly around the abdomen, and secrete inflammatory and stress chemicals. We now know that altered gut biome affects pain. Opioids change gut biome. Looking at the wider complex picture, poverty and austerity make it difficult for a large section of society to eat a nutrient-rich, diverse diet which affects them in a multitude of ways from their microbiota to the ill health they experience as a result.

It's complex and it's all connected.

Lessening the clinical load

No one can do this alone. The load on clinicians, particularly GPs, is unsustainable. We could ease the load by spreading it among the load to appropriately trained community resources. A good way of doing this is to develop 'Healthy Living Networks' through the development of social prescribing, community-based groups and programmes – a network of mutual support with multiple entry points, creating relationships of trust and respect within a wider network and reaching out, educating people in this network so that everyone is singing from the same song sheet.

The implications go far and wide. We are all connected and part of the complex system that is the world. Our behaviours

affect our wider communities. Those who are struggling to survive aren't able to care about wider world issues because survival has to be their primary focus. They can't expend energy on climate change or eating a sustainable diet. What's bad for individuals is bad for communities and wider world. If we nurture individuals, we nourish communities and world.

It's complex, always happens in context and it's all connected.

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Effectiveness of ultrasound-guided dry needling in treating chronic pain

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Current treatments for chronic pain are mainly targeted towards the somatosensory and sympathetic nervous systems, which are often considered wholly responsible for the pain. Indeed, neuropathic pain is currently described as pain arising as a direct consequence of a lesion or disease affecting the *somatosensory* nervous system.¹ There is increasing evidence in fact to support that the majority of chronic pain conditions (85%–95%) also have a myofascial component.^{2–7} Myofascial pain syndrome (MPS) is defined as pain of muscular origin that originates in a painful site in the muscle. This site is characterised by the myofascial trigger point (MTrP). The MTrP is defined as a hyperirritable spot in skeletal muscle and is associated with a hypersensitive palpable nodule in a taut band. MTrPs can be active, generating spontaneous pain and pain referral and paraesthesia to a distant site, or latent, where pain is only produced on palpation.⁸ Importantly, both active and latent MTrPs are capable of stimulating the muscle nociceptors.⁹ In addition to being painful, MTrPs disturb motor function by causing a paradoxical combination of muscle stiffness with weakness and restricting range of motion (ROM).^{2,10} In the past 50–70 years, a modality termed *dry needling* (DN), a treatment done with needles placed in MTrPs, has emerged as a treatment option for MPS. Here, we discuss the effectiveness of a highly modified DN protocol done under ultrasound guidance as a treatment option for MPS across various chronic pain conditions, including many considered purely neuropathic in origin.

Historical perspective of MTrPs and concept of referred pain

The concept of '*referred pain*' was first demonstrated in 1938 by the British rheumatologist J.H. Kellgren, who injected hypertonic saline into fascia, tendon and muscle in healthy volunteers to show that pain and tenderness from muscles is often referred to a distant site, in a pattern specific to that muscle. Injection of procaine provided pain relief that far outlasted its effects, and in some cases provided permanent pain relief.^{11,12} Two other studies in 1940–1941 showed that

tender points in abdominothoracic musculature could simulate visceral pain, which could be eliminated by injecting the points.^{13,14} Brav and Sigmond¹⁵ (1941, US) showed the analgesic effect of the needle appeared independent of any injected agent. The term 'dry needling' was introduced in 1947 by Paulett¹⁶ to indicate there is no injection, even though a needle is introduced into tissues. The term MTrP was coined by Janet Travell, the first lady physician to the President in the United States in the 1950s.¹⁷ Later, Travell and Simmons⁸ published about 40 articles on myofascial pain and co-authored a book on myofascial pain and dysfunction. The term 'needle effect' was first described by Karel Lewit in 1979¹⁸ to indicate the immediate complete analgesia of the pain spot when the needle is placed in the MTrP. A Canadian physician, Chan Gunn,¹⁹ used acupuncture needles for DN of MTrPs in muscles and termed his protocol 'intramuscular stimulation' (IMS).

Current day practice

While the initial work on MTrPs and DN was carried out by physicians, treatment of MPS by MTrP release has mostly been taken over by physiotherapists, with only a handful of rehabilitation medicine practitioners and pain physicians performing DN. David Simons, acknowledging the lack of attention paid to the muscle by the medical fraternity, has stated, 'Muscle is the orphan organ. No medical specialty claims it'. Present-day practice of DN by physiotherapists first involves identification of MTrPs by clinical examination described mainly in physiotherapy textbooks.^{20–22} Next, a few (up to 6) 13- to 50-mm needles are blindly inserted into a few MTrPs to elicit a *local twitch response* (LTR) (Table 1).^{23–28} The LTR is a spinal reflex elicited when the needle is placed accurately within the MTrP, and even a 0.5 cm movement away from the MTrP eliminates the LTR. The LTR appears to be unique to MTrPs, both latent and active,²⁹ and can be observed through the skin during DN, recorded electromyographically or visualised with ultrasound during DN.³⁰

Table 1. Salient differences between acupuncture, conventional dry needling (DN), and ultrasound-guided dry needling (USGDN).

	Acupuncture	Conventional DN	USGDN
Diagnostic process	Solely based on Chinese philosophy	Physical demonstration of MTrPs necessary for diagnosis of myofascial pain	Both history and examination by a pain physician necessary for medical diagnosis of neuropathy and/or myofascial pain
Process for determining the presence of MTrPs	Not applicable as there is no concept of MTrP in acupuncture	Application of just enough pressure to blanch the nail bed of examiner should provoke pain Elicitation of the jump sign in muscle when a taut band is strummed	Clinical demonstration of MTrPs with digital pressure and jump sign Visualisation of an LTR during USGDN is necessary
Needle insertion	Into specific acupoints on meridians described in acupuncture texts. These points have no anatomical relevance to muscles	Needles inserted into MTrPs demonstrated by clinical examination and into palpable taut bands	Into muscles underlying the pain diagram drawn by patient: includes muscles eliciting pain and muscles in the kinetic chain of the original pain-eliciting muscles Needles are inserted along both the length and breadth of muscle, 2–3 cm apart, to address the multitudes of MTrPs, as confirmed by LTRs
Number of needles per session	6–10 (more used occasionally)	6–10	30–60
Needle length	13–25 mm (rarely longer)	25–50 mm	13–120 mm
Duration of needle maintenance	Usually 20 minutes	<1 minute Needle is introduced, pumped and then withdrawn, all within a few seconds	20–30 minutes Needle is slowly advanced in small increments, and when at maximum depth, left in situ for 20–30 minutes ^a
Number of sessions	Not specified	Up to 6 sessions	Up to 20 sessions
Elicitation/method of visualisation of LTRs	Not anticipated nor looked for	LTRs may or may not be seen through the skin, but attempts are made to elicit it by pumping the needle up and down multiple times	LTRs are routinely visualised on ultrasound, even in areas of muscle where gross physical examination does not demonstrate MTrPs
Practitioner expertise required	No knowledge of muscle anatomy needed	Knowledge of muscle anatomy necessary	In-depth knowledge of muscle anatomy, sonoanatomy and ability to steer needles under ultrasound essential
Associated risks/complications	Bruising, visceral and neurovascular injuries reported	Visceral and neurovascular injuries reported. Bruising can be seen	Ultrasound visualisation avoids the risk of visceral and neurovascular injuries. Bruising may be seen
Indications	Mainly for medical diseases, not for pain alone	Only indicated for pain	Mainly indicated for pain, but is also useful in painless conditions such as vertigo and persistent hiccups, and spastic conditions like cerebral palsy or deformities after stroke

MTrPs: myofascial trigger points; LTR: local twitch response.

^aNeedles left in situ for 20–30 minutes during USGDN because ultrasound videos have shown LTR activity to persist for about 15–20 minutes and rarely even 40 minutes (videos available), indicating that longer maintenance is required to end the LTR and deactivate the MTrP. While the LTR is ongoing, the muscle appears to grip the needle, making withdrawal very painful and difficult. After the LTR subsides, the needle comes out smoothly and painlessly, indicating muscle relaxation.

Understanding MTrPs

Recent pioneering research employing electrodiagnosis, magnetic resonance elastography, three-dimensional (3D) ultrasound and histopathology has shed light on MTrP pathophysiology.^{31–37} Using microdialysis, Shah et al. have demonstrated the biochemical differences in the local milieu between active and latent MTrPs and normal muscle tissue. They compared levels of protons, bradykinin, calcitonin gene-related peptide, substance P, tumour necrosis factor, interleukin-1, serotonin and norepinephrine. The inflammatory mediator levels were found to be significantly higher, while the proton levels were lower in active MTrPs compared to the other groups.^{31,32,38} By obtaining samples before and after an LTR induced by DN, they showed that the milieu changed after the LTR. These changes were also found to correspond with a reduction in pain and tenderness. The changes in analyte levels after the LTR were surmised to result from an increase in local blood flow to the MTrP region, resulting in a washout of the inflammatory mediators with corresponding pain relief. These authors have described MPS as a complex form of *neuromuscular dysfunction*: the neurogenic inflammation and inflammatory mediators in the tissue milieu of the MTrP are likely to stimulate muscle nociceptors and also sensitise the afferent nerves carrying nociception. This peripheral sensitisation of afferent nerves progresses to central sensitisation, which in conjunction with limbic system dysfunction plays a role in the initiation, sustenance, amplification and perpetuation of MPS.^{31,32} Chen et al.³⁴ using magnetic resonance elastography and Sikdar et al.³⁵ using ultrasound have established that localised areas of increased muscle stiffness can be reliably assessed and quantified. This explains the motor effects of the MTrP: the stiffness because of taut bands, the disordered recruitment of muscle fibres resulting in a weaker contraction and how the disordered recruitment of co-working muscles leads to a reduction or complete absence of reciprocal inhibition (relaxation of antagonist muscles that occurs when agonists contract).

Evolution of the practice of ultrasound-guided dry needling in the context of opiophobia

DN was adopted around 15 years ago at our centre to address the residual pains after nerve stimulator and fluoroscopy-guided interventions and radiofrequency procedures. Instead of prescribing opioids (which were difficult to obtain at that time in India), DN was attempted, based on the consistent clinical finding of MPS in these patients. Surprisingly, after 6–8 sessions of DN, patients were reporting sustained pain relief (unpublished data). Since the interpretation of these results required a better understanding of muscle pain and its referral patterns, a detailed analysis of muscle anatomy in the cadaver lab was undertaken. The cadaver lab experience emphasised

to us there were many prevailing gaps in medical undergraduate or post-graduate training vis-a-vis muscle anatomy and function, which needed to be addressed for a meaningful understanding of MPS. An interpretation of muscle anatomy and of kinesiology based on MPS radically changed our approach to DN: instead of addressing only the most painful spot in an individual muscle in isolation, the approach shifted to addressing the whole muscle harbouring the demonstrable MTrP, and thence to coworking muscle groups, rather than individual muscles, with the understanding that myofascial pain and functional impairment are two aspects of the same pathology. Thus, in a single 1-hour session of DN, agonist, antagonist and synergist fixator muscles need to be collectively addressed with at least 3–4 needles per muscle, taking the total of the needles used to 30–60 needles per session in most pain conditions. The understanding that emerged with continuing observations across a range of pain conditions was that the pain and tenderness at one MTrP forms just the tip of the iceberg. The actual pathology lies deeper in the whole of the muscle and its functional counterparts. The later addition of ultrasound opened up a whole new world of understanding, since it allowed visualisation of the sequence of events that follows needle placement in real time, and provided the means to correlate them to clinical observations. While high-intensity LTRs manifest as a twitch in the muscle that can be detected both by the naked eye and on ultrasound, we have observed that there are many more low-intensity LTRs (the confirmatory sign of an MTrP)³⁹ that are detectable only by ultrasound and can be missed by the naked eye, indicating that there is a much higher abundance of MTrPs than is currently assumed. These MTrPs could be in muscles that exhibit no pain or tenderness, but are involved in the kinetic chain of the original pain generator. The kinetic chain comprises muscles that are involved in complex movements across many joints for a particular functional activity of daily life.

When a needle is introduced into a normal muscle without any MTrP, there is no pain and the needle does not encounter any resistance and can be advanced very easily, painlessly and smoothly into the depths of muscle without any eliciting LTR. The needles are so fine (32-gauge) that the patient often may not even know that the needle has been inserted. In contrast, a muscle with MTrP exhibits specific features like pain, a discernible resistance to needle introduction and, of course, the LTR which is easily demonstrated on ultrasound visualisation. Occurrence of an LTR corresponds with the report of an initial sharp pain by the patient, followed by a sudden release of spontaneous pain once the LTR has subsided, even though the needle is still in situ. But often, the patient may not complain of this sharp pain but experience a mild pain or a sense of heaviness associated with subliminal LTRs or subtle flickers of muscles which might only be detectable on ultrasound. At this time, the muscle grips the needle and the

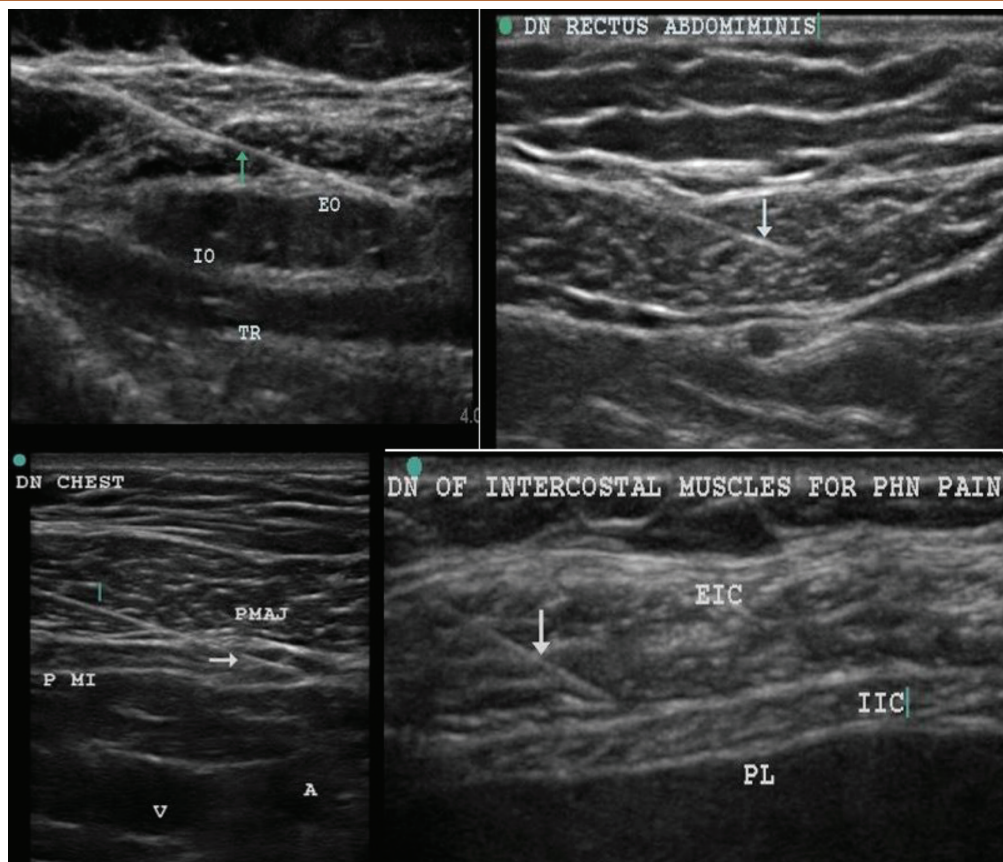
Figure 1. Improvement in range of movement at the metacarpophalangeal and interphalangeal joints after USGDN of digital flexors and extensors. *Top row:* appearance of the hand on day 3 (left), day 7 (middle) and day 10, after USGDN was initiated on day 1, and carried out every other day, thrice weekly. *Bottom row:* appearance of the hand on day 12 (left) and dynamometer readings on day 17 (middle) and day 22 (right), showing a gradual increase in the flexion at the metacarpophalangeal and interphalangeal joints to enable the formation of a fist to hold a dynamometer, with gradual increase in ability to produce a reading of 4 psi. USGDN: ultrasound-guided dry needling.



operator will find a resistance both to the introduction and withdrawal of the needle. The time taken for this resistance offered by the muscle to subside and the muscle to relax may take about 20–30 minutes. The patient experiences a gradual reduction in heaviness or the pain intensity during this period and reports a perceptible pain relief after needle removal. Patients consistently report a concomitant reduction in the movement stiffness which is accompanied by the objective finding of an increase in the ROM which persists thereafter. This is very obvious in complex regional pain syndrome (CRPS), where the ROM of finger and wrist

movement increase is routinely documented after ultrasound-guided dry needling (USGDN; Figure 1). Interestingly, we have demonstrated in certain very painful neuropathic conditions such as florid CRPS, Herpes zoster and trigeminal neuralgia that the resting muscle exhibits spontaneous twitches on ultrasound (videos available) even before the needling. These spontaneous twitches correspond clinically with the severe pain these patients report, and when needles are placed there is an initial increase in the twitches followed by quiescence which corresponds clinically with pain relief.

Figure 2. Necessity for ultrasound visualisation during dry needling. Ultrasound images showing needling of abdominal wall muscles (top left and right), chest wall muscles (bottom left) and intercostal muscles (bottom right). Ultrasonography allows direct visualisation of pleura, peritoneum and neurovascular structures so that needles can be steered into muscles away from these vital structures. DN: dry needling; IO: internal oblique; EO: external oblique; TR: transversus abdominis; PMAJ: pectoralis major; PMI: pectoralis minor; V: subclavian vein; A: subclavian artery; PHN: post-herpetic neuralgia; EIC: external to intercostal muscle which is the serratus anterior; IIC: intercostal muscles; PL: pleura.



Necessity of ultrasound use during DN

Ultrasound visualisation ensures accuracy of needle placement and avoids risks of injury to the viscera, pleura and neurovascular structures (Figure 2), all of which have been reported with both acupuncture and conventionally practised DN.^{23–25} The safety of visualisation allows needling into the depth of large muscles with impunity. Unlike the risks associated with blindly performed DN, the complications associated with USGDN include only bruising and pain during needling.

USGDN procedure

USGDN utilises commercially available 32-gauge solid filiform disposable acupuncture needles ranging between 13 and 120 mm. It cannot be emphasised enough that despite using

the same tools, USGDN has nothing in common with acupuncture. Acupuncture needles are only used because they are the thinnest needles available on the market. The differences between USGDN, DN and acupuncture are summarised in Table 1.^{23–28}

Effectiveness of USGDN versus DN

A 2017 systematic review and meta-analysis on DN effectiveness in the hands of physical therapists concluded that there was low quality to moderate evidence to support that DN is more effective in reducing pain than no treatment, in short-term follow-up. Evidence for any long-term benefit of DN is currently lacking.⁴⁰ These results are very markedly different compared to the effectiveness of USGDN at our centre, in a variety of pain

conditions.^{41–52} These contradictory findings are likely due to the following differences in practice between USGDN and DN.

Number of needles

3D ultrasound studies have shown that MTrPs occur in clusters,³⁵ and the use of only a limited number (up to 6) of needles in DN may leave many MTrPs in a muscle untreated. Our experience with USGDN (which utilises 30–60 needles per session, Table 1) suggests that the number of active MTrPs causing spontaneous pain or even latent MTrPs form only the tip of the iceberg of MPS – the majority of the problem may be attributable to a subclinical contribution of asymptomatic MTrPs or their predecessor abnormalities in the muscle.

Needle length

Blindly performed DN usually utilises short 25–50 mm or occasionally 75 mm needles that may not be able to reach deep-seated MTrPs, particularly in obese patients. It is our routine observation with USGDN (where needles as long as 120 mm are used) that it is the deepest layers of muscle (e.g. multifidus in back pain or vastus intermedius juxtaposed on femur or serratus anterior just superficial to ribs and intercostal muscles) that seem to have the most taut bands that exhibit distinct LTRs and a perceptible resistance to needle passage, as well as cause most pain to the patient on needling.

Duration of needling

In DN and in IMS, the needle is rapidly inserted with a pumping motion into the MTrP and kept in situ for only a few seconds before removal. In contrast, during USGDN, they are smoothly inserted till a resistance is encountered or patient reports pain, when the introduction is halted for a few seconds and then advanced slowly and gradually into the muscle as the muscle relaxes. Needles are maintained in situ for 20–30 minutes and come out easily and painlessly, compared to the resistance to needle passage at insertion, or after maintenance for a shorter period (e.g. 10 minutes). We have observed repeatedly that early removal of needles results in greater pain during needle removal and is also far less effective at resolving the original pain, as shorter needle maintenance in situ is often insufficient for MTrP deactivation. This difference in needle maintenance time between DN and USGDN may be highly relevant: using ultrasound monitoring, we have observed that cessation of LTRs (which indicates deactivation of an MTrP) can require up to 20–30 minutes of needle maintenance. Clinically, needle introduction into an active MTrP produces a gripping of the needle by the muscle with intense pain and any attempt to redirect the needle (away from a vessel) at this time is painful to the patient. We believe the immediate removal of the needle after eliciting the LTR precludes the wind down of the natural stimulation-relaxation

induced by the needling observed under ultrasound visualisation. Therefore, we surmise that the routine practice among DN and IMS practitioners of rapidly pumping the needle in an attempt to elicit a clinically visible LTR may fail to fully deactivate the MTrP.

The practitioner effect

Currently, DN practised by physiotherapists as the sole treatment modality involves targeting a few painful spots in the muscle, with pain relief as the main goal. Disability relief is not targeted. USGDN practised by pain physicians has the flexibility of serving as a sole modality, or as a follow-up to neural interventions, depending on the severity of clinical presentation. USGDN at our centre aims as much for disability relief as pain relief, based on the theory that myofascial pain and functional impairment are two aspects of the same pathology. To this end the agonist, antagonist and synergists are comprehensively addressed. However, the effectiveness of DN versus USGDN has not been explored in a study.

The MTrP and motor neuropathy – the connection

While the role of the somatosensory nervous system in the genesis and propagation of pain is well established, the possibility that motor nerves are as vulnerable to being affected by neuropathy as sensory nerves has not been considered. Based on the effect of USGDN in multiple pain conditions considered to be purely neuropathic,^{41,46,47,50,51} we have come to refer to this motor neuropathy as *neuromyopathy*, because we believe that not only is the motor nerve involved in the neuropathic process, but it also produces significant changes in the muscle by way of MTrP generation and taut bands, culminating in MPS.^{2,10,19,29,31–38,53–56} Simons et al. have proposed the integrated trigger point hypothesis incorporating the concepts of the local ischaemia in an energy crisis (the Cinderella hypothesis)^{53–55} and this has been further expanded by Gerwin et al.⁵⁶ to explain MTrP generation: briefly, increased discharge of acetylcholine at the motor end plate or the neuromuscular junction produces recordable electromyogram changes in the end plate zone near MTrPs. Electrical discharges that occur with frequencies that are 10–1,000 times that of normal end plate potentials have been shown in humans, presumably as a result of increased discharge of acetylcholine.⁵⁷ This crescendo of miniature end plate potentials leads to a muscle contracture, wherein myosin filaments get stuck at the Z band. The lack of ATP (and perhaps oxygen), which is required to break the cross-bridges between actin and myosin filaments, leads to the formation of an MTrP. We propose that if these theories, which pertain to the downstream effects of increased acetylcholine discharge at the motor end plate or neuromuscular junction, were to be extended a little more proximally from the neuromuscular junction to the motor nerve,

Effectiveness of ultrasound-guided dry needling in treating chronic pain

it would form the missing connection between motor nerve neuropathy and MTrP production.

While there is reporting of MPS in neuropathic pain,^{58–61} these associations have been dismissed as secondary musculoskeletal issues unconnected to the main pathology. We have proposed that MTrPs are generated in neuropathic conditions as an end result of neuropathy of motor nerve. Thus, many pain syndromes, instead of being described as a neuropathy, would be better described as a neuromyopathy, which is an all-encompassing terminology that describes disorders of peripheral nerve or lower motor neuron that directly produce muscle changes that become independent pain generators. In our clinical experience, residual pains in multiple neuropathic conditions have been unequivocally relieved by USGDN,^{46,47,49–51} warranting a serious consideration of the possibility that the muscle is actually an expressor of neural pathology.

The present description of neuropathic pain as pain arising as a direct consequence of a lesion or disease affecting the *somatosensory* system¹ is less than comprehensive. While the division of chronic pain into secluded chapters in text books such as neuropathic pain and myofascial pain makes it easy for physicians to neatly compartmentalise their understanding of this condition, neuropathy in real-life situations appears to have no special preferences for sensory nerves one way or the other, and motor and autonomic nerves may be equally involved in the neuropathic process. Moreover, muscles seldom act in isolation; MTrPs in flexor muscles can cause strain in other agonists, antagonists, synergists and fixators to give rise to MTrPs in these muscles. Furthermore, MTrPs can refer pain by forming secondary satellite MTrPs at other distal sites along the kinetic chain of muscles involved in complex movements across many joints. Muscle kinetic chains are combinations of several successively arranged joints constituting a complex motor unit: for example, the act of picking up an object involves several muscles acting across the shoulder, elbow, wrist and the small joints of the hand as well as the neck. An MTrP in one group of muscles (biceps) not only compromises the movement of that muscle group but also places an extra strain on the other muscles and joints required to achieve the function. Thus, we believe that muscles are not just passive expressors, but are also the perpetrators, facilitators, sustainers and amplifiers of the pathogenic process responsible for pain generation. The sheer interdependent complexity of muscle function ensures the production of myriad bizarre symptoms, which are the hallmark of many neuropathic pain syndromes that remain unresponsive to opioids. Once formed, the MTrPs become the autonomous source of pain, inflammation, peripheral and central sensitisation, all of which persist even after treatment with spinal or peripheral nerve blocks, radiofrequency procedures, and even intrathecal drug delivery systems and spinal cord stimulation. Pain from persistent MTrPs might well

explain the conclusions of the Mint trial⁶² and the second ASBMR task force report on vertebral augmentation⁶³ that opined that radiofrequency denervation and vertebroplasty procedures were not useful in relieving pain.

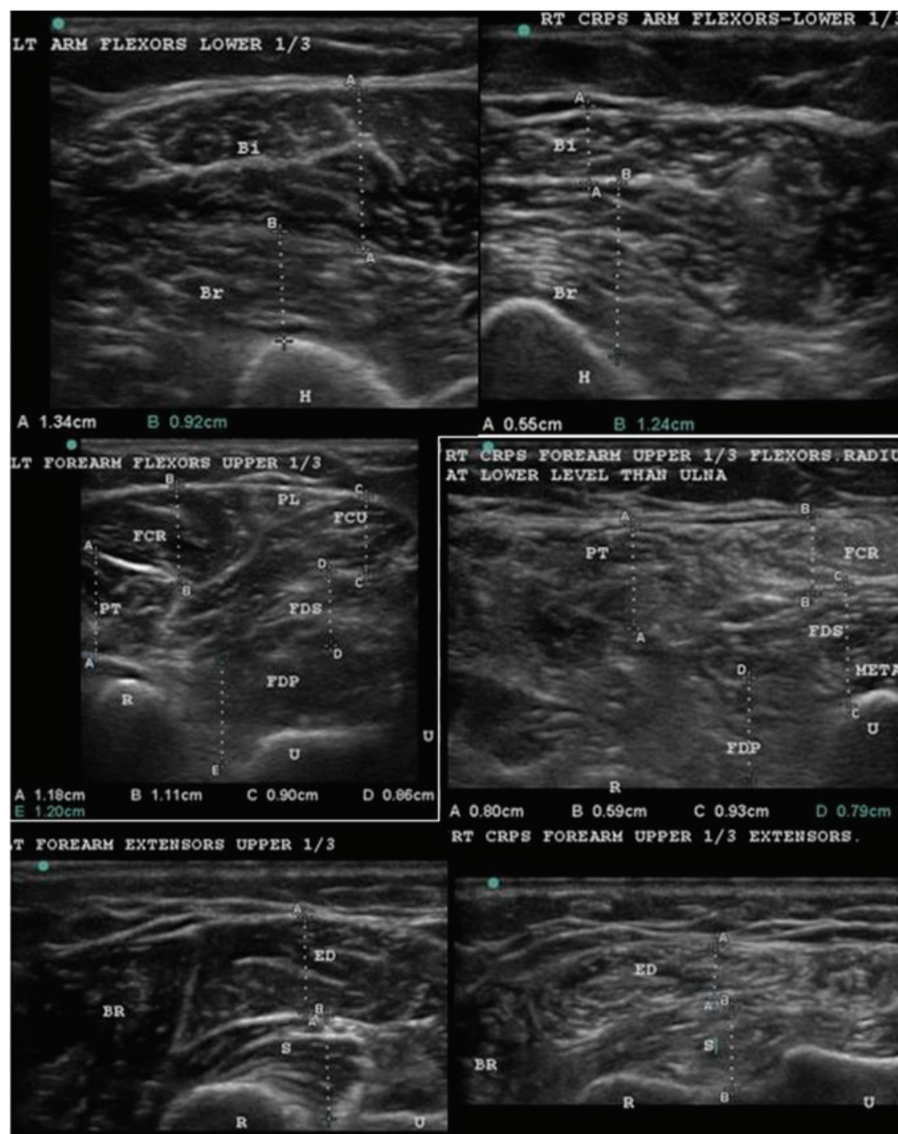
Effectiveness of USGDN in current clinical pain practice

Currently, interventional pain management procedures address the nerves affected by neuropathy and then follow up with physiotherapy referrals and opioid prescription for residual pain. Our clinic is probably the only one (to our knowledge) to take an integrative approach, treating pain syndromes not as a neuropathy, but rather a neuromyopathy: the *neural* component is usually first addressed in patients with severe pain with interventions such as transforaminal epidural injection, cervical interlaminar epidural, radiofrequency procedures (both thermal radiofrequency (TRF) and pulsed radiofrequency (PRF)), continuous nerve or plexus infusions or intravenous lignocaine/ketamine infusions. The residual pains persisting after these neural interventions are addressed by systematic USGDN, which routinely achieves a dramatic reduction in pain and also disability. Strikingly, in many patients, USGDN is effective as the sole modality of treatment. Furthermore, neuropathic symptoms such as burning, allodynia, and hyperalgesia and hyperaesthesia (seen in herpes and post-herpetic neuralgia, brachial plexus injuries, CRPS and other severe neuropathic conditions) are routinely and predictably relieved with 2–3 sessions of USGDN. After initially puzzling over why such ‘sensory’ symptoms were relieved by USGDN, a treatment that patently and exclusively addresses muscles, we came to the realisation that these so-called sensory symptoms could actually be the result of an intense spasm of erector pili muscles in the dermis.⁴⁷ USGDN results in a relaxation of these dermal muscle fibres while also deactivating MTrPs in much deeper-seated muscles.

Effectiveness of USGDN in CRPS

Our experience with CRPS has been in stark contrast to the world literature, in that complete reversal of CRPS has been routinely achieved.^{42–45,47,52,64} To date, CRPS has been reversed in 204 consecutive patients, including 2 paediatric patients, 5 cases of bilateral CRPS,⁴² 1 case of recurrent CRPS⁴³ and 4 cases of chest wall CRPS that had developed after coronary bypass surgery. There were 155 cases of upper extremity CRPS, of which 149 had CRPS-1 and 6 had CRPS-2. There were 45 patients with lower extremity CRPS, of which 41 had CRPS-1 and 4 had CRPS-2^{42–44,47,52,64} (unpublished data). Given the overwhelming incidence of disability in CRPS and its relief by USGDN, a treatment that only deactivates MTrPs, we have hypothesised that the primary pathology of CRPS is actually motor impairment: formation of abundant MTrPs and

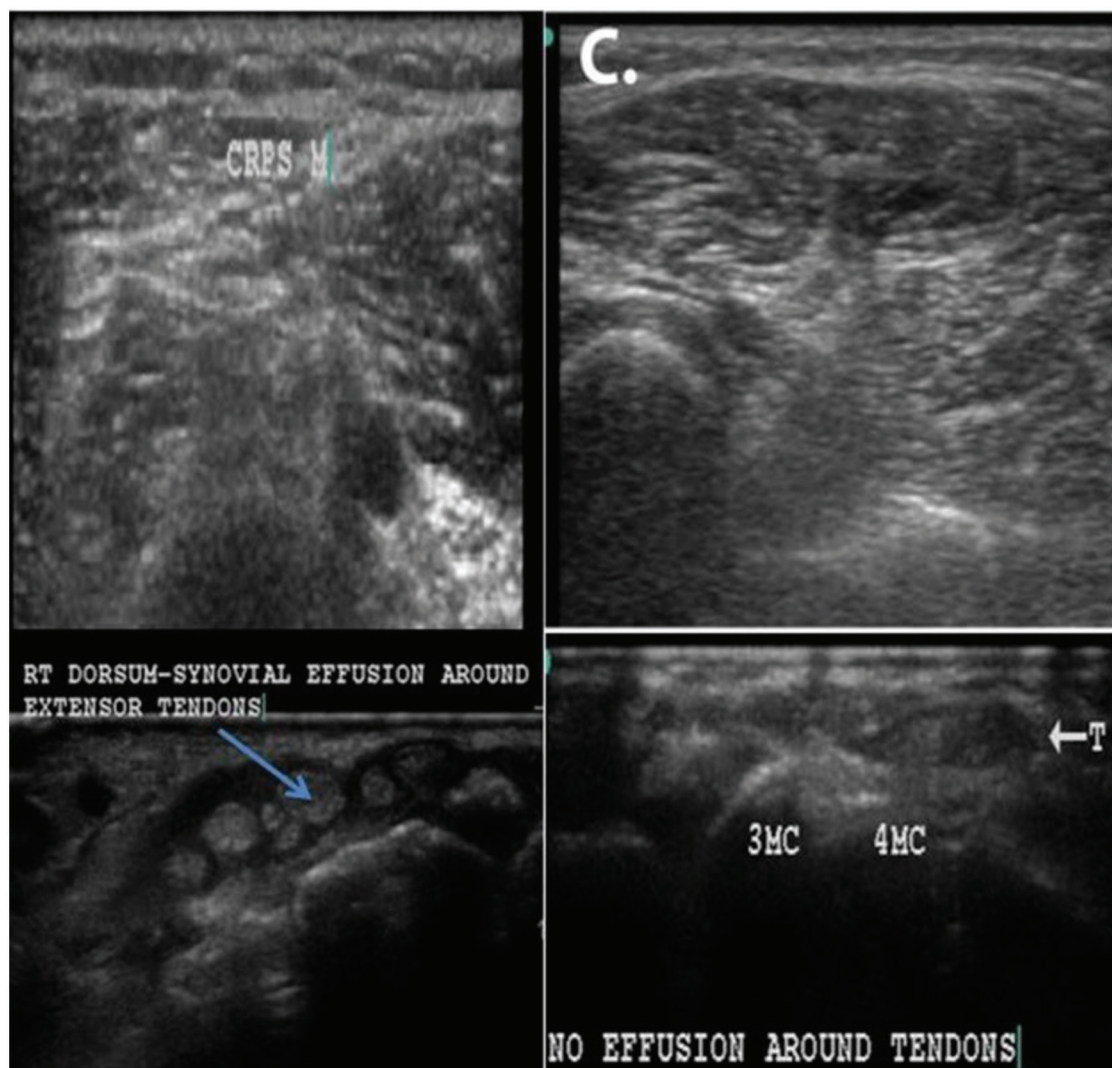
Figure 3. Muscle ultrasonography is a novel diagnostic investigation for CRPS. Ultrasonographic images of digital flexor and extensor muscles of the normal left arm (left-hand side panels) compared with CRPS-affected arm (right-hand side panels). Muscles in the normal arm (left panels) show clear demarcation of muscles and well-defined muscle outlines, with the hypoechoic (dark) background representing muscle fibres, and bright curvilinear echoes representing the connective tissue frame work of the perimysium. In the CRPS-affected arm (right panels), muscle outlines are lost and there is a predominance of uniform hyperechoic fibrous tissue, with loss in muscle bulk. BI: biceps; BR: brachialis; H: humerus; R: radius; U: ulna; PT: pronator teres; FCR: flexor carpi radialis; PL: palmaris longus; FDS: flexor digitorum superficialis; FDP: flexor digitorum profundus; BR: brachioradialis; ED: extensor digitorum; S: supinator.



taut bands in the agonist/antagonist muscles such as flexor/ extensors and supinator/pronators causes an impaired reciprocal inhibition that culminates in an abnormal co-contraction that severely impedes all extremity movements.

Attempted movements of muscles tethered by constant co-contraction lead to friction and inflammation at the digital tenosynovial sheaths (demonstrable on ultrasound, Figure 4) similar to that seen in de Quervain's tenosynovitis.

Figure 4. Muscle ultrasonography as a prognostic tool in CRPS. Ultrasound images obtained before (right panel) and after (left panel) USGDN of the CRPS-affected hand. *Top row:* Ultrasound images of the forearm just below the elbow before and after USGDN shows the return of normal outlines as well as return of hypoechoic muscle fibres in the muscles (right panel). The bony outlines of radius and ulna obscured by the hyperechoic echoes pre-USGDN (left panels) become clearer after treatment (right panels). There is also an increase in muscle bulk in the right panels, compared to left. *Bottom row:* Images show the tenosynovial effusion around the digital extensor tendons before USGDN (left panel) which is completely resolved post-USGDN, suggesting that USGDN of the digital extensor and the flexor muscles relieves the co-contraction and the consequent tenosynovial inflammation and effusion. T: tendons; MC: metacarpal bone.



We have proposed that the inflammation seen in CRPS is secondary to a global tenosynovitis, rather than a neurogenic inflammation that has been proposed by other authors. The unrelenting co-contraction is likely responsible for the resource depletion, which causes the hypoxic changes like wasting and

fibrosis with the dystrophic and atrophic manifestations of later CRPS. We have consistently observed that this co-contraction responds with exquisite sensitivity to USGDN. Relaxation of the co-contracted agonist/antagonist muscles of the CRPS-affected limb automatically reduces the synovial friction and

resolves the inflammatory tendinoses in the hand, thereby reversing the pain, vasomotor, sudomotor and sensory features forming the Budapest criteria. Relaxation of muscles also allows a return of the normal coordination between the flexor (agonist) and extensor (antagonist) muscles with dramatic improvement of stiffness, weakness and disability. Ultrasound documentation of changes in CRPS-affected muscles, as well as their reversal after USGDN, supports this theory^{45,47,52,64} (Figures 3 and 4).

USGDN has also proven effective in numerous other pain conditions, alone or in combination with modalities such as PRF, ultra-low dose botox and trigger injection of ultra low-dose steroids. An incomplete list of conditions that have been improved includes various neuropathic pains, including post-surgical pains,^{41,65} post-herpetic neuralgia (manuscript under preparation), diabetic neuropathy, brachial plexus injury, spinal cord injury with causalgia (unpublished data); central pains such as post-stroke pain, and deafferentation pains (unpublished data); trigeminal neuralgia (manuscript under preparation); migraines (unpublished data); lower back pain (discogenic, facetogenic, spondylolytic and spondylolisthetic (unpublished data)); failed back surgery syndrome;⁴⁹ arthritis of knee (both osteoarthritis⁶⁶ and rheumatoid arthritis (unpublished data)); writer's cramp;⁴⁸ shoulder pains (frozen shoulder (unpublished data)); chronic pelvic pain;⁵⁰ and cancer pains.^{46,51} USGDN is also used as an add-on therapy after transforaminal epidural and pars injections and after RF denervation of the medial branch to the facet joint.⁶⁵

Conclusion

USGDN is a low-cost, simple yet safe technique that simultaneously addresses pain and disability across a wide range of chronic pains with a specific and predictable accuracy. For its widespread dissemination, the following are needed:

1. The necessity to sensitise pain physicians to the concept that neuromyopathy is operative in most chronic pain conditions.
2. Training pain physicians in muscle anatomy via cadaveric dissection workshops and educating in musculoskeletal ultrasound use.
3. Well-designed clinical trials to determine its superiority over opioid prescription.
4. Basic science research to explore the concept of neuromyopathy as a causative factor in various chronic pain conditions.

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Evaluating the effectiveness of Essential Pain Management programme as a method for improving health care professionals' knowledge of pain assessment and management in a District General Hospital

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Credit: Tetiana Lazunova.

Introduction

Inadequate pain management continues to be a problem facing health care professionals globally.¹ Despite advances in technology and medicine, pain management continues to be inadequate.² Regardless of the reason for their admission, all health care professionals will encounter a patient reporting an episode of pain during their admission.^{3,4} It is estimated that

between 37% and 84% of patients will report pain during their hospital admission, with the prevalence of severe pain being reported by between 9% and 36% of those admitted.⁵ This high prevalence of pain is not only restricted to the hospital population, but it is also estimated that the prevalence of chronic pain in the United Kingdom is between 33% and 50% in the general population.⁶ This prevalence increases significantly

in vulnerable groups such as the elderly, with some studies suggesting a prevalence of 80% in the care home setting.⁷

This continued undertreatment of acute pain is having a detrimental and wide-reaching impact on today's society, since it is likely that poorly controlled acute pain may develop into chronic pain and impact on overall quality of life.⁸ Furthermore, these complications often become a burden for the health care system because they can result in a prolonged hospital stay or readmission for further pain control.⁹ The reasons for the continued undertreatment of pain are complex and multifactorial; however, health care professionals' lack of pain knowledge has been identified as one of the main causes.^{10,11}

A survey was carried out among 19 higher education providers in the United Kingdom who offered undergraduate education in the following disciplines: dentistry, medicine, midwifery, nursing, occupational therapy, pharmacy, physiotherapy and veterinary science.¹² They found that the average duration of pain education content in the undergraduate courses was 12 hours, with physiotherapy students receiving the highest input (37.5 hours) and midwifery students receiving the lowest (6 hours). On average, veterinary students received twice as many hours of pain-related education than medical students (27.6 hours versus 13 hours);¹² this study also demonstrated that most programmes used a uni-professional approach; lectures and case studies were most often used as a teaching strategy, with neurophysiology and analgesics being the subjects most frequently covered.¹² The International Association of the Study of Pain (IASP) curricula content had only been implemented by two undergraduate programmes.¹³

Following the analysis of data provided by 19 of its member countries in 2011, the IASP set out recommendations for the core elements of any national pain strategy, with Professional Education being one of the four key areas for development; it stresses that pain education must be incorporated into health care professionals' pre-registration curricula and should also be included in continuing education programmes.

Background

The IASP set 2018 as Global Year of Excellence in Pain Education. To support this initiative, the British Pain Society published the document 'Pre-registration Pain Education: A Practical Guide to Incorporating Pain Education into Pre-Registration Curricula for Healthcare Professionals in the UK', which aims to complement the IASP Interprofessional Curriculum Outline by providing guidance and resources for pain educators. Essential Pain Management (EPM) is one of the teaching methods advocated in this document.

Dr Roger Goucke and Dr Way Morriss from the Australian and New Zealand College of Anaesthetists developed the EPM programme in 2010.¹⁴ Its initial purpose was to deliver pain education in low- and middle-income countries. However, this

has been extended and adopted internationally and is now taught in over 30 countries and includes high-income countries such as the United Kingdom. In the United Kingdom, the Faculty of Pain Medicine adapted the programme as a 4-hour workshop called EPM Lite that encourages multidisciplinary participation. The course introduces the concept of the 'RAT' system (Recognise, Assess, Treat) and covers relevant physiology, assessment and pain management, and it is now taught in 18 medical schools across the United Kingdom.

An initial evaluation of the EPM programme by Goucke et al.¹⁴ demonstrated an increase in the participants' pain knowledge. However, they were not able to demonstrate at this stage any changes in the health care workers' behaviour. Some participants in this educational programme demonstrated lower post-test scores, which the study's authors suggest may be due to a lack of English language comprehension, since the first EPM courses were delivered in countries where English was not the participants' first language.¹⁴ EPM has now been translated into a number of different languages, for example, Spanish and Vietnamese.

The provision of pain education for qualified nurses, medical staff and members of the multidisciplinary team (MDT) is one of the roles of the Acute Pain Services.¹⁵ The purpose of this article is to evaluate the effectiveness of the EPM-UK programme used as an educational method by the Acute Pain Service in an Inner London District General Teaching Hospital.

Method

The acute pain team scheduled four EPM-UK study days in the last 4 months of 2018. The study days were open to all health care professionals involved in the care and management of patients with both acute and chronic pain across an Inner London District General Teaching Hospital.

Prior to starting the study day, participants were asked to complete a 'true or false' questionnaire with 25 questions, which was developed as part of the EPM-UK programme. This was then repeated at the end of the study day to assess the efficacy of the teaching. All questionnaires were anonymous to ensure participants' confidentiality, and descriptive statistical analysis was used to demonstrate the impact of the EPM-UK programme.

Results

A total of 51 participants attended over 4 study days, with an average of 13 participants on each day. In all, 42 participants completed the pre-course questionnaire, 4 were discounted as incomplete and 5 were not returned. In total, 46 participants completed the post-course questionnaire with 4 discounted as incomplete and 1 not returned.

Demographic information obtained from course booking forms demonstrated that participants were from a wide spectrum of professional groups (Figure 1).

Figure 1. Professional background.

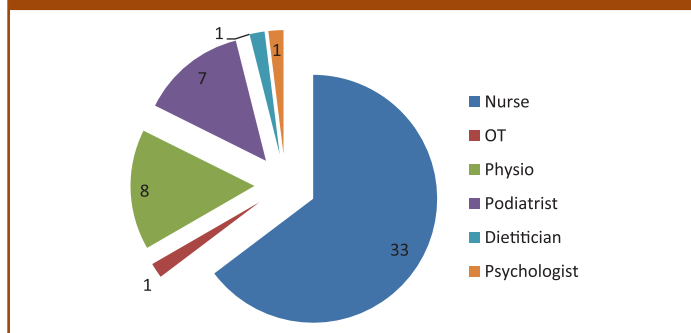
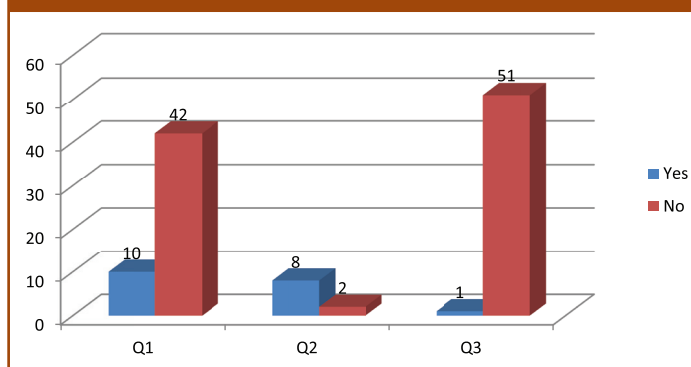


Figure 2. Pre-course informal questions.



Pre-course questions (informal)

Along with the formal true/false questionnaire, participants were asked three statements at the start of the study day and asked to agree with these using a show of hands:

- Q1: Do you recall having specific formal undergraduate training in the multidisciplinary management of pain?
- Q2: Do you feel that your personal undergraduate training in pain management was adequate?
- Q3: Do you feel that undergraduates in all health professions currently receive adequate training in the multidisciplinary management of pain?

Figure 2 above outlines the response to each of these statements:

True/false question scores (formal)

The mean score pre-course was 17.26/25 or 69.04%; there was a small improvement in the post-course questionnaire which saw results increase to 18.45/25 or 73.82%. However, on review of individual score breakdown, there was an overall improvement to participants scores as demonstrated in Figure 3.

Discussion

Demographics

Pain is a complex and personal experience that not only consists of biological factors but also includes psychological and social contributions. This complexity of pain goes beyond the reach of any individual health care professional and requires collaborative working to achieve adequate management.¹⁶ However, in order for this multidisciplinary working approach to be effective, it is essential that each professional is aware of each other's contribution to the management plan.¹⁶ It was for this reason that the emphasis of these study days was on interprofessional education to instil this value of interprofessional working and ensure pain management is not the sole responsibility of one professional group. The importance of MDT working was repeated throughout the study day with participants being split into groups that contained (when possible) one professional from each group during group working scenarios.

Although the results in Figure 1 show that nurses were the most represented group, there was also a reasonable uptake from other allied health care professionals who also play a role in pain management. Unfortunately, there were no representatives from medical colleagues, despite being invited; the exact reason for this is unclear and may be due to a number of factors including the ability to get time away from clinical commitments. This will need to be addressed when planning future courses to ensure that the study days have representation from all professional groups.

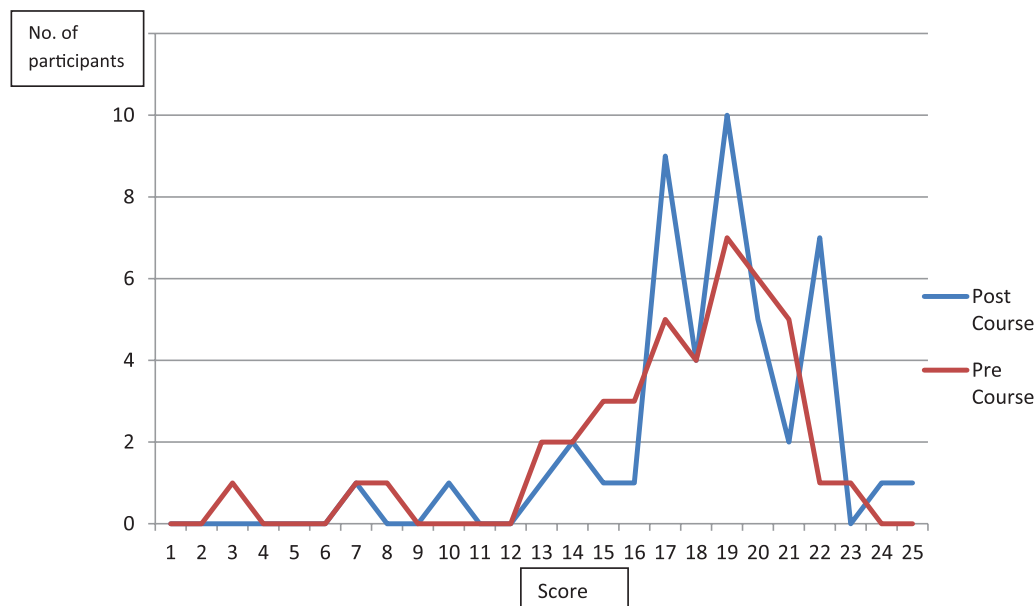
Pre-course questions (informal)

The vast majority of participants did not have any formal pain education during undergraduate study (Figure 2). This is not surprising, given the paucity of provision of pain education within the undergraduate setting.¹⁷ Depending on professional background, the amount of pain education is highly variable.¹² A total of 98% of participants felt that current pain education during undergraduate training is inadequate; this is reflected throughout the literature with high incidences of uncontrolled pain,^{5,18,19} which is largely thought to be a direct result of poor knowledge from health care professionals.¹¹ However, it is important to note that these are informal questions and not a truly accurate analysis of participants' pre-registration pain education.

True/false question scores (formal)

Following completion of the programme, there was a modest increase in participants' knowledge score from a baseline score of 69% to 74%. This increase echoes a similar study completed by Goucke et al.,¹⁴ who found an improvement in knowledge test scores from 65.89% pre-teaching to only 75.23% post-teaching through EPM. Although the knowledge

Figure 3. Score breakdown



scores increased following the intervention, the EPM package does not state what would represent an acceptable knowledge score. There have been multiple studies performed into knowledge levels of health care professionals using a variety of methods.¹¹ The scores range from 61% to 79%.^{20–23} All studies agree that a knowledge deficit exists; however, there is no agreement on what an acceptable level of knowledge is. McCaffery and Robinson²⁴ recommend that a score of 80% represents an adequate knowledge level. However, this is based on their survey and this does not allow for this principle to be applied to other studies that have used different questionnaire designs.

Further exploration of participants' individual scores pre- and post-EPM teaching was also undertaken; in some cases, the individual scores did improve following education, and overall there was an increase in the number of participants achieving scores of 20/25 (Figure 3), which suggests that the EPM has had an impact on knowledge levels. However, there was a small cohort of participants that saw a reduction in their score following EPM teaching. It is interesting to note that Goucke et al.¹⁴ reported a similar trend in a small proportion of participants scoring poorer on the post-course questionnaire in their study examining the efficacy of EPM.

Given that the participants were from a variety of professional backgrounds, their starting level of knowledge and education needs will have had an impact on the overall scoring. Unfortunately, it was not possible to compare scores for each

professional group, given that the questionnaires were anonymous; this may have provided further insight into the efficacy of undergraduate education for each of the professional groups and will be examined in future studies.

Despite the modest increase in knowledge score, written feedback from participants on the study day was encouraging and suggested that participants felt more confident in their pain knowledge. Feedback was collected on three themes of 'what we learned', 'what we liked' and 'what to improve'. A selection of the quotes from the feedback is outlined in Table 1.

Formal pain education continues to be an important and effective method of improving health care professionals' knowledge.²⁵ However, improvements in knowledge scores do not always result in a change of practice.¹⁴ The acquisition of knowledge comprises various factors; these include evidence for dealing with the situation, personal attitudes and concerns of the situation, ethical considerations of what should be done and the ability to assimilate and respond as the situation unfolds.²⁶ This can be seen in aspects of pain knowledge, where participants may have the knowledge of how to manage pain, yet their fears and misconceptions surrounding opioid use and perceptions based on patients' behaviour will influence how they respond to the emerging situation.^{20–22} This results in a 'theory–practice gap'.²⁷ This gap can manifest in relating taught theory and applying this to a real-life situation²⁷ and may explain the gap between pain knowledge and adequate management. This theory–practice gap is relevant to pain

Table 1. Feedback.

What we learned	What we liked	What to improve
Improved knowledge of pain assessment and pain medications	MDT approach pain assessment and management	More focus on psychology
How to use the RAT system for assessment and management of pain	Use of case studies and group work	Longer study day with greater detail
	Education on pain medications and how to apply them to case studies	

RAT: Recognise, Assess, Treat; MDT: multidisciplinary team.

knowledge given its complex subjective nature consisting of physical, psychological, social and spiritual factors. Even where the physical cause and understanding of the physiology behind pain is known, the impact of the social and psychological influence still may not be fully appreciated.

The literature discussed indicates that traditional educational interventions in the form of study days do improve underlying knowledge of pain assessment and management. However, there has yet to be a reduction in the incidence of moderate to severe uncontrolled pain.⁵ More needs to be done to tackle the 'theory–practice' gap to ensure that health care professionals can apply theoretical aspects of pain management to real-world patient scenarios and fully appreciate the complex biopsychosocial nature of pain. There is now a greater focus on the role of interprofessional pain education, as emerging evidence has shown this can be effective in changing behaviours and improving patient care by instilling the values of collaborative working between the interdisciplinary team.²⁸ Further strategies that have shown promising developments include clinical simulation, as this embeds the teaching in real-world scenarios. It allows for the theory–practice gap to be bridged in a more meaningful way compared with traditional didactic study days/conference format.^{16,29} Moving forward, a combination of these education interventions may provide a rounder learning experience for participants and ultimately lead to an improvement in individuals' pain management.

Conclusion

Our EPM programme was not able to demonstrate a significant improvement in participants' knowledge score following the half-day teaching. There are several limitations that could be a contributing factor to these findings. These include the small sample size that may not be representative of the sample population. By having mixed interprofessional participants, it may not always be possible to meet everyone's educational needs in the short time that was available. There

were also errors within the questionnaire which had to be corrected during testing, ranging from simple spelling mistakes to inaccuracies in the question itself. This has since been addressed by EPM-UK with an updated questionnaire being released. All teaching resources are prepared including PowerPoint presentations and participants handbooks; guidance is given to the trainer in how to deliver the sessions; this can be altered to fit the needs of the learners. This may make comparison of EPM courses across centres challenging, depending on the extent of the changes to the course content.

The EPM programme was evaluated by all participants who completed it over the 4 days. Although this particular audit has not been able to demonstrate EPM's efficacy as a tool for making a significant improvement in pain knowledge, further research is needed with a larger sample size. Using the EPM programme to bring members of the MDT together allows for a richer source of learning for all participants involved. By fully embracing the MDT approach during pain education will hopefully transfer through into clinical practice and cement the principles that pain management is applicable to all professional groups, and the most effective way of managing patients with complex pain is through MDT collaboration.

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Prospective evaluation of cancer-related pain referrals at a Tertiary Pain and Palliative Medicine Clinic in Liverpool

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Background

Our joint Pain and Palliative Care Clinic has developed, evolved and expanded over the past 15 years since we set up our joint weekly Pain and Palliative Care Clinic in Liverpool. However, we are concerned because we receive referrals for assessments of patients with cancer-related pain very late and the patients are sometimes in a desperate situation. This is despite the advice of many publications, which aim to support cancer-related pain management from leading pain organisations.^{1–3} They suggest regular assessment for pain and early referral to specialist pain clinics.

Aims and objectives of this service evaluation

The purpose of this audit was to compare the clinical experience of patients being referred to our clinic with current guidelines. The audit was conducted over a 6-month period and concerned the number of referrals for cancer pain management received and the numbers attending for appointment. Furthermore, the number of patients unable to attend, and the reasons for this, was also audited.

Methodology

The service evaluation project was registered with our Trust's audit department. Information was collected from December 2017 to May 2018 (6 months) on the date of referral, referral region (out of area or our region) and the date of patient's attendance at our clinic or of telephone assessment. We also evaluated the number of patients offered interventions and the reasons for patients not attending or not being offered interventions. We did not include email advice in this evaluation, which we offer to our referrers (oncologists, palliative medicine or pain medicine colleagues) before they refer patients to our service. An Excel spreadsheet with the required data set was

used for the collection and analysis of referral information for this project.

Results

Total number of patients referred was 43.

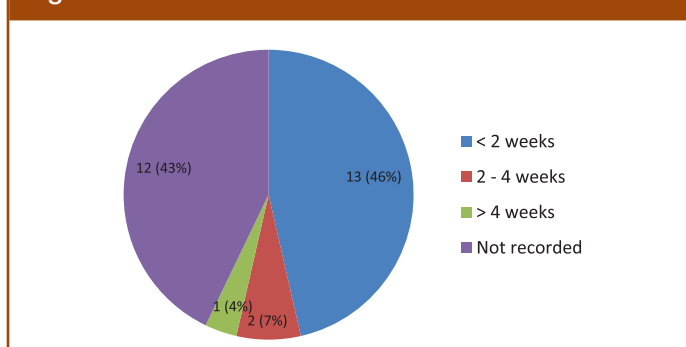
1. Outcome of referral
 - Patients seen in clinic – 28 (65%)
 - Patients reviewed via telephone consultation – 15 (35%)
2. For the 28 patients who attended a clinic appointment, what was the time frame from referral to clinic appointment?

Number of patients seen in clinic was 28 and the wait time was as follows:

- <2 weeks – 13 (46.4%)
- 2–4 weeks – 2 (7.1%)
- >4 weeks – 1 (3.6%)
- Date of appointment not recorded (missing data on date – 12 (42.9%))

See Figure 1.

Figure 1. Time from referral to consultation.



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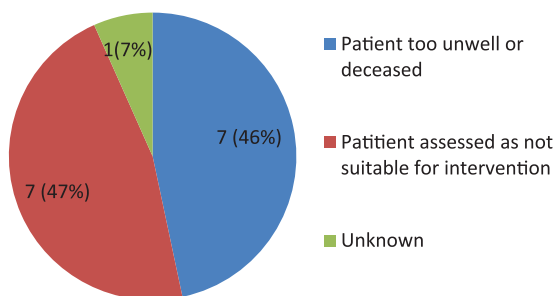
We believe that most patients, if they could attend the joint clinic appointment, were offered an appointment within 1–4 weeks.

One patient was seen more than 4 weeks after referral because they could not make an earlier appointment.

3. Number of patients reviewed via telephone consultation was 15

The information below shows the reasons why 15 patients did not attend a clinic appointment and were assessed via telephone consultation. See Figure 2.

Figure 2. Telephone assessments. Seven patients were too unwell or died between receiving the referral and the telephone consultation, within days of referral being made (though they were contacted by telephone to make initial screening over the phone). Seven patients were assessed as unsuitable for intervention due to short prognosis, overall poor performance status or their pain being too diffuse to be helped by an intervention. The reason for one patient was not recorded.



These telephone assessments happened within 1–2 weeks of receiving the referral and some of these patients attended clinic appointments or were admitted for further assessment depending on the clinical scenario and logistics of distance and travel.

4. Of the 28 patients seen, how many were offered interventions?

- Offered interventions – 8
- Not offered interventions – 20

One patient for planned intervention became too unwell very soon and therefore intervention had to be cancelled.

5. Time from referral to offer of intervention

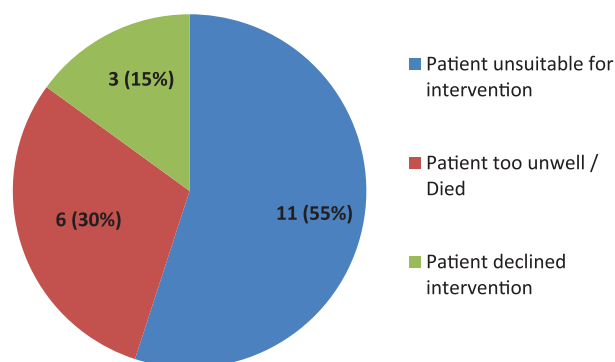
Eight patients were offered interventions and the wait time is as follows:

- <2 weeks (four patients)
- 2–4 weeks (four patients)

All patients who needed an intervention were offered it within 4 weeks of receiving a referral for assessment.

6. Reasons patients not offered intervention

Figure 3. Reasons patient not offered pain intervention.



A total of 20 patients could not be offered intervention for various reasons (see Figure 3). The reasons were multifactorial; though, we have tried to separate these into three groups. Interventions being considered included intrathecal pumps, epidural infusions and neurolytic blocks including cervical or open surgical cordotomy.

- Six patients were too unwell or died between referral, assessment and/or offer of intervention.
- Eleven patients were not suitable for interventions including intrathecal pumps. The reasons included short prognosis, overall poor performance status, pain too diffuse to be helped by an intervention.
- Three patients declined intervention as pain improved and/or after clinic appointment in context of perceived risks and proposed benefits.

The complexity of decision-making in such clinical scenarios is highlighted in the clinical vignettes below. In our view, it is likely that if some of these patients had been assessed sooner, a significant number may have been suitable for pain relief interventions.

Clinical Vignette: Case 1

A 65-year-old man, who was an inpatient in a hospice, was referred for consideration of cordotomy for mesothelioma-related severe chest wall pain. Referral was received on a Thursday morning. We advised of assessment in the joint Pain and Palliative Care Clinic the following Tuesday. However, the referrer felt that the patient would benefit from admission urgently and a cordotomy was offered on the next available theatre session. A telephone consultation was carried out the same afternoon and we agreed on his admission to our Trust on Monday morning for further assessment and consideration of cordotomy. Unfortunately, the patient could not make the appointment and died on the weekend.

Clinical Vignette: Case 2

A 57-year-old man with a history of renal cancer and metastasis to lung and right tibia was referred for cordotomy for severe pain in his right shin on weight bearing. He had received prophylactic tibial nailing, palliative radiotherapy and chemotherapy including immunotherapy. He was on oxycodone slow release 360 mg bd, OxyNorm 50 mg QDS and other analgesia including pregabalin and naproxen, having also had trial of oral steroids. He was admitted for assessment by the joint Pain and Palliative Medicine team and was offered cordotomy during the same admission. He achieved excellent pain relief following the cordotomy, with increased mobility and reduction in analgesia by half over the following 5 days. He was discharged back to the referring hospice and later spent the rest of his time at home and with well-controlled pain.

Clinical Vignette: Case 3

A 70-year-old man was referred for assessment for cordotomy. He suffered from lung cancer with bony metastasis of the left femur and incident pain (severe pain on slight movement and no pain at rest) affecting the left leg. He had no access to private transport and was an inpatient in a hospice. He had already had surgical fixation on his left femur and further surgery from an orthopaedic perspective was unlikely to be successful in controlling the pain. His case was discussed with the referring team over the phone. He was transferred by hospital transport which took at least 3 hours by road and was very painful for him. On admission to our hospital, he was very unwell, frail and unsuitable for any complex pain relief intervention. He had to be transferred back to the referring hospice for end-of-life care support closer to his home.

Discussion

In early 2019, The Faculty of Pain Medicine (FPM) published a Framework for provision of pain services for adults across the United Kingdom with cancer or life-limiting disease, supported by the Association for Palliative Medicine, the Association of Cancer Physicians and the Faculty of Clinical Oncology.¹ This Framework is designed to enable services to meet the standards for cancer-related pain in the United Kingdom. The guidance has also been published by the European Pain Federation (EFIC) for the management of cancer-related pain⁴ and by National Institute for Health and Care Excellence (NICE).⁵ General recommendations in these publications include the following:

- Patients with a history of cancer must be routinely screened for pain at every engagement with a healthcare professional.
- Patients identified with cancer-related pain must receive a pain assessment when seen by a healthcare professional, which at a minimum classifies the cause of pain based on proposed International Classification of Disease, 11th Revision (ICD-11) taxonomy⁶ and establishes the intensity and impact on quality of life of any pain that they report.
- A multimodal pain management plan must be agreed with the patient that explains the causes of their pain and its likely prognosis, the need for further investigations and the multimodal treatment options. It must also include the patient's preferences and goals for treatment.

However, pain management is not improved by assessment alone without seeking support from a relevant professional colleague experienced in managing a particular complex cancer-related pain as part of a multidisciplinary team (MDT). This colleague may be an oncologist, general surgeon, orthopaedic surgeon, neurosurgeon or a palliative medicine or pain medicine consultant, depending on the specific scenario.

Generally, we find that lack of knowledge about what can be offered in terms of specialist pain intervention and mistaken beliefs, including fearful attitudes of patients and healthcare professionals towards cancer pain and analgesia, are associated with a reluctance to commence opioids. This leads to reduced medication adherence and higher pain intensity. Equally, at the other end of the spectrum, (more common in our experience) patients have been prescribed high dosages of opioids and adjuvant analgesic with the burden of significant side effects despite limited pain relief.

In this study, there were a considerable number of referred patients (31/43) who were unable to access pain interventions for various reasons, including 13 patients who were unwell or deteriorating soon after referral or assessment, and others who had poor prognosis, so did not fit the criteria for implantation of intrathecal pumps. In our

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view, this referral pattern and timing reflects late referral, that is, referral in a last-ditch effort to improve pain control when medications are not working. It also illustrates the challenge of providing timely interventions for the cancer population group, who have a high incidence of acute problems, whose pain is dynamic and often difficult to control and whose prognosis is often difficult to estimate.

Most of our clinic assessments for cancer-related pain referrals were carried out within 4 weeks (over half within 2 weeks). All of our telephone screening assessments were held within 2 weeks; the majority within 1 week, since we now have cross cover for this work by colleagues from both disciplines (pain medicine and palliative medicine). Where a pain relief procedure was offered (mostly cordotomy), it was carried out within a maximum of 4 weeks from receiving a referral unless there were reasons to delay (e.g. delaying in the context of patients having oncological assessment and treatment or intercurrent illness requiring supportive care); the majority were offered it within 2 weeks following assessment. These time frames seem reasonable, considering the overall context of cancer-related issues and meet expectations set out in 'Core Standards for Pain Management Service in the UK' published in 2015.⁷ However, late referrals, of which some are highlighted in the vignettes, mean that some patients have missed the opportunity to benefit. Therefore, the current situation, as highlighted by our audit, does not meet the standards recommended by FPM for delivering cancer-related pain management.⁸ This needs the urgent attention of the organisations supporting the recent framework published by FPM.¹ In our view, FPM members and Palliative Medicine colleagues should act as regional and local champions to promote the development of service provision for cancer-related pain as described in the framework, otherwise nothing will change.

This audit highlights the need for support for referrers (on the timing and appropriateness of referral to tier 3 or tier 4 Cancer Pain Services as per FPM Framework published in 2019). This support must come from the Association of Palliative Medicine and FPM¹ by provision of joint interdisciplinary educational events for their members and fellows, including Clinical Oncology. These events will improve understanding and confidence on what can be delivered locally and who needs onward referral to tier 4 services for cancer-related pain management. These educational events are likely to create a network of clinicians (peer support) and allied healthcare professionals who then meet regularly to share experiences (e.g. clinical audits) and areas of good practice in this complex field.

There is a need for appropriate commissioning and guidance from NHSE so that clinicians' job plans are well supported.¹ We are aware that these organisations have made an excellent start by publishing the framework, but this needs more support

in order to succeed in clinical practice.¹ This can only happen through support from interested clinicians collaborating between pain medicine and palliative medicine⁹ and with assistance from senior medical management in local trusts.

This audit highlights the current situation of referrals to and assessment from a tertiary-care joint Pain and Palliative Care service for patients with cancer-related pain. We are unsure whether it reflects the situation across the United Kingdom. We suggest that there are several contributing factors that result in late referrals. This could be due to a lack of awareness on the part of referrers about the range of interventions available for cancer-related pain syndromes. Cancer patients undergo a lot of necessary treatments and some patients may be reluctant to consider an additional pain intervention because of the sheer number of medical interventions they have had previously. They may also not have access to information on what interventions are available to help difficult pain. They may also be concerned about travelling to a service far away from home or admission to another hospital or hospice. The use of telemedicine and video consultations may be helpful to expedite and complete assessment and to avoid unnecessary travel for those suffering severe pain in the last months of their life.

High-quality, readily accessible information about tier 3 and tier 4 cancer pain services and the procedures available would be helpful in educating all stakeholders about the availability of these services. This information should be in the form of written materials and web-based resources including videos or podcasts for both patients and professionals to ensure accessibility. The services would need to be well advertised to professionals along with their referral criteria and the ability to call for advice before referring.

Regional oncology networks linking with Pain and Palliative Medicine will help with earlier referral to secondary-care Pain and Palliative services (tier 3 services as part of the framework published by FPM). This should also link in with regional tertiary-care units and with Pain and Palliative Medicine joint clinics (tier 4 services) to offer further support for these patients and families. Ongoing education for healthcare professionals is needed, but this is resource-intensive for small teams. Face-to-face education is limited in terms of numbers but when undertaken previously has been highly evaluated. Novel approaches, such as using project ECHO (web-based video conferencing of education between healthcare professionals), to create a community of practice, may make it easier for healthcare professionals to attend sessions and to bring complex cancer-related pain cases for discussion in order to build confidence in referral.

Another strategy that we have discussed to improve cancer pain management in our area would be a regional Cancer Pain

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MDT for Cheshire and Merseyside. Referrals could come from Pain or Palliative Care with an option to video link into MDT for the referrers, which would be a valuable educational experience. Core membership should include palliative care consultant, pain medicine consultant, neurosurgeon, clinical oncologist and specialist nurses. This would allow earlier referral for an opinion and an ability to lay out options at an early stage – meaning that people pursue referrals earlier and are given the confidence to refer. It may also allow for the development of the use of intrathecal pumps and home epidural services.

We offered a limited number of intrathecal pumps for cancer-related pain, though these are commissioned by NHSE. Our view is that one-off interventions, such as cervical cordotomy or spinal neurolytic blocks, are attractive in this group of patients since these avoid repeated contact of patients with pain services. Therefore, patients can concentrate on and get on with their lives by reducing contact with pain services once their pain has been controlled to an acceptable level. There are also significant service implications regarding pump refills for cancer-related pain, especially at end of life. These require more frequent refills nearer to the patient's home, though this is required by a sub-group presenting with cancer-related pain, which is otherwise not controlled. There may be a subgroup of cancer survivors who have chronic pain problems but, somehow, we did not see those referred to us. Our referrals were generally for those with limited life expectancy.

We are aware of significant missing data here on the number of referrals received by the service. This may be due to referrals being received by either Pain or Palliative Medicine, so this requires improved coordination for data collection purposes.

We recognise that we should try to accurately assess the unmet need: Are there patients who other teams have not referred who could have benefitted? What were the barriers to referral? It would be desirable to benchmark our data with other services and develop a network of cancer-related pain services to see whether other services have the same issues with late referrals.

By establishing closer links in the region, local services can be developed, and patients will have access to the interventions they need in a timelier manner. We think that the following recommendation may go a long way to improving the experience of patients affected by cancer-related pain.

Conclusion

In our audit, we highlight that referrals come to our service too late for patients to receive timely specialist assessment, advice and appropriate pain relief interventions. A significant number of patients died prior to assessment by our service. This is not only unsatisfactory from a patient and family perspective, but

also late referrals make pain interventions riskier because patients are less stable clinically.

Our recommendations

1. Consideration to be given to increased education for healthcare professionals including oncology, pain and palliative care specialists about the range of pain relief interventions available from Pain Medicine in collaboration with Palliative Medicine.
2. Improving marketing and visibility of the service to local and regional referrers and ensuring that information on all the websites (e.g. in our region on The Walton Centre NHS Foundation Trust, University Hospital Aintree and Woodlands Hospice websites) is mirrored.
3. Continued data collection with improved systems for capturing referral information.
4. Collecting data to estimate the current level of unmet need by surveying local services.
5. Consideration to be given to establishing a cancer pain network so that we can estimate the wider unmet needs of patient population and benchmark services.

Key standards as published by FPM for cancer-related pain

Some of the relevant key standards from chapters 6.5 and 7.4 in 'Core standards for Pain Management Service in the UK' available online⁸ are as follows:

- Patients must be referred for specialist support if pain is not well controlled despite initial management. Specialist support must be available in each region in the form of palliative care services, oncology services (including radiotherapy), and specialist pain services (Chapter 6.5, Core standards).
- Pain management units offering complex cancer pain interventions, including spinal neurolysis, cordotomy, spinal infusions and intrathecal implants, must have adequate resources in place to collect outcomes, including safety and efficacy data (Chapter 7.4, Core standards).
- There must be written and agreed patient care pathways in place for complex cancer pain interventions, to optimise patient care before, during and afterwards. Cancer pain interventions need to be planned in a timely manner through appropriate, early referrals. Referrals at a very late stage should be avoided (Chapter 7.4, Core standards).

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