



British  
Acupuncture  
Council



# The scope of acupuncture

Exploring acupuncture as a modern  
healthcare solution

March 2020

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# The scope of acupuncture

Foreword by Kevin Durjun

Acupuncture has been successfully integrated into western medical healthcare systems around the world. Professionals at eminent institutions including Harvard Medical School advocate its use for a growing number of conditions including cancer care.

Right now, as we face a severe shortage of qualified healthcare workers, misuse of prescription opioids, and growing numbers of patients with multiple long-term conditions, there is huge scope for registered acupuncturists to support the National Health Service (NHS). Registered professional acupuncturists can be part of the solution.

Under General Medical Council (GMC) guidelines, doctors in the UK are free to refer patients to members of the British Acupuncture Council (BACc), all of whom meet the standards required by the Professional Standards Authority (PSA), a government backed organisation accountable to the UK parliament.

Global research, including studies from the US and Australia, has demonstrated that incorporating professional acupuncture treatments into allopathic healthcare systems improves patient outcomes, reduces the strain on doctors and saves money in the long term. This report aims to raise awareness about the scope of acupuncture, as well as how the UK could benefit from wider use of this effective, safe, evidence-based medicine and the professional skills of BACc members.

It is our hope that this report will inspire positive change and strengthen the case for acupuncture as a valid healthcare choice in the UK.



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## Executive summary

The National Health Service (NHS) in the UK faces problems with a severe shortage of qualified healthcare workers, misuse of prescription opioids and many patients with multiple long-term conditions, taking multiple medications.<sup>1-3</sup>

Integration of acupuncture into the NHS would be a step towards solving these problems. Acupuncture has been practised for 2,000 years and recently its effectiveness has been confirmed in clinical trials, which have shown that it is more than just a placebo.<sup>4,5</sup> Studies show acupuncture is effective and safe, both when used alone, and alongside medication.<sup>6</sup> Acupuncture works for specific illnesses but also bolsters overall health and wellbeing, something that the NHS would like to achieve but doesn't yet have the tools, the skills or the attitudes to do well.

“ ”

There is substantial evidence supporting acupuncture's effectiveness, compared to conventional treatments, for addressing various conditions.<sup>7</sup>

Across the world, acupuncture is used in hospital emergency departments, in cancer centres, and in midwifery as well as in primary care. In the UK, the Gateway Clinic was fully integrated into the NHS in 1992, and treats about 300 patients every week. GPs from Lambeth, Southwark and Lewisham can freely refer their patients with long-term chronic pain, migraine, cancer pain, fibromyalgia, and HIV.

'We are lucky to work in an NHS Trust that recognises this little jewel they have in the community, and the NHS should be proud too.'

Dominique Joire, clinical head of service



“ ”

I would consider the acupuncture treatment I received to be the most effective of every treatment option I've ever tried in my life at reducing my pain and increasing my quality of life, as well as the quickest in producing results. I was able to stop taking all my pain medications while receiving acupuncture and was even able to try a few physical activities (such as yoga) that have caused me pain in the past. I only wish I could continue to receive acupuncture as I believe it's the one treatment with results that would allow me to work full time.<sup>45</sup>

## Executive summary

# Acupuncture can be cost-saving

Acupuncture is cost-effective for the treatment of many common health conditions, including the management of chronic pain.<sup>8-11</sup> Studies show that in migraine or headache, the cost-effectiveness for acupuncture is well within the threshold used by the National Institute for Health and Care Excellence (NICE).<sup>28-31</sup>

Patients with migraine or headache who received acupuncture had, compared with controls:<sup>31</sup>

15%

less medication

25%

fewer GP visits

15%

fewer days off work sick



For long-term low back pain, acupuncture is more cost-effective than NSAIDs<sup>23</sup> and it can remain effective for two years after treatment.<sup>19,22</sup>

As well as immediate cost-effective treatment for osteoarthritis of the knee or hip,<sup>39-42</sup> acupuncture's potential for delaying or avoiding the need for knee replacement surgery can mean further cost saving.<sup>42</sup>

“ ”

When acupuncture was offered to patients with knee osteoarthritis who were to be referred for orthopaedic surgery, a third were able to avoid surgery with a cost-saving of £100,000 per year.<sup>42</sup>

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## Executive summary

### Effective for long-term pain

There is a large body of evidence that acupuncture can treat long-term pain.<sup>5,8,9</sup>

Acupuncture could be a key part of the solution to the over prescription of opioids for chronic pain, which is linked to poor pain control, side effects and a risk of addiction.<sup>16</sup>

“ ”

Acupuncture seems, in skilled hands, one of the safer forms of medical intervention.<sup>15</sup>

Acupuncture is effective for conditions that don't respond well to medication, such as migraine, back pain and knee osteoarthritis.

- Acupuncture for low back pain helps pain and improves function without any serious side effects.<sup>17-21</sup>
- Acupuncture is as good at preventing migraine as medication,<sup>4,24-27</sup> and is better at reducing pain levels and the number of migraines experienced. There are fewer side effects with acupuncture than medication.<sup>27</sup>
- Acupuncture treats the pain of knee osteoarthritis, helps mobility and has similar levels of side effects to ibuprofen and glucosamine sulfate.<sup>32-38</sup>
- Acupuncture can address not just the pain but also the distress that often accompanies it. It is a whole person treatment.

“ ”

Acupuncture has emerged as a powerful, evidence-based, safe, cost-effective, and available treatment.<sup>8</sup>

### The future of acupuncture in the UK

- Acupuncture can be easily integrated into the NHS to improve patient care.<sup>8</sup>
- As it is not protected by statute in the UK, anyone can practise without training. The British Acupuncture Council (BACc) works to ensure the authenticity, safety and efficacy of acupuncture provision in the UK.<sup>43</sup>
- The BACc is the only acupuncture register in the UK to be accredited by the Professional Standards Authority. GMC delegation and referral guidelines allow GPs to refer patients to our members.<sup>44</sup>
- With almost 3,000 members, the BACc has a ready workforce of acupuncturists trained to the some of the highest standards worldwide.

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# Healthcare challenges today

The NHS in the UK faces problems that are common to many developed countries, in particular the burden of long-term conditions (LTCs), multimorbidity and polypharmacy, an opioid crisis, and a severe shortage of qualified healthcare workers.

## Long-term conditions

Fifteen million people in the UK live with LTCs and this figure is predicted to rise by a further three million by 2025.<sup>1,2</sup> In England, patients with one or more LTCs account for over half of all general practice (GP) consultations and over three-quarters of inpatient bed days.<sup>2</sup> In Scotland the situation is worse, with LTCs being responsible for 80 per cent of all GP consultations and 60 per cent of all inpatient bed days.<sup>3</sup>

In the UK, LTCs create a huge financial burden as 70 per cent of the total spent on health and care relates to the 30 per cent of the population with at least one LTC.<sup>2</sup>

The Department of Health is 'committed to improving care for people with LTCs so that they are able to enjoy an independent, fulfilling life, and have the support needed to manage their health'.<sup>1</sup> The Welsh Government has listed the reduction of the burden of LTCs in its goals to be achieved by 2030.<sup>4</sup>

The integration of services is central to providing care that recognises the complexity of patients with multiple morbidities, and treats the person, rather than the condition.<sup>2</sup>

## Multimorbidity and polypharmacy

More than two million people are living with multiple LTCs.<sup>1</sup> Multimorbidity may be compounded by the prescription of several drugs and this polypharmacy is frequently associated with adverse drug reactions. In the UK, a half of all care home residents receive six or more drugs daily, and have a high risk of adverse events.<sup>2</sup> In addition to the problems for the patient caused by adverse reactions and interactions, polypharmacy also results in a significant financial burden on the NHS.<sup>2</sup>

Treating the person as a whole, instead of their individual illnesses, is the proposed solution to polypharmacy.<sup>5</sup>

For patients with chronic disease or comorbidities, general practice as it exists today is not well placed to deliver good care. A multidisciplinary team, linked to a local GP practice, may be the answer.<sup>6</sup>

“ ”

The government needs to ensure that every patient is treated as an individual whole person, and provide coordinated, joined-up care so that people are not treated as patients with a variety of illnesses which are managed separately.<sup>5</sup>

## Medically unexplained symptoms

A quarter of consultations with a GP relate to cases that cannot be medically explained even after multiple investigations.<sup>6</sup> Over two-thirds of these people received investigations and referrals, with symptoms of back pain and headaches incurring higher costs.<sup>6,7</sup>

Health anxiety may drive others to repeatedly consult with a GP for minor conditions, and measures to ensure that these people are provided with the reassurance they need without costly referral for further investigation would have obvious benefits for the patient and the healthcare budget.<sup>6</sup>

According to the Nuffield Trust, patients with LTCs, health anxiety or medically unexplained symptoms will benefit from episodic and long-term continuity of care at the primary care level.<sup>6</sup>

**If no medical explanation for symptoms is apparent, or the patient has health anxiety, then the repeated use of primary care services could be avoided by referral to a traditional acupuncturist who:**

- may provide a different insight into the person's condition
- can effectively manage a wide variety of physical symptoms
- has the time to provide a complete biopsychosocial assessment and offer salient lifestyle advice
- can offer treatment for anxiety that does not contribute to polypharmacy, is safe, effective and acceptable to the patient



## Healthcare challenges today

### Royal London Hospital for Integrated Medicine, Great Ormond Street, London, UK

The Royal London Hospital for Integrated Medicine is the largest public-sector provider of integrated medicine in Europe. It offers a patient-centred service integrating the best of conventional and complementary treatments for a wide range of conditions. All clinics are led by consultants, doctors and other registered healthcare professionals who have received additional training in complementary medicine. Acupuncture is delivered by members of the British Acupuncture Council (BAC) and the British Medical Acupuncture Society (BMAS), and most referrals relate to headache, migraine and chronic pain.

The Royal London Hospital for Integrated Medicine is a teaching hospital and also a research centre, with research including:<sup>8-11</sup>

- feasibility study of acupuncture in cancer patients undergoing radiotherapy treatment
- feasibility study of auricular therapy and self-administered acupressure for insomnia following cancer treatment
- trial to evaluate the effectiveness of acupressure wristbands in the management of chemotherapy-related nausea
- study to examine the feasibility of acupuncture being delivered within the radiography department by radiographers
- survey assessing knowledge about acupuncture in people with back pain in the UK

“ ”

Workforce shortages are currently the biggest challenge facing the health service.<sup>12</sup>

### Staff crisis

As populations continue to increase, the demands for healthcare will rise exponentially. In the UK, the Nuffield Trust has forecast a shortfall in healthcare staff of almost 250,000 by 2030.<sup>13</sup> Many of the strategies proposed to improve care for those with LTCs and multimorbidities increase demands on primary care staff, just at the time when the number of GP practices closing across the UK is increasing.<sup>1</sup> The shortage of GPs restricts the ability to provide the continuity of care required for effective management of LTCs.<sup>6</sup>

The King's Fund suggest that other healthcare professionals step into some of the roles currently fulfilled by GPs and nurses and forecast a growing role for allied health professionals in primary care teams.<sup>12</sup>

- In line with the NHS 10-year plan, fully integrated community-based healthcare from broad multidisciplinary teams will increase NHS capacity and allow people greater access to services provided by social prescribing.<sup>12</sup>
- Almost a half of all UK GPs are prepared to recommend patients for acupuncture or offer them an acupuncture treatment themselves.<sup>14</sup>

### Patient choice and the shift to personalised care

The need for personalised care has come to the forefront, especially in the treatment of LTCs.<sup>2</sup> The report A Healthier Wales advocates a multidisciplinary team approach where the patient has 'a greater role and greater control in managing their own health and wellbeing, making decisions about treatment, and managing LTCs'.<sup>15</sup> In order to implement this, patients must be given new ways of accessing information and be cared for by a wider range of community-based healthcare practitioners.<sup>15</sup>

The NHS 10-year plan aims to roll out tailored care to 2.5 million people by 2023/24. Key to this model is the provision of social prescribing schemes and personal health budgets, fulfilled by allied health professionals, the voluntary sector and other partners working in the community.<sup>16</sup>

Healthcare practitioners, such as acupuncturists, who are listed on trusted registers have the ability to provide continuity of care through their extended contact hours, provision of a complete biopsychosocial assessment and tailored lifestyle advice.<sup>17</sup>

## Healthcare challenges today

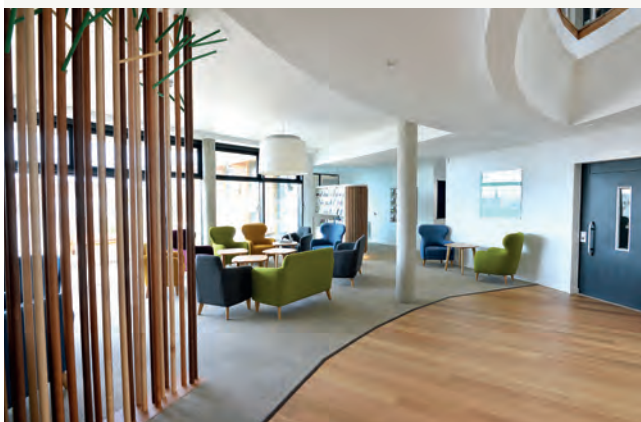
### MACMILLAN CANCER SUPPORT

#### Macmillan Horizon Centre, Brighton, UK

The Macmillan Horizon Centre in Brighton offers complementary therapies, including acupuncture, to people from all over Sussex following a cancer diagnosis. Horizon Centre cancer patients can self-refer for any of the complementary therapies offered. They are often recommended to try acupuncture by their consultant and other oncology team members. Individuals frequently report that a short course of acupuncture, most often three to six sessions, alleviates treatment-related symptoms such as:

- joint and muscle aches and pains
- poor sleep/fatigue
- hot flushes
- day and night sweats
- dry mouth, facial and neck swelling, sore throat, impaired ability to swallow
- digestive issues like diarrhoea, constipation, reflux, nausea and vomiting

Christine MacFie, a member of the British Acupuncture Council (BAcC) who volunteers at the centre, says, 'People generally report finding acupuncture relaxing and helpful in relieving emotional issues such as low mood, anxiety, fear and uncertainty'.



#### Personal health budgets

A personal health budget is an amount of money to support the identified healthcare and wellbeing needs of an individual, which is planned and agreed with the local clinical commissioning group. Personal health budgets allow people with LTCs more control over the care they receive and can cover the cost of therapies, personal care and equipment.<sup>18</sup>

The rollout of personal health budgets across England is based on the evidence from pilot studies showing savings made through the avoidance of costly acute and crisis services. A reduction in medication use may provide additional savings.<sup>19</sup>

Members of the BAcC can provide information to patients and carers about how acupuncture can contribute to their care plan. Through the BAcC, the NHS can access acupuncturists trained to the highest level possible in the UK who are able to provide safe and effective care for people with LTCs and help them improve their physical and mental wellbeing. Integral to this care, patients will receive tailored lifestyle advice and support over the course of their treatment.

Craig Minto, a BAcC member, says, 'I am involved in a personal care budget pilot in Medway and find that personal budgets can assist in making sure people have access to the best possible acupuncture support'.



## Healthcare challenges today

### A global view of healthcare challenges

'Traditional and Complementary Medicine is an important and often underestimated health resource with many applications, especially in the prevention and management of lifestyle-related chronic diseases, and in meeting the health needs of ageing populations.' WHO Director General Tedros Adhanom Ghebreyesus<sup>20</sup>

The challenges facing the UK are also seen in many developed countries.

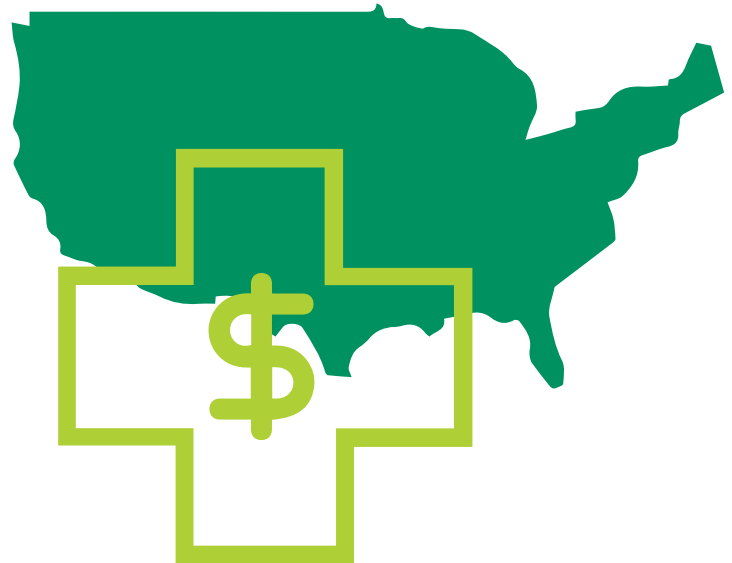
#### AUSTRALIA

- A quarter of all adults have two or more LTCs.<sup>21</sup>
- The Australian healthcare system recognises the challenge of an ageing population and is taking steps to providing optimal care for this group.<sup>22</sup>
- Research is being undertaken in how to increase capacity at the primary care level and expand multidisciplinary support.<sup>22</sup>



#### AMERICA

- One in four Americans has been diagnosed with more than one LTC.<sup>23</sup>
- Three-quarters of America's health spending is due to LTCs and this rises to 90 per cent if mental health conditions are also included.<sup>23</sup>
- The US healthcare system is the most costly in the world, and the government will bear most of the costs associated with increasing prices estimated to be 5.5 per cent annually between 2017 and 2026.<sup>2</sup>



# Meeting patients' needs in the changing landscape of healthcare

The use of complementary medicine, such as acupuncture, is rising due to:<sup>14</sup>

- perceived lack of effectiveness of current allopathic treatment
- concern about side effects with pharmacological interventions
- desire to avoid invasive techniques or polypharmacy
- mistrust of the allopathic medical approach and an over-reliance on technology
- seeking control of their own health and wellbeing
- appreciation that complementary medicine can offer a gentler way of managing LTCs
- recommendations of others who have had a positive personal experience of complementary medicine
- improved access to evidence of the effectiveness of complementary medicine

The benefits of acupuncture often extend beyond the physical treatment into lifestyle advice, with encouragement and support in making positive changes that can make a lasting difference to a person's quality of life.<sup>25</sup>

The European Federation for Complementary and Alternative Medicine (EFCAM) has stated that 'Complementary and alternative medicine's particular strength is the combination of individualised holistic care, capacity to provide health maintenance, illness prevention and non-invasive illness treatment as part of an integrated package'.<sup>26</sup>

## The use of acupuncture across the world

The use of acupuncture is widespread and is provided by licensed acupuncturists, allopathic doctors, nurses and other health professionals such as physiotherapists and midwives.<sup>14</sup> Acupuncture is regulated in 29 countries and more than 100 have approved its use.<sup>27</sup>

### UK

- Data from 2009 show that approximately four million acupuncture treatments were delivered in the UK.
- The majority of treatments were provided by independent licensed acupuncturists, with the remainder delivered by doctors, nurses or physiotherapists.<sup>28</sup>
- The most common reasons for having acupuncture were musculoskeletal conditions and chronic pain.<sup>28</sup>

### EUROPEAN UNION

- In the EU, there are about 21 acupuncturists per 100,000 of the population.<sup>29</sup>
- Most people see an acupuncturist to treat a musculoskeletal condition.<sup>30</sup>
- In Germany, acupuncture is the most commonly used complementary and alternative medicine, with around a third of all physicians using it in their own practice.<sup>31</sup>
- In the German state of Hesse, acupuncture is used by more than a half of obstetricians and gynaecologists.<sup>32</sup>
- In Italy, acupuncture was the most common complementary and alternative medicine used by people with cancer, to reduce the adverse effects of cancer treatment, pain and likelihood of treatment-induced menopause.<sup>33</sup>

### AMERICA

- In 2018, there were 37,886 actively licensed acupuncturists in America.<sup>34</sup>
- The use of acupuncture is growing in America, with the number of licensed acupuncturists rising by 100 per cent between 2002 and 2012.<sup>35</sup>
- 63 per cent of American paediatric pain clinics offer acupuncture, several of which employ a licensed acupuncturist.<sup>36</sup>



## Meeting patients' needs in the changing landscape of healthcare

### ISRAEL

- Acupuncture is the most frequently used complementary medicine in Israel.<sup>37</sup>
- The majority of complementary medicine services in Israel were provided in the public sector and delivered in community clinics or within various hospital departments.<sup>37</sup>
- Acupuncture may also be given at Sick Fund Clinics, although the provision is limited due to a lack of physician time and low funding.
- There are also a number of private acupuncturists operating in Israel.<sup>37</sup>

### AUSTRALIA

- In 2017, there were 4,905 registered acupuncturists in Australia and the majority practice in private multidisciplinary clinics.<sup>38</sup>
- About eight per cent of the population have used acupuncture in the last 12 months.<sup>39</sup>
- People using complementary medicine were more likely to be female, have a diagnosed LTC, no private health insurance, a higher education level, and not be currently looking for work.<sup>39</sup>

### What is traditional acupuncture?

Traditional acupuncture is a healthcare system based on ancient principles which go back nearly two thousand years. It has a very positive model of good health and function, and looks at pain and illness as signs that the body is out of balance. The overall aim of acupuncture treatment, then, is to restore the body's equilibrium.

What makes this system so uniquely suited to modern life is that physical, emotional and mental are seen as interdependent, and reflect what many people perceive as the connection between the different aspects of their lives.

Based on traditional belief, acupuncturists are trained to use subtle diagnostic techniques that have been developed and refined for centuries. The focus is on the individual, not their illness, and all the symptoms are seen in relation to each other. Each patient is unique; two people with the same western diagnosis may well receive different acupuncture treatments.

Traditional acupuncturists believe that the underlying principle of treatment is that illness and pain occur when the body's qi, or vital energy, cannot flow freely. There can be many reasons for this, and emotional and physical stress, poor nutrition, infection or injuries are among the most common. By inserting ultra-fine sterile needles into specific acupuncture points, a traditional acupuncturist seeks to re-establish the free flow of qi to restore balance and trigger the body's natural healing response.

Until the 1940s, when the Chinese government commissioned the development of a uniform system of diagnosis and treatment – somewhat misleadingly referred to as TCM (traditional Chinese medicine) – nearly all training had been apprentice style with masters and within families. The same applied when acupuncture travelled overseas to Japan and South East Asia.

As a consequence, there are many different styles of acupuncture which share a common root but are distinct and different in their emphases. You may read of TCM, five elements, stems and branches, Japanese meridian therapy, and many others, all of which have their passionate devotees. The British Acupuncture Council has long embraced this plurality under the heading 'unity in diversity' and sees the variety of approaches as the mark of a healthy profession.

Traditional acupuncture has a long history of adapting to new cultures in which it is practised. Its growing popularity and acceptance in the West may well promote yet more new and exciting variations on the ancient themes.

## Meeting patients' needs in the changing landscape of healthcare

### The opioid crisis

The over-prescription of opioid analgesics and the illicit drugs trade are the cause of the current opioid crisis. An analysis by the Organisation for Economic Co-operation and Development (OECD) detailed how there has been more than a twenty per cent increase in opioid-related deaths over a five-year period, with England, Wales, America and Canada all witnessing sharp increases. Three-quarters of opiate-related deaths are in men and a broad group of populations are affected.<sup>40</sup>

The OECD highlighted the damaging effects of opioid manufacturers funding pain advocacy organisations, medical societies, and clinical practice guidelines with the misleading message that opioids are 'low-risk medications and effective at managing a wide range of chronic pain conditions'.<sup>40</sup>

The health and social consequences of the opioid crisis result in a financial burden on the health services due to increased hospitalisation and the treatment of subsequent addiction.<sup>40,41</sup>

### UNITED KINGDOM

- Deaths from opioid overdose are 'rising sharply' in England and Wales according to the OECD, with the highest number in the northeast of England.<sup>40,42</sup> In Wales, there are approximately five deaths a day related to opioids (including heroin).<sup>42</sup>
- Primary care prescription is the most common source of opioids, and 80 per cent of those who try heroin began with prescription opioids.<sup>42,43</sup>
- In 2017-18, 5.6 million people were prescribed opioids for non-cancer pain.<sup>44</sup> Patients reported not being offered any non-pharmacological treatment options.
- A quarter of patients prescribed opioids for musculoskeletal conditions in primary care were still taking them over two years later.<sup>43</sup>
- The cost of over-prescription of opioids may be more than £100 million every year, without considering the additional cost of managing side effects or overdose.<sup>45</sup>

### AMERICA

- In the USA, more than 90 people die every day from an opioid overdose and the number of deaths is reported to have tripled since 2001.<sup>46,47</sup>
- More than 1,000 people are treated for opioid abuse in hospital emergency departments every day, resulting in significant treatment costs.<sup>46</sup>
- According to a recent OECD analysis, there has been a two-fold increase in the use of prescription opioids in the US in people with mental health issues.<sup>40</sup>

### AUSTRALIA

- More than 1,000 people die annually from opioid overdose in Australia, with 75 per cent linked to prescription opioids.<sup>48</sup>
- Between 1990 and 2014, opioid prescriptions increased almost four-fold in Australia.<sup>49</sup> Half of all these prescriptions were long-acting formulations and 40 per cent were strong opioids.
- As the prescription of opioids increased between 1992 and 2012 in Australia, the financial burden also increased 32-fold to \$271 million a year.<sup>50</sup>
- The levels of prescription opioid overdose are thought to be due to 'indication creep', for example the prescription for osteoarthritis pain despite a lack of evidence for their use in this condition.<sup>51</sup>
- In early 2018, low-dose codeine medication became prescription-only in Australia due to concerns regarding tolerance, physical dependence and fatal overdoses.<sup>52</sup>

Australian GPs are advised to deprescribe opioids for patients experiencing chronic non-cancer pain after three months,<sup>52</sup> and direct them instead to alternative, safer and effective forms of pain management.<sup>51</sup> However, 77 per cent reported a lack of effective alternate treatment makes them less likely to initiate a weaning regime.<sup>52</sup>

### ISRAEL

- In Israel, the availability of analgesic opioids increased by 125 per cent between 2011 and 2016.<sup>40</sup>
- More than half of all patients receiving treatment for chronic pain in two pain centres in Israel were considered to have problematic opioid use.<sup>40</sup>

## Meeting patients' needs in the changing landscape of healthcare



### Chris O'Brien Lifehouse

The Chris O'Brien Lifehouse is a leading cancer centre in Australia that operates within a not-for-profit cancer hospital. Patients can self-refer for acupuncture or be sent by cancer specialists, a GP or a nurse. Patients at the centre seek acupuncture for the side effects of chemotherapy and pain. They want help with sleep problems, wellbeing and numbness, as well as anxiety, depression, and spiritual pain.

Dr Suzanne Grant is one of the acupuncture practitioners. She says, 'If you can use acupuncture to provide some relief from the side effects of treatment or the symptoms of cancer, you may be able to reduce some medications, prevent treatment delays or simply feel better'.



### But don't opioids provide effective pain relief?

Opioid analgesics can offer relief for acute pain, cancer-related pain and in palliative care. However, there is a lack of evidence for opioids in the treatment of chronic non-cancer pain (>3 months duration), with several studies demonstrating poor improvement in pain, functionality and quality of life.<sup>42,53</sup> A systematic review of opioid analgesics for lower back pain, (n= 7,925) found that they were poorly tolerated and for those who can tolerate them the effect was unlikely to be clinically important within doses recommended by guidelines.<sup>34,54</sup>

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81 per cent of general practitioners feel patients received suboptimal management of chronic non-cancer pain.<sup>55</sup>

The significant side effects of opioids are well documented and include depression, anxiety, headaches, insomnia, accidental poisoning, and an increased risk of bone fractures.<sup>43,45,56</sup>

The long-term use of opioids is also associated with bowel dysfunction which includes constipation, nausea, abdominal pain, ileus, gall bladder contraction and gastro-oesophageal reflux. Patients consulting a gastroenterologist are often already taking opioid analgesics which were prescribed in primary care.<sup>48</sup>

One of the key problems with the long-term use of opioids is the risk of dependence and addiction. Not only does this have a physical impact but it also has a detrimental effect on a person's quality of life.<sup>43,56</sup>

A Cochrane review states that 'People with chronic non-cancer pain who are prescribed and are taking opioids can have a history of long-term, high-dose opioid use without effective pain relief'. If there is no pain relief with opioids, then the dose should be reduced with a view to discontinuation.<sup>57</sup>



## Meeting patients' needs in the changing landscape of healthcare

### What can be done about the opioid crisis?

Government-level regulation of opioid use and prescription monitoring are critical to dealing with the opioid crisis according to an analysis by the OECD.<sup>40</sup> As the pharmaceutical industry has downplayed the negative effects of chronic opioid use, governments should review industry regulation.<sup>40</sup>

There is also a call for an alternative to opioid analgesics.<sup>40,42</sup> The OECD recognises that alternative pharmaceutical analgesics, such as gabapentinoids or antidepressants, are not always effective and non-pharmacological treatments such as acupuncture or exercise are 'associated with durable slight to moderate improvements in pain and function for specific chronic pain conditions'.<sup>40</sup> In the US, it has been suggested that acupuncture should be considered a first-line option in the treatment of pain in an attempt to reduce the volume of opioid prescriptions.<sup>34</sup>

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Acupuncture has emerged as a powerful, evidence-based, safe, cost-effective, and available treatment.<sup>34</sup>

Acupuncture has been shown to be a safe and acceptable form of pain relief for patients presenting to the hospital emergency department. Pain relief with acupuncture for ankle sprain and back pain was comparable to that achieved by pharmacotherapy.<sup>58</sup>

In 2017, the American College of Physicians published guidelines strongly recommending acupuncture as an effective treatment for chronic and acute lower back pain.<sup>59</sup> The Center for Disease Control's Guideline for Prescribing Opioids for Chronic Pain, states that 'non-pharmacologic therapy and non-opioid pharmacologic therapy are preferred for chronic pain... If opioids are used, they should be combined with non-pharmacologic therapy'.<sup>59</sup>

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The practice of safe acupuncture should be at the forefront of discussions for addressing the opioid crisis, as it has the potential to replace initial opioid prescriptions and to reduce the need for continuing opioid use for chronic and acute pain.<sup>59</sup>

In response to the opioid crisis, the 2016 Vermont legislature commissioned a study to assess acupuncture for patients with chronic pain (n=156) in the Vermont Medicaid population.<sup>60</sup> Following 12 treatments with a state-registered acupuncturist, there were significant improvements in group mean pain intensity, pain interference, physical function, fatigue, anxiety, depression, sleep disturbance, and social isolation. There were also significant reductions in both non-opioid medication use and opioids. Almost three-quarters of employed patients reported an improved capacity to work and the comments of participants reflect the value of the acupuncture treatment received:

'I went to a regular doctor for over six years and my pain only became more intense and more frequent. This is the longest I've gone without pain or medication in well over a year'.

'I would consider the acupuncture treatment I received to be the most effective of every treatment option I've ever tried in my life at reducing my pain and increasing my quality of life, as well as the quickest in producing results. I was able to stop taking all my pain medications while receiving acupuncture and was even able to try a few physical activities (such as yoga) that have caused me pain in the past. I only wish I could continue to receive acupuncture as I believe it's the one treatment with results that would allow me to work full time... if I was able to continue treatments if/when my pain flared up again.'<sup>60</sup>







## Meeting patients' needs in the changing landscape of healthcare

There is also evidence that acupuncture can help ease the symptoms of withdrawal from opioids.<sup>59</sup> There are a number of published studies that highlight its role in dealing with opiate addiction and it can be easily incorporated into a variety of settings, such as community drug treatment centres or prisons.<sup>34</sup> A systematic review of studies of acupuncture for treating opioid disorder found that it has the potential to be effective in, and can help with, opioid cravings and depression, as well as improving anxiety and insomnia, compared with no treatment or sham acupuncture.<sup>61</sup>

The National Acupuncture Detoxification Association (NADA) protocol, a simple auricular acupuncture treatment, was assessed by a systematic review, which concluded that it may not be able to reduce the cravings associated with opiate withdrawal but it can increase treatment retention and decrease methadone detoxification and maintenance dosages in opioid use disorder. Acupuncture was also considered to be useful in supporting the psychosocial aspects of recovery.<sup>62</sup>

### The advantages of acupuncture in the treatment of pain<sup>34</sup>

- There is a large body of evidence that acupuncture is effective for the management of many types of acute and chronic pain conditions.
- Credible mechanisms of action for acupuncture for the treatment of pain have been established.
- Acupuncture can be easily integrated into primary care and hospital emergency departments.
- Acupuncture can significantly decrease healthcare expenditures by effectively treating acute pain and by acting as an alternative to opioids, thereby reducing the risk of addiction or overdose and the financial burden this conveys.



### Acupuncture for the US military and veterans

Acupuncture was recommended as a treatment for chronic pain in the Army Pain Management Task Force report published in 2010.<sup>63</sup> Acupuncture has been successfully integrated into the care of veterans and branches of the US military, with 15,761 military personnel receiving acupuncture from the military health service.<sup>34,64</sup> Studies in these populations have shown that the number of opioids prescribed is reduced when acupuncture is offered.<sup>34</sup>

A retrospective chart review of 172 people at a US Air Force medical centre found that opioid prescriptions decreased by 45 per cent, muscle relaxants by 34 per cent, NSAIDs by 42 per cent, and benzodiazepines by 14 per cent after a course of acupuncture. Patients reported significant improvements in symptom control, ability to function, and sense of wellbeing. The centre now has a 'Think acupuncture first' strategy for all healthcare professionals.<sup>65</sup>

# Meeting patients' needs in the changing landscape of healthcare

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# The excellent safety record of acupuncture

## Safe acupuncture through policy and regulation

In order to optimise the use of traditional medicine such as acupuncture, the WHO recommends the creation of national policies alongside regulation and legislation, to ensure that the medicine is used in a safe, effective and rational way.<sup>1</sup>

The failure to create a formal place for complementary medicine in a national healthcare system may increase the possibility that there is unsafe and ineffective practice, that medicine is not available to all that need it and overall healthcare costs are increased. It also restricts the ability of allopathic doctors to refer patients to a practitioner whose standard of training and care is guaranteed.<sup>1</sup>

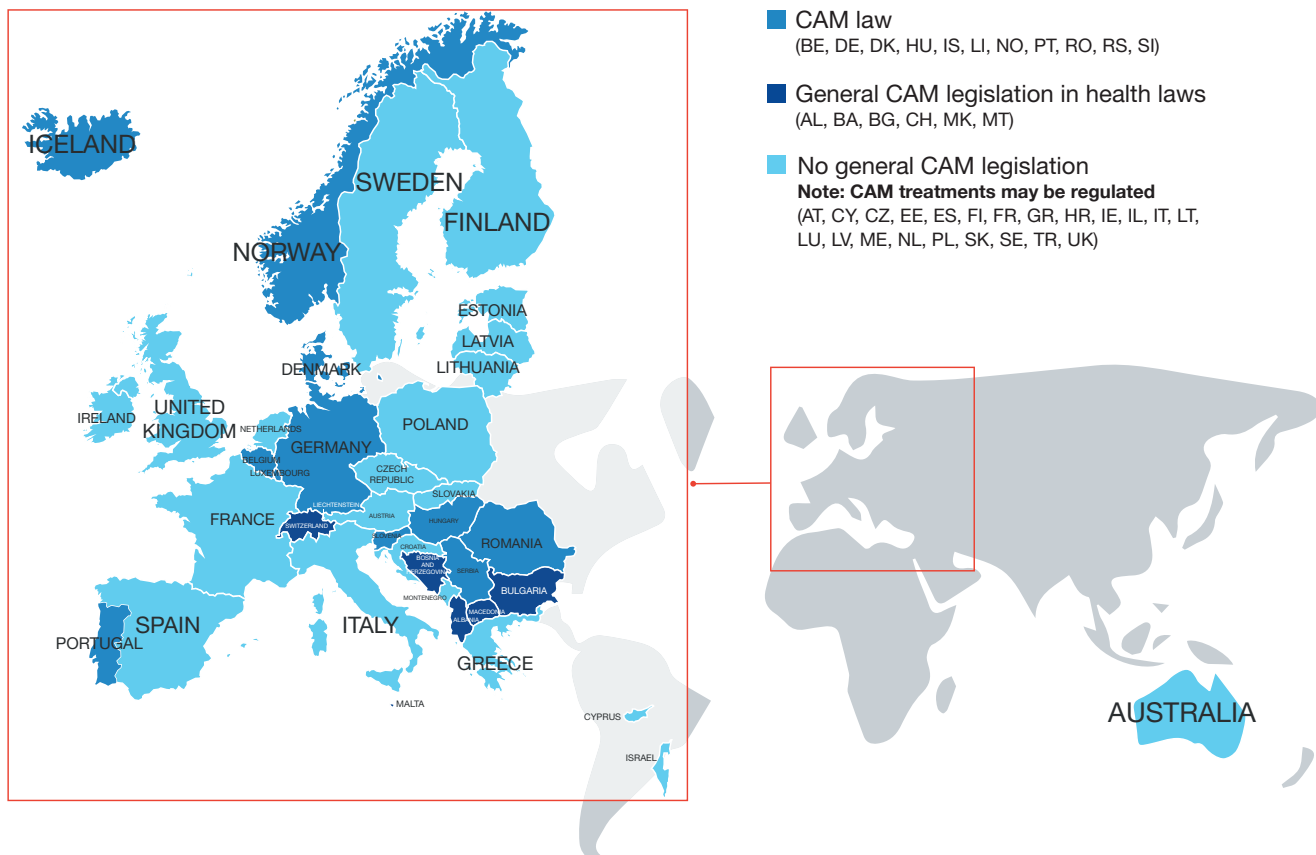
Regulation at a national level is necessary if acupuncture is to be integrated into mainstream medicine.

According to the WHO this involves:<sup>1</sup>

- inclusion in national healthcare legislation
- regulation of practitioners
- availability through hospitals and primary care clinics
- reimbursement of treatment costs through health insurance or available free at the point of care in the case of the UK NHS
- undertaking of research into efficacy and safety
- education to a university level

Since 2012, acupuncture has been the leading type of complementary and alternative medicine (CAM) in 113 member states.<sup>2</sup> A review of the legal and regulatory status of complementary and alternative medicine in the EU member and associated states revealed enormous variability, with states having general CAM legislation, specific CAM or sections on CAM in general healthcare laws, or no general CAM regulation at all, as shown in the figure below.<sup>3</sup>

## General CAM legislation





## The excellent safety record of acupuncture

### UK

- Acupuncture is not protected by statute which means that anyone can practise without training.
- Outside of London, local councils require people practising acupuncture to be licensed through their health and safety department.
- The BAoC is the largest self-regulatory body for the practice of traditional acupuncture in the UK.

### AUSTRALIA

- 'Acupuncturist' is a protected title under the new registration law and its use is dependent on the achievement of registration standards, which are renewed annually.<sup>4</sup>
- Acupuncturists are regulated like all other health practitioners in Australia, after acupuncture became a registered profession in Victoria in 2000, followed by mandatory national registration in 2012.
- The Chinese Medicine Board of Australia registers acupuncturists, Chinese herbal medicine practitioners and Chinese herbal medicine dispensers under the Australian Health Practitioner Regulation Agency.

### GERMANY

- Chinese medicine, including acupuncture, may only be performed by an allopathic doctor or Heilpraktiker.<sup>5</sup>
- Heilpraktiker are educated to degree level and are able to treat almost all conditions, with the exception of certain infectious diseases, gynaecological problems and dentistry.<sup>5</sup>
- Arbeitsgemeinschaft für klassische Akupunktur und Traditionelle Chinesische Medizin e.V. (AGTCM) is the membership body for those practising traditional acupuncture in Germany.<sup>6</sup>

### AMERICA

- Acupuncture practice laws are in place in 47 states and the district of Columbia.<sup>8</sup>
- The majority of allopathic physicians are permitted to practise acupuncture within the scope of their medical practices.<sup>7</sup>
- Acupuncturists may have different professional titles depending on the state, such as doctor of oriental medicine, doctor of acupuncture, acupuncture physician, as well as licensed or registered acupuncturist.<sup>8</sup>

### PORTUGAL

- Doctors can practise acupuncture as a medical competency.
- Acupuncture treatment provided by non-medical practitioners is regulated by Portuguese law and demands a degree of licentiate.
- Professional titles are protected and they have technical and professional autonomy from other health professions.<sup>5,9</sup>

### NEW ZEALAND

- Acupuncture is not currently statutory regulated in New Zealand, with two professional organisations representing acupuncture professionals.
- The New Zealand Acupuncture Standards Authority (NZASA) is a standards-based registration authority that aims to ensure clinical competency of acupuncturists practising in the region. The NZASA was recognised in 2005 under the Accident Compensation Corporation (ACC) Act, which allows registered members to become ACC Treatment Providers.<sup>10</sup>
- Acupuncture NZ is the largest professional body representing practitioners of acupuncture and Chinese medicine in New Zealand.

### CANADA

- 'Acupuncturist' is a protected title in British Columbia, Alberta, Quebec, Ontario and Newfoundland, where acupuncture is regulated.

## The excellent safety record of acupuncture

### The Professional Standards Authority in the UK

The Professional Standards Authority (PSA) for Health and Social Care is an independent body that exists to protect the public and help ensure their health and wellbeing, primarily by elevating the standards of regulation and registration of people working in health and care. The PSA is accountable to the UK parliament.<sup>11</sup>

Organisations that represent practitioners who are not currently regulated by UK law can apply to be an accredited register, and following a rigorous assessment can achieve the quality mark.<sup>12</sup> The PSA is able to review the performance of organisations and their ability to discern whether people on their registers are fit to practise.<sup>12</sup> According to the PSA, the British Acupuncture Council (BACc) has a 'robust, transparent and fair' complaints procedure.<sup>12</sup>

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The British Acupuncture Council is the only acupuncture organisation in the UK to be registered with the PSA and have been awarded the quality mark.<sup>13</sup>

Under General Medical Council rules, doctors in the UK are able to refer patients to members of the BACc due to their being on a voluntary register that has been accredited by the PSA.

### Training standards in acupuncture education

As there is a demand for treatments which are not currently statutorily regulated, it is necessary that people requesting this treatment are directed to practitioners who are safe and well trained.<sup>11</sup> The WHO recognises the importance of setting standards in the training and qualification of traditional medicine practitioners to ensure that traditional medicine is used appropriately and safely. There is a need to ensure that medicines such as acupuncture, which are transferred from another country and culture, are practised with the same levels of competence and training as in the original country.<sup>1</sup>

Where acupuncture is established as a normal component of healthcare, training commonly extends over several years at college level, and graduates have opportunities for ongoing supervision. Where allopathic medicine dominates a national health system, acupuncture may be practised without any educational or professional framework.<sup>14</sup>

The WHO has produced guidelines for the theoretical and practical training of acupuncturists to ensure basic levels of competence and safety are met. It recommends that the curriculum includes Chinese medical theory and that training is delivered by skilled instructors. Graduates would undertake examinations and be required to meet standards for licensing, which the WHO hopes would prevent the commercial exploitation of acupuncture training and the

subsequent harmful consequences of incompetent and unauthorised practice. The WHO also recognises the importance of providing a period of supervised practice after qualification.<sup>14</sup>

The minimum amount of time recommended by the WHO to ensure adequate training for the safe practice of acupuncture ranges from at least 200 hours for a qualified physician who wants to practise with limited scope, to 2,500 hours for non-physicians who want to practise the complete scope of acupuncture. Qualified physicians who want to practise a broader scope of acupuncture should have 1,500 hours of formal training. All candidates should be required to pass examinations in acupuncture.<sup>14</sup>

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There are risks due to inadequate training of the acupuncturist. These include inappropriate selection of patients, errors of technique, and failure to recognise contraindications and complications, or to deal with emergencies when they arise.<sup>14</sup>

## The excellent safety record of acupuncture

The European Traditional Chinese Medicine Association (ETCMA) is an umbrella organisation for professional associations from different countries. One of their goals is to promote and develop high standards of acupuncture education across Europe.<sup>15</sup> Minimum educational criteria for entry to the ETCMA were established in 2013 with the intention of ensuring acupuncturists are 'capable of independent practice, safe, ethical and competent'. They recommend that training be no less than 3,600 hours over a period of at least 3 years full-time or the part-time equivalent. Standards should be equal to a first degree and involve 10-15 attended hours each week. For every interactive/contact hour there should be two non-contact study hours. This equates to 1,200 hours of clinical contact time, with 400 hours of supervision.<sup>16</sup>

### Acupuncture training standards in the UK

The introduction of good quality acupuncture into a national healthcare system would necessitate the training of a significant number of staff over a short time frame and this could represent a financial challenge.<sup>14</sup> Professional acupuncture organisations such as the British Acupuncture Council (BAcC) and the British Acupuncture Accreditation Board (BAAB) in the UK can regulate the training and supervision of acupuncture practitioners without further strain on the national healthcare system. The BAAB sets and closely monitors the standard for acupuncture education in the UK to ensure that all graduates from their accredited establishments are competent and safe acupuncture practitioners. The BAAB will only accredit providers who offer a final award equivalent to a bachelor's degree with honours. Graduates receive a licentiate, diploma or degree in acupuncture according to their circumstances.<sup>17</sup>

The BAcC has a membership of around 3,000 professionally qualified acupuncturists. All members of the BAcC have BSc or BA degree-level training or equivalent, with a curriculum covering traditional acupuncture, Chinese medicine, and western biomedical sciences (3,600 hours of study).<sup>18</sup> Physicians and nurses in the UK are eligible to join the BAcC if they have met the same training standards as non-physicians.

Statutory or self-regulated healthcare professionals may also train under the British Medical Acupuncture Society (BMAS) or the British Academy of Western Medical Acupuncture (BAWMA). The Acupuncture Association of Chartered Physiotherapists (AACP) is the membership organisation of chartered physiotherapists practising acupuncture.

The BMAS train healthcare practitioners in western medical acupuncture, a form adapted from Chinese acupuncture. They offer a four-day foundation course and further training to achieve a diploma in medical acupuncture.<sup>19</sup>

### Online acupuncture training

As acupuncture is not statutorily regulated in the UK, it is possible to be pronounced competent to practise on the public with very little training. For example, after an 11-day course one provider purports that candidates are 'in a position to start your new career and earn some money'. Those who complete the course are eligible to join the Acupuncture-Acuthery Council, a self-regulatory body in the UK. There has been a recent upsurge in online acupuncture courses which require no clinical training. For example, one course has no eligibility criteria and those who complete can use the letters DipTCM after their name, which could imply a greater level of training and clinical competence than is actually involved.<sup>21</sup> Another online course of 12 hours duration states 'If you are someone suffering from stubborn body aches or want to help someone who is undergoing intolerable pain, then this Certificate in Acupuncture course will explain how exactly you can do this by practising Acupuncture, a pretty reliable solution to release pain'.<sup>22</sup>

### Acupuncture training standards in America

Of the 62 accredited acupuncture schools offering 100 programs, 32 are master's degrees in acupuncture, 53 are master's degrees in oriental medicine, 13 are postgraduate doctorate degrees and two are entry-level doctorate degrees.<sup>8</sup>

The National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM) is used widely across America for acupuncture licensure.<sup>23</sup> The NCCAOM Diplomate of Acupuncture requires three to four academic years of education at the master's degree level. Following graduation, acupuncturists must pass examinations in foundations of oriental medicine, acupuncture, and biomedicine as well as meet other certification requirements. All acupuncturists must complete the national needle safety course known as the Clean Needle Technique Course.<sup>23</sup>

Many states require allopathic physicians to undertake additional training alongside non-physicians.<sup>7</sup>

## The excellent safety record of acupuncture

Thirteen states and the district of Columbia meet the 200 hours of formal training in acupuncture required for physicians according to the WHO guidelines. Many physicians may have sought to undertake training that exceeds this minimum, such as the American Board of Medical Acupuncture (ABMA) certification.<sup>23</sup>

The ABMA requires members to have a minimum of 300 hours of systematic acupuncture education at an ABMA-accredited program on top of their medical or osteopathic degree. Members must pass the Board examination, and have at least two years of clinical experience with 500 treatments performed.<sup>24</sup>

### Acupuncture versus dry needling in the US

The American Alliance for Professional Acupuncture Safety (AAPAS) published a white paper in 2016 which called for dry needling practitioners to meet standards required for licensed acupuncturists and physicians. This white paper concluded that dry needling is a rebranding of acupuncture, with acupuncture points being labelled as trigger points (dry needling points).

Dry needling is a simplified version of traditional Chinese acupuncture which emphasises biomedical language when treating neuromusculoskeletal pain (referred to by dry needlers as myofascial pain). Trigger points belong to a long-established category of traditional Chinese acupuncture points known as 'ashi' points. Dry needling can be considered to be trigger point acupuncture and is therefore an invasive procedure rather than a manual therapy. It is also recognised that those trained in dry needling pay attention to acupuncture's local responses whereas acupuncturists have a broader perspective and pay attention to local, distal, and whole body responses.

It was recommended that, for patient safety, dry needling practitioners in the USA should meet standards required for licensed acupuncturists and physicians.

### Acupuncture training standards in Canada

Requirements for licensing vary by province in Canada, but in general, a registered acupuncturist would have completed a three-year educational program, a registered TCM practitioner would complete a four-year program, and a doctor of TCM a five-year program.<sup>25</sup>

Acupuncturists must record a minimum of 200 patient appointments and complete 50 hours of continuing education every 2 years in order to retain their protected title.<sup>25</sup>

Canadian allied health professionals such as physiotherapists and chiropractors must achieve 200 hours of acupuncture training and pass an examination.<sup>26</sup> Medical doctors and dentists may use acupuncture in all Canadian provinces and territories.

Physiotherapists and chiropractors may not use acupuncture in Quebec. In Quebec, physicians must complete 300 hours of an acupuncture training program approved by the credentials committee of the Collège des médecins du Québec.<sup>7</sup>

### Acupuncture training standards in Israel

In Israel, it has been suggested that all courses in acupuncture should meet the standard of a bachelor's degree. Currently, Israeli acupuncturists are eligible to become members of the ETCMA if they meet the entry criteria.<sup>5</sup>

### Acupuncture training standards in New Zealand

In New Zealand, acupuncturists must have completed four years full-time training either in New Zealand or overseas. They are required to complete 20 hours CPD annually and hold a current first aid certificate. Acupuncture NZ has taken a stand against short-course acupuncture qualifications and those obtained through online or correspondence courses.<sup>10</sup>

### Acupuncture training standards in Australia

Each state and territory in Australia is responsible for their own acupuncture registration standards, although the following are mandatory:<sup>4</sup>

- annual CPD of at least 20 hours
- no criminal history
- English language skills
- professional indemnity insurance
- recency of practice

Overseas applicants are required to have achieved an academic acupuncture qualification comparable to an Australian bachelor degree at level 7 of the Australian Qualifications Framework.<sup>27</sup>



## The excellent safety record of acupuncture

### Why use a British Acupuncture Council acupuncturist?

Incorporating acupuncturists within the primary care team would help optimise referral pathways, and improve access for patients. Whilst there are physiotherapists and GPs who practise acupuncture part time and with a limited scope, only acupuncturists trained to a degree level can provide comprehensive care for patients with complex LTCs that encompass a broad range of illness, from gynaecological to gastrointestinal, mental health to migraine. The BAaC is ideally placed to offer implementation guidance on the provision of specialist acupuncture into general practice or a hospital setting.

There is a strong pipeline of BAaC members representing a well-trained workforce that can make an active contribution to integrated care.

The BAaC has published a Code of Safe Practice to define standards for the safe and hygienic practice of acupuncture. This Code is designed to protect both practitioner and public alike, and reflects the BAaC's primary aim of ensuring the safety of the general public. The principles outlined in the Code, when properly observed, provide protection against all known cross-infection, including blood-borne viruses. Where local authority byelaws have lower standards than those in this Code, members of the BAaC are required to comply with the Code standards. Non-compliance with this Code is a breach of the BAaC's Code of Professional Conduct.

#### All members of the BAaC are expected to:

- maintain high standards of communication in their interactions with patients, carers, colleagues and other professionals
- make a diagnosis and formulate a treatment plan
- treat patients using needles and other techniques in order to awaken the body's ability to protect and heal itself
- ensure safety for patients and themselves in accordance with the BAaC Codes of Safe Practice and Professional Conduct
- engage in professional development to improve their practice
- participate in the CPD programme of the BAaC
- manage their practice following sound business, legal and ethical principles and in accordance with the BAaC Codes of Safe Practice and Professional Conduct for the benefit of themselves and their patients

### Adverse events with acupuncture

The incidence rates for major adverse effects of a medical treatment are best estimated from large prospective surveys.<sup>28,29</sup> Such surveys of practitioners have shown that serious adverse events with acupuncture are rare.<sup>30-32</sup> No deaths or permanent disabilities were reported, and all those experiencing adverse events fully recovered.<sup>33</sup>

“ ”

Acupuncture seems, in skilled hands, one of the safer forms of medical intervention.<sup>31</sup>

Findings from the prospective surveys are supported by the results of an overview of 17 systemic reviews, which found that adverse events with acupuncture were rare and usually mild.<sup>34</sup>

Similarly to body acupuncture, most adverse events with auricular acupuncture were considered to be transient, mild, and tolerable, with no serious events reported.<sup>35</sup> The commonest events were tenderness or pain at insertion, dizziness, local discomfort, minor bleeding and nausea.

Although adverse events with acupuncture are usually mild, practitioners must not be complacent as it cannot be considered a risk-free intervention. Maintaining high standards of hygiene and clean needle technique are important, as is adequate training, in keeping numbers of adverse events to a minimum.<sup>33</sup>

“ ”

Most NHS acupuncture treatments are for musculoskeletal pain where the conventional option would often involve the prescription of non-steroidal anti-inflammatory drugs (NSAIDs). One in twelve hundred people taking NSAIDs for at least two months will die of gastrointestinal complications and one in five will develop an ulcer as a consequence.<sup>30,36</sup>

## The excellent safety record of acupuncture

### AMERICA

- A 2014-2015 survey of patients who received acupuncture, in the main, for low back and neck pain (n=89,769) found that 0.014 per cent of patients reported a minor adverse event and no serious adverse events were reported.<sup>46,47</sup>

### UK

- Over one million sessions of acupuncture are provided each year in the NHS, with one reported pneumothorax (over three years of data collection). A large prospective study of over two million consecutive acupuncture treatments reported that two patients had a non-life threatening pneumothorax.
- In a prospective survey covering 34,407 acupuncture treatments given by BAcC members over a 4-week period, no serious adverse events were reported. Of the mild transient reactions reported, the most frequent were 'feeling relaxed' and 'feeling energised'.<sup>30</sup>



The safety of  
acupuncture across  
the globe

## GERMANY

- In a prospective observational study of patients who received acupuncture for chronic osteoarthritis pain of the knee or hip, low back pain, neck pain or headache, allergic rhinitis, asthma, or dysmenorrhoea (n=229,230), adverse effects from acupuncture were reported in 7.4 per cent of patients and were usually treated by themselves.<sup>28</sup>
- In an open pragmatic trial of patients treated with acupuncture for chronic headache, low back pain, and/or osteoarthritis (n=454,920), acupuncture was provided by physicians with at least 140 hours of acupuncture education. Minor adverse events were reported in 7.9 per cent of patients and 0.003 per cent experienced serious adverse events.<sup>45</sup>

## CHINA

- A systematic review of 167 studies published between 1956 and 2010 reported 1,038 cases of adverse events.<sup>41</sup>
- A systematic review of case reports of adverse events with acupuncture reported from 1980 to 2013 found 182 incidents.<sup>42</sup>

## JAPAN

- Over a 6-year period in a Japanese college clinic, a total of 65,482 treatments were performed and 94 adverse events (0.14 per cent) were reported.<sup>43</sup>
- A multicentre prospective survey of acupuncture and moxibustion performed in 8 acupuncture teaching clinics found that in 14,039 sessions, 847 (6.03 per cent) adverse events were reported. The most common were subcutaneous bleeding and haematomas, discomfort and residual pain at the needle site. No infections or serious adverse events were reported and most were mild and transient.<sup>44</sup>

## AUSTRALIA

- The Australian Health Practitioner Regulation Agency found that closed notifications and complaints about acupuncture were associated with low or no detectable levels of harm, and any considered to be moderate harm were resolved.<sup>48</sup>
- In Australia, the overall rate of adverse events was calculated as 0.15 per cent, which relates to adverse events every 1 in 1,009 consultations for non-physician acupuncturists and 1 in 368 for physicians performing acupuncture.<sup>48</sup>



## The excellent safety record of acupuncture

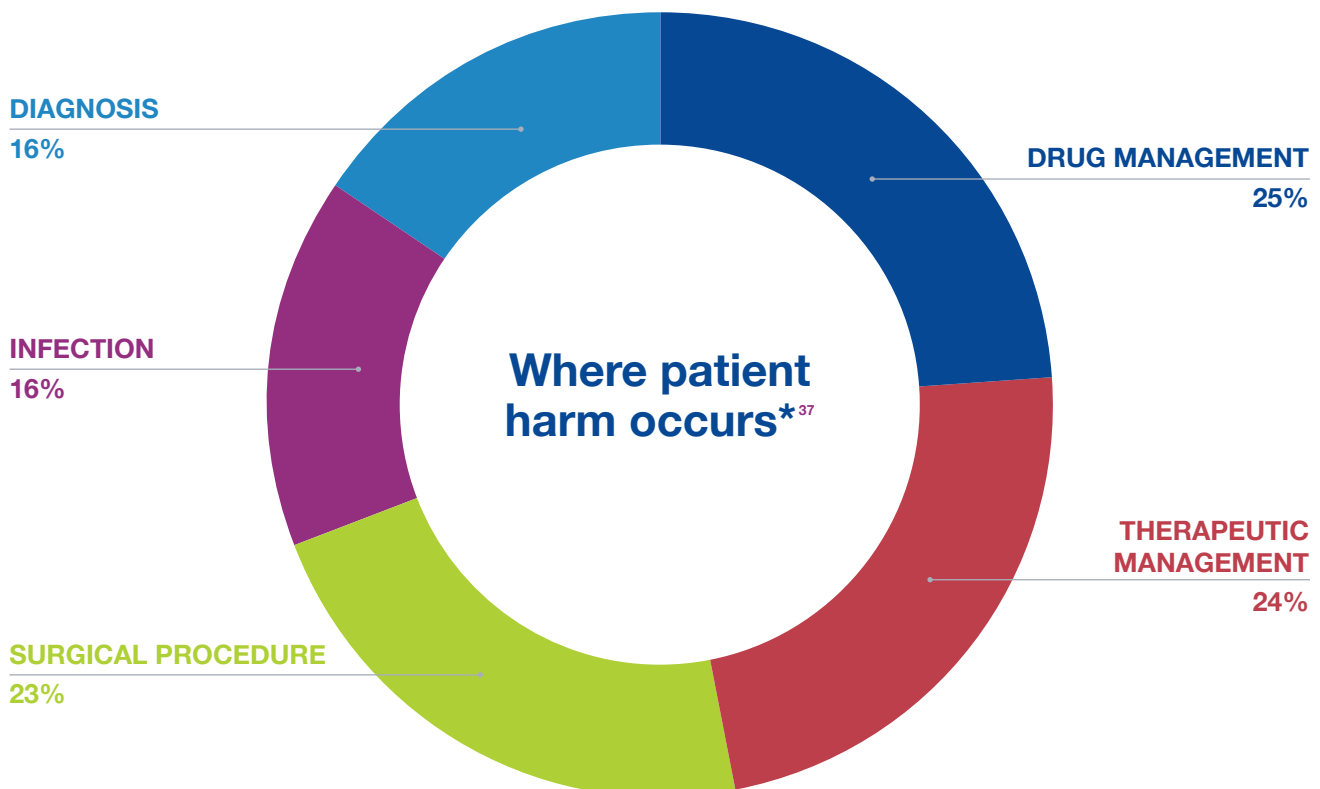
### Patient harm with allopathic medicine

A meta-analysis of 66 studies (n=337,025) to understand the preventable patient harm in a range of western medical care settings found that at least one in twenty patients are affected by preventable patient harm.<sup>37</sup>

- 49 per cent of patient harm was considered mild, 36 per cent was moderate and 12 per cent was severe
- Half of all patient harm was preventable.
- Approximately 12 per cent of preventable cases cause permanent disability or patient death.
- Up to 15 per cent of healthcare expenditure is thought to relate to medical patient harm.<sup>37-39</sup>

An overview of 14 Cochrane reviews investigated the adverse events associated with various opioid medications taken on a medium- or long-term basis for the treatment of chronic non-cancer pain in adults. A total of 18,679 participants were included. The risk of experiencing adverse events was significantly higher with opioids compared with placebo or a non-opioid active pharmacological comparator. Adverse events reported with opioids include constipation, dizziness, drowsiness, fatigue, hot flushes, increased sweating, nausea, pruritus, and vomiting.<sup>40</sup>

- Compared with placebo, the absolute event rate for any adverse event with opioids was 78 per cent.
- Absolute event rate for any serious adverse event was 7.5 per cent.
- Risk of a serious adverse event with an opioid is 175 per cent higher than with placebo.



\* The proportions for types of preventable or overall harm do not add up to 100 per cent because each figure in the table is the pooled proportion which has been calculated by combining (after assigning appropriate weights) proportions extracted from several independent studies using meta-analysis. Moreover, not all studies reported all types of preventable or overall harm and therefore it is not appropriate to assume they add up to 100 per cent.



## The excellent safety record of acupuncture

### The safety of acupuncture in special populations

#### Pregnant women

There is a significant body of evidence that acupuncture is safe and effective during pregnancy when performed by a well-qualified practitioner.<sup>49-59</sup> Systematic reviews have demonstrated that the rates of adverse events are low when acupuncture or moxibustion is used during pregnancy for:

- pelvic and back pain
- nausea
- depression
- correction of nonvertex presentation (breech)
- induction of labour
- post-partum urine retention

A systematic review of studies of acupuncture during pregnancy found that all of the adverse events that were thought to be certainly, probably or possible due to acupuncture (an incidence rate of 1.3 per cent) were considered to be mild or moderate in severity.<sup>50</sup>

#### Induction of labour

A Cochrane review investigated whether acupuncture was safe and effective in aiding third trimester cervical ripening or induction of labour. A total of 14 trials were included (n=2,220). The review found that there were no differences in caesarean deliveries between acupuncture and the sham control, and acupuncture compared with usual care. There was also no apparent difference in the rate of neonatal seizures between the acupuncture and sham groups.<sup>56</sup>

“ ”

All forms of acupuncture should only be performed by a well-trained therapist who is experienced, understands the theories underpinning the practice of acupuncture, and takes the necessary precautions.<sup>60</sup>

### Hutt Valley Hospital antenatal clinic, Wellington, New Zealand

Acupuncture is available at the Hutt Maternity Hospital to treat pregnancy-related problems and assist in preparation for childbirth and postnatal care. This free service began in 2008 and is provided by the hospital in conjunction with the New Zealand School of Acupuncture and Traditional Chinese Medicine.<sup>61</sup>

The majority of patients receiving acupuncture were referred through their lead maternity carer midwives and were seeking acupuncture for labour preparation, back or pelvic/hip pain. Following assessment they also received treatment for heartburn, insomnia, emotional considerations, varicosities, headaches and migraines. The level of patient satisfaction with the service was high and 80 per cent of patients reported a clinically significant change in their pain. When they looked at lumbopelvic pain specifically, 89 per cent of women receiving acupuncture reported a clinically significant reduction in their pain.<sup>62</sup>



**HUTT maternity**  
Hutt Valley Maternity Care

## The excellent safety record of acupuncture

### Children

The safety of acupuncture in children has been investigated with several systematic reviews. The rates of adverse events were low, with the majority being mild and transient.<sup>31,63-65</sup>

- An analysis of 23 randomised controlled trials (RCTs and 8 systematic reviews concluded that acupuncture in paediatrics is low risk. The incidence of a serious adverse event is thought to be very low at between 1:10,000 and 1:100,000, and the same as taking penicillin.<sup>31,63</sup>
- In an analysis of 24 systematic reviews, including 142 RCTs (n=2,787), 6 reviews reported adverse events and no fatal side effects were reported. Overall, acupuncture was considered to be well tolerated.<sup>64</sup>

### “”

The National Institutes of Health Consensus Statement states, ‘one of the advantages of acupuncture is that the incidence of adverse effects is substantially lower than that of many drugs or other accepted procedures for the same conditions.’<sup>63</sup>

**The safety of acupuncture in children has been demonstrated in:**

- cerebral palsy
- neonatal abstinence syndrome
- infantile colic
- autism spectrum disorder
- paediatric pain<sup>66-72</sup>



### Treatment of paediatric pain

An observational study showed that non-invasive electrical stimulation at acupuncture points during a routine heel stick was well tolerated in healthy infants less than three days old (n=30), which makes this technique a valid alternative to ineffective topical anaesthetics for relieving acute pain during this procedure.<sup>70,71</sup>

In a retrospective review of studies of acupuncture in an in-patient infant population (n=10) who were likely to receive sedative and analgesic medications to facilitate intensive and invasive medical care, with the accompanying risk of neurotoxic effects, no adverse events were identified and acupuncture was well tolerated in all the infants. There were no reports of distress or discomfort during the treatment.<sup>72</sup>

Of children receiving pharmaceutical analgesics, 30-50 per cent will experience at least one adverse event.<sup>73</sup>

In a systematic review of 44 studies of oral medications, paracetamol, non-steroidal anti-inflammatory drugs, and opioids, to manage acute non-surgical pain in children, 23 reported on adverse events. Ibuprofen and paracetamol have similar rates of adverse effects, notably fewer than opioids. Codeine was also associated with almost double the risk of experiencing dermatologic manifestations compared with the other medications. Drowsiness and tiredness were experienced by almost a third of all children receiving oxycodone or oral morphine and half of all of those receiving codeine.<sup>74</sup>

## The excellent safety record of acupuncture



### The Panda Clinic, Oxford, UK

Rory came for treatment at the age of five. He suffered from quite severe asthma, and used both a steroid preventer and a bronchodilator as a reliever. He was also taking montelukast, but despite these three medications, Rory's symptoms of a constant cough, breathlessness and wheezing were poorly controlled. His parents were concerned both about his ongoing symptoms, the restrictions they placed on his life and the possible long-term effects of the medication.

'I began treating Rory with paediatric tuina (massage) and a low-level laser machine. On the fourth treatment, I began using needles instead of the laser machine as Rory felt comfortable enough to try them.

'The first change that Rory's parents noticed was that he became less anxious. After two months of treatment, Rory's use of his reliever inhaler had reduced from several times a day to very occasional. At this point, I suggested that Rory's parents talk to his asthma nurse

about the possibility of reducing the preventer inhaler and montelukast. She suggested that he begun a gradual reduction of the montelukast.

'After five months of treatment, Rory had come off Montelukast with no worsening of his symptoms. His cough was now intermittent rather than constant, and he had had no acute asthma attacks. He no longer wheezed, but still occasionally became breathless when stressed. At this point, in conjunction with the asthma nurse, Rory began reducing the dose of his preventer inhaler.

'Rory went from strength to strength. After eight months of treatment, he had come off all medication although he still carried his reliever inhaler with him just in case. He had grown in confidence and was thriving at home and school. His parents were thrilled that he no longer relied on so much medication, and that his life was no longer restricted by his symptoms.'

**Rebecca Avern**  
The Panda Clinic, Oxford

## The excellent safety record of acupuncture

### The safety of acupuncture in common conditions

The excellent safety profile of acupuncture has been demonstrated in many conditions (see appendix).

#### Back pain

In pragmatic RCTs of acupuncture for chronic back pain in patients referred by their GP:<sup>75, 76</sup>

- no serious or life-threatening events were reported
- only minor adverse events were reported, such as including transient pain at the site of needling or a temporary worsening of symptoms
- acupuncture was described as relaxing by 86 per cent

In a systematic review of traditional Chinese medicine treatments for neck pain and low back pain (75 trials; n=11,077), no serious or life-threatening adverse events were reported. Minor adverse events with acupuncture included a temporary worsening of low back pain, pain, redness and bruising at the site of insertion, shoulder pain, and pain, numbness, or other side effects in the leg.<sup>77</sup>

#### Migraine

In a systematic review of acupuncture for migraine without aura (14 trials; n=1,155):<sup>78</sup>

- significantly fewer adverse events were reported in the acupuncture groups compared with medication groups
- adverse events with acupuncture were mild

In a Cochrane review of acupuncture as a prophylactic for episodic migraine compared with no prophylactic treatment, sham acupuncture or prophylactic treatment with drugs (22 trials; n=4,985):<sup>79</sup>

- one per cent of patients discontinued acupuncture due to adverse events compared with seven per cent receiving medication
- twice as many patients reported adverse events with medication compared with acupuncture

### Depression

Systematic reviews have found that in studies of acupuncture for depression:<sup>80,81</sup>

- adverse events were mild, with nothing serious reported
- the incidence of adverse events was lower with acupuncture than with antidepressants

The Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 Clinical Guidelines for psychiatrists and other mental health professionals recognise that in the treatment of mild depressive disorder acupuncture is well tolerated when performed by a trained and regulated practitioner, with mild and transient adverse events.<sup>80</sup>

Acupuncture in combination with medication resulted in fewer adverse events than with medication alone, which suggests that it may help ameliorate the side effects of antidepressants.<sup>82,83</sup>

### Osteoarthritis of the knee

In systematic reviews of acupuncture for knee osteoarthritis:<sup>84-86</sup>

- the frequency of adverse events was similar between acupuncture and control groups
- no serious adverse events were reported, with all being minor
- fewer adverse events were reported with acupuncture compared with glucosamine sulphate capsules<sup>86</sup>

Acupuncture is well tolerated when combined with other treatments. The addition of acupuncture to topical ibuprofen did not increase the incidence of adverse events compared with topical ibuprofen alone.<sup>87</sup> In patients with chronic pain due to knee osteoarthritis, the addition of acupuncture to physiotherapy and anti-inflammatory drugs did not increase adverse events. Haematoma was the only adverse event considered to be associated with acupuncture.<sup>88</sup>



## The excellent safety record of acupuncture

### Acupuncture in the updating of NICE guidance for treatment of osteoarthritis of the knee

In 2014, NICE (National Institute for Health and Care Excellence) updated its guidance on the treatment of osteoarthritis of the knee. Acupuncture was one of the interventions<sup>69</sup> reviewed, but it has been suggested that it was required to meet higher standards than other included treatments. The evidence for the safety of acupuncture was not considered in the update.<sup>69</sup>

The effect size of various different treatments for knee osteoarthritis has been estimated. Generally, an estimate of <0.3 is considered a small effect, 0.5 is moderate and 0.8 is large. NICE set the threshold for clinical significance at  $\geq 0.5$  for its osteoarthritis guideline.

The effect size for opiates is the highest of all interventions but they are associated with significant adverse events, nearly twice the risk level for a serious event compared with placebo.<sup>40</sup>

When NICE reviewed acupuncture for knee osteoarthritis, they focused on evidence from sham-controlled clinical trials and did not consider the evidence supporting the safety profile of acupuncture compared with alternative treatments. Sham acupuncture is believed to exert a clinical effect which makes it invalid as an inert placebo control. If NICE had measured acupuncture's effect against usual care then it would have passed the test of clinical significance (see following table).

| INTERVENTION  | Effect size, 95% confidence  |
|---|--|
| Patient education, self-management vs. pragmatic comparator | 0.06 (0.02-0.10)   |
| Weight loss vs. pragmatic comparator                        | 0.20 (0.00-0.39)   |
| Acetaminophen vs. placebo                                   | 0.14 (0.05-0.23)<br>0.21 (0.02-0.41)   |
| NSAIDs vs. placebo  | 0.29 (0.22-0.35)<br>0.37 (0.26-0.49)   |
| COX-2 inhibitors vs. placebo                                | 0.44 (0.33-0.55)<br>0.44 (0.33-0.55)   |
| Topical NSAIDs vs. placebo                                  | 0.40 (0.16-0.66)   |
| Opiates vs. placebo   | 0.78 (0.59-0.98)   |
| Strengthening exercise vs. pragmatic comparator             | 0.32 (0.23-0.42)   |
| Aerobic exercise vs. pragmatic comparator                   | 0.52 (0.34-0.70)   |
| Water-based exercise vs. pragmatic comparator               | 0.19 (0.04-0.35)   |
| Acupuncture vs. sham acupuncture                            | 0.35 (0.15-0.55)<br>0.29 (0.10-0.48)<br>0.26 (0.17-0.34) including outlier<br>0.16 (0.07-0.25) excluding outlier |
| Acupuncture vs. pragmatic comparator                        | 0.57 (0.50-0.64)   |

Furthermore, if the criteria used by NICE to assess acupuncture were used for the other interventions for knee osteoarthritis, then recommendations could not be made for patient centeredness, patient education, self-management and weight loss, muscle strengthening exercise, NSAIDs, paracetamol and COX-2 inhibitors, for their effect sizes do not meet the threshold value, as seen in the table above.<sup>69</sup>



### The Spire Washington Hospital, Washington, UK

The Spire Washington Hospital provides private hospital treatments for patients across the north-east of England. A member of the British Acupuncture Council, Joanna Wright, offers acupuncture to women following treatment for breast cancer who are suffering symptoms from adjunctive hormone blocking drugs. As these women are not suitable for hormone replacement therapy, acupuncture can help with hot flushes and low mood. Patients are referred to acupuncture by their consultant oncologist and lead breast cancer nurse. They usually receive between six and ten treatments, which are paid for by private health insurance or the patient themselves. The service is well received and Joanna says, 'The results are positive, and over 90 per cent of patients report that acupuncture improves their sleep and reduces hot flushes'.

# The excellent safety record of acupuncture

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# Acupuncture is an evidence-based healthcare solution

Acupuncture has been practised for 2,000 years to restore and maintain good health and recently its effectiveness has been confirmed in clinical trials: it is more than just a placebo.<sup>1,2</sup>

Acupuncture is a complex, often personalised, intervention and to achieve optimal clinical effect the practitioner must be well trained and skilled in diagnosis, formulating a treatment plan and in needle technique itself. It is difficult in clinical trials to replicate best practice and ensure a sufficient number of treatments is provided,<sup>3</sup> so the acupuncture intervention may often be below par.

Another widely reported problem is that of providing an inactive control in acupuncture trials. With sham acupuncture, patients are commonly needled at sites away from the intended acupuncture point or a retractable needle is used on the correct acupoint. Sham acupuncture, however, is not inert, it results in physiological changes and sometimes clinical benefit. Clinical trials comparing true acupuncture with a waiting list or usual care demonstrate a larger treatment effect than when it is compared with sham acupuncture.<sup>1,4</sup> Despite these difficulties, there is a large body of evidence that supports acupuncture's effectiveness in many conditions.<sup>1,2</sup>

“ ”

There is substantial evidence supporting acupuncture's effectiveness, compared to conventional treatments, for addressing various conditions.<sup>5</sup>

## Acupuncture in evidence-based clinical research

A review of high-quality analyses (systematic reviews and meta-analyses) found strong evidence that acupuncture is effective in a range of conditions:<sup>1</sup>

- allergic rhinitis
- chemotherapy-induced nausea and vomiting (CINV)
- chronic low back pain
- headache (tension and chronic)
- knee osteoarthritis
- migraine prophylaxis

- postoperative nausea and vomiting (PONV)
- postoperative pain

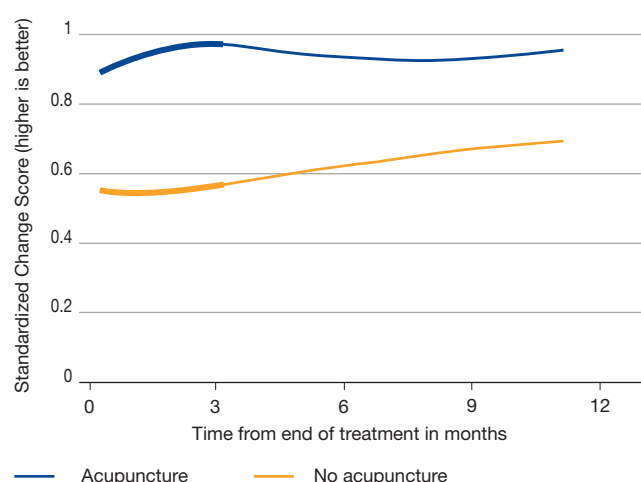
There is also a growing body of evidence for acupuncture in the management of gastrointestinal problems, gynaecological issues, mental health conditions, stroke rehabilitation, and cancer-related pain and fatigue.<sup>1,6-10</sup>

The evidence for acupuncture in the treatment of non-specific musculoskeletal pain, osteoarthritis, chronic headache or shoulder pain was confirmed using a meta-analysis of 39 trials (n=20,827):<sup>2</sup>

- acupuncture was significantly better at treating pain in all these conditions compared with sham acupuncture or usual care controls
- the positive effect of acupuncture on pain persists, with 85 per cent of effect sustained to 1 year

NSAIDs, paracetamol and COX-2 inhibitors and approximately 90 per cent of the benefit of acupuncture was sustained to 1 year as shown in the figure below.<sup>11</sup>

### The effects of acupuncture treatment persist longer-term



Line thickness represents the number of trials contributing data at these time points: thicker line represents 5-9 trials and the thinner line, 2-4 trials.

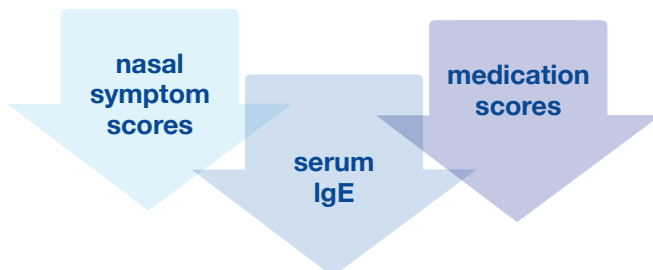
## Acupuncture is an evidence-based healthcare solution

### Allergic rhinitis

Based on trial data, the American Academy of Otolaryngology Head and Neck Surgery Foundation produced guidelines which recommend that ‘Clinicians may offer acupuncture, or refer to a clinician who can offer acupuncture, for patients with allergic rhinitis who are interested in nonpharmacologic therapy’.<sup>12</sup>

Systematic reviews have shown that acupuncture improves the symptoms of both perennial (PAR) and seasonal (SAR) allergic rhinitis, reduces medication use and improves quality of life (QoL).<sup>13-15</sup>

Compared with control groups, acupuncture significantly reduced:<sup>14</sup>



Acupuncture may treat allergic rhinitis by modulation of the immune system, though probably through a different mechanism to conventional immunotherapy.<sup>14,16</sup>

An RCT showed that acupuncture significantly reduced allergen specific IgE for house dust mite and downregulated proinflammatory neuropeptide substance P.<sup>17</sup>

### Chemotherapy-induced nausea and vomiting (CINV) with antiemetics

Acupuncture and acupressure are recommended in the Society for Integrative Oncology guideline to reduce chemotherapy-induced nausea and vomiting (CINV) based on published evidence.<sup>18</sup>

The effectiveness of acupuncture and moxibustion in ameliorating CINV has been demonstrated by several systematic reviews.<sup>19,20</sup>

A Cochrane review found that moxibustion in combination with conventional treatment was associated with better QoL and reduced CINV compared with conventional treatment alone.<sup>21</sup> Another systematic review concluded that moxibustion not only reduced the severity and frequency of CINV, it may be more effective than antiemetic medication.<sup>22</sup>

### St Joseph's Hospice, Tring, Hertfordshire, UK

The complementary therapy department of St Joseph's Hospice includes acupuncture for people receiving end-of-life care and their carers. All the acupuncturists give their time on a voluntary basis.

‘This is just like a breath of life, coming here. I’ve had really marked benefits from having acupuncture treatments and they were a real turnaround... It was an absolute godsend and I can’t imagine where I would have been, you know, what state I would have been in physically, mentally and emotionally had I not had this little oasis to come into.’

Michael Zaccharia became a patient at St Joseph's Hospice after suffering from stomach cancer and had a full gastrectomy, followed by radiotherapy and chemotherapy. He received regular acupuncture at the hospice and said, ‘This treatment has helped me with my eating and keeps my anger levels down and helps me with some symptoms from chemotherapy. Also the advice they gave me helps a lot. It also relaxes me, giving me energy, and pulsates through my body, giving me warmth within during the treatment. When I don't have acupuncture for a month, I feel my inner self sluggish and slightly lethargic. I'd like to carry on with my acupuncture on a regular basis as I really believe it benefits me.’



## Acupuncture is an evidence-based healthcare solution

### Chronic low back pain

The American College of Physicians 2017 guideline for non-invasive recommends for acute, subacute and chronic low back pain includes acupuncture for the initial treatment of chronic low back pain. Pharmacologic therapy should only be initiated if the patient does not respond to non-pharmacological interventions.<sup>23</sup> A systematic review of high-quality guidelines on the management of low back pain also found that acupuncture should be offered to patients with chronic low back pain.<sup>24</sup>

There is a substantial body of evidence that acupuncture is effective in the management of low back pain.<sup>2,25-29</sup> High-quality systematic reviews have shown that acupuncture for low back pain:<sup>26,29</sup>

- reduces self-reported pain compared with sham acupuncture
- improves function compared with no treatment or usual care
- has similar effects to medications (NSAIDs, muscle relaxants and analgesics)

A systematic review of non-invasive treatments for chronic low back pain concluded that there was strong evidence for the efficacy of acupuncture.<sup>27</sup> Another review concluded that the 'evidence consistently demonstrated that acupuncture provides short-term clinically relevant benefits for pain relief and functional improvement compared with no treatment or acupuncture plus another conventional intervention'.<sup>28,29</sup>

### Headache: tension type and chronic

The National Institute for Health and Care Excellence (NICE) includes acupuncture in its pathway for the management of headaches. It recommends that a course of up to ten sessions of acupuncture over five to eight weeks should be considered for the prophylactic treatment of chronic tension-type headache.<sup>30</sup>

Headaches, both tension type and chronic, were among the conditions included in a meta-analysis of high-quality acupuncture studies. It was confirmed that acupuncture has a clinically relevant effect compared with no acupuncture or a sham control.<sup>2</sup>

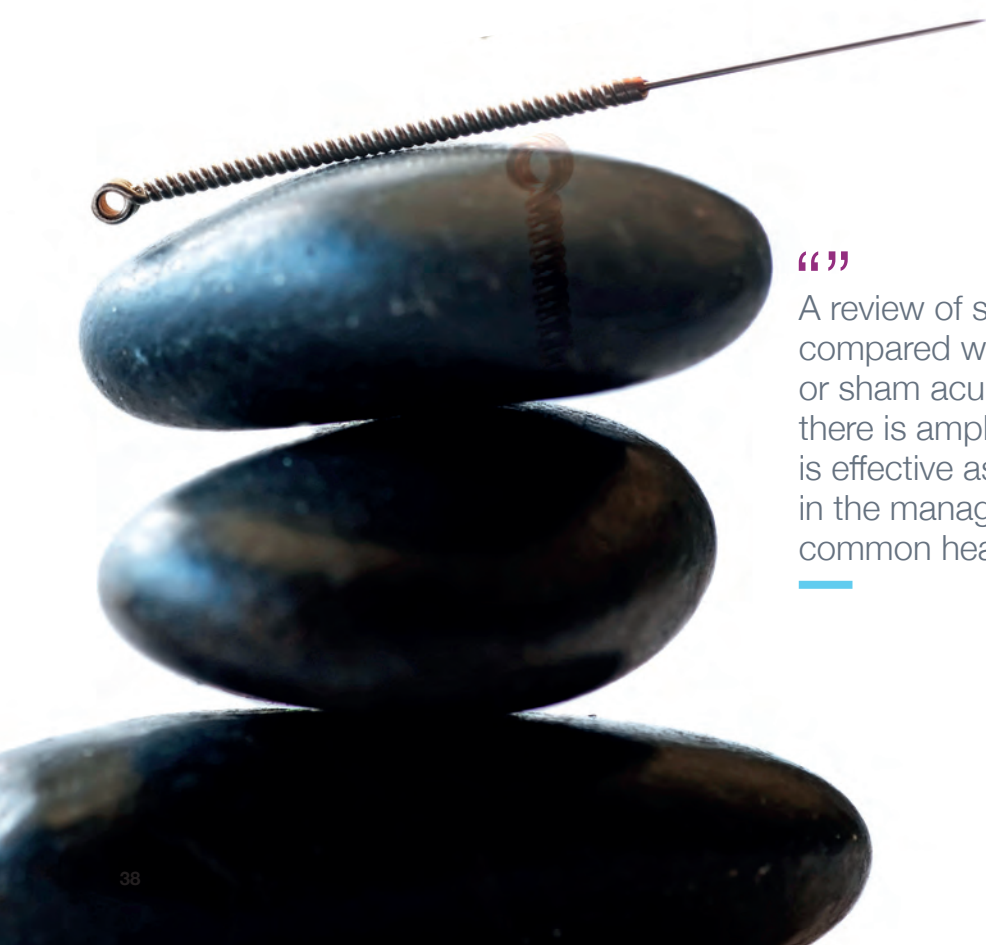
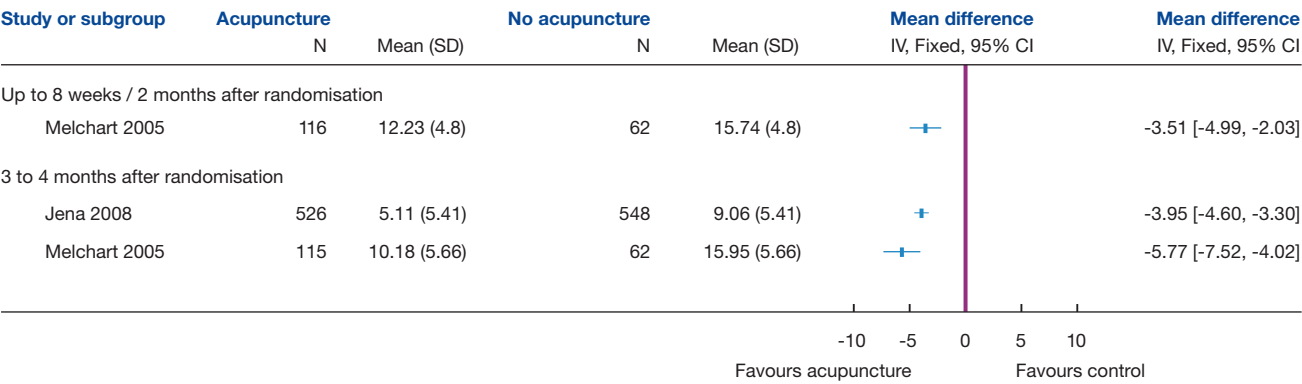
A systematic review of interventions for primary headaches in the workplace found that acupuncture may reduce headache intensity, frequency and related disability.<sup>31</sup> Another systematic review found that acupuncture was effective for frequent episodic or chronic tension headaches.<sup>32</sup>

A Cochrane systematic review of acupuncture for the prevention of headaches included 12 trials (n=2,349). It revealed that the proportion of participants experiencing at least 50 per cent reduction of headache frequency was much higher in groups receiving acupuncture than in control groups. Acupuncture is associated with a reduced number of headache days compared with no acupuncture (see diagram overleaf). The review concluded that 'acupuncture is effective for treating frequent episodic or chronic tension-type headaches'.<sup>33</sup>



# Acupuncture is an evidence-based healthcare solution

The number of headache days with acupuncture compared with no acupuncture<sup>33</sup>



“A review of studies of acupuncture compared with either usual care only or sham acupuncture concluded that there is ample evidence that acupuncture is effective as an adjunct to usual care in the management or prevention of common headache disorders.”<sup>34</sup>



## Acupuncture is an evidence-based healthcare solution

### Knee osteoarthritis

A high-quality evidence base exists to support acupuncture for the treatment of knee osteoarthritis. Several systematic reviews demonstrate that acupuncture is effective at reducing the pain of osteoarthritis in both the short and long term.<sup>35-38</sup>

We know that acupuncture and electroacupuncture have:<sup>39-41</sup>

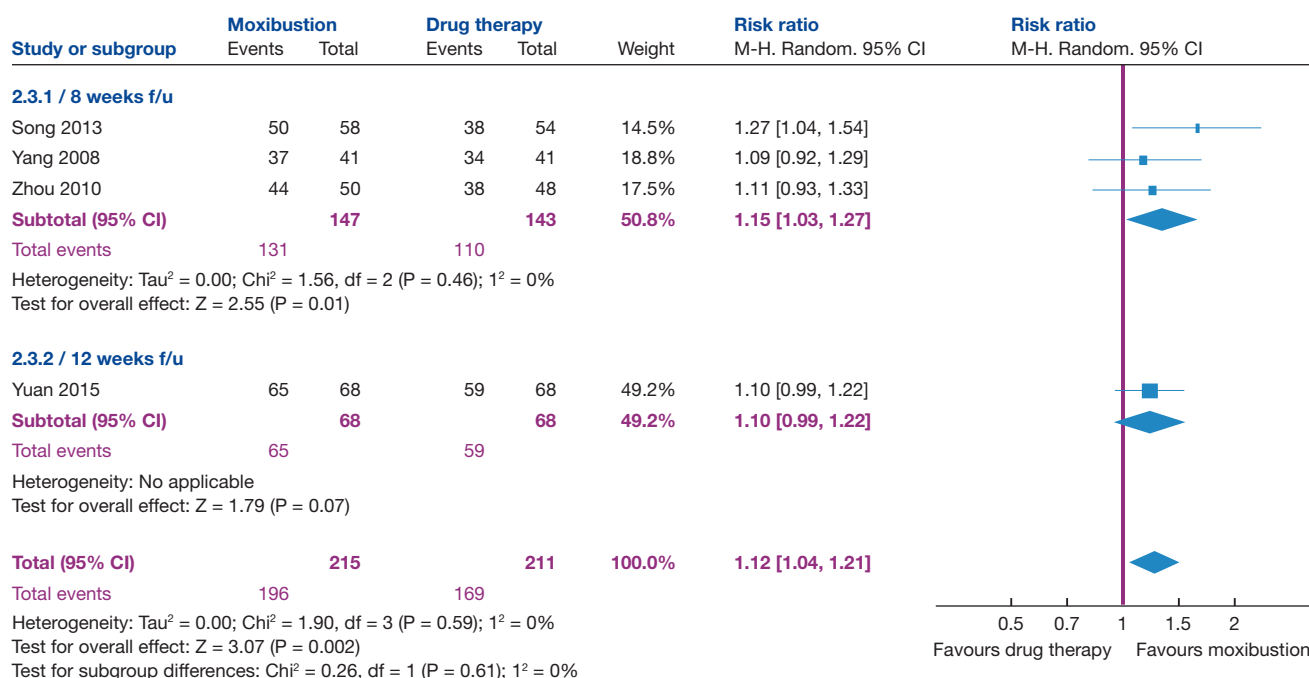
- a greater total and short-term effect rate than drugs
- superior scores over drugs on Lequesne index and Lysholm knee scoring scales
- significantly reduced pain intensity, increased function and improved health-related QoL compared with no treatment or usual care

A meta-analysis of physical treatments for painful knee osteoarthritis (14 trials; n=9,709) found acupuncture to be one of the most effective. It was at least as good as exercise, which is itself a frontline recommendation by NICE.<sup>35</sup>

The use of moxibustion for treating knee osteoarthritis has been studied in systematic reviews, and was found to give better pain control than sham or oral medication. The forest plot below shows how response rates were improved with moxibustion compared with oral drug therapy.<sup>42,43</sup>

(note that all the results fall on the 'favours moxibustion' side of the vertical line. Diamond shapes that don't touch or cross this line indicate statistical significance).

### Response rate





# Acupuncture is an evidence-based healthcare solution

Brain imaging has revealed that true acupuncture, but not sham acupuncture, may ameliorate pain and dysfunction by improving the functional connectivity in older patients with knee osteoarthritis, specifically between the right frontoparietal network, the executive control network and the descending pain modulatory pathway.<sup>44</sup>

Whereas several RCTs have shown that a single session of acupuncture has the potential to improve pain caused by knee osteoarthritis,<sup>45</sup> increased frequency of treatment results in better outcomes.<sup>46,47</sup>

Repeated acupuncture normalises the connectivity of regions in the brain that become dysregulated in chronic pain. This results in changes to pain attention and memory.<sup>47</sup>

## Migraine prophylaxis

The evidence base for acupuncture in the prevention of migraine has led to its inclusion in several national guidelines.

- NICE in the UK includes acupuncture in its guidance for migraine prophylaxis in adults. It recommends up to ten sessions, over five to eight weeks, should be considered as an adjunct or alternative to pharmacological therapy where topiramate and propranolol are ineffective.<sup>48</sup>

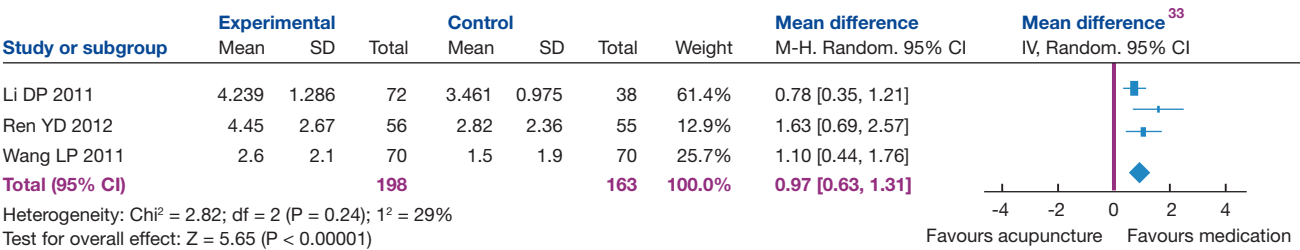
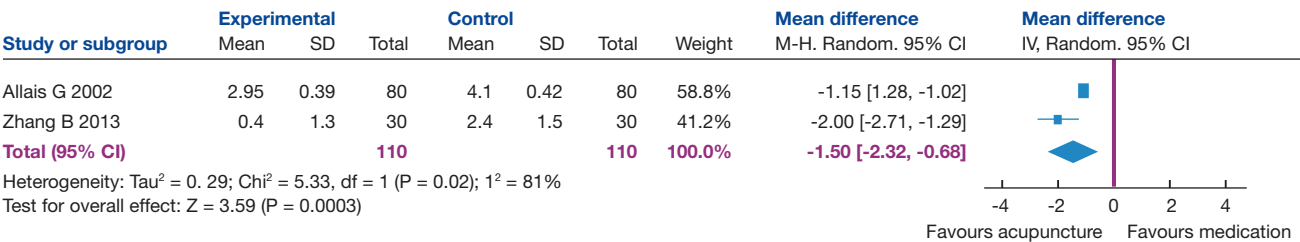
- The 2019 consensus of the Brazilian Headache Society recommends acupuncture (Class B) for the treatment of chronic migraine alongside valproate, gabapentin, and tizanidine.<sup>49</sup>
- Guidelines by the German Migraine and Headache Society and the German Society of Neurology recommend that acupuncture can be used for prevention of migraine in patients who refuse or do not tolerate prevention with drugs.<sup>50</sup>

Several systematic reviews have confirmed that acupuncture is better at preventing migraine than sham acupuncture, and is similar to medication.<sup>1,51-54</sup> A higher number of acupuncture treatments results in better outcomes.<sup>1</sup>

A systematic review of studies of acupuncture for the prevention of migraine without aura (14 trials; n= 1,155) showed that acupuncture was significantly better than medication in:<sup>54</sup>

- reducing the frequency of migraine (see figure below)
- reducing the number of days with migraine
- reducing pain levels (see figure below)
- achieving an effective response

## Acupuncture compared with medication reduces the frequency of migraine and the pain levels (measured by visual analogue scale)<sup>54</sup>



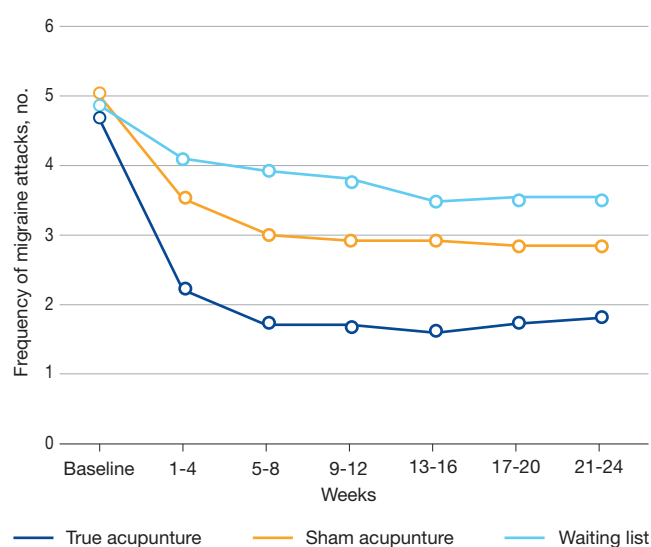
## Acupuncture is an evidence-based healthcare solution

Another systematic review of acupuncture (62 trials; n=4,947) found that it improved both pain control and QoL at 3 months compared with medication.<sup>55</sup>

A 2016 Cochrane Review (22 trials; n=4,985) found that acupuncture reduced migraine frequency significantly more than drug prophylaxis but that this was not sustained in the long term, and so concluded that 'acupuncture may be at least similarly effective as treatment with prophylactic drugs'.<sup>52</sup> Subsequently it has been shown that this conclusion can be strengthened: acupuncture is able to match the results of proven prophylactic drugs for migraine.<sup>5</sup>

There is also evidence that the benefits of acupuncture treatment can be sustained long after the end of treatment (n=249). The figure below shows that after four weeks of acupuncture treatment, the frequency of migraine attacks remained reduced during the 20-week follow-up period.<sup>56</sup>

**Frequency of migraine attacks throughout the study**



Functional MRI data in patients with migraine has pointed to possible mechanisms for acupuncture's effectiveness:

- reducing functional connectivity of the right frontoparietal network<sup>57</sup>
- increasing N-acetylaspartate/creatine in the bilateral thalamus<sup>58</sup>
- normalising homeostasis of the trigeminovascular nociceptive pathway<sup>59</sup>
- altering the pain matrix, lateral pain system, medial pain system, default mode network, and cognitive components of pain processing: in migraine without aura acupuncture normalises the functional connectivity within the default mode network to levels seen in healthy controls<sup>60,61</sup>

### Postoperative nausea and vomiting (PONV)

Acupuncture has been studied in the prevention of postoperative nausea and vomiting (PONV), which is common after anaesthesia and surgery.<sup>62,63</sup>

Several systematic reviews have assessed the benefits of the stimulation of acupuncture points pre-surgery, whether using a needle or acupressure delivered via a wristband.<sup>62,64</sup> As detailed in the figures below, one systematic review (30 trials; n=2,534) found that acupuncture or acupressure at one point (P 6):<sup>62</sup>

- significantly reduced the number of cases of early vomiting
- significantly reduced the number of cases of nausea

# Acupuncture is an evidence-based healthcare solution

## Postoperative vomiting up to 24 hours is reduced with acupuncture compared with no acupuncture<sup>62</sup>



## Postoperative nausea up to 24 hours is reduced with acupuncture compared with no acupuncture<sup>62</sup>



## Acupuncture is an evidence-based healthcare solution

A Cochrane review (59 trials, n=7,667) found acupuncture superior to sham in reducing nausea and vomiting and the need for rescue antiemetics.<sup>64</sup> It was similarly effective to commonly used drugs (metoclopramide, cyclizine, prochlorperazine, droperidol, ondansetron and dexamethasone). Furthermore, acupuncture in combination with antiemetic medication reduced the incidence of vomiting and need for rescue medication but not the incidence of nausea.<sup>64</sup>

Acupuncture and acupressure have been shown to reduce PONV in several types of surgery, including laparoscopic cholecystectomy, breast surgery, paediatric tonsillectomy and laparoscopic gynaecological surgery.<sup>65-76</sup>

### Laparoscopic gynaecological surgery

Studies have also shown that acupuncture or acupressure at P 6 is able to reduce PONV following laparoscopic gynaecological surgery compared with standard care, and:<sup>71-76</sup>

- decrease the severity of nausea, PONV scores, and antiemetic requirements<sup>75</sup>
- increase comfort levels<sup>74</sup>
- reduce the time from extubation to discharge<sup>73</sup>
- results in a shorter duration of surgery<sup>76</sup>

Electroacupuncture in combination with dexamethasone was as effective as tropisetron in combination with dexamethasone in preventing PONV and better than in those receiving dexamethasone alone.<sup>71</sup>

### Postoperative pain

Systematic reviews of acupuncture for postoperative pain management have shown that pain levels are significantly reduced on day one after surgery compared with control (see figure below).<sup>77,78</sup>

There is also high-level evidence that acupuncture significantly reduces the use of opioid analgesics to control pain postoperatively.<sup>77,78</sup>

### Meta-analysis for pain score on the first day after surgery<sup>77</sup>

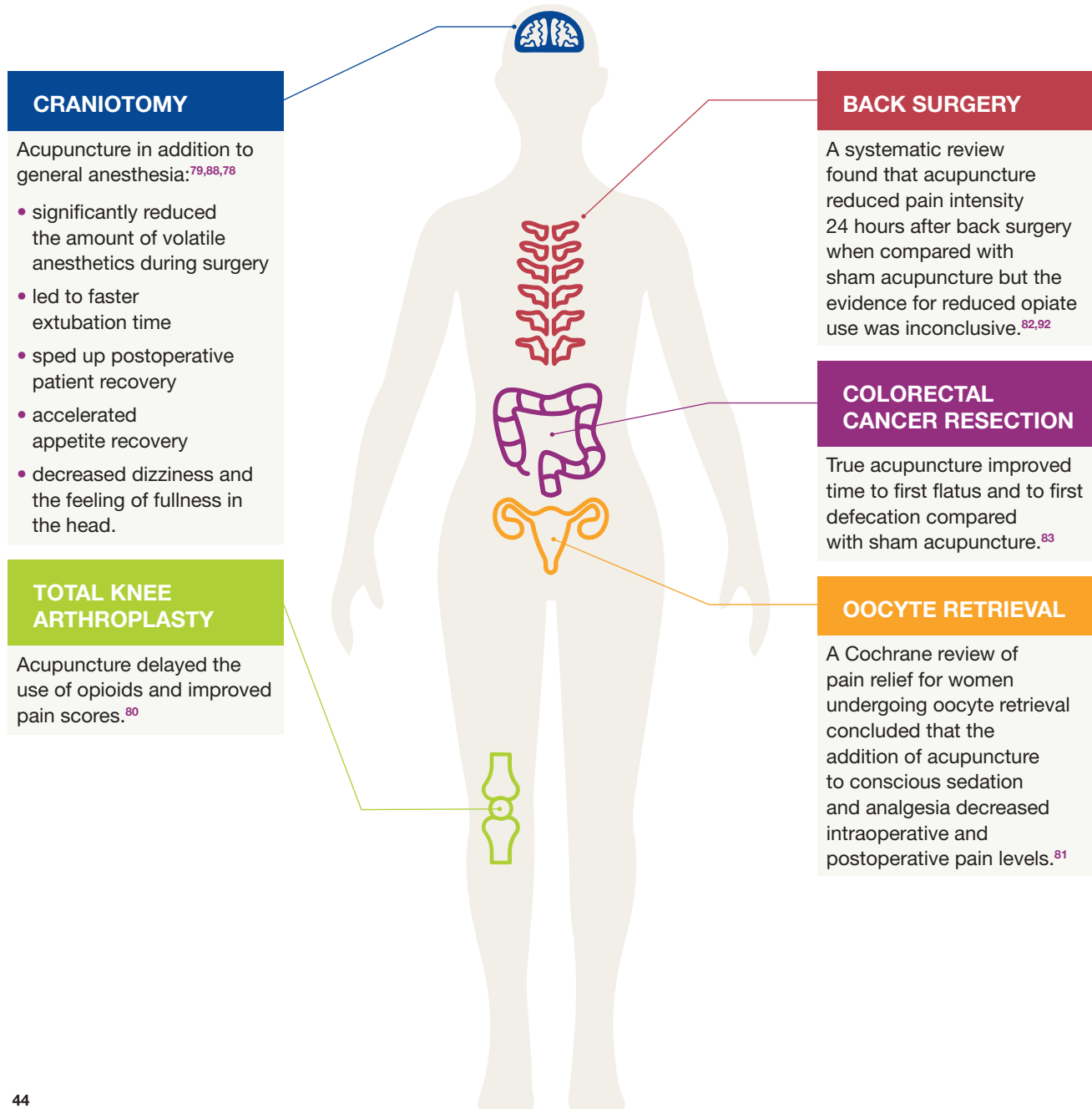
| Study name   | Pain Score         |               | Statistics for each study |              |              | Z-Value      | P-Value      | Difference in means and 95% CI | Relative weight |
|--|--------------------|---------------|---------------------------|--------------|--------------|--------------|--------------|--------------------------------|-----------------|
|  | Experimental group | Control group | Difference in means       | Lower limit  | Upper limit  |              |              |                                |                 |
| Langenbach (2012)                                      | 2.7 (1.5)          | 4.0 (1.0)     | -1.30                     | -2.18        | -0.42        | -2.91        | 0.004        |                                | 43.968          |
| Wang (2000)  | 2.2 (0.3)          | 5.9 (0.5)     | -3.75                     | -3.88        | -3.62        | -56.72       | 0.000        |                                | 56.032          |
| <b>Pooled effects (Acupuncture vs. control)</b>        |                    |               | <b>-2.67</b>              | <b>-3.92</b> | <b>-1.43</b> | <b>-4.21</b> | <b>0.000</b> |                                |                 |
| Coura (2011)   | 2.5 (1.1)          | 4.0 (2.0)     | -1.50                     | -2.80        | -0.20        | -2.27        | 0.023        |                                | 21.916          |
| Wong (2006)  | 3.9 (1.3)          | 3.9 (1.4)     | 0.00                      | -1.06        | 1.06         | 0.00         | 1.000        |                                | 25.116          |
| Lin (2002)   | 4.7 (2.4)          | 6.4 (2.1)     | -1.66                     | -2.77        | -0.55        | -2.92        | 0.003        |                                | 24.357          |
| Sim (2002)   | 4.3 (1.7)          | 4.5 (2.1)     | -0.20                     | -1.01        | 0.61         | -0.49        | 0.627        |                                | 28.611          |
| <b>Pooled effects (Electroacupuncture vs. control)</b> |                    |               | <b>-0.79</b>              | <b>-1.78</b> | <b>0.20</b>  | <b>-1.57</b> | <b>0.116</b> |                                |                 |
| Lan (2012)   | 2.8 (1.0)          | 3.1 (1.3)     | -0.30                     | -0.87        | 0.27         | -1.03        | 0.305        |                                | 22.492          |
| Yeh (2011)   | 2.1 (1.3)          | 3.0 (1.4)     | -0.90                     | -1.58        | -0.22        | -2.58        | 0.010        |                                | 21.512          |
| Chiu (1999)  | 1.9 (0.2)          | 3.2 (0.4)     | -1.30                     | -1.46        | -1.14        | -15.92       | 0.000        |                                | 24.978          |
| Chen (1998)  | 3.2 (2.5)          | 3.1 (2.5)     | -2.50                     | -4.00        | -1.00        | -3.26        | 0.001        |                                | 13.783          |
| Wang (1999)  | 4.5 (2.4)          | 4.8 (2.2)     | -0.30                     | -1.42        | 0.82         | -0.52        | 0.600        |                                | 17.233          |
| <b>Pooled effects (TEAS vs. control)</b>               |                    |               | <b>-0.98</b>              | <b>-1.81</b> | <b>-0.15</b> | <b>-2.33</b> | <b>0.020</b> |                                |                 |
| <b>Overall effects</b>                                 |                    |               | <b>-1.27</b>              | <b>-1.83</b> | <b>0.71</b>  | <b>-4.42</b> | <b>0.000</b> |                                |                 |

Heterogeneity test (Acupuncture vs. control):  $Q = 29.43$ ,  $df = 1$ ,  $P < 0.001$ , I-square = 96.60%  
Heterogeneity test (Electroacupuncture vs. control):  $Q = 7.46$ ,  $df = 3$ ,  $P < 0.059$ , I-square = 59.76%  
Heterogeneity test (TEAS vs. control):  $Q = 17.05$ ,  $df = 4$ ,  $P = 0.002$ , I-square = 76.54%  
Heterogeneity test for overall:  $Q = 728.41$ ,  $df = 10$ ,  $P < 0.001$ , I-square = 98.63%

## Acupuncture is an evidence-based healthcare solution

There is a significant body of evidence that acupuncture is effective in reducing pain and improving outcomes in several types of surgery: <sup>77,79-95</sup>

craniotomy • total knee arthroplasty • oocyte retrieval • back surgery • colorectal cancer resection • thoracic surgical lobectomy • tonsillectomy • laparoscopy • sinusotomy • haemorrhoidectomy • neck dissection • nephrectomy • percutaneous nephrolithotomy





## Acupuncture is an evidence-based healthcare solution

### Acupuncture in clinical guidelines

Only 18 per cent of published recommendations for primary care physicians (GPs) were based on consistent, high-quality, patient-oriented evidence.<sup>96</sup> Current clinical practical practice do not reflect the levels of evidence for acupuncture.<sup>97</sup>

A recent bibliometric analysis of clinical guidelines worldwide found:<sup>97</sup>

- 2,189 positive recommendations for the use of acupuncture
- 107 were related to pain indications, 703 were related to 97 non-pain indications

Recently, the extent to which acupuncture is recommended to help with the symptoms of cancer and its treatment was studied. Acupuncture was recommended for 61 cancer-related symptoms in over 350 publications by clinical practice guideline groups and other expert groups.<sup>98</sup>

Guidelines recommending acupuncture have been published for conditions where there is strong evidence.

|                     |  |
|---------------------|--|
| Allergic rhinitis   | American Academy of Otolaryngology Head and Neck Foundation: Clinical Guideline 2015 <sup>12</sup>   |
| Back pain           | American College of Physicians <sup>23</sup><br>Scottish Intercollegiate Guidelines Network 136 2019 <sup>99</sup><br>Global Spine Care Initiative: recommends acupuncture for chronic low back and neck pain without serious pathology <sup>100</sup><br>European guidelines for the management of chronic nonspecific low back pain <sup>101</sup> |
| CINV                | Society for Integrative Oncology: clinical practice guidelines on the use of integrative therapies during and following breast cancer treatment <sup>18</sup>  |
| Headache (tension)  | NICE: Management of headaches 2019 <sup>30</sup><br>NICE: Headaches in over 12s: diagnosis and management 2012 <sup>102</sup><br>British Association for the Study of Headache 2010 <sup>103</sup>   |
| Knee osteoarthritis | Scottish Intercollegiate Guidelines Network 136 2019 <sup>99</sup><br>American College of Rheumatology: 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip and knee (under certain circumstances) <sup>104</sup>  |
| Migraine            | NICE: Clinical Knowledge Summary 2019 (prophylaxis) <sup>48</sup><br>Guidelines by the German Migraine and Headache Society and the German Society of Neurology <sup>50</sup><br>2019 Consensus of the Brazilian Headache Society <sup>49</sup>  |
| PONV                | American Society of PeriAnesthesia Nurses 2006 <sup>105</sup>  |

## Acupuncture is an evidence-based healthcare solution

### America: ASH acupuncture network

American Specialty Health Incorporated (ASH) is a private healthcare provider in America that has created national and regional practitioner networks of about 6,000 acupuncturists. ASH ensures that all practitioners are suitably qualified, insured and work according to the evidence base for acupuncture.<sup>106</sup>

ASH acupuncturists have treated over 157,000 patients, with the majority referred for musculoskeletal pain. Outcomes monitoring and survey research has shown that:<sup>106</sup>

91%

of patients would probably or definitely recommend their health plan to others

99%

rated quality of care and service from their ASH network acupuncturist as good to excellent

93%

said their provider was successful in treating their primary condition

ASH operates a programme where patients who are being treated in a medical pain clinic are offered the option to seek acupuncture treatment for their pain. 85 per cent of patients with chronic pain who were referred by their physician to an ASH-managed acupuncture programme reported that their primary condition was successfully treated.<sup>106</sup>

### UK practice-based research

Improvements in patient-reported outcomes and reduced use of medication are observed when acupuncture is offered at a primary care level in the UK.<sup>107-110</sup>

Patients were offered six acupuncture treatments at a GP surgery over 18 months. Acupuncture treatment led to:<sup>107</sup>

- improved MYMOP scores, with positive changes to the patients' Symptom, Activity, Wellbeing and Profile scores
- all but one patient on prescribed medication reported having either stopped or substantially reduced their usage

'Having an acupuncture service at this GP surgery was a great success. Referred patients had a high degree of chronicity to their symptoms (56 per cent experienced symptoms for over 5 years). This represents a large group of patients that do not appear to be responding or improving with current NHS treatment and who are living with a reduced quality of life, often with high levels of pain which require frequent analgesia'<sup>107</sup>

Data from patients who completed a course of acupuncture treatment for long-term chronic pain conditions at the Gateway clinic in London were analysed. 86 per cent of the patients had suffered from symptoms for over 1 year (with 49 per cent over 5 years) and were poor responders to earlier treatments from physiotherapy, orthopaedic specialists, and/or medication.

Over a course of ten acupuncture treatment, outcomes were significantly improved particularly with regards to the 'main symptom'.<sup>110</sup>

'I would like to thank people here for helping me to walk again because before I started the acupuncture I was unable to stand or walk for more than ten minutes'.<sup>110</sup>

'Input to change my lifestyle, pain reduced, sleep better, can work as a graphic designer without restriction and stopped pain medication'.<sup>110</sup>

The Beating Back Pain Service (BBPS) was a primary care-based pilot service providing acupuncture, self-management and information to patients with chronic low back pain. Data from the service showed that there were significant improvements over time for:

- pain
- quality of life
- understanding of pain
- physical activity
- relaxation

A post-hoc analysis showed that improvements from baseline and post-treatment were maintained to three-month follow-up (except relaxation). A combination of acupuncture and self-management sessions were the most effective.<sup>111</sup>

## Acupuncture is an evidence-based healthcare solution

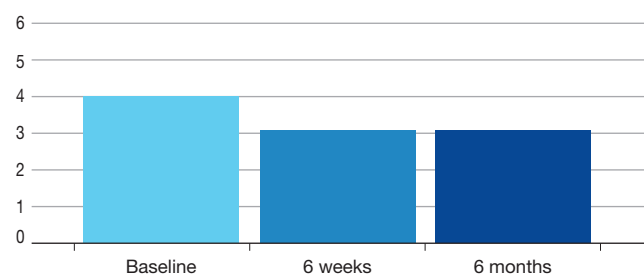
### Evidence from an acupuncture clinic integrated into the UK NHS

In the UK, the Gateway clinic was fully integrated into the NHS in 1992, and treats about 300 patients every week. GPs from Lambeth, Southwark and Lewisham can freely refer their patients with long-term chronic pain, migraine, cancer pain, fibromyalgia and HIV.<sup>110</sup>

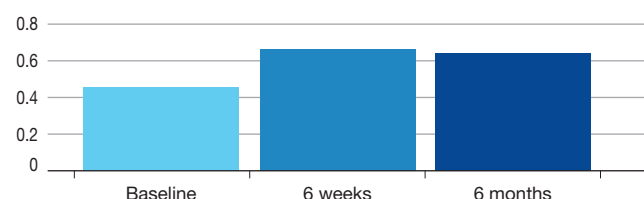
'We are lucky to work in an NHS trust that recognises this little jewel they have in the community, and the NHS should be proud too'. Dominique Joire: Clinical Head of Service

A descriptive outcome study of questionnaires to determine the effect of acupuncture on conditions that were present for at least six months showed improvements in QoL (see figure below), symptom scores and other measures of health status at both six weeks and six months after treatment (n=205).<sup>112</sup>

#### MYMOP profile scores



#### EuroQol 5D utility score



Questionnaire scores at baseline, after six treatments and after six months (Better health depicted by lower scores in MYMOP and higher score in EuroQol and W-BQ12).

### Northern Ireland: Get Well UK service

The Get Well UK service undertook a pilot project in Northern Ireland, commissioned by the Department of Health, Social Services and Public Safety, where patients were able to access a range of complementary therapies through their GP practice, including acupuncture, chiropractic, osteopathy, homeopathy, reflexology, aromatherapy and massage.<sup>108</sup>

A total of 713 patients were referred by their GP, in the main for musculoskeletal or mental health conditions. Patients were referred to an acupuncturist for musculoskeletal problems, depression, stress and anxiety.<sup>108</sup>

Patients reported many significant benefits from the service:<sup>108</sup>

- 80 per cent recorded an improvement in the severity of their main symptom
- 81 per cent of patients said that their general health had improved
- 84 per cent of patients directly linked the complementary therapy to an improvement in their overall wellbeing
- 55 per cent of those using painkillers prior to treatment reduced their usage
- almost a quarter of patients who used other health services prior to treatment used those services less often
- 64 per cent took less time off work

'Prior to getting the acupuncture I was on 44 tablets a day and it was a waste of time going near my GP... there was nothing else he could give me... which was true... now after six sessions of acupuncture I am down to seventeen tablets a day and I hope that continues... the only way I can see that continuing is to get a booster every two weeks or every four weeks. I have had ulcerated colitis for the last fifteen to twenty years which means that I have diarrhoea seven or eight times a day... after the second session of acupuncture I haven't had diarrhoea since... absolutely fantastic... the practitioner explained everything to me... I was involved in a car accident and had my spleen removed... but the practitioner was working on the spleen, the nerve ends of the spleen and after the second treatment the symptoms had gone... unbelievable. People are coming up to me and asking what have you been doing? What are you taking? What is making you so lively?'<sup>108</sup>

GPs also reported positive outcomes:<sup>108</sup>

- health improvement was noted in 65 per cent of patients
- 65 per cent of patient cases had seen the GPs less often
- half of GPs reported prescribing less medication for chronic or acute patients
- half of GPs reported that the service reduced their workload

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# Acupuncture is an evidence-based healthcare solution

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# Acupuncture is cost-effective for many common health conditions

Economic evaluations are important in helping patients, healthcare workers and payors to make rational decisions about purchasing healthcare resources and treatments.<sup>1</sup>

One common measure of the state of health of a person in which the benefits, in terms of length of life, are adjusted to reflect the quality of life is called a quality-adjusted life year (QALY). One QALY is equal to 1 year of life in perfect health, and it can be used to understand whether an intervention is value for money. Studies that calculate QALYs are called cost-utility analyses.<sup>2,3</sup>

Cost-effectiveness analysis assesses the cost of achieving a benefit by different means. To help us understand and compare the cost-effectiveness of healthcare interventions,

the incremental cost effectiveness ratio (ICER) is calculated. This is the difference in the change in mean costs in the population of interest divided by the difference in the change in mean outcomes.<sup>2,3</sup>

Good quality analyses have demonstrated that acupuncture is cost effective for the treatment of:<sup>4-10</sup>

- allergic rhinitis
- low back pain
- depression
- dysmenorrhoea
- headache
- allergic bronchial asthma
- chronic pain
- osteoarthritis
- irritable bowel syndrome

| Study                                | Perspective* | Mean difference QALY | ICER**  | Probability acupuncture is cost effective (%) |
|--------------------------------------|--------------|----------------------|---------|---|
| <b>Low back pain</b>                 |              |                      |         |   |
| 3 months                             |              |                      |         |   |
| Witt 2006, Germany <sup>11</sup>     | Societal     | NA                   | €10,526 | About 100%                                    |
| 24 months                            |              |                      |         |   |
| Ratcliffe 2006, UK <sup>12</sup>     | NHS          | 0.027                | £4,241  | Over 90%                                      |
| <b>Headache</b>                      |              |                      |         |   |
| 3 months                             |              |                      |         |   |
| Witt 2008, Germany <sup>13</sup>     | Societal     | 0.030                | €11,657 | Women 100%, men 99%                           |
| Wonderling 2004, UK <sup>14</sup>    | NHS          | 0.021                | £9,951  | 92%   |
| <b>Osteoarthritis</b>                |              |                      |         |   |
| 3 months                             |              |                      |         |   |
| Reinhold 2008, Germany <sup>15</sup> | Societal     | 0.024                | €17,845 | Women 95%, men 45%                            |
| 12 months                            |              |                      |         |   |
| Whitehurst 2011, UK <sup>16</sup>    | NHS          | 0.022                | £3,855  | 77%   |
| Woods 2017, UK <sup>17</sup>         | NHS          | 0.017                | £13,502 | 47%   |
| <b>Chronic neck pain</b>             |              |                      |         |   |
| 3 months                             |              |                      |         |   |
| Witt 2006, Germany <sup>18</sup>     | Societal     | 0.024                | €10,464 | 100%  |
| 12 months                            |              |                      |         |   |
| Essex 2017, UK <sup>19</sup>         | NHS          | 0.032                | £18,767 | 71%   |
| <b>Dysmenorrhea</b>                  |              |                      |         |   |
| 3 months                             |              |                      |         |   |
| Witt 2008, Germany <sup>20</sup>     | Societal     | NA                   | €3,011  | Highly cost effective                         |

NA, not available

+ a societal perspective includes the costs of, for example, work days lost to sickness, whereas a NHS perspective includes only direct NHS costs

++ ICERs below £20,000 are deemed cost-effective by NICE [www.nice.org.uk/process/pmg6/chapter/assessing-cost-effectiveness]

## Acupuncture is cost-effective for many common health conditions

| Study                                | Perspective <sup>+</sup> | Mean difference QALY | ICER <sup>++</sup> | Probability acupuncture is cost effective (%) |
|--------------------------------------|--------------------------|----------------------|--------------------|---|
| <b>Allergic rhinitis</b>             |                          |                      |                    |   |
| 3 months                             |                          |                      |                    |   |
| Witt 2009, Germany <sup>21</sup>     | Societal                 | 0.020                | €22,798            | 100%  |
| 8 weeks                              |                          |                      |                    |   |
| Reinhold 2013, Germany <sup>22</sup> | Societal                 | 0.00306              | €118,889           | 1%  |
| 16 weeks (extrapolated)              | Societal                 | 0.01035              | €31,241            | 82%   |
| <b>Depression</b>                    |                          |                      |                    |   |
| 12 months                            |                          |                      |                    |   |
| Spackman 2014, UK <sup>23</sup>      | NHS                      | NA                   | £4,560             | 62%   |
| <b>Allergic bronchial asthma</b>     |                          |                      |                    |   |
| Reinhold 2014, Germany <sup>10</sup> | Societal                 | 0.0162               | €23,231            | 88.5%   |
| <b>Irritable bowel syndrome</b>      |                          |                      |                    |   |
| All IBS patients,                    |                          |                      |                    |   |
| 12 months                            | NHS                      | 0.0035               | £62,500            | 40%   |
| Severe IBS patients,                 |                          |                      |                    |   |
| 12 months                            | NHS                      | 0.031                | £6,377             | >60%  |
| Stamuli 2012, UK <sup>9</sup>        |                          |                      |                    |   |

NA, not available

+ a societal perspective includes the costs of, for example, work days lost to sickness, whereas a NHS perspective includes only direct NHS costs

++ ICERs below £20,000 are deemed cost-effective by NICE [[www.nice.org.uk/process/pmg6/chapter/assessing-cost-effectiveness](http://www.nice.org.uk/process/pmg6/chapter/assessing-cost-effectiveness)]

Seventeen full economic evaluations of acupuncture for any medical condition up to March 2011 found that acupuncture, with or without usual care, was cost effective compared with waiting list control or usual care alone.<sup>7</sup>

Looking at chronic pain conditions specifically, a review of seven cost-utility analyses and one cost-effectiveness analysis revealed that acupuncture was clinically effective and any increased costs was due to the provision of acupuncture itself. Acupuncture was delivered by acupuncturists in two studies and by a physiotherapist or physician in the remainder. The cost per QALY gained ranged from £2,527 to £14,976, which is within UK and international cost-effectiveness thresholds.<sup>8</sup>

Many economic evaluations only consider the treatment effect of acupuncture at 3 months,<sup>15,18,20</sup> but a large individual patient dataset from 29 high quality randomised trials of acupuncture for chronic pain (musculoskeletal, osteoarthritis of the knee and headache/migraine) (n=17,922) showed that the positive effects persist to 12 months.<sup>24</sup> Increasing the time horizon for the acupuncture benefit would increase the cost-effectiveness estimates.

Data from the Center for Health Information and Analysis, USA, found that full insurance coverage for acupuncture would save \$35,480, \$32,000, \$9,000, and \$4,246 per patient for migraine, angina pectoris, severe osteoarthritis, and carpal tunnel syndrome, respectively.<sup>4,25</sup>



## Acupuncture is cost-effective for many common health conditions

### Migraine and headache

In the UK, a RCT to assess the benefits of acupuncture in primary care patients with chronic headache disorders (n=401), predominantly migraine, found that headache scores at 12 months were significantly improved compared with usual care. Patients receiving up to 12 acupuncture treatments over 3 months, delivered by physiotherapists:

- used 15 per cent less medication
- made 25 per cent fewer visits to GPs
- took 15 per cent fewer days off sick<sup>26</sup>

The cost of providing adjuvant acupuncture (n=42) compared with a waiting list control group (n=44) in patients with migraine was higher at 3 months, with the increased costs relating to travel expenses and acupuncture provision. At 12 months, the costs in the waiting list group were twice that of the acupuncture group. The financial benefits of acupuncture were thought to be related to:<sup>27</sup>

- reduced loss of productivity and income
- decreased medication used
- fewer adverse drug reactions
- fewer hospital A&E visits

### Depression and anxiety

The Atlas Men's Well-being Programme in London encouraged GPs to refer male patients who were stressed or distressed for acupuncture in combination with counselling (n=82). Acupuncture was provided by experienced members of the British Acupuncture Council. A cost analysis revealed that acupuncture reduced costs associated with lost employment and health and social care use. Indeed, when the costs of the acupuncture were considered, there was an average saving of almost £700 per patient.<sup>28</sup>

### Assisted reproductive techniques

The effect of electroacupuncture for pain relief and on postoperative wellbeing of women undergoing IVF was compared with conventional analgesia (CA) with opiate medication. In relation to the oocyte aspiration procedure, there were no significant differences in cost overall or costs associated with time between the groups, although drug costs were significantly lower for the acupuncture group than the CA group.<sup>29</sup>

In another study, the time to discharge and total costs were significantly lower in patients receiving acupuncture in combination with a paracervical block compared with those receiving conventional medical analgesia in combination with a paracervical block.<sup>30</sup>

### Obstetrics

The cost-effectiveness of acupuncture for pelvic girdle and low back pain (PGLBP) during pregnancy (n=96) compared with standard care (n=103) was assessed. Acupuncture significantly reduced pain and disability compared with standard care. The average total costs with the control group were higher than with the acupuncture group due to higher indirect costs of absenteeism and presenteeism.<sup>31</sup>

Data from the Andalusian Public Health System was used to assess the cost-effectiveness of moxibustion to correct non-vertex presentation. Moxibustion reduced the need for caesarean in nine per cent of deliveries compared with conventional treatment, with an average cost saving of €107.11 per delivery. The study concluded that moxibustion is a good option in about 88 per cent of cases of non-vertex presentation.<sup>32</sup>

### Low back pain

The majority of studies have demonstrated that acupuncture is cost effective for the treatment of low back pain, both alone and in combination with usual care.<sup>33</sup> This cost-effectiveness persists over a two-year period.<sup>34</sup> Acupuncture has been shown to be more cost effective than NSAIDs in the treatment of chronic low back pain.<sup>35</sup>

Data from US state-registered acupuncture clinics and a physician claims administrative database were analysed. A total of 201 cases of low back pain treated with acupuncture and 804 controls were included. The number of physician visits decreased by 49 per cent in the acupuncture group and 2 per cent in the control group, compared with the previous year.

## Acupuncture is cost-effective for many common health conditions

Physician services costs were correspondingly reduced by 37 per cent in the acupuncture group and 1 per cent in the control group. The cost reductions were larger for those receiving more than ten acupuncture treatments during the year.<sup>36</sup>

People with low back pain who were undertaking manual work in a Japanese factory were offered acupuncture weekly for eight weeks (n=72). Compared with similar employees in a control branch factory, those receiving acupuncture reported less pain, improved mood and a reduced number of hospital visits. The standardised medical expenses for low back pain were significantly lower after acupuncture (from 100.1 to 7.3 with acupuncture; and from 140.2 to 140.1 in the control group).<sup>37</sup>

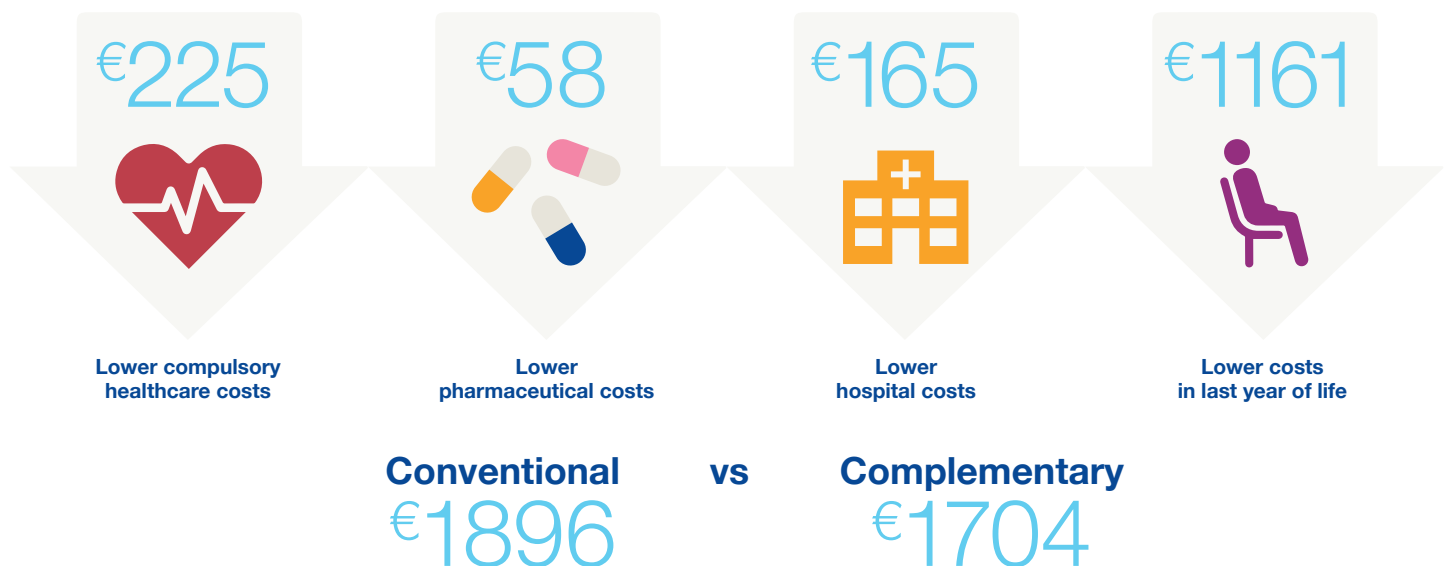
### Osteoarthritis

A nurse-led service in the UK offered acupuncture to patients with knee osteoarthritis who were candidates for total knee replacement surgery. Of the 90 patients receiving acupuncture, 41 continued acupuncture without surgery at 1 year and 31 at 2 years. A significant improvement in MYMOP scores was evident at one month for pain, stiffness and function which was sustained up to two years. Patients contributed £20 to the costs of acupuncture treatment and it was estimated that the cost to the primary care trust for the service was £16,440 in the first year and £30,000 for the full study period. Using realistic assumptions about deferred surgery, the cost consequences of the acupuncture service for the local commissioning group were estimated as a saving of £100,000 a year.<sup>38</sup>

### The effects of integrating complementary and alternative medicine into general practice

The healthcare costs of 1,521,773 patients from conservative general practices in the Netherlands were compared with those of 18,862 patients from complementary medicine general practices (incorporating anthroposophic medicine, acupuncture or homeopathy) over a period of six years. Where the GP has received training in complementary and alternative medicine, the annual total compulsory and supplementary healthcare costs are ten per cent lower than those with a conventional GP. The reduction is mainly due to lower hospital and pharmaceutical costs.<sup>39</sup>

#### Reduced annual healthcare costs, per person, for patients of GPs in the Netherlands trained in complementary medicine<sup>39</sup>



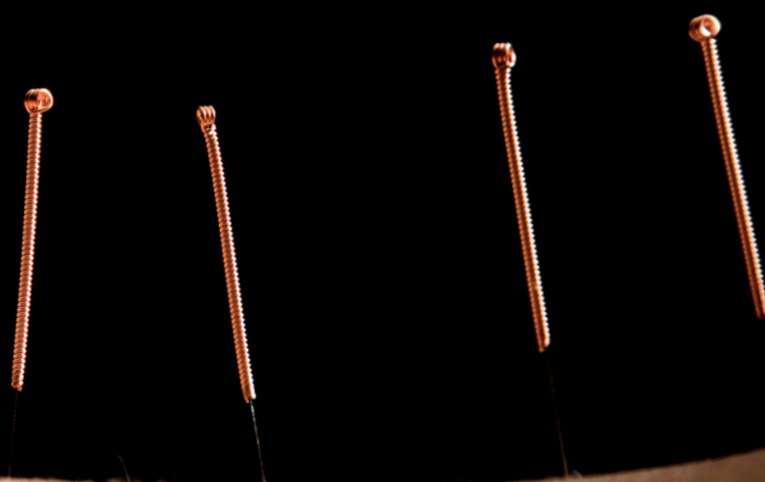
Overall healthcare costs were decreased by 10% with the introduction of CAM.

## Acupuncture is cost-effective for many common health conditions

### Group acupuncture

Acupuncture can be delivered on a one-to-one basis or in a group setting depending on the patient's needs and financial circumstances. The cost of delivering group acupuncture is lower than sequential individual treatments and so may be more attractive to the NHS.

The sociodemographic characteristics, reasons for using acupuncture, and frequency of acupuncture treatment were compared between patients in two group acupuncture clinics in Portland, Oregon and national acupuncture users. Group acupuncture allowed for more frequent treatment in patients with limited income.<sup>40</sup>



### The Gateway Clinic, London, UK

The Gateway Clinic is a specialist acupuncture clinic, offering treatment for patients with chronic long term conditions in Lambeth, Southwark and Lewisham. The clinic has been fully integrated in the NHS since 1992, treating about 300 patients per week. GPs from Lambeth, Southwark and Lewisham can freely refer their patients with long-term chronic pain, migraine, cancer pain, fibromyalgia and also HIV support. The clinic is run as a multibed with seven couches and up to three practitioners. They offer patients a course of 6-12 weekly acupuncture treatments as well as dietary and lifestyle advice, with daily drop-in of auricular acupuncture, qigong, Pilates classes and mindfulness meditation sessions.

Dominique Joire, clinical head of service at the Gateway Clinic says, 'We also take time to simply listen to them. Patients are often sent by their GPs with no idea of what acupuncture is; so we have to be pragmatic with them,

simple facts, no yin and yang jargon, treat them swiftly, get some results fast and let the acupuncture do the magic! Also our clinicians have been working here for decades and we are all still enjoying so much not only the team work that is unique, but also the chance to treat patients that we would never see in private practice.

They come from all walks of life, often with the most complex medical history, and we just have to make it happen, use our skills and our intuition. The beautiful transformation of patients in their recovery reminds us all why we chose this profession and it is a daily gift.'

Dominique Joire credits the longevity of the integration of the clinic with the NHS to the feedback mechanism of patients returning to their GP with positive experiences over so many years, and also to the many works and outcome reports (MYMOP questionnaire) and studies that are continuously provided to the GPs and Guy's and St Thomas' multidisciplinary teams.

# Acupuncture is cost-effective for many common health conditions

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# Appendix

Adverse events of acupuncture reported in systematic reviews and randomised controlled trials for different conditions.

| Study   | Type | No. of trials | No. of patients | Serious AEs | All AEs | AEs   | Comments   |
|---|------|---------------|-----------------|-------------|---------|---|--|
| <b>Stroke</b>   |      |               |                 |             |         |   |  |
| <b>Cerebral infarction</b>                              |      |               |                 |             |         |   |  |
| Li 2014   | MA   | 25            | 2,224           | 0           | 17      | Transient fainting, pain at the insertion site, dizziness and superficial haematoma     | Mild AEs only  |
| Zhang 2005  | CR   | 14            | 1,208           | 6           | 386     | Dizziness, pain and infection at the needle site, haematoma                             | Serious AEs rare   |
| Yang 2016   | CR   | 31            | 2,257           | 0           | NR      | Bleeding, haematoma, pain at the acupoint, and itchiness                                | Mild AEs only  |
| Liu 2015  | SR   | 18            | 1,411           | 0           | NR      | Needle pain, fainting, minor bleeding, or infection                                     | Well tolerated   |
| <b>Post-stroke dysphagia</b>                            |      |               |                 |             |         |   |  |
| Li 2018   | MA   | 29            | 2,190           | 0           | NR      | NR  | Five studies reported no AEs with acupuncture                      |
| <b>Post-stroke depression</b>                           |      |               |                 |             |         |   |  |
| Zhang 2014  | MA   | 17            | 1,132           | 0           | NR      | All mild; pain  | Fewer AEs than with medication such as fluoxetine or amitriptyline |
| <b>Pain management</b>                                  |      |               |                 |             |         |   |  |
| <b>Neck pain</b>  |      |               |                 |             |         |   |  |
| Seo 2017  | SR   | 16            | 1,432           | 0           | 16      | Temporary aggravation of symptoms, dizziness and tiredness                              | Mild AEs only  |
| <b>Shoulder pain</b>                                    |      |               |                 |             |         |   |  |
| Green 2005  | CR   | 9             | NR              | 0           | NR      | Fainting, headache, dizziness, swelling or leg weakness                                 | All AEs minor  |
| <b>Fibromyalgia</b>                                     |      |               |                 |             |         |   |  |
| Zhang 2019  | SR   | 12            | 824             | 0           | NR      | Bruising, soreness, nausea, discomfort of needle insertion, and aggravation of symptoms | Mild AEs only  |
| <b>Chronic prostatitis/chronic pelvic pain syndrome</b> |      |               |                 |             |         |   |  |
| Liu 2016  | SR   | 10            | 704             | 0           | 17      | NR  | No difference in AEs between acupuncture and medication            |

| Study   | Type | No. of trials | No. of patients | Serious AEs | All AEs | AEs  | Comments                                |
|---|------|---------------|-----------------|-------------|---------|--|---|
| Pain management                                     |      |               |                 |             |         |  |   |
| Sciatica<br>Qin 2015                                | SR   | 11            | 962             | 0           | 5       | Hypodermal bleeding  | Fewer AEs than with medication          |
| Gouty arthritis<br>Lu 2016                          | SR   | 28            | 2,237           | NR          | 6       | Gastrointestinal tract reaction, central nervous system reaction, leukopenia, skin rash, and fainting  | Fewer AEs than with medication          |
| Tension-type headaches<br>Davis 2008                | SR   | 5             | 893             | 0           | 28      | Bruising, headache exacerbation, and dizziness   | Mild AEs only                           |
| Linde 2016  | CR   | 12            | 2,349           | NR          | NR      |  | 1/420 dropped out due to AE             |
| Respiratory   |      |               |                 |             |         |  |   |
| Chronic obstructive pulmonary syndrome<br>Wang 2018 | SR   | 19            | 1,237           | 0           |         | Fatigue, subcutaneous haemorrhage, dizziness, and needle site pain   | Mild AEs only                           |
| Allergic diseases respiratory system<br>Liang 2017  | SR   | 4             | 261             | 0           | NR      | Needling pain, papules, pruritus, subcutaneous bleeding, dizziness, numbness, and headache   | No serious AEs                          |
| Feng 2015   | SR   | 13            | 2,365           | 0           | NR      |  | Mild AEs only                           |
| Neurology   |      |               |                 |             |         |  |   |
| Alzheimer's disease<br>Zhou 2015                    | MA   | 10            | 3,146           | 0           | 7       | NR   | Mild AEs only                           |
| Mild cognitive impairment<br>Deng 2016              | MA   | 5             | 568             | NR          | NR      | Redness at the needle sites and fainting during treatment  | Mild AEs only                           |
| Parkinson's Disease<br>Zhang 2015                   | MA   | 27            | 2,314           | NR          | 75      | NR   | May reduce AEs from adjuvant medication |
| Noh 2017  | SR   | 42            | 2,625           | 0           | 43      | Nausea, vomiting, constipation, and anorexia, hypotension, dizziness, acupuncture syncope, palpitations, dry mouth, dry eye, blurred vision, and decreased reactions | Mild AEs only                           |
| Cervical ischaemia with vertigo<br>Wen 2016         | RCT  |               | 136             | 0           | 5       | Needling pain, slight haematoma and transient chest tightness  | Mild AEs only                           |

| Study  | Type | No. of trials | No. of patients | Serious AEs | All AEs | AEs  | Comments   |
|--|------|---------------|-----------------|-------------|---------|--|--|
| <b>Cardiovascular</b>                            |      |               |                 |             |         |  |  |
| <b>Stable angina</b><br>Zhang 2015               | MA   | 8             | 372             | 0           | 0       | NR   | No AEs reported                                  |
| <b>Atrial fibrillation</b><br>Fei 2019           | SR   | 8             | 633             | 0           | 6       | NR   | Fewer AEs than with control                      |
| <b>Hypertension</b><br>Zhao 2019                 | SR   | 15            | 1,803           | 0           | 14      | Spot-bleeding, pain, headache, and syncope   | Mild AEs only                                    |
| Zhang 2018                                       | CR   | 22            | 1,744           | 2           | NR      | Headache, pain, or spot-bleeding syncope   | SAEs were hypertensive urgency                   |
| <b>Gastroenterology</b>                          |      |               |                 |             |         |  |  |
| <b>Functional dyspepsia</b><br>Lan 2014          | CR   | 7             | 542             | NR          | NR      | NR   | Fewer AEs than with the drug cisapride           |
| <b>Functional constipation</b><br>Zhang 2013     | SR   | 15            | 1,256           | 0           | 0       | Eye discomfort, irregular menstruation, common cold, and joint pain  | No AEs reported                                  |
| Zheng 2018                                       | RCT  |               | 284             | 0           | 18      | Pricking, mild fatigue, or subcutaneous haemorrhage  |  |
| Wu 2014  | RCT  |               | 475             | 0           | NR      |  |  |
| <b>Irritable bowel disease</b><br>Manheimer 2012 | CR   | 17            | 1,806           | 0           | 1       | Syncope  | One mild AE                                      |
| <b>Gynecology</b>                                |      |               |                 |             |         |  |  |
| <b>Primary dysmenorrhea</b><br>Smith 2011        | SR   | 10            | 944             | 0           |         | Regional pain or discomfort, haematoma, and dizziness  | AEs may be fewer than with usual care            |
| <b>Polycystic ovary syndrome</b><br>Lim 2016     | CR   | 5             | 413             | NR          | NR      | Skin erythema, dizziness and nausea.   | All AEs mild;                                    |
| Jo 2017  | CR   | 27            | 2,093           | 0           | 0       | Mild bleeding and pain at the site of needling, fatigue, dizziness, and short-term nausea  | Fewer AEs than with medication                   |
| <b>Embryo transfer for IVF</b><br>Smith 2019     | SR   | 20            | 5,130           | 0           | 467     | Nausea, dizziness, tiredness, drowsiness, headache, chest pain, pain/itching at needle site, feeling relaxed, calm and energised | 127 reported feeling relaxed, calm and energised |
| <b>Urology</b>                                   |      |               |                 |             |         |  |  |
| <b>Stress urinary incontinence</b><br>Wang 2018  | RCT  |               | 504             | 0           | 6       | Sharp pain, bruising, and fatigue  | All AEs were mild                                |
| <b>Overactive bladder</b><br>Zhao 2018           | SR   | 10            | 794             | 0           | 13      | Minor pain when needling and transient subcutaneous bruising   | All AEs were mild                                |

| Study                                      | Type | No. of trials | No. of patients | Serious AEs | All AEs | AEs   | Comments   |
|--|------|---------------|-----------------|-------------|---------|---|--|
| Cancer care                                |      |               |                 |             |         |   |  |
| Palliative cancer care                     |      |               |                 |             |         |   |  |
| Wu 2015                                    | SR   | 23            | 17,392          | 0           | NR      | Bleeding at the acupuncture site, skin irritation, discomfort, transient rash, electrical shock sensation and tingling                                | All AEs were mild  |
| Hot flushes in breast cancer               |      |               |                 |             |         |   |  |
| Wang 2018                                  | SR   | 18            | 735             | 0           | NR      | All AEs were mild   | Fewer AEs than with medication or hormone therapy                  |
| Lesi 2016                                  | RCT  |               | 190             | 0           | 12      | Muscle pain, headache, and menstrual bleeding   |  |
| Pain management in cancer                  |      |               |                 |             |         |   |  |
| Hu 2016                                    | SR   | 20            | 1,639           | 0           | NR      | Subcutaneous, transient bruising, and fainting during acupuncture   |  |
| Chemotherapy-induced peripheral neuropathy |      |               |                 |             |         |   |  |
| Li 2019                                    | SR   | 3             | 203             | 0           | 1       | NR  | All AEs were mild  |
| Mental health                              |      |               |                 |             |         |   |  |
| PTSD                                       |      |               |                 |             |         |   |  |
| Grant 2018                                 | SR   | 7             | 709             | 0           | NR      | Pain, superficial bleeding, and haematoma at needle insertion sites   | All AEs mild   |
| Substance misuse disorder                  |      |               |                 |             |         |   |  |
| Grant 2016                                 | SR   | 41            | 5,227           | 0           | 12      | Local side effects, convulsions, delirium tremens, slight bleeding at the site of acupuncture   | Some AEs thought to be due to the detox process or pharmacotherapy |
| Insomnia                                   |      |               |                 |             |         |   |  |
| Cao 2019                                   | SR   | 73            | 5,533           | 0           | 32      | Fainting, bleeding, dizziness, and skin flushing  | Fewer AEs than medication  |
| Cheuk 2012                                 | CR   | 33            | 2,293           | NR          | NR      | Pain at needle site   | Minor AEs were mild  |
| Sun 2016                                   | SR   | 22            | 1,971           | 0           | 24      | Headache, fatigue, constipation, and diarrhoea  | Fewer AEs than with medication                                     |
| Postoperative nausea and vomiting          |      |               |                 |             |         |   |  |
| Lee 2004                                   | CR   | 26            | 3,347           | 0           | NR      | Mild skin irritation, pain at the site of needling or irritation at the site of an acupressure band, feeling tired and sleepy, headache and dizziness | All AEs minor  |
| Acne vulgaris                              |      |               |                 |             |         |   |  |
| Mansu 2018                                 | SR   | 12            | 975             | 0           | 127     | Painful sensation, ecchymosis, flushing, itchy sensation  | More AEs reported in the control group vs acupuncture group        |

\* SR, systematic review; MA, meta-analysis; CR, Cochrane review; RCT, randomised controlled trial;

AE, adverse events; NR, not reported







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