

# **ACUPUNCTURE.**

## **Summary of Published Systematic Reviews**

**By**

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## **1. SUMMARY.**

### **Medical Evidence - Conclusions:**

- The quality of primary research publications on acupuncture is generally poor.
- There are many published good quality systematic reviews (Level I evidence) on the effectiveness of acupuncture in the treatment of various conditions.
- There is strong evidence for its effectiveness in treating dental pain, temporomandibular joint pain and post-operative as well as pregnancy related nausea and vomiting.
- The evidence for acupuncture effectiveness in treating a myriad of other disorders is lacking.
- Acupuncture is relatively safe when performed by trained individuals.

### **Corporate/Other - Conclusions:**

- As there is no specific fee code or identifier assigned for acupuncture services, it is difficult to estimate its financial impact on the WCB.
- 1-2% of the Canadian population will see an acupuncturist in any given year.
- Acupuncture that is provided to many workers is done within the context of an office visit to a registered practitioner.
- Acupuncture is relatively safe, has many cultural aspects to its use and has been historically accepted by many segments of society.

### **Option accepted by EBPG Steering Committee:**

1. Accept acupuncture (as a stand alone treatment) as a WCB responsibility in only WCB accepted cases of dental pain, temporomandibular joint pain and nausea.

## 2. BACKGROUND.

Two thirds of Canadians used some form of complementary or alternative medicine in 2000. Vitamin use accounted for the majority of this 'alternative' use<sup>1</sup>. Sixteen percent of Canadians saw alternative health care providers in 1998 – 1999. Of those people, 16% (1–2% of the total population) saw an acupuncturist.

Acupuncture refers to the insertion of dry needles at specially chosen sites for the treatment or prevention of symptoms and conditions<sup>2</sup>. In Chinese, acupuncture is called 'zhenjiu' which refers to both acupuncture and moxibustion. The latter is the use of a herb *Artemisia vilgaris* (mugwort) which is burned over the acupuncture site for purposes of warming. One Western agency, the Washington State Department of Labor and Industries has defined acupuncture as a health care service based on a traditional Oriental system of medical theory utilizing Oriental diagnosis and treatment to promote health and treat organic or functional disorders by treating specific acupuncture points or meridians<sup>2</sup>.

Acupuncture is performed with solid needles ranging in length from 1 – 10 cm. These needles can be made of gold, silver, copper, stainless steel or a combination of metals. In acupuncture, needles are inserted under the skin, in various acupuncture points, up to 8 cm deep<sup>3</sup>. Today, besides needling, acupuncture is also performed by applying electrical current to the inserted needles (electroacupuncture), by focusing a laser beam in the acupuncture points (laser acupuncture), by applying a metal staple to an acupuncture point where it remains for a prolonged period of time (staple puncture), by applying vacuum force to acupuncture sites (cupping), by scarification (counter-irritation) or, the least invasive of all, by applying finger pressure (acupressure).

In general, the scientific community accepts that acupuncture produces physiological changes in the human body. Various theories have been postulated regarding how acupuncture works<sup>3</sup>. To this date, two theories are more accepted than others: one theory relates to the production of endorphins and enkephalins, and the other theory is based on the gate theory of pain physiology.

## **A. Acupuncture at the WCB of BC.**

Chapter 10, Section 78.14 (Acupuncture), Rehabilitation Services & Claims Manual (Appendix 1) states that the WCB does not generally accept responsibility for acupuncture. However, acupuncture is accepted as a part of treatment for dealing with some conditions. Section 78.14 also states that the expected number of treatments, the cost and the expected benefit should accompany any request for acupuncture. Further, Health Care Services Benefit Guideline (Appendix 2) states that "acupuncture is reasonable for patients with preferences for this modality and pre-approval is required". The Guideline also limits up to 5 acupuncture treatments will be paid by the WCB over a 2 week period.

Until now (October 2003), there is no specific identifier (fee item code) assigned for acupuncture services paid by the WCB. At the time being, the best and most practical way of identifying acupuncture services is by identifying payment toward certain health care providers that includes acupuncture as part of their company name or providers that are known to be acupuncturists. Based on these criteria, 18 health care providers were identified as registered acupuncturists with the WCB (from the 'payee' database).

Surprisingly, these 18 payees have never billed the WCB for acupuncture prior to 2001. Data extraction done on both billing systems available at the WCB (i.e. the online system has data back to June 1994 and teleplan which started in 1996) revealed that 68 and 218 acupuncture services were paid by the WCB in 2001 and 2002 (up to November), respectively. Each acupuncture session cost \$ 28.12.

During the period of 2001 - 2002, 286 acupuncture treatments were given to 38 claimants. 16 (42.1%) of these claimants were females and 22 (57.9%) were males. The mean age ( $\pm$  SD) of claimants who sought acupuncture was  $42 \pm 11$  years. Six (15%) of these claims were for

Health Care Only, 29 (76.3%) were for Short term Disability and 3 (7.9%) were on Long term Disability.

The majority of acupuncture services were provided in the Courtenay Area Office region (6 claimants, 15.8%), Surrey Area Office region (7 claimants, 18.4%) and Richmond Area Office region (8 claimants, 21.1%).

63.2% (24) claimants received  $\leq 5$  acupuncture during the course of their treatments. 18.4% (7 claimants) received 6-10 treatments and another 18.4% (7 claimants) received  $> 10$  treatments. Of these 7 claimants who received  $> 10$  treatments, their medical records documented some sort of progress in pain or functionality due to acupuncture.

Among the 38 claimants who received acupuncture, 14 (36.8%) suffered from neck/back strain/sprain or back pain, 7 (18.4%) from vertebral displacement or fracture, 6 (15.8%) from rotator cuff syndrome, 4 (10.5%) from epicondylitis, 3 (7.9%) from multiple body contusion including ankle, foot and hip, and 1 (2.6%) of each of concussion, peripheral nerve lesion, 'other' fracture or 'other' tendinitis.

Of the 7 claimants who received  $> 10$  treatments, 2 were due to sprain/strain or backache, 1 was due to epicondylitis, 3 were due to vertebral related fracture and 1 was due to brain concussion.

It should be noted that the above figures do not likely reflect the actual number of workers receiving acupuncture. Most treatments likely take place during an office visit with a general practitioner or physio therapist and are billed to the WCB under this generic code (office visit). Hence we feel the data noted above is an under representation of reality.

## **B. Issues related to primary research and systematic reviews on acupuncture.**

There are 3 major problems surrounding primary research and systematic reviews on acupuncture - namely, selection and the role of control groups, complexities of acupuncture including variations of acupuncture technique and methodological quality of the study<sup>1,3,4,5</sup>.

In acupuncture related research, controls can range from placebo or sham acupuncture, to standard care or no treatment at all. The use of standard care or no treatment versus placebo or sham has been debated in the literature. Sham acupuncture, the most commonly used control in acupuncture studies, is done by needling in sites of the body where it theoretically irrelevant. However, research has shown that inserting needles or applying pressure in these 'irrelevant' points evokes physiological responses. Thus, it is difficult to separate the specific effect of treatment from that of placebo.

Acupuncture includes diverse philosophies and treatment styles. For example, there is ear acupuncture (most widely used) as well as scalp, hand, foot, nose and abdominal acupuncture. There is also acupuncture based on formulae (standardised) vs. Traditional Chinese Medicine (TCM). TCM focuses on a balanced system and uses point selection based on symptoms, pulse and tongue diagnoses. The choice of points may vary from day to day as the balance shifts. In a formula approach, the same prescription of points is used for each patient repeatedly. Thus, the most accurate evaluation on the effectiveness of acupuncture should include the evaluation of each single well-defined approach. Furthermore, studies<sup>4,20</sup> have shown that for the same disease condition on the same patients, needle acupuncturists have conflicting ideas about which points of the body are active acupuncture points, about the ideal level of intensity and duration of acupuncture simulation, the gauge of the acupuncture

needles that should be used and the appropriate depth of needle insertion.

Like much other research, research on acupuncture also suffers from weak study design, inadequate description of methodology and frequently from small sample size. For example, most of the randomized controlled trials in acupuncture for chronic pain were under powered<sup>20</sup>, which implies that even though acupuncture may be effective in alleviating chronic pain, the sample size available in these studies would not be enough to detect the effectiveness of acupuncture compared to the controls. As has been shown in clinical trials in other fields of medicine, acupuncture research also shows correlation between low methodological study quality and positive outcomes<sup>6,7,20</sup>. Further, acupuncture is based on philosophical models that differ from Western medicine. Thus, some advocates argue that using methodological criteria validated in conventional clinical trials to evaluate the effectiveness of acupuncture may not be appropriate. Others have countered back dismissing this negative view of conventional research philosophy<sup>22</sup>.

Specific problems arise in systematic reviews of acupuncture - namely, the application of appropriate quality assessment tools. Many systematic reviews on acupuncture have made use of the Jadad Scale<sup>1</sup>. This scale includes five criteria, four of which look at the randomisation and blinding methodology. The scale does not incorporate other issues such as the appropriateness of treatment, the skill of the acupuncturists and the type and duration of treatment.

### **3. METHODS.**

#### **A. Literature search.**

Searches were done on medical literature databases (including Pubmed, Cochrane Library, ACP Journal Club, Clinical Evidence, Bandolier and Prodigy); websites of members of the International Network of Agencies for Health Technologies Assessment (including Canada, the US, Great Britain, New Zealand, Australia, Sweden and Denmark); websites of BC, Alberta and the Quebec Office of Health Technology Assessment; websites of other WCBs in Canada (including Yukon and Northwest Territories, Alberta, Saskatchewan, Manitoba, Nova Scotia, Newfoundland, PEI, Quebec and Ontario) and in the US (Washington State, Colorado, California and Oregon); private health insurance companies (including Aetna, Humana, Permanente Medical group, Tuft and Western Health Advantage) and other agencies such as Health Canada, the US NIH, the US Agency for Healthcare Research and Quality and the NHS Centre for Reviews and Dissemination at the University of York.

Searches were done by employing a combination of medical subject heading and textwords of; acupuncture or acupressure or electroacupuncture or electro-acupuncture or staple acupuncture or staple-acupuncture or stapleacupuncture or staple puncture or staplepuncture or moxibustion.

#### **B. Inclusion - Exclusion criteria.**

*Inclusion criteria:* publications were selected if they were systematic reviews and/or meta-analyses. The primary studies were restricted to humans with no restriction to age, sex or ethnicity of the participants. There was no restriction placed on the year of publication. However, these systematic reviews or meta-analyses were required to have acupuncture as the primary treatment modality in the study. Publications were restricted to those available in English.

*Exclusion criteria:* publications were excluded if the methodology used to evaluate the quality of the primary studies were not apparent<sup>23</sup>. Many reviews used the same primary studies, hence, these were excluded. Those reviews that were built in earlier work were also excluded, and the most recent version of that work was included, if appropriate.

## 4. RESULTS.

### A. Summary of the evidence.

This review does not differentiate between the different types of acupuncture treatments. However, most of the primary research was undertaken by employing needle acupuncture. A summary of this evidence is presented in tabular format indicating the disease/condition, the source of the evidence, the recommendations/conclusions and the strength of the evidence. The strength of the evidence is based on the quality of the published evidence and categorised as follows<sup>21</sup>:

- level 1 evidence from review of systematic review, meta-analysis, systematic reviews of randomised controlled trials or randomised controlled trials
- level 2 evidence from systematic reviews of case-control or cohort studies, case-control or cohort studies
- level 3 evidence from non-analytic studies such as case reports, case series
- level 4 expert opinion

The summary of the evidence on the effectiveness is presented in Table 1.

### B. Adverse events.

Acupuncture is a relatively safe procedure, however there is evidence that serious adverse events related to acupuncture treatment do occur. The type of adverse events can vary from minor concerns such as pain, bleeding at the needle insertion site, nausea or fainting to major events such as cardiac tamponade or pneumothorax<sup>18,19</sup>.

Norheim's<sup>12</sup> summary on the literature from 1981 - 1994 shows that these infrequent adverse events include medulla spinalis injury, pneumothorax, infections (e.g. hepatitis), auricular chondritis and

argyria. More recent reviews from the UK (2001) by White et al<sup>13</sup> And MacPherson et al<sup>14</sup> show that there were no serious adverse events that required hospitalization or led to permanent disability or death. They did report an adverse event rate of between 1.3 - 1.4/1000 consultations. These adverse events included severe nausea, fainting, lost needles and exacerbation of symptoms.

In a systematic review of 250,000 treatments, Ernst and White<sup>15</sup> reported that although 28% of patients experienced some adverse events, serious adverse events were rare. Of these 28% patients who experienced adverse events, 38% experienced bleeding and 45% experienced aggravation of symptoms.

Yamashita et al<sup>16</sup>, in a review of the Japanese literature from 1992 - 1997 found an incidence of adverse events (per 10,000 treatments) as follows; forgotten needles 2.89, dizziness 2.35, burn injury 1.27, ecchymosis with pain 1.09, ecchymosis without pain 0.9, malaise 0.9, minor hemorrhage 0.54, aggravation of symptoms 0.54, suspected contact dermatitis 0.54, and pain in the needle insertion 0.36. A longer search period undertaken by Yamashita et al<sup>17</sup> (1987 - 1999) on the same literature identified other major adverse events such as peripheral nerve and arterial injury, cardiac tamponade, pneumothorax, medullary lesion and subarachnoid hemorrhage. The total number of patients treated was not described.

### **C. Who is paying for the acupuncture?**

Based on information gathered from their respective websites (downloaded on November 12, 2002), Workers' Compensation Boards in the Northwest Territories and Nunavut, Yukon, Alberta, Manitoba, Newfoundland and Labrador, and Ontario explicitly state that they recognise acupuncture as part of the entitlement of workers with a compensable injury, subject to certain parameters.

Other, non-Canadian jurisdictions suggest a more diverse approach to their payment for acupuncture services. The Workers' Compensation of California, Colorado and Oregon perceive acupuncture as a valid method of pain treatment and as such do cover it. On the other hand, Washington State Department of Labor and Industries, Medicare, Blue Cross/Blue Shield Association and Medicaid do not recognise the validity of acupuncture; therefore, it is not covered by these respective health insurers.

## **5. CONCLUSIONS:**

- the quality of the primary research literature on acupuncture remains a concern
- acupuncture is a relatively safe procedure when performed by properly trained practitioners in a clinical environment using sterile, disposable needles
- the benefits of acupuncture are not experienced by every patient. To date, there is no way to identify who is most likely to benefit from the procedure
- there is strong evidence on the effectiveness of acupuncture in treating temporomandibular and dental pain as well as treating post-operative nausea and vomiting
- aside from the evidence on its use in TMJ/dental pain and nausea, the evidence for its effectiveness in treating a myriad of other disorders is lacking.

**Table 1. Summary on the effectiveness of acupuncture.**

Disease/condition	Source of the evidence	Reference no: (year)	Recommendation	Strength of the evidence
Acute Low Back Pain	Swedish Council on TA*	8 (2000)	No evidence	Level 1
Chronic Low Back Pain	Swedish Council on TA*	8 (2000)	Limited evidence	Level 1
	Alberta Heritage Foundation HTA**	1 (2002)	No evidence	Level 1
	ICSI***	9 (2000)	Limited evidence	Level 1
Acute Neck Pain	Swedish Council on TA*	8 (2000)	No evidence	Level 1
Chronic Neck Pain	Swedish Council on TA*	8 (2000)	Strong evidence <b>against</b>	Level 1
	Alberta Heritage Foundation HTA**	1 (2002)	No evidence	Level 1
Dental and Temporomandibular pain	Alberta Heritage Foundation HTA**	1 (2002)	Strong evidence <b>for</b>	Level 1
	NHS Centre for Review & Dissemination	20 (2001)	Evidence <b>for</b>	Level 1
Tinnitus	Alberta Heritage Foundation HTA**	1 (2002)	No evidence	Level 1
	NHS Centre for Review & Dissemination	20 (2001)	No evidence	Level 1
Post-operative nausea and vomiting	Alberta Heritage Foundation HTA**	1 (2002)	Strong evidence <b>for</b>	Level 1
	NHS Centre for Review & Dissemination	20 (2001)	Evidence <b>for</b>	Level 1
Chemotherapy related nausea and vomiting	Alberta Heritage Foundation HTA**	1 (2002)	Evidence <b>for</b>	Level 1
	NHS Centre for Review & Dissemination	20 (2001)	Evidence <b>for</b>	Level 1
Chronic pain	Alberta Heritage Foundation HTA**	1 (2002)	No evidence/inconclusive	Level 1
	Ontario WSB	10 (2001)	No evidence/inconclusive	Level 1
	NHS Centre for Review & Dissemination	20 (2001)	No evidence/inconclusive	Level 1
Fibromyalgia	Alberta Heritage Foundation HTA**	1 (2002)	No evidence/inconclusive	Level 1
Idiopathic headache	Alberta Heritage Foundation HTA**	1 (2002)	Inconclusive	Level 1
	ICSI***	9 (2000)	Limited evidence	Level 1
Osteoarthritis	ICSI***	9 (2000)	No evidence	Level 1
Lateral epicondylitis	New Zealand HTA**	4 (2002)	Inconclusive	Level 1

**Table 1. Continued.**

<b>Disease/condition</b>	<b>Source of the evidence</b>	<b>Reference no: (year)</b>	<b>Recommendation</b>	<b>Strength of the evidence</b>
Patellofemoral pain syndrome	New Zealand HTA**	4 (2002)	Inconclusive	Level 1
Rotator cuff tendonitis	New Zealand HTA**	4 (2002)	Inconclusive	Level 1
Myofascial trigger point pain	Cummings TM and White AR	11 (2001)	Inconclusive	Level 1

\* Technology Assessment. \*\* Health Technology Assessment. \*\*\* Institute for Clinical System Improvement  
NB. Various Cochrane-based reviews are incorporated in the reviews of systematic reviews

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## **78.14 Acupuncture**

The Board does not generally accept responsibility for acupuncture. Any exception must be previously authorized. Even where an exception is allowed it is usually only for a short period of time and then only in conjunction with an overall program for dealing permanently with the worker's problem such as is found at a pain clinic. The Board would not likely authorize the treatment where it was being carried out on a routine long-term basis. Where approval of acupuncture treatment is granted, the number of treatments allowed and the fees payable will be set. Requests for authorization of acupuncture treatment are initially referred by the Board officer to the Unit or Area Office Medical Advisor. The request should provide details such as the number of treatments, the cost and the expected benefits. Treatments that do not meet the above general criteria are usually denied at the unit or area office level.

## Appendix 2. Health care services benefit guideline. Acupuncture.

**Topic Title: Acupuncture**

**Last Revised: April 24, 2002**

**Information:**

This form of treatment is reasonable for patients with preferences for this modality and pre-approval is required.

**Rate Schedule: Effective Date: October 1, 1998**

**Duration:**

**Once authorized, the WCB will pay up to a maximum of 5 treatments over a 2-week period.** Rates are paid according to the profession of the provider.

**Rates:** If the provider is a General Practitioner, we pay the equivalent to an office visit - i.e. fee item 00100 for the service date. A Physiotherapist is paid at their subsequent visit rate fee item 19169. All other providers are paid at the GP rate.

Note: These rules also apply for reimbursing a claimant.

Approval Process: The Case Manager or Officer will indicate on the claim the expected duration of treatment.

**Reference(s): [RS&CM Ch. 10 #78.14](#)**