First steps: Involving people with lower limb lymphoedema in evaluating traditional acupuncture for improved wellbeing

Beverley de Valois,1 Teresa Young,1 Elaine Melsome1,2

1Supportive Oncology Research Team, Lynda Jackson Macmillan Centre, Mount Vernon Cancer Centre, Rickmansworth Road, Northwood, Middlesex, United Kingdom HA6 2RN
2Mount Vernon Lymphoedema Service, Mount Vernon Cancer Centre, Northwood, Middlesex, United Kingdom HA6 2RN

Introduction
Following promising exploratory research results of using acupuncture to improve wellbeing in cancer patients with upper body lymphoedema, we began initial investigations into the potential for using acupuncture with people with lower limb lymphoedema. This activity is a preliminary step to possible research and service development.

Objectives
- Assess patient interest
- Gauge potential for service development
- Develop Patient Public Involvement (PPI) (necessary for some UK research funders)
- Explore challenges to acupuncture: needling restricted to points on and above the waist
- Identify practical challenges

Methods
Participants
The Lymphoedema Nurse Specialist (EM) referred 6 patients receiving ongoing lymphoedema treatment who had expressed interest in having acupuncture. Patients presented with chronic lower limb lymphoedema that was primary, or secondary to other conditions such as cancer.

Preliminary meeting
Five of the 6 invited patients attended a meeting at which the Research Acupuncturist (BdV) explained the objectives, demonstrated acupuncture and moxibustion, and answered questions. The nurse specialist and a researcher (TY) were present. All 6 patients agreed to try “taster sessions”.

Acupuncture “taster sessions”
- Treatment once weekly, for up to 7 treatments
- Individualised treatment, based on traditional acupuncture frameworks
- Administered by a licensed acupuncturist (BdV)
- Patients gave written consent for treatment

Monitoring
Needling was avoided in the affected area. The acupuncture treatment was an adjunct to usual care, and did not aim to treat the lymphoedema.

Results

Demographic and clinical characteristics (n=6)
A heterogeneous sample of patients participated:
- 2 primary lymphoedema (female) – 1 unilateral, 1 bilateral
- 4 secondary lymphoedema (2 female, 2 male):
  - 2 gynaecological cancer-related (1 bilateral, 1 unilateral plus trunk)
  - 2 non-cancer (bilateral) – 1 multiple factors, 1 varicose vein surgery
- 4 with history of cellulitis
- 3 carrying excess weight
- All with a variety of co-morbidities
- Mean duration of lymphoedema was 8.1 years (range 2.5 to 18 years)
- Mean age was 62.3 years (range 53 to 74 years)
- Mean number of acupuncture treatments was 6 (range 4 to 7).

MYMOP
- Scale: 0 is “as good as could be”, 6 is “as bad as could be”
- A change of over 0.5 on the MYMOP Score is clinically significant
- MYMOP Profile = the summary score

* significance (p<0.05) for Wilcoxon signed rank test (paired) at EOT.

** MYMOP Scores

<table>
<thead>
<tr>
<th>Symptom 1</th>
<th>Symptom 2</th>
<th>Activity</th>
<th>Wellbeing</th>
<th>MYMOP Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
<td>Score</td>
</tr>
<tr>
<td>Baseline</td>
<td>EOT</td>
<td>4 week</td>
<td>12 week</td>
<td></td>
</tr>
<tr>
<td>A = -2.5</td>
<td>A = -2.0</td>
<td>A = -2.5</td>
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<td></td>
</tr>
<tr>
<td>p = 0.041</td>
<td>p = 0.048</td>
<td>p = 0.039</td>
<td>p = 0.039</td>
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</tr>
</tbody>
</table>

** MYMOP Categories

- Symptom 1 (n=6)
- Activity (n=6)
- Wellbeing (n=6)
- MYMOP Profile (n=6)

** MYMOP Symptoms

Patients specified a range of symptoms.
- Symptom 1 (n=5) included balance, motivation, tingling in foot, mobility, bladder function, groin/hip strength
- Symptom 2 (n=4) included shoulder pain, breathing, sleep (n=2)

** LYMQOL-Leg

* significance (p<0.05) for Wilcoxon signed rank test (paired) at EOT.

** LYMQOL Scores

<table>
<thead>
<tr>
<th>Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>Appearance</td>
<td>Symptoms</td>
<td>MYMQL Domains</td>
<td>Mood</td>
<td>QoL</td>
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<tr>
<td>Baseline</td>
<td>EOT</td>
<td>4 week</td>
<td>12 week</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>A = 0.21</td>
<td>A = 0.07</td>
<td>A = 0.1</td>
<td>A = 0.32</td>
<td>0.044</td>
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<tr>
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<td>p = 0.08</td>
<td>p = 0.79</td>
<td>p = 0.064</td>
<td>p = 0.029</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** SF-36

* significance (p<0.05) for Wilcoxon signed rank test (paired) at EOT.

** Patient Feedback
All participants found acupuncture relaxing, and were pleased with the experience. Five found it very beneficial in the short term and would recommend it to a friend. Four were considering having further acupuncture.

“Legs used to ache most of the time after even moderate walking. No pain at the moment and therefore I am walking more. Able to relax and sleep soundly which I don’t normally do. I wasn’t a sceptic but I had doubts about … acupuncture, but I am very impressed with how much it seems to have benefitted me and helped.”

Clinical Observations
Patients presented with:
- High levels of anxiety (traumatic life events; anxious about acupuncture)
- Grief and sense of loss (role; mobility)
- Multiple, complex co-morbidities
- Practical issues included:
  - Size of patients and appropriate furniture
  - Mobility (difficulties getting to treatment room).

“Improvements – my sleeping, my alertness, my bowel movement, my walking… After a full day my lymphoedema … swells quite dramatically, but after a good night’s sleep the swelling goes away.”

Conclusion
These first steps indicate potential for service development and patient involvement in research. Patients responded positively to the short course of “taster sessions”. Outcomes for this small sample indicate further work in this area is warranted. A focus group with these patients was the next step, and will be reported separately. Detailed case studies will also be published.

For further information contact beverley.devalois@nhs.net

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Footnotes:
1Unilateral, 1 bilateral
2Female
3Wilcoxon signed rank test (paired)

Table:

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Baseline (n=6)</th>
<th>EOT (n=5)</th>
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</thead>
<tbody>
<tr>
<td>General Health</td>
<td>Median</td>
<td>Range</td>
</tr>
<tr>
<td>38.5</td>
<td>30 – 67</td>
<td>40.0</td>
</tr>
<tr>
<td>Mental Health</td>
<td>70.0</td>
<td>45 – 80</td>
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</table>

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Image captions:
- Photograph courtesy of the British Acupuncture Council
Does Chong meridian describe the vascular system?

Author: Vivien Shaw, University of Oxford

**Spiritual Axis chapter 60**

Chōng meridian and rèn meridian both come out from inside the uterus, they travel up along the inside of the back and are the sea of the meridian system; there is a part which goes to the exterior, it circulates and travels up the right side of the abdomen and meets in the throat where it diverges and wraps around the mouth.

**Figure 1. Proposed anatomical structures described by Spiritual Pivot texts. Acupuncture points named Chōng marking significant vascular structures on face and shao yin division.**

**Acknowledgements:** My thanks go to the body donors from the Oxford Body Donation Programme, the live body model, Ken Turner for making the digital painting, Yongxiang Ren for his patience and help with translation, Professor John Morris for his support and guidance.
The Effects of Electro-Acupuncture Related methods on the EEG Signals

Ronakben Bhavsar1, Na Helian1, Yi Sun1, Neil Davey1, David Mayor2, Tony Steffert3

1Science and Technology Research Institute, University of Hertfordshire, UK
2Hon Research Fellow, Division of Physiotherapy, University of Hertfordshire, UK
3Independent EEG Consultant and Researcher in Physiological Signification, Computing Department, Open University

r.p.bhavsar@herts.ac.uk

1. Motivation

In this research the Electroencephalography (EEG) signals of patients have been recorded when acupuncture is performed. Here we try to detect variation in the EEG signals following a Transcutaneous Electrical Acupoint System (TEAS) at different stimulation locations.

Here we use Sample Entropy to measure the complexity of the EEG signals.

2. Experimental Techniques

EEG

EEG is a method of recording brain activity (NHS, 2012). The electrical signals that travel through the active brain cells are recorded by placing small electrodes onto the scalp. The signals are measured using only 19 electrodes because 1 electrode is considered as ground. The readings obtained in EEG can be used to investigate some brain conditions. A EEG signal is a symptom indicator which helps in determining brain activities under a physiological condition.

TEAS for Acupuncture

TEAS is a safe, standardized acupuncture technique in which there is no needle insertion. It involves applying cutaneous electrical stimulation by placing electrodes at classical Chinese acupoints.

Sample Entropy as non-linear measure

Sample Entropy measures the predictability of a time series. If the Sample Entropy is 0, then the time series is completely predictable, as is the case for example if the time series is constant. On the other hand, if the time series is completely unpredictable the sample entropy is 1 (for a binary series). EEG signals represent the complex dynamic behaviours of a biological system. In order to understand the complex behaviours Sample Entropy is used.

3. Description of the Datasets

The EEG data is taken from signals provided by 7 patients on whom acupuncture was performed. During this visit EEG monitoring was carried out in six 5 minute ‘slots’ with stimulation at six different locations:

1. First stimulation – Left (L14, a point on the left hand, and ST36, a point on the left leg)
2. Second stimulation – Right (L14, a point on the right hand, and ST36, a point on the right leg)
3. Third stimulation- Bilateral (both ‘Left’ and ‘Right’)
4. Fourth stimulation-LL or Upper (left L14 and right L14)
5. Fifth stimulation-SS or Lower (left ST36 and right ST36)
6. Sixth stimulation-LLSS (both upper and Lower)

4. Results

The figure shows the Sample Entropy for a typical patient over 19 electrodes. The first thing to note is that the Sample Entropy is low showing that the EEG time series is fairly predictable. It can also be seen that there is not much difference in location or stimulus site.

5. Conclusion & Discussion

- Subject 1 didn’t give response to any of the location
- Subject 2 responded highly when upper body was stimulated. (Higher Sample Entropy value obtained)
- Result in Table 1 suggest the average Sample Entropy value.

The higher sample entropy value the higher disorder in EEG recording of patient. This result can help to identify their mental state (such as anxious, actively thinking, relax, sleeping) and suggest that different patient reacted differently on different location when they were under acupuncture treatment.

6. References

Investigation into the Use of Small Cone Direct Moxa in the Battle against Drug Resistant Tuberculosis

**Tuberculosis in Africa**

TB is a terrifying disease that affects people of all ages, particularly in countries where nutrition and living conditions are poor. In sub-Saharan Africa the TB epidemic has reached very alarming proportions, killing 2000 Africans every day.

**HISTORY OF MOXA USE FOR TB**

Moxafrica derives much of its inspiration from a Japanese doctor (Dr. Shimetaro Hara) who used MOXA for the treatment of TB in the 1930s when it was a very common disease in Japan. He treated many patients by using MOXA before the discovery of the first drugs and reported good successes. He also conducted extensive scientific research using animals to support his own MOXA. He could claim successful recovery of people who were suffering from TB.

More recent research in Japan and Korea has indicated that immune response may have many beneficial effects.

**MEDICAL RESEARCH**

In 2009 Moxafrica set up pilot studies at health centres in Kampala, Uganda. The study is part of a larger national trial of introducing direct moxa therapy to African communities as a long-term, daily treatment to TB patients who are being administered alongside any prescribed medications.

In each location, 12 health workers were given two days of training in the use of moxa, so that they would be able to safely administer the treatment and teach their patients to self-administer. Using a simple protocol based on the treatments of Dr. Hara, patients were taught to apply up to 18 half rice-grain sized cones of moxa to St 36 and 8 points on the sacrum, every day for as long as possible. A pure-grade of Japanese moxa was supplied by Moxafrica, together with equipment such as cutting knives and lighting tapers.

Clinical staff assessed each patient thoroughly and simple questionnaires were used to obtain information about the patients' conditions. Site visits were made every 4 months by Moxafrica monitors to progress the study.

Following the pilot study in Uganda, we were invited to present our work to a group of scientists at Makerere University, Kampala, who immediately saw the importance of scientific investigation into the possible immunological effects of moxa treatment. A team of experts was drawn up by Professor Paul Waako (Head of Department of Pharmacology & Therapeutics), Co-investigators: Head of Department Pharmacology & Therapeutics, College of Health Sciences, Makerere University Medical School. Kampala. Co-investigators: Brenda Hard MBE, Worodria William MBChB, Arfield PhD (Makerere University) Mercury Sless BSc, MBChB, Worodria William MBChB, MBChB (Makerere University) Jenny Craig BSc, MBChB, Shabri MSc (Moxafrica Ltd) Jenny Craig BSc, MBChB, Wendy Williams MBChB, MBChB (Moxafrica Ltd).

**A Study of the Efficacy of Adjunctive Moxibustion in the Treatment of Tuberculosis**

Principle Investigator: Paul Waako MBChB, PhD, Professor & Head of Department of Pharmacology & Therapeutics, College of Health Sciences, Makerere University Medical School. Kampala.

Co-investigators: Brenda Hard MBE, Worodria William MBChB, Arfield PhD (Makerere University) Arfield PhD (Makerere University) Mercury Sless BSc, MBChB, Worodria William MBChB, MBChB (Moxafrica Ltd) Jenny Craig BSc, MBChB, Shabri MSc (Moxafrica Ltd) Jenny Craig BSc, MBChB, Wendy Williams MBChB, MBChB (Moxafrica Ltd).

**Abstract:**

A 12 month pilot study with TB patients in Kampala has suggested that daily use of moxa can improve the recovery rate and reduce the side effects of medication. This is now being expanded into a randomised control trial to investigate in more detail the effects of moxa on immune responses, recovery rate and quality of life. The study will involve 180 patients presenting in the TB clinic with TB and HIV, and randomised to receive standard TB medication and self-administration of daily moxa treatment for 14 months. Regular monitoring of all patients will be carried out, with analysis of immune and blood parameters, as well as immunological and clinical evaluations, and assessments using the Karnovsky score. Patients will be studied for 14 months from the time of non-compliance in any adverse symptoms or disease complications, including failure to respond to the first-line drugs.

**Experimental Protocol**

**General Objective**

The main objective of this research is to study the effect of moxa on the blood and morbidity rates of patients taking standard TB medication in Uganda.

**Specific Objectives**

a) To study the bacteriological response of new patients (cases of TB receiving moxa plus standard TB therapy)

b) To compare the group receiving adjunctive moxibustion with the group receiving only TB drug therapy in the following ways:

- **Clinical response**
  - Proportion healed of TB
  - Improvement in quality of life (using Karnovsky score)
- **Sputum tests** (indicating whether they are still infectious):
  - Acid Fast bacilli
  - CD4, CD8, other immune markers
  - Liver & kidney function tests
- **Tuberculosis**
  - Karnovsky score (detailed assessment of general health)

**PRELIMINARY RESULTS**

All patients were recruited to the study having been newly diagnosed with TB using a sputum test. Those who were co-infected with HIV were treated as a separate cohort.

**RESULTS OF PILOT STUDIES**

In general moxa treatment was accepted enthusiastically by both clinic staff and patients. Trainees were able to demonstrate that they could administer small cones of moxa safely and correctly after 3 days of training. Over the 12 month period more than 95% of patients were able to safely administer the treatment and teach their patients to self-administer.

- Most patients reported unpleasant side effects developing after the start of their TB drug therapy. These were less marked or absent if moxa was used at the same time.
- After starting moxa, most patients reported improved appetite, weight gain, reduced pain (in joints or peripheral neuropathy), and 37% were coughing less. All of them had a general increase in strength and energy. Relief of other symptoms such as itching and poor libido was also reported by some patients.
- In patients who died from moxa, those who received their TB drugs were treated as a separate cohort.
- Some patients stopped using moxa when they began to feel better but some symptoms returned. They were encouraged by the clinic to start moxa again and the symptoms soon reduced. This really convinced them of the benefits of moxa and most patients wanted to continue using it after they had finished their drug course.
- In many cases the patients only used moxa, because they had no other help to them treat the social problems. However, these patients seemed to respond as well as those using all the drugs:
  - Patients co-infected with HIV reported similar improvements with moxa to those having only TB.
  - Clinic staff were convinced that the patients receiving moxa treatment recovered from TB much faster than those on TB drugs alone.

**MOXAFRICA’S QUESTIONS:**

“Could moxa be used to help TB patients in resource-poor areas of Africa, living in similar conditions to those in 1930s Japan?”

Moxafrica's charity was founded in the UK in 2009 by acupuncturists Merlin Young and Jenny Craig. It is run by eight trustees, based in the UK and USA, all of whom are passionate about moxa and about finding ways to help patients of underprivileged and desperate people suffering from TB throughout the world.

Our work has so far relied almost totally on funding from private donors.
Introduction

Clinical guidelines depend on the analysis of randomised controlled trials in systematic reviews. How to interpret the results of acupuncture vs. sham-placebo procedures is a controversial aspect of the evidence base for acupuncture. The central difficulty is the paradoxical finding that verum [real] acupuncture is not better than sham acupuncture but both are better than usual care [1].

A recent meta-analysis of data from nearly 18,000 patients demonstrated a statistically significant difference between real and sham acupuncture. “Patients who received acupuncture had less pain, with scores that were 0.23 (95% CI, 0.13-0.33), 0.16 (95% CI, 0.07-0.25) and 0.15 (95% CI, 0.07-0.24) SBs lower than sham controls for back and neck pain, osteoarthritis, and chronic headache, respectively” [2]. However, due to the relatively small effect size of real acupuncture compared to sham, controversy remains.

Two inferences can be drawn from the acupuncture vs. sham-placebo randomised controlled trials. The first is whether acupuncture has a physiological basis. The second is whether there is any validity in the traditional concepts of acupuncture practice. The degree to which sham acupuncture controls can physiologically be considered placebo controls has been challenged. However, whether these procedures should be considered ‘inert’ in terms of Chinese medicine theory has yet to be fully examined.

Aim

To assess whether sham-placebo acupuncture should be considered inert, with regards to the Chinese medicine theory in particular.

Methods

Reviewers were asked to examine sham-placebo control procedures were studied to identify the different types of sham-placebo acupuncture controls previously used in clinical trials [3,4,5,6,7].

Results

All the reviews identified the following four characteristics of sham-placebo acupuncture controls. These characteristics are used either individually or in combination [3,4,5,6,7].

i. Shallow needling: The needles are not inserted as deeply as the perceived ‘real’ treatment
ii. Non-penetrating needles: The best known is the Streitberger needle that performs like a theatre knife, the shaft recedes into the handle rather than penetrating the skin
iii. Non-acupuncture point: The needles are inserted at locations away from traditional acupuncture points
iv. Needles are inserted at acupuncture points that are not traditionally indicated for a particular condition

Conclusion: These procedures cannot be considered as inert controls from either a Chinese medicine or biomedical perspective. There is a need to develop appropriate Acupuncture Control Assessment Guidelines to assess the risk of bias from sham-placebo controls when undertaking systematic reviews. The terminology used to describe control procedures needs to be developed and standardised.

Non acupuncture point

Points not traditionally indicated for a condition

The notion that individual acupuncture points have specific functions is a belief common to all traditional styles of practice. However, this is complex and diverse nature of traditional practice designing trials to separate sham acupuncture is a practically difficult, in traditional practice it is rare to use one specific point in isolation for a particular condition. In traditional acupuncture, descriptions of acupuncture points may vary or represent different styles of practice.

One point, PS (Symajing) has been investigated for more than any other sham acupuncture point. It is an imaginary point that is described to reduce nausea and vomiting. Strong clinical evidence exists for the effectiveness of PS in treating postoperative nausea and vomiting [PONV] [10]. The generation of this evidence is probably due to the development of the term ‘sham acupuncture’ as a means to separate the site of needle insertion. Real acupuncture points point to the likelihood that this will be lost-reversing the physiological effects [17]. Conversely, it is also argued that for non-sham acupuncture the deep sensations are a point attribute, because the processes have greater physiological effects. Traditional practitioners debate the importance of deqi sensations. Some believe a needle should allow the patient to feel different degrees of deep depending on the condition and patient. There are also practitioners who try to minimize deqi sensations.

De Qi: Contraindications

Placive controls should be psychologically credible but physiologically inert [9]. The desire to meet these two objectives has lead to inconsistencies between acupuncture controls. Shallow needling sham acupuncture controls create a problem for the patient experiencing needle sensation. The patient may doubt that the site of needle insertion, patient may end up losing the site of needle insertion. Conversely, it is also argued that non-sham acupuncture points need to place the sensory produced into the body. In acupuncture practice it is not the case that penetration of the skin is thought to be essential. In some forms of Japanese acupuncture needles are not inserted at all. It may be the case that originally needle application pressure to the skin and as such produces a perceived sensation. Points not traditionally indicated for a condition

Background

Some commentators assert that in terms of traditional theory shallow needling should be considered a placebo technique and state that in traditional practice the penetration depth varies from 1 cm to over 10 cm [8]. Furthermore that superficial needling would be the real thing to patients – but according to Chinese medical practice the point must be felt because the needles would not reach the meridian [6].

Assessment

Superficial insertion is very much a part of traditional practice in many styles of acupuncture, particularly needling of 1-2mm [9]. The depth of insertion, as taught in Chinese medicine, may be as shallow as 1 mm. However, in Western medicine, the depth of insertion is generally 1-2 cm for long-term treatment and 1-3 cm for short-term treatment [9]. The use of shallow needling has a long history, as the Emperor’s Internal Classic, shallow insertion is used to treat muscle spasm caused by cold [9]. Indeed muscle deep insertion may even be a characteristic of modern practice. The manufacturing of needles has greatly improved. Needles are now sharper, finer and far less likely to break, and as deep needling is not easier.

There are numerous points on the body where it is not physically possible to insert a needle to the depth of 10 cm, for example those on the head or at the base of the spine. Needles should be inserted superficially in order to stimulate the muscle meridians [10] (see non-acupuncture point above). Muscle meridians are also used to lead saliva from the mouth to the stomach muscle meridian. It is clear the shallow points lie within the muscle meridian.

Non-penetrating needles

The best-known non-penetrating method is the Streitberger needle that is designed to perform a fine theatre knife (the shaft reedes into the handle rather than penetrating the skin).

Assessment

In traditional practice it is not the case that penetration of the skin is thought to be essential. In some forms of Japanese acupuncture needles are not inserted at all. It may be the case that originally needling does not apply pressure to the skin and as such produces a perceived sensation. Needles are inserted at acupuncture points that are not traditionally indicated for a particular condition.

Non-acupuncture point control is not a psychologically inert procedure from a biomedical perspective. It may also be the case that severe deep sensations should be avoided in certain patients. In patients with pain, sham acupuncture may even decrease the pain depending on the degree of central sensitization. In patients with migraines and fibromyalgia (conditions characterised by central sensitization) sham acupuncture may actually be more effective than so-called verum acupuncture. It is likely that variations in acupuncture practice (including deep) is a too strong stimulus in some of these patients. Studies have shown the activation of fMRI structures and more pain [25].

Non penetrative needling

Background

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References

6. Almazor et al [11] and the leg Yang Ming muscle meridian. It is clear the sham points lie within the muscle meridian.
7. There are numerous points on the body where it is not physically possible to insert a needle to the depth of 10 cm, for example those on the head or at the base of the spine. Needles should be inserted superficially in order to stimulate the muscle meridians [10] (see non-acupuncture point above). Muscle meridians are also used to lead saliva from the mouth to the stomach muscle meridian. It is clear the shallow points lie within the muscle meridian.
8. Therefore, it seems reasonable that sham acupuncture points should not be within a similar sized ellipse of a traditional point.
9. Many modern textbooks give unambiguous descriptions of point locations. However, in modern textbooks a comprehensive list of acupuncture point locations we can see why, by modern means. 197 (World Health Organization) Compendium of Acupuncture and Moxibustion (1961) is located between Lu10 (Liver) and St44 (Stomach Spleen) [11] and does not lie within the Stomach muscle meridian. The sham points used clearly fall within the Stomach meridian (Fig 1).
10. The central difficulty is the paradoxical finding — that verum [real] acupuncture is not better than sham acupuncture but both are better than usual care [1].
11. Therefore, it seems reasonable that sham acupuncture points should not be within a similar sized ellipse of a traditional point.
12. Accuray of point location


The fickleness of data: Estimating the effects of different aspects of acupuncture treatment on heart rate variability (HRV). Initial findings from three pilot studies

© Tony Steffert (Open University) and David Mayor (University of Hertfordshire)

Background
Heart rate variability (HRV) is a measure of the interplay between sympathetic and parasympathetic influences on heart rate. Higher HRV is usually associated with relaxation and health benefits, lower HRV with stress/pathology. HRV is used increasingly in acupuncture research. Electroacupuncture (EA) and transcutaneous electrical acupoint stimulation (TEAS) are frequently used variants of manual acupuncture (MA).

Methods of assessing effect

HRV values
- Changes in HRV values
- Correlations between HRV values
- Ratios of ‘high’ or ‘low’ HRV values relative to group median
- Normalised percentage difference (Diff%) between values:
  \[
  \text{Diff} = \frac{\text{Value at 10 Hz} - \text{Value at 2.5 Hz}}{(\text{Value at 10 Hz} + \text{Value at 2.5 Hz})} \times 100
  \]

Coefficient of variance (CV), a measure of dispersion
- Cohen's \( d \) (effect size)
- Correlation ratio etc \( \eta \)
- Counts of significant differences \( N \)

Conclusions

There is excellent correlation between assessment methods. The sum of \( n^2 \) for all factors (effect size) = 0.678, suggesting that >2/3 of factors responsible for variance in outcomes have been identified.

The analytical methods employed here are accessible even to those with little statistical expertise. They offer a simple way of assessing the contribution of different experimental factors to outcomes when statistical significance is elusive and sample size is small. They would thus be very appropriate in acupuncture research, which tends to involve a number of independent variables in small-scale studies.

Where next?

The next small-scale Pilot in this study will focus on individual participants, within individual sessions, and with stimulation at a single location (LI4 or ST36) within each session, rather than attempting to compare the effects of several variables at once. Careful attention will be paid to the effects of baseline HRV (B) and stimulation Amp, as well as Hz. A mixed models approach and multivariate analysis will also be used to analyse new and existing results, with Bootstrap to ensure a sufficiently large sample size.

Treatment factors
- Frequency (Hz) [primary objective]
- Location ([Loc, pair of points])
- Duration (Dur)
- Amplitude (Amp)
- Modality (Mod)
- Participant (ID)
- Visit (V)
- Baseline HRV (B)

HRV Measures
- RR Mean R-R interval (ms)
- SDNN R-R standard deviation (ms)
- RMSSD Root mean square of successive differences (ms)
- HFpwr HF power (mA^2)
- LF/HF LF/HF power ratio
- ApEn Approximate entropy
- SampEn Sample entropy
- \( D_2 \) Correlation dimension

Objectives
To assess how treatment factors contribute to changes in HRV

Some RESULTS
Counts of significant differences in 8 HRV measures for main factors over (during or after) stimulation segments (total possible for each factor: 32)

<table>
<thead>
<tr>
<th>Pilot 1</th>
<th>Loc</th>
<th>Dur</th>
<th>Amp</th>
<th>Mod</th>
<th>ID</th>
<th>V</th>
<th>Baseline</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot 1</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>n/a</td>
<td>6</td>
<td>8</td>
<td>1 (4)</td>
<td>13 (27)</td>
</tr>
<tr>
<td>Pilot 2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>n/a</td>
<td>6</td>
<td>8</td>
<td>1 (5)</td>
<td>14 (20)</td>
</tr>
<tr>
<td>Pilot 3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>n/a</td>
<td>6</td>
<td>8</td>
<td>1 (4)</td>
<td>11 (19)</td>
</tr>
<tr>
<td>Pilot 3</td>
<td>0</td>
<td>0</td>
<td>n/a</td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>0 (5)</td>
<td>6 (12)</td>
</tr>
<tr>
<td>All</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>2</td>
<td>6 (28)</td>
<td>46 (77)</td>
</tr>
</tbody>
</table>

Teats or 1-way ANOVA were used, with Bootstrap (Mann-Whitney or Kruskal-Walls test) counts in parentheses. Thus ID, Baseline HRV and stimulation Amp contribute most to changes in HRV. This is confirmed by further analysis:

Effects of the main factors: a summary

<table>
<thead>
<tr>
<th>Comparison</th>
<th>N</th>
<th>CV</th>
<th>Cohen's ( d )</th>
<th>( \eta )</th>
<th>Diff%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hz</td>
<td>5</td>
<td>0.149</td>
<td>0.217</td>
<td>0.133</td>
<td>11.481</td>
</tr>
<tr>
<td>Loc</td>
<td>2</td>
<td>0.193</td>
<td>0.225</td>
<td>0.205</td>
<td>10.438</td>
</tr>
<tr>
<td>Visit</td>
<td>4</td>
<td>0.293</td>
<td>0.376</td>
<td>0.237</td>
<td>12.150</td>
</tr>
<tr>
<td>Amp</td>
<td>17</td>
<td>0.826</td>
<td>0.562</td>
<td>0.240</td>
<td>n/a</td>
</tr>
<tr>
<td>Dur</td>
<td>0</td>
<td>1.165</td>
<td>0.113</td>
<td>0.051</td>
<td>n/a</td>
</tr>
<tr>
<td>Baseline</td>
<td>21</td>
<td>n/a</td>
<td>0.355</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>ID</td>
<td>28</td>
<td>1.030</td>
<td>4.156</td>
<td>0.613</td>
<td>45.217</td>
</tr>
</tbody>
</table>

Means are shown, except for \( N \)

Results for all impact assessment methods are greatest for ID, and (apart from Diff%) least for Hz. This suggests that the effects of Hz may be masked by those of other factors.

Does fickleness account for the effects of frequency (Hz)?
Several methods suggest a small, non-significant difference in favour of 2.5 Hz (e.g. Fig 1). Most of these can be explained by intrinsic variation. For instance, greatest Diff% for Hz was found for sdnn, RMS SD and HFpower. However (Fig 2), both at baseline (horizontal bars) and during stimulation (histogram), these were among HRV measures that showed greatest CV.

In Pilot 2, over the 20 minutes of EA stimulation, changes in value of 7 out of 8 HRV measures were in opposite directions for the two frequencies. At 2.5 Hz, 7 measures increased, but at 10 Hz only 3 measures (e.g. Fig 4). It is clear that such changes are very closely associated with inherent variability (CV)

Further information available at www.qeeg.co.uk/electroacupuncture/hrv1.htm, also accessible through the QR code at the head of this poster.

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EVALUATION OF A NHS-FUNDED COMMUNITY HEALTH PROJECT

KATE ANDERSON MBACC
THE COMMUNITY ACUPUNCTURE CI COMPANY

JOEL JAMES AND LAURA BRIGGS
UNIVERSITY OF LIVERPOOL
Since January 2012, the Community Acupuncture CI Company has been awarded £80,000 in NHS-funded grants, designed to support third sector community health projects on the Wirral. These include the Public Health Innovation Fund, Third Sector Development Fund and the CCG Innovation Fund.

The company has used this funding to create and develop a number of initiatives supporting carer’s health and well-being. With the help of WIRED, a local support team for carers, a questionnaire canvassing interest in complementary therapies, was analysed by medical students and used as evidence of need in this sector.

Public Health funding restricted access to the service to those residing in the 20% most deprived areas of the Wirral as determined by post code. Third sector development and CCG innovation funding has widened access to include carers in all post codes, and with a recent focus on men’s health.

The project runs from the “Health Pod”, a portacabin situated on the edge of a car park in central Birkenhead. The therapy room is the hub for holistic health checks, acupuncture, remedial massage, reiki and reflexology treatments, as well as counselling and meditation classes. Courses in Chinese Dietary Therapy and the Bach Flower Remedies are run in larger venues.

All treatments, courses and classes are free of charge at the point of delivery.
**METHODOLOGY**

1. Grounded Theory Analysis of a service evaluation questionnaire completed by carers after a 6 week course of acupuncture treatment.

2. Evaluation, by exit questionnaire and 3 month follow-up interviews, of a 12 hour course in Chinese Dietary Therapy undertaken by carers.
RESULTS

1. In grounded theory analysis of acupuncture treatment, the following codes emerged: (n=41)

Axial codes:

- Symptom reduction
- Positive experience
- Feeling of importance
- Changes made in life
- Improved diet
- Importance of own health
- Acceptance of own needs
- Important lessons learned

Core/ selective codes:

- Self-actualisation
- Altered habits (lifestyle)

The concluding theory is;

The caring for you programme provided a pathway for carers to achieve self-actualisation and to alter their lifestyle, making it a very beneficial experience.
PERCENTAGE CHANGE IN HEALTH SINCE STARTING ACUPUNCTURE TREATMENT (N=27)

22% of participants reported a reduction in medication.
RESULTS

2. Chinese dietary therapy exit questionnaire (n=6)

![Bar chart showing survey results for Venue, programme, trainer, and pre course administration. The chart indicates the number of people (0-6) who rated each aspect from poor (1) to good (5).]
RESULTS

Figure 2: graph showing how participants felt towards the course

<table>
<thead>
<tr>
<th>Number of People</th>
<th>1 (Poor)</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 (Good)</th>
</tr>
</thead>
<tbody>
<tr>
<td>maintained your interest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>met your expectations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>involved participants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

opinions
Figure 3: A graph to show how useful and or enjoyable participants found the following resources and activities.
3 month follow-up interviews (n=5)

The primary emergent themes were as follows:

changes participants made to their diet

change in attitudes towards food

changes in drinking habits

identification and reduction of symptoms identified by participants

feeling healthier

the desire to learn more

carrying on with what they have learnt

the social side of the course

sharing the course with others

the belief that everyone should know a bit about CDT
Perceived benefits of the course:

- Decrease in ready meal consumption
- Increase in home-cooked food
- Decrease in coffee consumption
- Weight loss
- Improved emotional well-being
- Symptom reduction
- Greater enjoyment of food
- Better able to cope with hectic lives (caring responsibilities)

Quotations:

- “no longer eating for eating’s sake”
- “it makes sense”
- “a lot of people would benefit”
- “should be taught in schools”
• Demonstrating evidence of need for small scale community health projects has secured NHS funding.

• Evaluation of outcomes developed a dialogue with funders, resulting in further funding.

• Clear benefits of the project included providing carers with “me” time, access to health care in an informal setting, positive holistic health and well-being outcomes, lifestyle changes which support caring responsibilities, care for the carers.