1. Clinical guidance on acupuncture for osteoarthritis
   - Background

2. Is there a way to develop better evidence from the existing literature?
   - A network meta-analysis

3. How does acupuncture compare to other physical interventions?
   - Physical interventions vs. standard care
   - Acupuncture vs. physical interventions
<table>
<thead>
<tr>
<th>Guideline</th>
<th>Recommendation of acupuncture? (yes/no?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAOS</td>
<td>no</td>
</tr>
<tr>
<td>ACR</td>
<td>yes if moderate/severe pain + unwilling to have knee replacement</td>
</tr>
<tr>
<td>EULAR</td>
<td>no</td>
</tr>
<tr>
<td>OARSI</td>
<td>yes</td>
</tr>
<tr>
<td>NICE</td>
<td>no</td>
</tr>
</tbody>
</table>

ACR - American College of Rheumatology  
AAOS - American Academy of Orthopaedic Surgeons  
EULAR – European League against Rheumatism  
NICE – National Institute for Clinical Excellence (UK)  
OARSI - Osteoarthritis Research Society International
“There is not enough consistent evidence of clinical or cost effectiveness (of acupuncture) to allow a firm recommendation.”

CG 59, NICE, Feb 2008
3.2.2 Targeting treatment

Figure 3.2 Targeting treatment algorithm. COX-2 = cyclooxygenase-2; NSAIDs = non-steroidal anti-inflammatory drugs; TENS = transcutaneous electrical nerve stimulation.
Some questions on acupuncture for osteoarthritis

1. Clinical guidance on acupuncture for osteoarthritis?
   - Background

2. Is there a way to develop better evidence from the existing literature?
   - A network meta-analysis

3. How does acupuncture compare to other physical interventions?
   - Physical interventions vs. standard care
   - Acupuncture vs. physical interventions
Multiple treatment meta-analysis – or network meta-analysis

Why a network (multiple treatment) meta-analysis?

- A method of comparing interventions that have not yet been directly compared.
- Comprehensive combination of both direct (within-trial) and indirect (between-trial) evidence
- All treatments are compared equally with each other.
- Enables ranking of relevant treatments for same condition
Some questions on acupuncture for osteoarthritis

1. Clinical guidance on acupuncture for osteoarthritis?
   - Background

2. Is there a way to develop better evidence from the existing literature?
   - A network meta-analysis

3. How does acupuncture compare to other physical interventions?
   - Physical interventions vs. standard care
   - Acupuncture vs. physical interventions
“How does the effectiveness of acupuncture compare with other relevant physical treatments for alleviating pain due to osteoarthritis of the knee in patients seeking additional or alternative therapy to pharmacological analgesics.”
Network meta-analysis of physical therapies for osteoarthritis

• Searches
  – 17 electronic databases, trial registers, osteoarthritis websites, and bibliographies of relevant reviews searched.

• Eligibility
  – Randomised controlled trials
  – Patients with osteoarthritis of the knee
  – Treatments with physical therapies (excluding drugs and surgery)
  – Reporting pain as an outcome.
Network meta-analysis of physical therapies for osteoarthritis

- Suitable data for came form
  - 156 eligible studies
  - 114 trials
  - 9709 patients
  - 18 physical therapies
  - 4 comparators (standard care, sham treatment, placebo, no treatment)
# 22 interventions

<table>
<thead>
<tr>
<th>9 physical treatments - recommended by NICE 2008</th>
<th>9 physical treatments - not recommended by NICE 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>braces</td>
<td>acupuncture</td>
</tr>
<tr>
<td>aerobic (weight bearing) exercise</td>
<td>balneotherapy</td>
</tr>
<tr>
<td>muscle strengthening (non-weight bearing) exercise</td>
<td>interferential therapy</td>
</tr>
<tr>
<td>heat treatment</td>
<td>neuromuscular electrical stimulation (NMES)</td>
</tr>
<tr>
<td>ice/cooling treatment</td>
<td>pulsed electrical stimulation (PES)</td>
</tr>
<tr>
<td>insoles</td>
<td>pulsed electromagnetic fields (PEMF);</td>
</tr>
<tr>
<td>manual therapy</td>
<td>static magnets</td>
</tr>
<tr>
<td>transcutaneous electrical nerve stimulation (TENS);</td>
<td>tai chi</td>
</tr>
<tr>
<td>weight loss</td>
<td>laser/light therapy</td>
</tr>
</tbody>
</table>

**COMPARATORS**

Standard care, sham acupuncture, placebo, no treatment
Results for the “any-quality” trials

eFigure 3: Network Diagram
End of treatment analysis, any quality trials, with interventions categorised without adjuncts

- Acupuncture
- Tai Chi
- Weight loss
- Standard care
- TENS
- PEMF
- PES
- NMES
- Manual therapy
- Static magnets
- Laser/light therapy
- Interferential treatment
- Insoles
- Ice/cooling treatment
- Braces
- Aerobic exercise
- Muscle exercise
- Placebo
- Sham Acupuncture
- 0.48
- 0.42
- 0.4
- 0.83
- 0.67
- 0.17
- 0.50
- 0.46
- 0.88
- 0.88
Network for “higher-quality” trials

Thickness of lines represents number of trials that have a comparison in the analysis. Number on lines represents consistency between direct and indirect evidence (zero = totally consistent, 1 = totally inconsistent)
Multiple treatment comparison for osteoarthritis of the knee

Comparator = standard care

Treatments vs. standard care

“higher-quality” trials

Acupuncture, balneotherapy, sham acupuncture, muscle-strengthening exercises all outperform standard care
Acupuncture vs. other treatments
“high-quality” trials

Comparator = acupuncture

"...the network meta-analysis results indicate that acupuncture can be considered as one of the more effective physical treatments..."
Strengths and limitations

- Focus on clinical decision-making
- Comparisons available between interventions when direct trial comparisons do not exist
  - It uses more of available evidence
- Consistent framework for synthesis
  - All interventions compared equally

---------------------------------------------

- Small sample sizes of trials
- Mixed quality of methodology
- End of treatment = primary end-point
- Heterogeneity across trials
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Publications
