The impetus for conducting a Cochrane Review

Jos Verbeek, Cochrane Occupational Safety and Health Review Group, the Editorial Team and dozens of Cochrane Review Authors
Don't we know what works?

- Rates of fatal injuries decreased over time

Italy 1951 - 1998
Fabiano OEM 2001

Taiwan 1994 - 2005
Ho OEM 2010
Noise-induced hearing loss

- **UK:** THOR data show that diagnoses related to work-related noise exposure remain important health problems, despite preventive measures being in place (Money 2010)

- **Korea:** Though noise exposure level has improved, NIHL is the most common occupational disease.. and NIHL prevalence is thought to be much higher than reported in official publications (Kim 2010)

- **Finland:** Reported cases of noise-induced hearing loss
What works best in practice?

• How to best help teachers with voice problems?

  Therapy?
  • Speech therapy?
  • Aids, amplifier?

  Prevention?
  • Education and training?
  • Change classroom environment?
  • Regulation?

  Multifaceted intervention?
Evidence voice problems interventions

- Search Medline through Pubmed: voice AND occupation

- Evidence
  - Cochrane Systematic Reviews: Ruotsalainen et al 2007/2010:
    
    Therapy
    - *Voice therapy* is effective compared to no intervention (4 RCTs)
    - For *amplification aids* no studies found

    Prevention
    - For *voice training*, there is **no** evidence of effectiveness in 4 RCTs
    - For *work-directed interventions* no studies found

- Implications for practice
  - Concentrate on therapy for those with symptoms
  - Ask for studies of prevention effectiveness
Why not use expert's advice?

- Answers of experts compared to evidence (N=75)
- Not in line with evidence: 53%
- If based on evidence, only 17% wrong

Conclusion:
If you ask experts for advice, ask for evidence!

Schaafsma BMC Health Serv Res. 2005
What is evidence?

**Evidence**

/əˈvɪdəns/

Show Spelled [ev-i-duh ns]

- noun

1. that which tends to prove or disprove something; ground for belief; proof
Evidence should prove that our current approach..

- ...is beneficial and should be continued
- OR
- ...does not help and should be changed

We have strong beliefs:
- Prevention is always beneficial...
- Correct body position prevents back pain...
- A healthy diet is..

Strong evidence needed
- Difficult to change current practice/policy
- The stronger the beliefs the more difficult to change them
Blunt needles to prevent needle stick injuries in health care


Influence of blunt needles on surgical glove perforation and safety for the surgeon.

Mingoli A, Sapienza P, Sgarzini G, Luciani G, De Angelis G, Modini C,
1st Department of Surgery, La Sapienza University, Rome, Italy.

CONCLUSION: The risk of glove perforation is sevenfold greater if sharp needles are used. Blunt needles reduce sharp injuries and improve safety for surgeons.
Blunt needles to prevent needle stick injuries in Health Care

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>log[Risk Ratio]</th>
<th>SE</th>
<th>Weight</th>
<th>Risk Ratio</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wright 1993</td>
<td>-0.7472144</td>
<td>0.296334</td>
<td>8.6%</td>
<td>0.47 [0.27, 0.85]</td>
<td>1993</td>
</tr>
<tr>
<td>Thomas 1995</td>
<td>-0.35667494</td>
<td>0.348466</td>
<td>6.2%</td>
<td>0.70 [0.35, 1.39]</td>
<td>1995</td>
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<tr>
<td>Meyer 1996</td>
<td>-0.85131877</td>
<td>0.138984</td>
<td>39.2%</td>
<td>0.43 [0.33, 0.56]</td>
<td>1996</td>
</tr>
<tr>
<td>Rice 1996</td>
<td>-3.11351531</td>
<td>1.449138</td>
<td>0.4%</td>
<td>0.04 [0.00, 0.76]</td>
<td>1996</td>
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<tr>
<td>Mingoli 1996</td>
<td>-0.73315252</td>
<td>0.173816</td>
<td>25.1%</td>
<td>0.48 [0.34, 0.68]</td>
<td>1996</td>
</tr>
<tr>
<td>Hartley 1996</td>
<td>-1.70552479</td>
<td>0.636209</td>
<td>1.9%</td>
<td>0.18 [0.05, 0.63]</td>
<td>1996</td>
</tr>
<tr>
<td>Ablett 1998</td>
<td>-0.64435702</td>
<td>0.421637</td>
<td>4.3%</td>
<td>0.52 [0.23, 1.20]</td>
<td>1996</td>
</tr>
<tr>
<td>Nordkam 2005</td>
<td>-0.8303483</td>
<td>0.290628</td>
<td>9.0%</td>
<td>0.47 [0.27, 0.85]</td>
<td>2005</td>
</tr>
<tr>
<td>Wilson 2008</td>
<td>-0.2048782</td>
<td>0.67082</td>
<td>1.7%</td>
<td>0.41 [0.17, 0.99]</td>
<td>2008</td>
</tr>
<tr>
<td>Sullivan 2009</td>
<td>-0.8873032</td>
<td>0.449089</td>
<td>3.8%</td>
<td>0.47 [0.27, 0.85]</td>
<td>2009</td>
</tr>
</tbody>
</table>

Total (95% CI) 100.0% 0.46 [0.38, 0.54]

Heterogeneity: Chi² = 7.45, df = 9 (P = 0.59); I² = 0%
Test for overall effect: Z = 9.03 (P < 0.00001)

- Blunt needles effectively reduce the risk of needle stick injuries in surgeons with 54%

Parantainen 2011
What to do with the evidence?

- In many hospitals no blunt needles available
- Physicians hard to convince of OSH measures
Stress Management in Health Care Workers

- PubMed Search: 10,914 results
  - stress AND health personnel

- In health care
  - stress prevalent
    - due to work- and organisation related factors
  - stress leads to
    - higher turn over, lack of staff, higher labour costs
    - burn out, depression

- Cochrane Review Marine / Ruotsalainen:
  - Stress management for preventing and decreasing stress complaints in health care personnel
  - 19 Randomised trials; Current update 35 RCTs

Marine 2006
Stress Management in Health Care Workers

3.1.1 Cognitive-behavioral intervention only vs. no intervention

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Experimental Mean</th>
<th>SD</th>
<th>Total</th>
<th>Control Mean</th>
<th>SD</th>
<th>Total</th>
<th>Weight</th>
<th>Std. Mean Difference IV, Fixed, 95% CI</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novell 1987</td>
<td>27.1</td>
<td>5.50</td>
<td>6</td>
<td>34.3</td>
<td>5.50</td>
<td>6</td>
<td>2.2%</td>
<td>-1.20 [-2.47, 0.08]</td>
<td>1987</td>
</tr>
<tr>
<td>Ewers 2002</td>
<td>10.51</td>
<td>6.525</td>
<td>10</td>
<td>18.91</td>
<td>6.525</td>
<td>10</td>
<td>3.8%</td>
<td>-1.23 [-2.21, -0.26]</td>
<td>2002</td>
</tr>
<tr>
<td>Dovalux 2004</td>
<td>1.7</td>
<td>0.756</td>
<td>64</td>
<td>2.039</td>
<td>0.73</td>
<td>68</td>
<td>25.4%</td>
<td>-0.44 [-0.91, 0.04]</td>
<td>2004</td>
</tr>
<tr>
<td>Rowe 2006</td>
<td>23.63</td>
<td>4.09</td>
<td>42</td>
<td>25.6</td>
<td>4.6</td>
<td>42</td>
<td>10.0%</td>
<td>-0.47 [-0.91, 0.04]</td>
<td>2006</td>
</tr>
<tr>
<td>Yamagishi 2008</td>
<td>2.83</td>
<td>0.67</td>
<td>20</td>
<td>2.97</td>
<td>0.83</td>
<td>16</td>
<td>8.2%</td>
<td>-0.18 [-0.84, 0.48]</td>
<td>2008</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>132</td>
<td></td>
<td></td>
<td>132</td>
<td></td>
<td></td>
<td>56.5%</td>
<td>-0.50 [-0.74, -0.27]</td>
<td></td>
</tr>
</tbody>
</table>

- Heterogeneity: Chi^2 = 4.32, df = 4 (P = 0.38); I^2 = 7%
- Test for overall effect: Z = 3.51 (P < 0.0001)

3.1.2 Cognitive-behavioral intervention and relaxation vs. no intervention

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Experimental Mean</th>
<th>SD</th>
<th>Total</th>
<th>Control Mean</th>
<th>SD</th>
<th>Total</th>
<th>Weight</th>
<th>Std. Mean Difference IV, Fixed, 95% CI</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>von Bayer 1983</td>
<td>27.8</td>
<td>6.5</td>
<td>7</td>
<td>35.1</td>
<td>8.5</td>
<td>7</td>
<td>2.8%</td>
<td>-1.00 [-2.14, 0.13]</td>
<td>1983</td>
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<tr>
<td>West 1994</td>
<td>3</td>
<td>0.67</td>
<td>24</td>
<td>3.759</td>
<td>0.67</td>
<td>24</td>
<td>9.5%</td>
<td>-1.11 [-1.73, -0.50]</td>
<td>1994</td>
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<tr>
<td>Reynolds 1995</td>
<td>11.08</td>
<td>5.71</td>
<td>42</td>
<td>13.97</td>
<td>5.89</td>
<td>30</td>
<td>13.9%</td>
<td>-0.50 [-1.00, 0.01]</td>
<td>1995</td>
</tr>
<tr>
<td>Jones 2000</td>
<td>56.33</td>
<td>12.74</td>
<td>39</td>
<td>56.43</td>
<td>16.4</td>
<td>34</td>
<td>15.3%</td>
<td>-0.89 [-1.37, -0.41]</td>
<td>2000</td>
</tr>
<tr>
<td>Subtotal (95% CI)</td>
<td>102</td>
<td></td>
<td></td>
<td>95</td>
<td>41.5</td>
<td></td>
<td>41.5%</td>
<td>-0.82 [-1.11, -0.52]</td>
<td></td>
</tr>
</tbody>
</table>

- Heterogeneity: Chi^2 = 2.65, df = 3 (P = 0.45); I^2 = 0%
- Test for overall effect: Z = 5.46 (P < 0.0001)

Total (95% CI)          234           227           100.0% | -0.63 [-0.82, -0.44]

- Heterogeneity: Chi^2 = 0.71, df = 8 (P = 0.20); I^2 = 13%
- Test for overall effect: Z = 5.51 (P < 0.0001)
- Test for subcategory differences: Chi^2 = 2.75, df = 1 (P = 0.10); I^2 = 63.6%

Conclusion:

stress management reduces complaints with about 25%

Marine 2006/ Ruotsalainen

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What to do with the evidence?

- Stress often measured in health care

- Change from measuring to intervening
  - organise and offer stress management courses
  - refer our patients to stress management courses
  - advise employers about less stressful working conditions
Training ‘correct’ lifting posture for back pain prevention

• Back pain frequent cause of disability
  • Work disability leads to suffering and costs
• Training 'correct' lifting postures prevalent in OSH
  • But training not very well supported by biomechanical and educational arguments

• Cochrane Review Martimo / Verbeek:
  Does training healthy workers in 'correct' lifting techniques prevent back pain?

• 9 RCTS (N=20,101) and 9 Cohort studies (N=1280)
Training in correct lifting for preventing LBP

Conclusion:
• Training in lifting techniques does not prevent back pain

Martimo 2006, Verbeek 2011
What to do with the evidence

• Stop organising correct lifting courses to prevent back pain

• Change regulation that requires employers to organise training for preventing back pain

• Use other outcomes to justify training
  • comfort, well-being, efficiency
How to deal with evidence

- Evidence that an intervention is not effective provokes negative emotions
  - Why not effective?
    - technical failure? implementation failure? theory failure?
  - Put into practice
    - advocate better noise regulation and enforcement
    - change regulation on manual material handling
    - use comfort and well-being as a measure of outcome

- Evidence that something is effective provokes feelings of indifference
  - "We knew that it would work any way"
  - Put into practice
    - advocate stress management
    - advocate and use blunt needles
    - advocate workplace HIV prevention programs
Let's find out what works

- To do list
  - Update existing reviews
  - Cover important areas of occupational disease prevention:
    - Musculoskeletal, noise, asthma, dermatology etc
  - Cover important areas of injury prevention:
    - Construction, Agriculture
    - Mechanism based
  - Cover important areas of rehabilitation and RtW
    - Musculoskeletal, injuries, depression, mental health, cancer, RA
    - Interventions at organisational level