

Systematic Review of Economic Evaluations of Complementary and Integrative Medicine

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Overview

- Design of the systematic review
 - Search strategy
 - Quality measures and criteria
- Overall results
 - Numbers of studies
 - Quality of the studies
 - Characteristics
- Summary

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Comprehensive Systematic Review

- Followed the PRISMA statement
- 34 search terms for CIM
- 16 search terms for economics
- Searched all available years through 2010 in:
 - PubMed
 - CINAHL
 - AMED
 - PsychInfo
 - Web of Science
 - EMBASE
- Also searched bibliographies & consulted key researchers





Several Measures of Quality

1. Reporting quality – *BMJ* checklist
2. Tufts CEA Registry quality score (CUAs only)
3. Jadad score for randomized controlled trials
4. Study quality (5 criteria)
5. Study transferability – one measure of whether enough detail is reported so that results can be adapted to other settings

Study Quality Criteria



1. Compared to 'usual care'
2. Recognized perspective
3. Effectiveness from a randomized or matched control trial
4. Resource use as a measured outcome (modeling studies exempted)
5. Sensitivity analysis

Results

- Generated 13,142 references to review after duplicates were removed
- 789 of these were reviewed as full text
- Total of 338 CIM economic evaluations
 - 270 CIM economic evaluations from the search
 - 68 additional from bibliographies and experts
- 204 (60%) published from 2001 thru 2010
 - 114 full and 90 partial
 - 84 US studies (35 full and 49 partial)



Found Lots of Studies

338 economic evaluations
CIM (1979-2010); 211 full

- White and Ernst (2000): 34 economic evaluations (1987-1999) – 11 full
- Herman et al (2005): 56 economic evaluations (1999-10/2004) – 39 full
- Hulme and Long (2005): 19 full economic evaluations (1994-5/2004)
- Maxion-Bergemann et al (2006): 5 economic evaluations (unspecified) – 1 full
- Doran et al (2010): 43 economic evaluations (1995-2007) – 15 full
- 80% of studies were found using search strategy



Study Quality - 2001-2010

	Number	Percent
Total full economic evaluations	114	100%
Usual care comparison	97	85%
Recognized perspective	96	84%
Randomized or matched control	86	75%
Resource use measured	105	92%
Sensitivity analysis	37	32%
Met all 5 study quality criteria	31	27%

Quality (BMJ Checklist)

	All Full CIM 2001-10 n=114	Higher- quality CIM 2001-10 n=31	CIM CUAs 2001-10 n=27	All CUAs 2002-05 n=637
Study perspective	61%	87%	93%*	83%*
Time horizon	96%	100%	100%*	87%*
Sensitivity analysis	32%	100%	93%*	84%*
Discounted	60%	94%	100%*	84%*
Currency year	59%	77%	78%*	85%*
Tufts score (CUAs only; range 1-7)			4.75*	4.25*

*p-value<.01

Other Findings

- Of the full economic evaluations (n=114), 90% were of single complementary therapies
- Of the 56 comparisons made in the higher-quality studies, 16 (29%) showed cost savings
- Of the 28 CUA comparisons:
 - 5 (18%) cost saving
 - 5 (18%) \$0-\$10,000/QALY
 - 15 (54%) \$10,000-\$50,000/QALY
- 22 articles provided at least the minimum information for study transferability

Cost-Effectiveness Decision Matrix

Increased Costs	Definitely Reject Alternative (Base Case Dominates)		Decision: Are benefits worth the costs?
No Change		Indifferent	
Cost Savings	Decision: Is health loss worth the savings?		Definitely Adopt Alternative (Alternative Dominates)
	Worse Health	No Change	Improved Health

Higher-Quality Acupuncture Studies

	Treatment	Population	Results
Brown et al (2001)	Pain management	Orthopedic referrals	CEA-H & CUA-H Cost saving
Van den Berg et al (2010)	Breech version acumoxa	Pregnant women w/breech present	CEA-Px2 Cost saving
Ratcliffe et al (2006)/Thomas et al (2005)	Acupuncture from TCM-trained acupuncturists	Low back pain	CUA-S Cost saving; CUA-P \$8755/QALY
Kim et al (2010)	Hospital-based acupuncture	60yo women w/ acute low back pain	CUA-S \$3086/ QALY
Witt et al (2008)	Acupuncture by physicians (A-dip)	Dysmenorrhea	CUA-S \$4708/ QALY
Witt et al (2006)	Acupuncture by physicians (A-dip)	Chronic low back pain	CUA-S \$16,230/ QALY

Higher-Quality Acupuncture Studies (cont.)

	Treatment	Population	Results
Witt et al (2008)	Acupuncture by physicians (A-dip)	Headache	CUA-S \$18,225/ QALY
Willich et al (2006)	Acupuncture by physicians (A-dip)	Chronic neck pain	CUA-S \$19,226/ QALY
Wonderling et al (2004)/Vickers et al (2004)	Acupuncture from trained physiotherapists	Chronic headache	CUA-S \$19,785/ QALY; P \$21,074/ QALY
Reinhold et al (2008)	Acupuncture by physicians (A-dip)	Chronic hip or knee OA	CUA-S \$27,900/ QALY
Witt et al (2009)	Acupuncture by physicians (A-dip)	Allergic rhinitis	CUA-S \$28,137/ QALY

Higher-Quality Manipulative Studies

	Treatment	Population	Results
Korthals-de Bos et al (2003)	Manual therapy physiotherapists	Neck pain	CEA-Sx3 & CUA-S Cost saving
Williams et al (2004)	Osteopathic manipulation	Subacute back pain	CUA-P \$8730/ QALY
UK BEAM Trial Team (2005)	Manipulation by chiro, osteo, or PT +/- exercise	Low back pain	CUA-Px2 \$8425 or \$10,642/QALY
Hollinghurst et al (2008)	Alexander technique -/+ exercise Massage -/+ exercise	Chronic or recurrent back pain	CUA-Px4 \$13,300 or \$12,022 or dominated or \$11,959/QALY; CEA-Px4
Haas et al (2005)	Treatment in a chiropractic clinic	Acute and chronic low back pain	CEA-Px2 \$21 or \$0.73/pain mm

Higher-Quality Natural Product Studies

	Treatment	Population	Results
Braga et al (2005)	Arginine and omega-3 pre-op	GI cancer surgery patients	CEA-H Cost saving
Stevenson et al (2010) & (2009)	Vitamin K ₁	Post-menopausal with osteopenia+	CUA-P Cost saving
Trevithick et al (2006)	Vitamins C and E and beta-carotene	People aged 50-54 Cataract prev	CEA-P Cost saving
Schmier et al (2006)	Omega-3 supplementation	Males with history of MI	CEA-S Cost saving; CEA-P \$11,903/MI avoid
Lamotte et al (2008)	Omega-3 supplementation	Post-acute MI	CEA-Px5 \$5k-\$8k/LYG
Quilici et al (2006)	Omega-3 supplementation	Post-acute MI	CEA-P \$28k/LYG CUA-P 36k/QALY
Franzosi et al (2001)	Omega-3 supplementation	Post-recent MI	CEA-P \$41,867/LYG

Higher-Quality Other Studies

	Treatment	Population	Results
Black et al (2009)	Glucosamine sulfate	Knee osteoarthritis	CUA-P \$59,053/QALY
Wilson and Datta (2001)	Yang-style Tai Chi	Fall prevention for nursing home	CEA-P Cost saving
Herman et al (2008)	Naturopathic care – acupuncture, relax, diet/ex	Chronic low back pain	CUA-S & CBA-E Cost saving; CEA-E \$191/absent
Van Tubergen et al (2002)	Combined spa-exercise therapy 2 different resorts	Ankylosing spondylitis	CUA-Sx2 \$13-\$32/QALY; CEA-Sx2 \$2-4k/BASFI
Zijlstra et al (2007)	Spa therapy 18-days in Tunisia	Fibromyalgia	CUA-S \$46-\$93k/QALY



Summary

- While we can always say we need more studies, what we really need is better quality studies
- Quite possible for CAM to reduce costs
- If testing effectiveness, try to also capture both cost of treatment and cost offsets