

Conference "Complementary and Alternative Medicine – An investment in health".  
27 June 2013. European Parliament, Brussels, Belgium.



# Cost-effectiveness and efficiency of CAM

*Prof. Dr. Erik W. Baars*

*MD, MSc Epidemiology  
University of Applied Sciences Leiden, Leiden, The Netherlands  
Louis Bolk Institute, Driebergen, The Netherlands*

# European policy: investing in sustainable health systems

- Improving cost-efficiency through innovation of health systems.
- More focus on self-management, prevention and health promotion.

# Assessment of the efficiency of health systems

- Verifying the evidence of efficiency gains and improvements in health obtained through better use of healthcare budgets.
- Measuring also quality of the years of life gained (e.g. QALYs).

Complementary and  
Alternative Medicine (CAM)

&

Complementary and  
Integrative Medicine (CIM)

# CAM and CIM

- Question: is there evidence of efficiency gains and improvements in health by CAM/CIM?

# Cost-effectiveness and efficiency of CAM/ CIM

# Cost-effectiveness and efficiency of CAM/CIM

- Review of 204 economic studies on CAM/CIM (2001 -2011) (*Herman et al., 2012*)
- Two additional examples of comparison conventional practices and CAM practices:
  - Cost savings by CAM practice (*Studer & Busato, 2010*)
  - Patients whose GP knows complementary medicine tend to have lower costs and live longer (*Kooreman & Baars, 2012*)

# Review on economic evaluations of CAM/CIM

Table 2 Types of individual complementary and integrative medicine (CIM) therapies studied for various conditions and in various populations: 2001–2010 (reported as the ratio of the total number of economic evaluations to the number of full economic evaluations)

	Manipulative and body-based practices	Acupuncture	Natural products	Other mind-body medicine	Homeopathy	CIM in general	Other CIM therapies*	Totals†
Back pain	28:19	11:10	2:2	–	1:1	3:0	2:2	42:29
Rheumatic disorders	9:5	6:4	6:6	2:2	–	1:0	4:3	27:19
Mixed populations	4:1	6:1	2:1	3:1	9:5	2:1	3:2	24:9
Cardiovascular disease and diabetes	–	1:0	8:6	6:4	1:1	–	3:1	18:12
Infection (various)	–	–	6:4	–	7:4	–	–	13:8
Surgery	1:1	2:2	4:3	5:4	–	–	–	12:10
Members of insurance plans	3:0	2:0	–	–	1:0	7:0	–	12:0
Mental disorders (various)	–	2:2	–	5:3	1:1	1:0	2:0	11:6
Older populations	–	–	6:3	2:0	–	–	3:1	11:4
Headaches	1:0	3:3	–	4:3	1:1	–	–	9:7
Children (various conditions)	1:0	–	–	–	6:4	1:0	1:0	9:4
Cancer	2:1	2:1	1:1	2:2	–	2:0	–	8:4
Pregnancy and women's health	–	5:5	1:0	1:0	–	–	–	7:5
Allergies	–	1:1	–	–	3:1	–	1:1	5:3
Other conditions‡	1:1	1:1	3:3	5:4	2:1	2:0	6:2	19:11
Totals†	45:25	41:29	39:28	27:16	24:13	18:1	25:12	204:114

\*Other CIM therapies included aromatherapy, healing touch, Tai Chi, Alexander technique, spa therapy, music therapy, electrodermal screening, clinical holistic medicine, naturopathic medicine, anthroposophic medicine, water-only fasting, Ornish Program for Reversing Heart Disease, use of a corset and use of a traditional mental health practitioner.

†Totals across (down) columns will not add to numbers in the totals column (row) due to individual studies addressing more than one CIM therapy (patients in more than one group).

‡Other conditions studied included patients with multiple chemical sensitivities, respiratory disease, pharyngeal dysphagia, dyspepsia, functional bowel disorders, other functional disorders, venous leg ulcers, major burns and constipation; patients who rated themselves as physically ill or having low quality of life; patients in home hospice or with home nursing; long-term care workers and prisoners.



# Review on economic evaluations of CAM/CIM

Table 4 Continued

	CIM therapy compared to usual care alone*	Treatment duration/ study duration	Patient population	Primary outcome(s)	Setting (information often limited by what was reported)	Sample size	Study design and quality scores†	Resource use (trials), parameters (models), and unit costs (both reported separately?)	Form and perspective of economic evaluation	Incremental cost-effectiveness ratio (2011 US\$)
Witt et al. <sup>99</sup>	Adjunctive acupuncture	Up to 15 treatments/ 3 months	Patients with headache	Economic: QALYs from SF-6D	10–15 sessions with physician trained in acupuncture (A-diploma) in Germany	3182	R (2) Tufts 5.5 88% BMJ	No	CUA-S	US\$18225/QALY§
Wülich et al. <sup>64</sup>	Adjunctive acupuncture	Up to 15 treatments/ 3 months	Patients with chronic neck pain	Clinical: Neck Pain and Disability Scale; economic: QALYs from SF-6D	10–15 sessions with physician trained in acupuncture (A-diploma) in Germany	3451	R (2) Tufts 5 88% BMJ	No	CUA-S	US\$19226/QALY§
Wonderling et al. <sup>100</sup> and Vickers et al. <sup>63</sup>	Adjunctive acupuncture	3 months/ 1 year	Patients with chronic headache	Clinical: headache severity score; economic: QALYs from SF-6D	Acupuncture-trained physiotherapists in own clinics in the UK	401	R (3) Tufts 5 97%/93% BMJ	Yes	CUA-S CUA-P	US\$19785/QALY US\$21074/QALY
Reinhold et al. <sup>66</sup>	Adjunctive acupuncture	3 months/ 3 months	Patients with chronic hip or knee osteoarthritis	Economic: QALYs from SF-6D	10–15 sessions with physician trained in acupuncture (A-diploma), Germany	489	R (3) Tufts 4 87% BMJ	No	CUA-S	US\$27900/QALY§
Witt et al. <sup>98</sup>	Adjunctive acupuncture	Up to 15 treatments/ 3 months	Patients with allergic rhinitis	Economic: QALYs from SF-6D	10–15 sessions with physician trained in acupuncture (A-diploma) in Germany	981	R (3) Tufts 4 94% BMJ	No	CUA-S	US\$26137/QALY§
Manipulative and body-based practices—see also Brown et al										
Korthals-de Bos et al. <sup>62</sup>	Manual therapy	6 weeks/ 1 year	Patients with neck pain	Clinical: perceived recovery, pain VAS; and Neck Disability Index; economic: All clinical plus QALYs from EQ-5D	Up to 6 weekly 45 min sessions with a physiotherapist who is also a registered manual therapist in the Netherlands	183	R (3) Tufts 6.5 83% BMJ	Yes	CEA-S CEA-S CEA-S CUA-S	Cost saving Cost saving Cost saving Cost saving
Williams et al. <sup>71</sup>	Adjunctive osteopathic spinal manipulation	2 months/ 6 months	Patients with subacute (2–12 week) back pain	Clinical: Extended Aberdeen Spine Pain Scale; economic: QALYs from EQ-5D	3 or 4 sessions with a general practitioner who is a registered osteopath at own clinic in UK	187	R (3) Tufts 5 89% BMJ	Yes	CUA-P	US\$8730/QALY
UK BEAM Trial Team <sup>68</sup>	Adjunctive spinal manipulation and exercise Adjunctive spinal manipulation	3 months/ 1 year	Patients with low-back pain	Economic: QALYs from EQ-5D	8 sessions with a chiropractor, osteopath, or physiotherapist at a private or NHS site in the UK	1267	R (3) Tufts 6 93% BMJ	Yes	CUA-P CUA-P	US\$8425/QALY US\$10642/QALY

Continued

Economics of complementary and integrative medicine

Downloaded from bmjopen.bmj.com on June 23, 2013 - Published by group.bmj.com



Herman PM, Poindexter BL, Witt CM, et al. BMJ Open 2012;2:e001046. doi:10.1136/bmjopen-2012-001046

# Review on economic evaluations of CAM/CIM

- **Results:**

- 338 economic evaluations of CIM.
- 204 evaluations, covering a wide variety of CIM for different populations, were published in 2001–2010.
- 114 full economic evaluations.
- 90% of these 114 articles covered studies of single CIM therapies and only one compared usual care to usual care plus access to multiple licensed CIM practitioners.

# Review of the scientific literature

- **Results:**

- 16 of the 56 comparisons (29%) made in the higher-quality studies show a health improvement with cost savings for the CIM therapy versus usual care.
- Study quality is overall good and comparable to studies in conventional medicine.

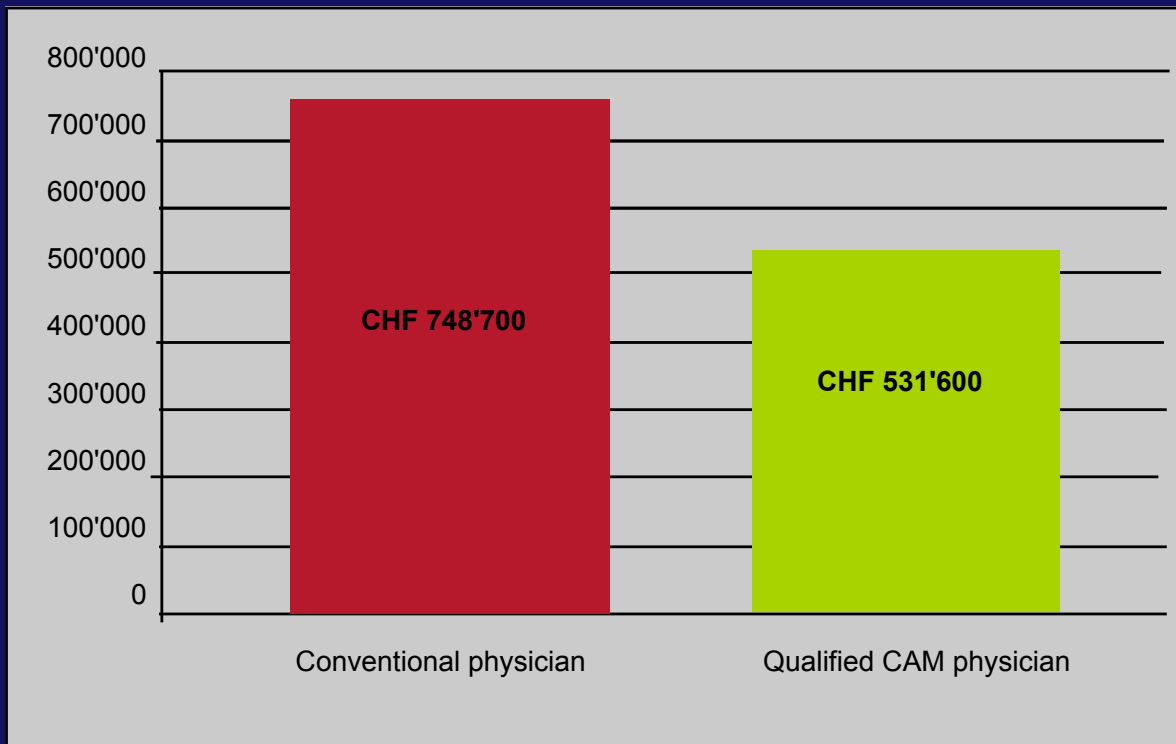
# Review of the scientific literature

- **Conclusions:**

- Many CIM economic evaluations were missed by previous reviews.
- There is emerging evidence of cost-effectiveness and possible cost savings in at least a few clinical populations.

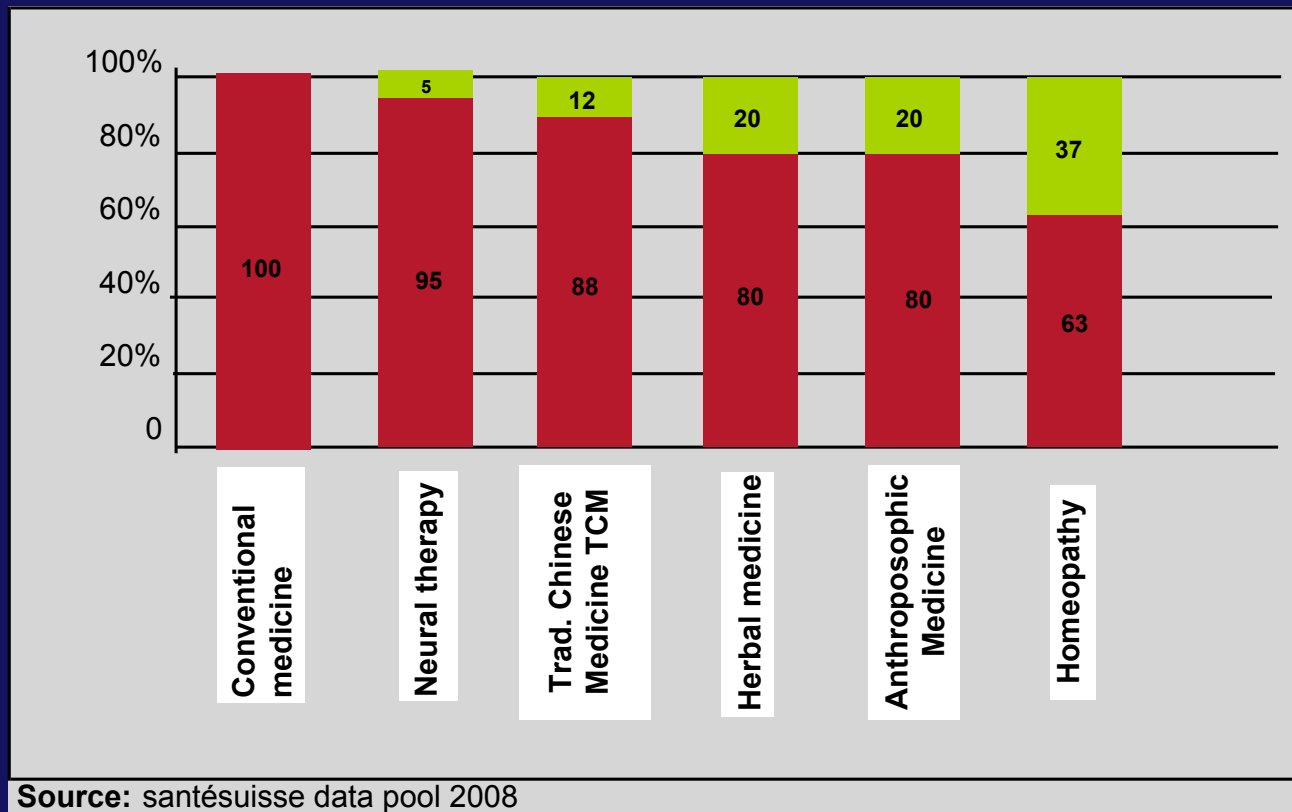
# Cost savings by CAM practices

Annual costs (in CHF) at the expense of the compulsory health insurance of qualified CAM physicians and conventional physicians.



# Cost savings by CAM practices

Average costs per patient for each CAM modality / savings potential (2008)



# Patients whose GP knows complementary medicine tend to have lower costs and live longer

- Dataset analysis:
  - A dataset from a Dutch health insurer was used containing quarterly information on:
    - healthcare costs (care by general practitioner (GP), hospital care, pharmaceutical care and paramedic care)
    - dates of birth and death, gender and 6-digit postcode of all approximately 150,000 insurees
    - for the years 2006–2009.
  - 1913 conventional GPs compared to 79 GPs with additional CAM training in acupuncture (25), homeopathy (28), and anthroposophic medicine (26).

# Patients whose GP knows complementary medicine tend to have lower costs and live longer

- Results:
  - Patients whose GP has additional CAM training have 0–30% lower healthcare costs and mortality rates, depending on age groups and type of CAM.
  - The lower costs result from:
    - fewer hospital stays
    - fewer prescription drugs



# Patients whose GP knows complementary medicine tend to have lower costs and live longer

- Cost-effects

Table 3 Effects of complementary care on costs per insuree age category

	Linear			Log-linear		
	Dummy for GP-CAM anthroposophy	Dummy for GP-CAM homeopathy	Dummy for GP-CAM acupuncture	Dummy for GP-CAM anthroposophy	Dummy for GP-CAM homeopathy	Dummy for GP-CAM acupuncture
<i>Age 0-24</i>						
Total	6 <sup>a</sup>	100	-32	0.016	-0.138**	-0.052
GP	1	-2*	1	0.015	-0.043*	0.019
Hospital	3	76	-5	0.064	-0.153*	-0.034
Pharmaceutical	1	25	-27	-0.078*	-0.250***	-0.108
Paramedic	2	0	-1	0.048	-0.006	-0.008
<i>Age 25-49</i>						
Total	14	-50	-66*	0.022	-0.160**	-0.106**
GP	2***	-3***	0	0.030**	-0.045**	-0.004
Hospital	3	4	-47**	0.008	-0.161**	-0.135**
Pharmaceutical	8	-51**	-17	-0.035	-0.365***	-0.136*
Paramedic	1	-1	-2***	0.032	-0.029	-0.060***
<i>Age 50-74</i>						
Total	63	-48	-2	-0.030	-0.153**	-0.084
GP	4***	0	0	0.040*	-0.001	0.017
Hospital	60	-121	-64	0.032	-0.145	-0.073
Pharmaceutical	-7	69	61	-0.204***	-0.352***	-0.162
Paramedic	6*	4	1	0.080	0.016	-0.009
<i>Age 75+</i>						
Total	-405**	81	214	-0.130	0.077	0.184
GP	-2	6	7	-0.030	0.058	0.111
Hospital	-263**	52	87	-0.029	0.069	0.171
Pharmaceutical	-125*	31	127	-0.169	0.048	0.196
Paramedic	-15	-8	-7	-0.106	-0.085	0.034

\*\*\*, \*\*, \* indicate a statistically significant difference with conventional GP at the 1, 5, and 10% level, respectively

<sup>a</sup> Costs of healthcare are in Euros per quarter. Each row is based on two regressions with either costs (left panel) or the natural logarithm of costs (right panel) as the dependent variable. Explanatory variables are gender, age (linear, within each age category), dummies for each quarter, dummies for anthroposophy, homeopathy, and acupuncture; the table reports the coefficients on the latter dummies. All regressions control for 6-digit insuree postcode fixed effects; standard errors clustered at the insuree level

# Patients whose GP knows complementary medicine tend to have lower costs and live longer

- Healthy ageing

**Table 4** Effects of complementary care on mortality

	Dummy for GP-CAM anthroposophy	Dummy for GP-CAM homeopathy	Dummy for GP-CAM acupuncture	Combined
Logit with fixed effects	0.031	-0.198	-0.333*	-0.128
LPM with fixed effects	-0.005*	-0.004	-0.009**	-0.006***
<i>Women</i>				
Logit with fixed effects	0.034	0.010	-0.203	-0.031
LPM with fixed effects	-0.007*	0.004	-0.008	-0.005*
<i>Men</i>				
Logit with fixed effects	0.020	-0.627*	-0.493	-0.291*
LPM with fixed effects	-0.003	-0.014	-0.013**	-0.008**

Dependent variable: death in 2006, 2007, 2008, or 2009

The table is based on models with the following explanatory variables: gender, age, dummies for anthroposophy, homeopathy, and acupuncture (dummy for complementary in the last column); the table reports the coefficients on the latter dummies

LPM regression controls for 4-digit insuree postcode fixed effects

\*\*\*, \*\*, \* indicate a statistical significance at the 1, 5, and 10% level, respectively

# Conclusions

- Europe wants to improve cost-efficiency through innovation of health systems, with more focus on self-management, prevention and health promotion.
- Investing in implementation and economic evaluation of CAM/CIM as a cost-efficient innovation of healthcare systems might be worthwhile since:
  - CAM/CIM is aiming at increasing self-management, prevention and health promotion (theoretical working principle)
  - There is emerging evidence of cost-effectiveness and possible cost savings in at least a few clinical populations (empirical evidence)

# Thank you for your attention!

- More information:
  - [baars.e@hsleiden.nl](mailto:baars.e@hsleiden.nl)
  - <http://www.hsleiden.nl/lectoraten/professorship-anthroposophic-healthcare/>
  - <http://www.louisbolk.org/nl/home/>