

Primer for database of Cochrane Reviews

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The objective of this document is an overview of the content and the structure of the database containing thousands of meta-analyses and systematic reviews by the Cochrane Library.¹

1 Database content

There are a total of 5,016 systematic reviews with 62,278 studies in the database. Some of the studies may be shared between reviews. The total number of unique studies in the database is at least 52,995 or larger (it may be possible that two totally different studies have an equal author name and year). We explore a review as a showcase to fully understand the structure and content of the database.

1.1 Showcase 1: Acupuncture in patients with asthma

The objective of this review (McCarney et al., 2004) was to assess whether there is evidence from randomized controlled trials (RCTs) that asthma patients benefit from acupuncture (review no. 3). Database entries are shown in Tables 2 and 3. The review included 12 studies. This number has been determined after searching for studies on databases (CENTRAL, MEDLINE, etc.) using the keywords “asthma” and “acupuncture”. Studies from the search results were evaluated for inclusion. Some common reasons for exclusion were, for example, no control group, no randomization, or RCT in another domain, such as acupuncture with healthy individuals or with individuals having other lung conditions. The primary outcome was lung function that can be determined by three measures, these are

- PERF (peak expiratory flow rates),
- FEV1 (forced expiratory volume in one second),
- and FVC (and forced vital capacity).

	Comparisons
Comparison 1	Needle acupuncture versus sham needle acupuncture
Comparison 2	Laser acupuncture versus sham laser acupuncture
Comparison 3	Needle acupuncture versus sham laser acupuncture

Table 1: The review contained three comparison types.

Secondary outcomes were symptoms, medication use, quality of life and two more. In the data synthesis SDM or WMD were used for continuous variables, and risk ratios for dichotomous variables. Acupuncture strategies differed considerably between studies. There were two types of acupuncture, needles and laser. There were also different types of control conditions, for example targeting non acupuncture points, targeting acupuncture points not related to asthma, or a pseudo intervention. The review analyzed needle and laser acupuncture separately and derived three types of comparisons, see Table 1. The studies also reported various types of outcomes. The database entries for a review consists of all the outcomes reported across all the single studies (and potentially subgroups and comparisons). The subgroups in this review all had different outcomes, however, it may be possible that in a study, the same outcome has been recorded in different subgroups. Likewise, the studies in this review performed one of the three comparisons, however, it may be possible that one study includes more than one comparisons.

¹<https://www.cochranelibrary.com>)

We found three potential errors in the data. One entry of Tandon 1991 is comparison 1 and all the other entries are comparison 2. However, Tandon 1991 is declared a laser acupuncture study (and not laser and needle acupuncture study). Hirsch 1994 is a study with children and has three entries are labeled accordingly in subgroup.name. However, in subgroup.nr one entry is a 1 while the other two entries contain a 2. Last, Biernacki 1998 has a missing value in one of its entries in subgroup.name and a 0 in subgroup.nr while the other entries contain "Adult" and "1".

In sum, there can be a database entry per outcome, per subgroup, per comparison and per study. In this review, identical outcomes within different comparison have been synthesized with respect to subgroups. In this review, the subgroups had different outcome numbers so it was sufficient to pool across comparison and outcome.

Within each comparisons, the outcomes are categorized in numbers (outcome number). For example, Shapira 2002 and Tashkin 1985 both report outcome number 4. However, between comparisons, the outcome number cannot be compared as there is a different numbering. There are 15 outcomes in comparison 1, 11 in comparison 2, and two in comparison 3, see Table 5.

In this review, in only two primary main outcomes and one secondary outcome pooling was possible, see Table ??.

	comp.nr	comp.name	out.nr	outcome.name	out.measures	sub	sub.name	study.name
101	1	NEEDLE	5	FVC after treatmen	Mean Differen	0		Biernacki 1998
103	1	NEEDLE	7	FEV1 after treatme	Std. Mean Dif	1	Adults	Biernacki 1998
113	1	NEEDLE	15	Quality of life fo	Mean Differen	1	Adults	Biernacki 1998
96	1	NEEDLE	1	Morning PEFr after	Std. Mean Dif	1	Adults	Christensen 1984
98	1	NEEDLE	3	Symptom scores (pa	Mean Differen	1	Adults	Christensen 1984
105	1	NEEDLE	8	Perceived improvem	Risk Ratio	1	Adults	Dias 1982
114	2	LASER A	1	Morning PEFr after	Mean Differen	1	Children	Hirsch 1994
115	2	LASER A	2	FEV1 after treatme	Std. Mean Dif	2	Children	Hirsch 1994
116	2	LASER A	3	Symptom scores cro	Std. Mean Dif	2	Children	Hirsch 1994
106	1	NEEDLE	8	Perceived improvem	Risk Ratio	1	Adults	Joos 2000
125	3	NEEDLE	1	Morning PEFr after	Mean Differen	1	Adults	Malmström 2002
126	3	NEEDLE	2	Medication usage (	Mean Differen	1	Adults	Malmström 2002
97	1	NEEDLE	2	FEV1 after treatme	Mean Differen	1	Adults	Medici 2002
99	1	NEEDLE	4	FEV1 at follow-up:	Mean Differen	1	Within 4 w	Shapira 2002
104	1	NEEDLE	7	FEV1 after treatme	Std. Mean Dif	1	Adults	Shapira 2002
107	1	NEEDLE	9	Symptom scores cro	Std. Mean Dif	1	Adults	Shapira 2002
110	1	NEEDLE	12	Medication usage	Mean Differen	1	Adults	Shapira 2002
109	1	NEEDLE	11	Symptom scores	Symptom score	1	Adults	Tandon 1991
111	1	NEEDLE	13	Medication usage	beta-agonist	1	Adults	Tandon 1991
117	2	LASER A	4	Medication usage	beta-agonist	1	Adults	Tandon 1991
118	2	LASER A	5	Symptom scores	Symptom score	1	Adults	Tandon 1991
119	2	LASER A	6	Perceived improvem	Odds Ratio	1	Adults	Tandon 1991
120	2	LASER A	7	FVC after treatmen	Mean Differen	1	Adults	Tandon 1991
121	2	LASER A	8	Morning peak flow	L/min	1	Adults	Tandon 1991
122	2	LASER A	9	FEV1	L/min	1	Adults	Tandon 1991
123	2	LASER A	10	FVC	Litres	1	Adults	Tandon 1991
124	2	LASER A	11	Evening peak flow	Litres	1	Adults	Tandon 1991
100	1	NEEDLE	4	FEV1 at follow-up:	Mean Differen	1	Within 4 w	Tashkin 1985
102	1	NEEDLE	6	FEV1 at follow-up:	Mean Differen	1	Within 4 w	Tashkin 1985
108	1	NEEDLE	10	Symptom scores (cr	Mean Differen	1	Adults	Tashkin 1985
112	1	NEEDLE	14	Medication usage (	Mean Differen	1	Adults	Tashkin 1985

Table 2: Database entries of a Cochrane systematic review on acupuncture for chronic asthma. Table is sorted by study name. Numbers on the left are the corresponding line number in the database.

	study.name	study.year	effect	se	events1	total1	mean1	sd1	events2	total2	mean2	sd2	N
101	Biernacki 1998	1998	0.07	2.08	0.00	23.00	3.33	0.85	0.00	23.00	3.26	9.94	
103	Biernacki 1998	1998	0.03	0.29	0.00	23.00	2.03	0.60	0.00	23.00	2.01	0.66	
113	Biernacki 1998	1998	-11.00	10.77	0.00	23.00	147.00	35.00	0.00	23.00	158.00	38.00	
96	Christensen 1984	1984	0.38	0.49	0.00	8.00	360.00	110.00	0.00	9.00	320.00	90.00	
98	Christensen 1984	1984	0.00	0.00	0.00	8.00	-55.00	0.00	0.00	9.00	-45.00	0.00	
105	Dias 1982	1982	0.75	0.30	6.00	10.00	0.00	0.00	8.00	10.00	0.00	0.00	
114	Hirsch 1994	1994	-3.00	2.14	0.00	32.00	105.00	8.88	0.00	32.00	108.00	8.20	
115	Hirsch 1994	1994	-0.48	0.32	0.00	20.00	103.23	14.52	0.00	20.00	110.99	16.81	
116	Hirsch 1994	1994	0.00	0.00	0.00	32.00	0.75	0.00	0.00	32.00	0.71	0.00	
106	Joos 2000	2000	1.68	0.28	15.00	19.00	0.00	0.00	8.00	17.00	0.00	0.00	
125	Malmström 2002	2002	-31.78	46.87	0.00	10.00	357.50	117.55	0.00	14.00	389.28	106.80	
126	Malmström 2002	2002	-0.88	0.78	0.00	8.00	1.78	0.76	0.00	8.00	2.66	2.07	
97	Medici 2002	2002	1.70	4.97	0.00	22.00	92.00	17.80	0.00	23.00	90.30	15.40	
99	Shapira 2002	2002	0.00	7.72	0.00	19.00	70.00	26.15	0.00	19.00	70.00	21.18	
104	Shapira 2002	2002	0.22	0.33	0.00	19.00	73.00	13.08	0.00	19.00	70.00	13.08	
107	Shapira 2002	2002	0.00	0.00	0.00	23.00	0.22	0.00	0.00	23.00	0.24	0.00	
110	Shapira 2002	2002	-1.40	4.00	0.00	23.00	6.70	13.17	0.00	23.00	8.10	13.94	
109	Tandon 1991	1991	-1.71	1.50	0.00	15.00	0.00	0.00	0.00	15.00	0.00	0.00	
111	Tandon 1991	1991	0.10	0.50	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	
117	Tandon 1991	1991	0.10	0.50	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	
118	Tandon 1991	1991	-1.71	1.50	0.00	15.00	0.00	0.00	0.00	15.00	0.00	0.00	
119	Tandon 1991	1991	1.00	0.77	5.00	15.00	0.00	0.00	5.00	15.00	0.00	0.00	
120	Tandon 1991	1991	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	
121	Tandon 1991	1991	-23.70	23.20	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	
122	Tandon 1991	1991	0.02	0.06	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	
123	Tandon 1991	1991	0.06	0.11	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	
124	Tandon 1991	1991	-1.00	26.70	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	
100	Tashkin 1985	1985	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	
102	Tashkin 1985	1985	-5.40	10.78	0.00	25.00	7.70	32.50	0.00	25.00	13.10	43.00	
108	Tashkin 1985	1985	0.00	0.00	0.00	25.00	1.40	0.00	0.00	25.00	-17.20	0.00	
112	Tashkin 1985	1985	0.00	0.00	0.00	25.00	-5.40	0.00	0.00	25.00	-9.00	0.00	

Table 3: Database entries of a Cochrane systematic review on acupuncture for chronic asthma. Table is sorted by study name.

2 Merging aliases in outcome measures

The most common outcome measures in the database are risk ratios, mean differences, and odds ratios. However, the values in `outcome.measure` have inconsistencies that need to be resolved, for example "odds ratio", "Odds Ratio", "odds ratios", "OR", etc. Altogether, there are 258 unique values present. We performed a cleanup of the values and defined a set of aliases for merging to reduce the heterogeneity in values (Table 6). In Tables 7 and 8 the most frequent names are shown before and after merging. Risk ratios make up 50% of all the outcome measures. In Tables 9–19.

References

- McCARNEY, R. W., BRINKHAUS, B., LASSERSON, T. J. and LINDE, K. (2004). Acupuncture for chronic asthma. *Cochrane Database Syst. Rev.* CD000008.
URL <http://dx.doi.org/10.1002/14651858.CD000008.pub2>

	comp.nr	out.nr	outcome.name	sub.name	study.name
96	1	1	Morning PEFR after treatment	Adults	Christensen 1984
97	1	2	FEV1 after treatment (% predicted)	Adults	Medici 2002
98	1	3	Symptom scores (parallel studies)	Adults	Christensen 1984
99	1	4	FEV1 at follow-up: pooled cross-over dat	Within 4 w	Shapira 2002
100	1	4	FEV1 at follow-up: pooled cross-over dat	Within 4 w	Tashkin 1985
101	1	5	FVC after treatment: pooled cross-over (		Biernacki 1998
102	1	6	FEV1 at follow-up: pooled cross-over dat	Within 4 w	Tashkin 1985
103	1	7	FEV1 after treatment: pooled cross-over	Adults	Biernacki 1998
104	1	7	FEV1 after treatment: pooled cross-over	Adults	Shapira 2002
105	1	8	Perceived improvement in general well-be	Adults	Dias 1982
106	1	8	Perceived improvement in general well-be	Adults	Joos 2000
107	1	9	Symptom scores cross-over studies	Adults	Shapira 2002
108	1	10	Symptom scores (crossover studies - chan	Adults	Tashkin 1985
109	1	11	Symptom scores	Adults	Tandon 1991
110	1	12	Medication usage	Adults	Shapira 2002
111	1	13	Medication usage	Adults	Tandon 1991
112	1	14	Medication usage (change from baseline)	Adults	Tashkin 1985
113	1	15	Quality of life follow-up	Adults	Biernacki 1998
114	2	1	Morning PEFR after treatment (crossover	Children	Hirsch 1994
115	2	2	FEV1 after treatment: pooled cross-over	Children	Hirsch 1994
116	2	3	Symptom scores cross-over studies	Children	Hirsch 1994
117	2	4	Medication usage	Adults	Tandon 1991
118	2	5	Symptom scores	Adults	Tandon 1991
119	2	6	Perceived improvement in general well-be	Adults	Tandon 1991
120	2	7	FVC after treatment: pooled cross-over (	Adults	Tandon 1991
121	2	8	Morning peak flow	Adults	Tandon 1991
122	2	9	FEV1	Adults	Tandon 1991
123	2	10	FVC	Adults	Tandon 1991
124	2	11	Evening peak flow rates	Adults	Tandon 1991
125	3	1	Morning PEFR after treatment (parallel g	Adults	Malmström 2002
126	3	2	Medication usage (parallel group)	Adults	Malmström 2002

Table 4: Organization of comparisons and outcomes

	comp.nr	comp.name	out.nr	outcome.name	sub.nr	sub.name	study.name	pool.nr
1	1	NEEDLE A	4	FEV1 at follow-up: pooled cros	1	Within 4	Shapira 2002	1
2	1	NEEDLE A	4	FEV1 at follow-up: pooled cros	1	Within 4	Tashkin 1985	1
3	1	NEEDLE A	7	FEV1 after treatment: pooled c	1	Adults	Biernacki 1998	2
4	1	NEEDLE A	7	FEV1 after treatment: pooled c	1	Adults	Shapira 2002	2
5	1	NEEDLE A	8	Perceived improvement in gener	1	Adults	Dias 1982	3
6	1	NEEDLE A	8	Perceived improvement in gener	1	Adults	Joos 2000	3

Table 5: The pool number indicates which studies have the same subgroup, outcome, and comparison. If these variables mach, data can be pooled. In this review data from two studies were pooled for each of the three outcomes.

	before merging	after merging
No. of unique outcome names	258	177

Table 6: Outcome names have been merged to account for inconsistencies.

	Percent
Risk Ratio	50.00
Mean Difference	21.80
Odds Ratio	10.60
Std. Mean Difference	8.60
Peto Odds Ratio	4.10
Risk Difference	1.30
Hazard Ratio	1.30
Rate Ratio	0.40
(Other)	0.10
rate difference	0.10
others	1.70

Table 7: Most frequent outcome measures before merging.

	Percent
Risk Ratio	50.10
Mean Difference	22.10
Odds Ratio	14.80
Std. Mean Difference	8.70
Hazard Ratio	1.40
Risk Difference	1.30
Rate Ratio	0.50
% Rate difference	0.10
% change	0.10
Prevented Fraction	0.10
others	0.80

Table 8: Most frequent outcome measures after merging..

	names
1	Risk Ratio
2	Risk Ratio (Non-event)
3	Relative Risk
4	Relative risk
5	RR
6	Incidence Risk Ratio
7	risk ratio
8	rr
9	IRR
10	RR Ratios
11	Relatvie risks
12	RR or HR
13	Risk ratio

Table 9: List of outcome measure and aliases that are merged.

	names
1	Mean Difference
2	Mean difference
3	MD
4	mean difference
5	Mean Difference L/mn
6	mean difference (L)
7	mean diff (L/min)
8	MD in SBP
9	MD in DBP
10	MD in serum Ca
11	MD in serum K
12	Mean diff in SBP
13	Mean diff in DBP
14	Change in SBP
15	Change in DBP
16	Change in PRA
17	Change in Aldosterone
18	Change in Noradrenaline
19	Change in Adrenaline
20	Change in Cholesterol
21	Change in LDL
22	Change in HDL
23	Change in Triglyceride
24	Change in duration
25	Change in MPAP
26	Change in MAP
27	Change in HR
28	immediate change in level
29	change in slope
30	Change in level and slope
31	Mean Difference [%]
32	MD or Difference-in-Differences (SDs)
33	Mean Difference (SDs)

Table 10: List of outcome measure and aliases that are merged.

	names
1	Std. Mean Difference
2	SMD
3	SMDs

Table 11: List of outcome measure and aliases that are merged.

	names
1	% change
2	% change from baseline
3	% increase
4	% Rate difference
5	Mean % change

Table 12: List of outcome measure and aliases that are merged.

	names
1	Odds Ratio
2	Peto Odds Ratio
3	Peto Odds Ratio (Non-event)
4	Odds Ratio (Non-event)
5	Odds ratio
6	odds ratio
7	odds ratios
8	Odds Ratios
9	Paired Odds Ratio
10	Adjusted Odds Ratio
11	Adjusted odds ratio

Table 13: List of outcome measure and aliases that are merged.

	names
1	Hazard Ratio
2	HR
3	Hazard ratio
4	Survival HR
5	Hazards ratio
6	Change in HR
7	hazards ratio
8	RR or HR
9	hazard ratio
10	HR and variance

Table 14: List of outcome measure and aliases that are merged.

	names
1	Rate Ratio
2	Rate ratio
3	Incidence rate ratio
4	Incidence Rate Ratio
5	incidence rate ratio
6	rate ratio

Table 15: List of outcome measure and aliases that are merged.

	names
1	Risk Difference
2	Risk difference (RD)
3	Risk Difference (%)
4	Annualized risk difference (%)

Table 16: List of outcome measure and aliases that are merged.

	names
1	% Rate difference
2	Rate difference
3	rate difference

Table 17: List of outcome measure and aliases that are merged.

	names
1	Prevented Fraction
2	Prevented fraction
3	prevented fraction

Table 18: List of outcome measure and aliases that are merged.

	names
1	Hedges' g
2	Hedges' g
3	Hedges'g
4	Hedges ' g

Table 19: List of outcome measure and aliases that are merged.