

## ORIGINAL PAPER

# Repertory and the symptom loquacity: some results from a pilot study on likelihood ratio

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**Treatment outcome in a pilot study indicates that it is possible to assess likelihood ratios of homeopathic symptoms. Entries in repertory rubrics can be validated, but must still be handled carefully. Prospective research is the only acceptable way. Software to support this research must be carefully designed to export correct data.** *Homeopathy* (2004) 93, 190–192.

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## Introduction

In our first paper on likelihood ratio (LR) we introduced this concept as the modern epidemiological translation of the Hahnemannian rule about the importance of peculiar symptoms in homeopathic prescribing. Homeopathic symptoms can be assessed like diagnostic instruments, we mentioned some problems of the present repertory that could be prevented by the use of LR.<sup>1</sup> For instance: a medicine is entered in a symptom rubric if the symptom is 'occasionally confirmed' for that medicine. This means that frequently used medicines will be entered in that rubric, even if the symptom is not indicative for that medicine. Furthermore, entries in the repertory are mainly based on retrospective, subjective, experience. We proposed to use prospective studies to assess repertory rubrics. In another paper we showed possible changes to the repertory using LR.<sup>2</sup>

There are, however precautions to be made: homeopathic symptoms are often vague and our gold standard for diagnostic properties of homeopathic symptoms, the 'cure', is not perfect.<sup>3,4</sup> A pilot study was performed to investigate possibilities and restrictions of LR assessment.<sup>5</sup> This study indicated that it is essential to use information technology to gather the necessary amount of data. After 14 months the results of therapy of this pilot-study and problems in the registration process were assessed. These results were

used to complete the registration software. In June 2004 an open prospective study to assess the LR of 6 homeopathic symptoms started. Here we show some results and lessons learnt from the pilot study.

## Pilot study

The pilot study was performed between July and December 2002. We used different methods to gather data. One of them, a paper form, proved impracticable, and some data were lost. February 2004 outcomes of treatment were evaluated and the relation between outcome of the treatment and the presence of the symptom 'loquacity' was established. The GHHOS-scale (specified to the VHAN-consensus) was used to assess the result of treatment (indicated 0–4). The total number of patients was 465, the total number of loquacious patients was 42. The prevalence of this symptom in the population was thus 9% (95% CI 6.4–12%). From this population 369 could be assessed, of which 35 were loquacious. Table 1 shows some results; only medicines that were prescribed to 9 or more patients are mentioned (so totals are greater than totals of listed medicines), see Table 1.

The numbers in this pilot study are small, so we cannot draw definite conclusions or assess LR. But this shows how we can reconstruct the repertory in a more reliable way. If we compare these results with the repertory-rubric 'Loquacity' two discrepancies are visible:

1. The medicine *Sepia* may be loquacious (2 in 10 cases with GHHOS 2–4), but is not mentioned in the rubric.

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**Table 1** Outcomes associated with the most frequently prescribed medicines in the pilot study and corresponding prevalence of the symptom 'loquacity'

Medicine	Data	Outcome (GHHOS)					Total
		0	1	2	3	4	
Sep	Number of prescription	5	4	4	2	4	19
	Sum of loquacity	0	0	2	0	0	2
Bell	Number of prescription	1	3	3	2	2	11
	Sum of loquacity	0	1	1	0	0	2
Calc	Number of prescription		3	4	2	2	11
	Sum of loquacity		0	0	0	0	0
Carc	Number of prescription	1	1	5	3	1	11
	Sum of loquacity	0	0	0	0	0	0
Lach	Number of prescription		1	3	3		7
	Sum of loquacity		1	1	1		3
Lyc	Number of prescription	2	2	1	3		8
	Sum of loquacity	1	0	0	0		1
Merc	Number of prescription	3	1	4	1		9
	Sum of loquacity	0	0	1	0		1
Nat-m	Number of prescription	2	2	5	7	5	21
	Sum of loquacity	0	0	0	0	1	1
Phos	Number of prescription	1	3	3	1		8
	Sum of loquacity	0	1	0	1		2
Puls	Number of prescription	2	2	1	4		9
	Sum of loquacity	1	0	0	1		2
staph	Number of prescription	3	1	3	4	2	13
	Sum of loquacity	0	0	0	0	0	0
Sulph	Number of prescription	5	4	6	4	3	22
	Sum of loquacity	2	0	0	0	0	2
Total number of result prescriptions		66	47	95	100	61	369
Total sum of loquacity		9	4	10	8	4	35

2. The medicine *Sulphur* is probably incorrectly included in the rubric. The prevalence of loquacity in cases that responded well to *Sulphur* (GHHOS 2–4) is at the most 7% (0 in 13, so at the most 1 in 14). The probability that *Sulphur* is less loquacious than the average population is more than 60%. More certainty can be obtained by larger investigations.

During and after the pilot study the participants evaluated technical problems regarding data collection and software requirements.

### Why prospective studies?

During the pilot study we grew more convinced that we should assess homeopathic symptoms by prospective studies. Many symptoms (like loquacity) are not easy to assess prospectively during the first consultation because of vagueness. In daily practice a symptom is often sought during follow-up consultations if a medicine is suspected that fits the symptom and more readily confirmed (confirmation bias). On the other hand it is possible that the symptom remains undetected in many patients if not systematically checked. LR assessment cannot be reliable without systematic prospective inquiry or observation of symptoms. The number of symptoms that can be assessed during one investigation is therefore limited.

We estimate that a maximum of 6 symptoms is feasible.

### Prevalence or incidence?

We also encountered some problems with software. Most registration software packages for homeopathic practice record each consultation and each prescription. If the patient has five consultations and the same medicine is prescribed each time there may be five entries of the same medicine for the same patient, ie the incidence of the medicine. For the same reason the database may have multiple entries of the same symptom for the same patient, the incidence of the symptom. From a Bayesian point of view it is not correct to use incidence. The Bayesian formula uses prevalence: is the patient loquacious; does *Lachesis* cure (not how many times)? So, before evaluating the data all multiple entries of symptoms for the same patient and all multiple entries of the same medicine for the same patient must also be removed.

### Scoring of results

In a previous paper we showed the importance of correct assessment of results because of the imperfect gold standard.<sup>4</sup> If our GHHOS score is valid we should get a higher LR if the GHHOS score is high. If the GHHOS score is zero (no change) LR for this score

should be close to one. It is therefore essential that the software default value for the outcome of a prescription is a blank and not zero. Furthermore, outcomes of prescriptions must be scored as soon as possible and adjusted if the results change subsequently. A zero result must also be entered carefully; when in doubt a blank, which is assessed as loss-to-follow-up, is preferable.

## Discussion

The results of our pilot study give an indication of what is to come. The methodology used to compose the repertory does not meet modern standards. The homeopathic community has a tendency to add data to the materia medica and repertory at will, but seems to view it as a sin to discard medicines from rubrics. How much certainty do we need to discard remedies? If we collect 4000 cases our certainty that for *Sulphur* 'loquacity' is less than average might become 90%. The next decision is: do we discard medicines with LR + near or less than 1 from that rubric? If we do, the absence of the medicine in the rubric means that the symptom does not increase the chance that the medicine will work, but not more than that. We may also choose to maintain medicines with LR + = <1 in the rubric, but then, to be consistent, we should include every medicine in every rubric.

The procedure we propose leads to a vast project; a few hundred symptoms should be assessed this way. This means that, say, 30 research groups each performing two studies each can complete this task in 6–10 years. We think that, from a scientific point of view, this is the only proper way. Retrospective analysis of data is convenient, but unacceptable because of confirmation bias. Another advantage is better description of our method and diagnostics. This amount of work can only be done by co-operation by groups operating in different countries. Management

of such a project and the data generated could best be done by an impartial international organisation.

Since software is essential for registration of symptoms and result we must be sure that the software exports the right data. Some examples:

- (1) The software should support checking of the investigated symptom(s) only during the first consultation.
- (2) Improper choice of default values could lead to serious bias.
- (3) Prevalence, not incidence, of symptoms and therapeutic results of medicines should be exported.
- (4) Adjustment of outcome assessment of each prescribed medicine must be possible during the course of treatment.

In June 2004 a group of 13 homeopathic physicians started a prospective study on six homeopathic symptoms (one of them being loquacity). The aim is to obtain more than 5000 cases in 3 year. With these data we hope to assess the corresponding repertory rubrics and assign LR to the most important medicines in these rubrics.

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