

## ORIGINAL PAPER

# Data collection: Treat every variable as a treasure



Lex (ALB) Rutten

*Committee for Methods and Validation, Dutch Homeopathic Doctors Association, Aard 10, 4813NN Breda, The Netherlands*

**Collection of data concerning case histories is not yet common in homeopathy despite its great importance for this method. Computer program development progresses slowly and discussion about requirements is scarce.**

**Two Dutch projects assessed Materia Medica of some homeopathic medicines and six homeopathic symptoms. Especially the second project relied heavily on data collection. In both projects much effort was spent on consensus between participating doctors. There was much variance between doctors despite our consensus efforts. Assessing causality seems the most important source of bias, there is also much variance in assessing symptoms.**

**Conclusion:** Data collection software should be developed step-by-step, guided by close monitoring and feedback of participating practitioners. *Homeopathy* (2015) 104, 190–196.

**Keywords:** Data collection; Causality; Confirmation bias

## Introduction

Collecting large amounts of data seems easy with a computer. Generally, more data is considered better data because with more data on the same variable we are more certain of the mean value, provided there is no bias. But we must be aware of the ‘garbage-in-garbage-out’ principle. It is tempting to collect data first and then start to think about possible research with these data, but then there is considerable risk that the data do not suit the research questions. But if we keep thinking about data collection it could last a long time before we actually start collecting data. There are research projects collecting data for specific research questions, but at the moment, few practitioners use software that records treatment data, despite extensive use of software programs for repertorisation. The importance of data collection for homeopathy is obvious, so we should try to speed up the process of software development for homeopathic data collection. The purpose of this paper is to open up the discussion, based on experience systematic data collection in Dutch practices with simple programs recording only the most necessary data.

We can have many theoretical considerations about data collection, but do they hold in daily practice? In the Netherlands a group of experienced homeopathic doctors started discussing successful cases retrospectively concerning specific homeopathic medicines in 1997.<sup>1</sup> The purpose was to validate existing Materia Medica by qualitative analysis of successful cases; hence it was called the Materia Medica Validation (MMV) project. A Dutch commercial database program (HARP) and three database programs made by doctors for their own practice facilitated retrieving successful cases. All programs were developed by homeopathic doctors following their own needs in collecting data. The programs were adjusted to new insights during these projects.

This experience resulted in some hypotheses about the clinical decision process in selecting homeopathic medicines. The main hypotheses were that firstly the choice of a homeopathic medicine is based on pattern recognition. Secondly, this pattern recognition is preceded by collecting symptoms and personal characteristics of the patient indicating a limited set of homeopathic medicines. This ‘differential diagnosis’ is about prognosis. It comes after the conventional differential diagnosis about illness. As in most differential diagnoses about illness, the differential prognosis’ about successful homeopathic medicines is based on more than one symptom/characteristic.

The prognosis process can be described as sequential updating of probability that a medicine will work in the patient before you, based on experience in the past. Participants of these expert meetings concluded that a symptom indicating a specific homeopathic medicine occurred frequently in cases 'cured' by that medicine, more frequently than in other medicines. This is similar to diagnostic reasoning and can be described as a Bayesian process.<sup>2</sup> New information (symptom) changes the probability that a medicine will work: posterior odds = LR × prior odds. Likelihood ratio (LR) is the prevalence of the symptom in the medicine population divided by the prevalence in the remainder of the population.<sup>3</sup> The existing database program was adjusted to these ideas and used for a new prospective study Likelihood Ratio project (LR project) assessing the relationship between homeopathic symptoms and successful prescriptions.<sup>4</sup>

An important goal of data collection is retrieving the information you need at any time, nothing less, nothing more. In other words, the search has to be precise to avoid ignorance and too much work. We want to retrieve all relevant cases and provings if we study a particular medicine. Would a computer have helped Constantin Hering (Figure 1) in finding just that piece of information he needed when writing his *Materia Medica* of, say, *Lachesis*? We cannot be sure, because he probably had a detailed roadmap of his office in his brain, indicating the position of every piece of information ordered by a system only familiar to him. Nowadays he would have to create an electronic roadmap on an information carrier the size of a finger nail that contains his whole library. Finding data on such an information carrier requires another, more explicit and less intuitive, way of organising data. In many cases we need the information to increase our knowledge about a specific medicine. After finding all related cases we may develop some qualitative ideas about the medicine.

Another goal of data collection is quantitative analysis: finding incidence or prevalence of variables like symptoms and results and relationships between variables. Some symptoms are more related to specific medicines than to other medicines. In this case precision is essential to avoid

false conclusions from the data. In this respect we must distinguish structured and unstructured data. Suppose, we want to find all cases of loquacious patients in Hering's digitalised cases (unstructured data). Can we start calculating the prevalence of 'loquacity' in Hering's practice after simple text search in a word-processing program? Only partly, because in a number of cases the patient may be described as 'not-loquacious', noticed only after reading the corresponding sentence. We may also miss a number of cases where the patient is called 'talkative', 'chattering', 'verbose', or where 'logorrhoea' is perceived. And we are also not sure if Hering noticed every loquacious patient. Although the computer can help us with a thesaurus, we must be careful handling such unstructured data. The opposite case is collecting strictly structured data in prospective research. Here we ask the practitioner to record if the patient is loquacious in every consecutive new case. Thus, we avoid the problem of synonyms and we are sure the symptom is observed. Structured and unstructured data collection both have their advantages and disadvantages, but it makes sense to know possible bias in strictly structured data first, because probably such bias is also present in unstructured data. This kind of bias can also be present in partly structured data, as proposed by the CARE guidelines.<sup>5</sup>

This paper presents some reflections on data collection based on the two Dutch projects assessing homeopathic prescribing; one qualitative, the other quantitative. Both projects were facilitated by electronic data collection, but in different respect. In the first project electronic data collection played a very modest role — just retrieving names to find the proper written documents, the second project depended heavily on electronic data for calculating prevalence of symptoms. Both projects involved intense discussions about what we were actually doing and about differences between doctors. Especially such differences appeared relevant in data collection. This experience may help to build effective databases, that are easy to use in daily practice.

## Methods

The first project, *Materia Medica Validation (MMV)*, comprised consensus meetings from 1997 to 2007. Twice a year experienced (>5 years) Dutch homeopathic physicians were invited to bring in their best cases concerning two specified homeopathic medicines to reflect on how to improve homeopathic prescribing. The meetings were structured as open discussions, but on a pre-structured format for each case, describing reasons for prescribing the homeopathic medicine and the effects ascribed to the medicine. The cases should have a follow-up of at least one year considering the assessed medicine and the relation between effect and the medicine should be clarified. There were no other inclusion or exclusion criteria to allow an open discussion about different methods in homeopathy. All participants, however, were trained in classical homeopathy according to ideas set out by Hahnemann, Kent and Hering. These meetings were attended by 10–25 doctors, presenting in total between five (concerning *Naja*) and 23 (concerning *Sulphur*) best cases. Each case was



Figure 1 Constantin Hering's office.

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