Critique of the

House of Commons Science and Technology Committee

Evidence Check 2: Homeopathy

Introduction

The Commons Science and Technology Committee states in its report that

> We regret that advocates of homeopathy, including in their submissions to our inquiry, choose to rely on, and promulgate, selective approaches to the treatment of the evidence base as this risks confusing or misleading the public, the media and policy-makers.[1]

It is a shame that this is precisely the approach taken by the committee in their own use of the evidence provided to them, and in the structuring of their argument. For example, they quote Dr Ben Goldacre as saying (our emphasis):

> There have now been around 200 trials of homeopathy against placebo sugar pills and, *taken collectively*, they show that there is no evidence that homeopathy pills are any better than a placebo. [...] it is not worth doing any more placebo controlled trials because you would be throwing good money after bad and you would have to have a huge number of very strongly positive trials to outweigh all of the negative ones.[2]

Earlier, however, Goldacre had said – more explicitly – that (our emphasis)

> if you look at all of the trials in the whole, collectively, what you see when you look at *the best quality trials* is that *homeopathy pills work no better than placebo pills*.[3]

This contradicts what he says when discussing a graph in his book *Bad Science*, namely that (our emphases)

> That little dot on the right-hand edge of the graph, representing *the ten best-quality trials*, with the highest Jadad scores, stands clearly outside the trend of all the others. This is an anomalous finding: suddenly only at that end of the graph, there are some good-quality trials bucking the trend and *showing that homeopathy is better than placebo*.[4]

One explanation for the selective choice of quotation may be the fact that H:MC21 sent an additional submission to the committee (accepted but not published) pointing out this contradiction. By employing a 'selective approach' to the evidence given, the committee may have avoided admitting that even critics of homeopathy acknowledge that the best trials show homeopathy is better than placebo, but they cannot avoid criticism for using the evidence of someone whose testimony is clearly highly suspect.

Randomised Controlled Trials

This example is of particular importance because the argument of the committee is designed to present randomised controlled trials as being the only valid source of evidence for homeopathy, and this particular quotation appears in a section dealing with whether there is a need for more such research. Their argument against further research is that:

1. *The research already conducted is conclusive.*
   But this is clearly not true, since Goldacre is only one of those who have acknowledged that high quality trials show that homeopathy is effective.

2. *The research already conducted is scientifically impeccable*.
   This issue was raised in H:MC21's evidence to the committee but is not discussed in their report, and it requires a careful look at what the committee has said.

To begin with the committee state that

> Randomised Controlled Trials (RCTs) are the best way of determining whether a cause-effect relationship exists between a treatment and an outcome.[5]

As H:MC21 pointed out, this description of RCTs is an oversimplification, since the definition of "outcome" is scientifically critical. In the case of testing for harm, the definition of outcome is simple, being any increase in morbidity or mortality, but in the case of beneficial effects, the definition is considerably more complex since patient individuality is a critical factor. Thus Ernst and Singh, in their book *Trick or Treatment?*, comment that

> After the advent of the clinical trial, doctors could choose their treatment for a single patient by examining the evidence from several trials, perhaps involving thousands of patients. There was still no guarantee that a treatment that had succeeded during a set of trials would cure a particular patient …[6]

For this reason RCTs cannot be sufficient as tests for efficacy, unless a definition of outcome is used of universal validity, as is the case with tests for harm.

In practice this is certainly not the case. For example, Ernst and Singh refer to the discovery of Viagra, noting that

> Viagra, one of the most successful drug discoveries in recent years, was originally developed to treat angina, but a pilot study showed that it did little to alleviate this condition. However, when researchers decided to stop the trial early and recall any unused pills, they were perplexed by the reluctance of the trial volunteers to return them. Subsequent interviews revealed that Viagra had an unexpected and

> desirable side-effect. Further trials and safety tests have resulted in Viagra's current widespread availability for the treatment of impotence.[7]

It self-evident from this that the result of an RCT depends entirely on how one defines the outcome, and simply redefining it will change side effects into beneficial effects *and vice versa*. In no case does the RCT test for the *absolute* effects of a treatment, but always only for an arbitrarily selected group of effects. Not only does this introduce the possibility of bias into such tests, but it also requires a rigorous scientific justification of the selection procedure if such tests are to be scientifically valid.

The committee's only consideration of this important aspect is to refer to the "intention to treat",[8] or the requirement that the arbitrary selection of outcome criteria should be made before conducting the trial rather than afterwards. They even claim that this arbitrariness is one of the "important features" of "well designed RCTs".[9] At no point do they offer any discussion of the scientific validity of such a process. Furthermore, they offer no discussion of the whole issue of individuality as part of the response to beneficial treatments.

Comment 1

The committee has failed to show that RCT research is scientifically impeccable, and so it has failed to provide a scientifically rigorous basis for assessing the evidence from this source. Conclusions based on this source are, therefore, fundamentally flawed.

Meta-analyses

If RCTs are unreliable, then meta-analyses are simply the compounding of unreliability. In *Halloween Science*, H:MC21's critique of *Trick or Treatment?*, it was shown that such types of systematic review are subjective since they depend on the criteria used to select trials for inclusion, and there is no evidence that these criteria include taking into account homeopathic principles.[10] The committee too fails to consider this aspect, blandly accepting the premise that "Meta-analyses combine the results of trials, increasing the sample size and statistical power of the data"[11] without considering the fact that if the primary source information is inaccurate, then the meta-analysis will only increase the degree of inaccuracy.

Without showing the scientific validity of the primary evidence and of the selection criteria, the committee cannot reliably use meta-analyses to provide a scientific basis for judgements about homeopathic effectiveness. Nonetheless they not only depend entirely on these analyses to justify

their argument about the results of RCTs (thus substituting secondary subjective evidence for the primary evidence, which is itself subjective), but they entirely depend on a meta-analysis which failed to meet basic requirements for such work. The meta-analysis by Shang et al. has been seriously criticised for the lack of transparency of its selection procedures. Close studies of the analysis have also shown that slight changes to these criteria dramatically change the result, producing evidence of homeopathy being more effective than placebo.

The committee also quotes Ernst's statement that

> Linde et al has been re-analysed by various authors, including Linde himself, and all of the 6 re-analyses (none of which were cited in the BHA's submission) have come out negative.[12]

Ernst, however, had previously stated that Linde's re-analysis was "much more equivocal" not negative,[13] so, like Goldacre, he is happy to rewrite the evidence for the benefit of this committee. In short, the committee is again relying on an unreliable source of information and an unreliable source of evidence.

Comment 2

The committee has failed to show that meta-analyses are scientifically impeccable, and so it has failed to provide a scientifically rigorous basis for assessing the evidence from this source. Conclusions based on this source are, therefore, fundamentally flawed.

Evidence based medicine

The committee has provided a charming little table as part of its efforts to rewrite the nature of evidence based medicine (EBM):[14]

A summary of the logical outcomes depending on whether homeopathy is or is not a placebo

	Efficacy	Effectiveness
Homeopathy is not a placebo	PASS	EITHER PASS OR FAIL
Homeopathy is a placebo	FAIL	

On the basis of this they claim that only RCTs can provide the evidence they require to justify the use of homeopathy in the NHS. Unfortunately, this is again a gross oversimplification of the issue. To begin with the efficacity of a tested medical intervention does not guarantee its effectiveness in individual cases, as we have pointed out, because it is only in "the real world" that individual responses are taken into account. As a result pharmaceutical drugs can pass as efficacious but be

withdrawn as ineffective in practice. Because of this evidence from clinical practice is an essential part of the process of EBM and cannot under any circumstances be ignored.

In the case of homeopathy treatment is entirely individual, not only in respect of the remedy given, but in terms of the assessment of what can be treated at a particular time, the nature of the reaction to the remedy, the period over which the reaction takes place, and so forth. This means that any RCT of homeopathic treatment faces serious problems in defining its terms appropriately. Failures in the process of designing the trial can mean the active arm of the trial includes a proportion of cases which *cannot* produce evidence of efficacy, distorting the results and meaning that homeopathy can be 'not a placebo' but still fail a test of efficacy. On the other hand, studies of homeopathy in clinical practice take individuality fully into account, and so they are better able to reflect the true effect of this form of treatment. These issues are not considerd by the committee.

At the same time, it is necessary to take into account the scale and nature of the results of clinical practice studies. These studies routinely produce 70% rates of patient improvement, often in intractable chronic conditions where orthodox treatment has failed.[15,16,17,18] To blandly write these off as "placebo effect" is to attribute impossible levels of effectiveness to inert treatments. As Ernst told the committee,

> … there is lots of data to show that placebo effects are notoriously unreliable; somebody who responds today may not respond tomorrow; responses are not large in effect size and they are not usually long-lasting.[19]

To maintain that evidence of such high levels of improvement can be explained by the placebo effect beggars belief, and so such a position cannot be assumed but rather requires a great deal of justification. The committee has insisted that

> We would expect the Government's policy on NHS funding and provision of homeopathy to be evidence-based.[20]

However, it has itself rejected the principles of EBM, despite the fact that the evidence emphasises that it is not possible to curtail the full principles of EBM in the case of homeopathy.

Comment 3

The committee has failed to show good reason for abandoning the principles of evidence based medicine at the same time as it is demanding that the Government abide by such

principles. This is grossly hypocritical and indicates that the committee's conclusions are based on reasoning which is fundamentally flawed.

Homeopathic principles

In other areas of their report the committee has exercised the same lack of rigour. For example, in discussing the concept of like curing like they note that

> It is not reasonable to lump "symptoms" into categories independent of physiological causation. For example, there are many different kinds of stimulants—caffeine, nicotine, amphetamines—but the metabolic pathways they use to cause stimulation differ. The principle of like-cures-like overlooks this complication, by holding that any kind of stimulant could, at low enough doses, counteract insomnia. But insomnia is caused by different things, such as pain, hormonal changes, psychological disorders or jet lag as well as the use of stimulants. Treating the symptoms and ignoring the causes is simply not good medical practice.[21]

This betrays a fundamental ignorance of a basic medical fact: symptoms necessarily reflect the full nature of the metabolic disturbance, since they are the very expression of that disturbance. Indeed, as the most immediate indications of such disturbance, they provide the most accurate basis for assessing the patient's state of health. Furthermore, the committee's statement completely ignores the fact that investigation of possible causative factors is an essential part of determining what is to be treated in homeopathy, and can be critical in determining the choice of treatment.

The source of this error lies in a failure to study the nature of homeopathy before discussing its principles. Had the committee done their research properly, they would have found that homeopathy depends on the following *six* principles, and not the two they claim:

1. That all symptoms other than those resulting directly from mechanical or toxic damage are part of the body's curative processes;[22]

2. That life and states of health are biophysical phenomena rather than biochemical ones;[23]

3. That it is the totality of the symptoms, including their chronological relationships, which must be treated, not individual symptoms;[24]

4. That a substance which produces in a healthy person symptoms most similar to the totality of the sick person's symptoms will cure those symptoms ("like cures like");[25]

5. That only a single medicine should be given at a time in order that there should be no confusion about the action of the treatment;[26]

6. That the minimum dose capable of effecting curative change should be used, and this may mean the use of a dose with biophysical properties rather than biochemical properties.[27

Quite clearly, homeopathy does not treat the isolated symptom of insomnia, but the complete metabolic disturbance of which this forms a single part, the "totality of the symptoms". In fact it is orthodox pharmaceutical medicine which treats a single symptom, often without reference to the cause, and it is this attitude to treatment which underpins the RCT and leads to the arbitrary selection of outcome criteria in such trials. In other words, the committee has applied the rationale of another system of medicine as if it were that of homeopathy, when in fact such a rationale is explicitly opposed to that of homeopathy.

Comment 4

The committee has shown that it has failed to undertake even the most basic research of its subject. Conclusions based on such inadequate research are, therefore, fundamentally flawed. Furthermore, in misrepresenting the truth of homeopathic practice in this way the committee brings discredit on Parliamentary committees generally and on the ability of Members of Parliament to assess the facts of important matters.

Conclusion

There are many other points of a similar nature which can be made about this report, but those included in this critique are sufficient to show that:

1. The committee has failed to properly assess the scientific validity of its only source of evidence, the randomised controlled trial.

2. The committee has failed to properly assess the scientific validity of the mechanism by which it has accessed this evidence, the meta-analysis.

3. The committee has failed to properly justify its rejection of the principles of evidence based medicine when it is demanding that the Government abide by these principles.

4. The committee has failed to accurately identify even the basic principles of homeopathy, with the result that it cannot claim to have an understanding of the evidence available.

This report offers a highly unsatisfactory basis for any change in legislation. Instead it opens the door to criticisms that the whole *Evidence Check* was simply a propaganda exercise, and to allegations that the Commons Science and Technology Committee is not impartial. H:MC21 urges Members of Parliament to raise questions about why it was necessary to attack the presence of homeopathy in the NHS, and why it was necessary to do so using such unacceptable standards of investigation.

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[1] House of Commons Science and Technology Committee, *Evidence Check 2: Homeopathy* (London: The Stationery Office Limited, 2010), para. 73
[2] *Evidence Check*, Q 87.
[3] *Evidence Check*, Q 23.
[4] Ben Goldacre, *Bad Science* (London: Fourth Estate, 2008), p. 53.
[5] *Evidence Check*, para. 19.
[6] Simon Singh and Edzard Ernst, *Trick or Treatment? Alternative medicine on trial* (London: Bantam Press, 2008), p. 23.
[7] Simon Singh and Edzard Ernst, *Trick or Treatment? Alternative medicine on trial* (London: Bantam Press, 2008), p. 225.
[8] *Evidence Check*, para. 19.
[9] *Evidence Check*, para. 19.
[10] Discussed in William Alderson, *Halloween Science* (Stoke Ferry: Homeopathy: Medicine for the 21st Century, 2009), pp. 64-67.
[11] *Evidence Check*, para. 22.
[12] *Evidence Check*, para. 67, quoting from EV 51, para. 2.
[13] Simon Singh and Edzard Ernst, *Trick or Treatment? Alternative medicine on trial* (London: Bantam Press, 2008), p. 135.
[14] *Evidence Check*, para. 28.
[15] Spence DS, Thompson EA, Barron SJ, 'Homeopathic Treatment for Chronic Disease: A 6-Year, University-Hospital Outpatient Observational Study', *Journal of Alternative and Complementary Medicine*, 2005, 11:793-798.
[16] Donal McDade, *Evaluation [of a] Complementary and Alternative Medicines Pilot Project* (London: Department of Health, Social Services and Public Safety, 2008), available at Get Well UK website at <http://www.getwelluk.com/>, accessed 27 April 2009; full report at <http://www.dhsspsni.gov.uk/final_report_from_smr_on_the_cam_pilot_project_-_may_2008.pdf>.
[17] Dr. Adrian Hunnisett, *Homeopathy Service Survey* (Cirencester: The Park Surgery, 2005).
[18] A. Steinsbekk and R. Lüdtke, 'Patients' assessments of the effectiveness of homeopathic care in Norway: A prospective observational multicentre outcome study', *Homeopathy*, 94 (2005), 10-16, available at: <http://www.scopus.com/record/display.url?eid=2-s2.0-11844297403&origin=inward&txGid=79ie_u0p0cPFoTLkdzTDA2p%3a2>, accessed 14 February 2010.
[19] *Evidence Check*, para. 28, quoting from Q 26.
[20] *Evidence Check*, para. 17.
[21] *Evidence Check*, para. 52.
[22] Samuel Hahnemann, *Organon of Medicine*, trans. William Boericke, 6th edn, manuscript completed 1841, 1st English edn 1921 (Calcutta: Roy Publishing House, repr. edn 1972), § 7 n. 3, p. 93.
[23] Samuel Hahnemann, *Organon of Medicine*, trans. William Boericke, 6th edn, manuscript completed 1841, 1st English edn 1921 (Calcutta: Roy Publishing House, repr. edn 1972), § 11 n. 7, pp. 96-98.
[24] Samuel Hahnemann, *Organon of Medicine*, trans. William Boericke, 6th edn, manuscript completed 1841, 1st English edn 1921 (Calcutta: Roy Publishing House, repr. edn 1972), §§ 6-7, pp. 93-94.

[25] Samuel Hahnemann, *Organon of Medicine*, trans. William Boericke, 6th edn, manuscript completed 1841, 1st English edn 1921 (Calcutta: Roy Publishing House, repr. edn 1972), §§ 61 and 70, pp. 141 and 149-150.
[26] Samuel Hahnemann, *Organon of Medicine*, trans. William Boericke, 6th edn, manuscript completed 1841, 1st English edn 1921 (Calcutta: Roy Publishing House, repr. edn 1972), § 273, p. 276.
[27] Samuel Hahnemann, *Organon of Medicine*, trans. William Boericke, 6th edn, manuscript completed 1841, 1st English edn 1921 (Calcutta: Roy Publishing House, repr. edn 1972), § 11 n. 7, pp. 96-98.