Evidence-based medicine and complementary medicine

Applying evidence-based medicine to complementary medicine (CM), which includes such therapies as acupuncture, chiropractic, hypnosis, and herbal medicine, seems at first contradictory. CM is often defined as techniques for which no evidence of benefit exists (or as a speaker at a recent Cochrane Colloquium put it, "medicine is either scientific or complementary.") But many of the interventions used by conventional clinicians have little scientific support. Conversely, evidence from randomised trials supports some interventions commonly described as CM. Use of this type of medicine is increasing in health care: About 10% of the U.K. population visits a CM practitioner each year (1), and about 40% of U.K. general practitioners offer their patients access to CM services through the National Health Service (NHS) (2). Thus, CM constitutes an important area for the implementation of evidence-based medicine for better patient care.

Can evidence-based medicine be applied to CM?

Evidence-based medicine and CM can be viewed from one of either perspectives. Those outside of CM have an external perspective. Examples include a general practitioner (GP) considering whether to refer a patient with fibromyalgia to an acupuncturist, a health authority thinking about a purchasing contract with a NHS homeopathic hospital for patients with eczema, and a patient deciding whether to buy an over-the-counter herbal remedy for osteoarthritis. Evidence-based medicine can and should be used as part of such decisions. Practitioners of CM have an internal perspective: They diagnose and treat patients with fibromyalgia, for example, or use acupuncture for nausea. Evidence-based medicine exists and should be used as part of such decisions. This use of evidence-based medicine is more problematic.

Evidence-based medicine and decisions about using CM

Contrary to widespread belief, considerable evidence exists to help with decisions about whether to refer to or purchase CM care. The Cochrane Controlled Trials Register currently lists 4000 randomised controlled trials (RCTs) of CM, with 4000 more papers awaiting analysis. There are over 200 systematic reviews of CM interventions, 40 of which are protocols or completed reviews in the Cochrane Library. These deal with such topics as St. Johnswort (a herbal treatment) for depression, acupuncture for migraine and chronic headache, osteopathy and chiropractic for neck pain, hypnosis for smoking cessation, and homeopathy for influenza.

One problem with much CM research is that it often has low clinical relevance. For example, a well-known RCT found significant differences between a homoeopathic remedy and placebo for the treatment of hay fever (3). Homoeopaths usually vary remedies for patients with hay fever by considering, at least in part, the patients' nonmedical characteristics, such as their personality or taste in food. This makes homoeopathy difficult — although not impossible — to test using standard RCT methods. The researchers decided to use one remedy for all patients as an artificial "test case" because it allowed a simpler trial design. Their question was not "Is homoeopathy an effective treatment for hay fever?" but "Is homoeopathy a placebo?" The clinical implications of the study's findings for the management of hay fever, therefore, are not straightforward.

An associated problem is that very few diseases and disorders seen in clinical practice have been subject to CM research. Over 30 trials of acupuncture for nausea have been done (4), not because nausea is a common presenting symptom in acupuncture, but because it is easy to research: Only a single acupuncture point is used, large numbers of surgical patients can be recruited, and outcomes can be assessed in a few hours. Chronic fatigue, a more common condition among acupuncture patients (5), has not been evaluated, probably because such research presents considerably greater practical difficulties.

Another problem related to evidence-based decisions about referring to or purchasing CM is the substantial variation in the way that it is practiced. Methods of diagnosis and treatment differ among practitioners of any particular CM therapy. In acupuncture, for example, some practitioners use the traditional Chinese concepts of yin and yang, while others rely purely on Western neurophysiology. Among traditional acupuncturists, some treat using the "five-element" theory and others treat using the "eight principles." Needles may be inserted deeply or so that they just pierce the skin, for a period of 30 seconds or 3 minutes, during which time they may (or may not) be stimulated by manual twirling or electricity. Therefore, a GP considering referring a patient with fibromyalgia for acupuncture might be impressed by an RCT retrieved from MEDLINE (6) but may not know whether the type of acupuncture used by a local practitioner is similar to that used in the trial.

Using evidence-based medicine to make decisions about purchasing or referring to CM, therefore, may require appraisal of research in which both the condition and the intervention are knowingly or unknowingly unlike those of the presenting problem. This lack of clarity may weaken, not necessarily eliminate any differences made from clinical research. Use of evidence-based medicine through decision analysis (7) may provide a practical framework for evaluation of CM evidence. CM therapies have long been prey to the view that no decision is worth taking until the evidence crosses a certain threshold (the level of which is never made explicit) and at which point the evidence becomes "strong." Decision analysis, conversely, allows an explicit estimate of how much evidence is enough evidence.
In a simple decision tree with one decision (use or avoid therapy) and two outcomes (cure and illness), it can be shown that, in order to recommend treatment, the disutility (or harmfulness) of treatment must be lower than the disutility of the illness multiplied by the probability that the treatment will be successful. If a disease is considered to be 20 times worse than the risks, costs, and inconvenience of a potential treatment, then that treatment is warranted once there is a greater than 5% chance that it will be effective. Many CM therapies are relatively safe, inexpensive, and noninvasive, and therefore have low levels of disutility. For example, although homoeopathy would not be considered a routine option in eczema, the wider use of decision analyses may result in making a case for referring patients with more severe or refractory cases for this treatment.

Use of evidence-based medicine by CM practitioners

Considerable barriers remain to the use of evidence-based medicine by practitioners of CM. The main problem is a dearth of research data examining those questions most likely to be asked by practitioners in the course of their work. Although evidence exists that chiropractors can offer effective treatment in back pain (8), less evidence can be found on which types of spinal manipulation are most beneficial. Similarly, the benefits of acupuncture for migraine have been supported by RCTs (9), but there is no information on which strategies for point selection should be favoured, how long needles should be kept in place, or how many treatment sessions are optimal. Undertaking and implementing such research would require a greater commitment to science, critical thinking, and evidence-based medicine than is currently found in the CM community.

Andrew Vickers, MA
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References

Journals Reviewed for This Issue*

Core Journals

Am J Med
Arch Pediatr Adolesc Med
Arch Surg
Arthritis Rheum
BMJ
Br J Gen Pract
Br J Obstet Gynaecol
Br J Surg
Circulation
Clin Pediatr
Cochrane Library
Diabetes Care
Hypertension
JAMA
J Am Board Fam Pract
J Am Coll Surg
J Gen Intern Med
J Intern Med
J Neurol Neurosurg Psychiatry
J Pediatr
J Vasc Surg
Lancet
N Engl J Med
Obstet Gynecol
Pediatrics
Surgery

Journals for Continuing Review

Acta Obstet Gynecol Scand
Age Ageing
Am J Cardiol
Am J Public Health
Am J Respir Crit Care Med
Ann Emerg Med
Ann Med
Arch Fam Med
Arch Neurol
Br J Psychiatry
Br J Rheumatol
Can Med Assoc J
Chest
Clin Invest Med
Crit Care Med
Periop Steril
Gastroenterology
Gut
Heart (formerly Br Heart J)
J Am Coll Cardiol
J Am Geriatr Soc
J Clin Epidemiol
J Fam Pract
J Infect Dis
Med Care
Med J Aust
Neurology
Pain
Spine
Stroke
Thorax

*Approximately 60 additional journals are reviewed. This list is available on request.