Evidence-based common sense?

Mark Sherman MD CM CCFP

Like most physicians, I try to keep up to date on my journal reading and continuing medical education conference participation in an effort to provide the best possible care to my patients and community, in accordance with the most evidence-based practice of the time. Of course, this requires me to accept an *assumption* that the evidence-based research that such journal articles and conference presentations are based upon is valid and an effective and appropriate means of elucidating the benefits and drawbacks of various clinical interventions.

Evidence-based medicine (EBM) is the popular term, all too loosely used, to validate claims made by various health practitioners, educators, authors, researchers, and pharmaceutical company representatives about the benefits and limitations of drug use and clinical management of disease. According to Marchevsky's *Critical Appraisal of Medical Literature*, EBM aims to "de-emphasize intuition, unsystematic clinical experience, and pathophysiological rationale as sufficient grounds for clinical decision making."[1] Certainly, if all research were truly randomized, blinded, and free from any bias, then such a rigorous, scientific approach might offer a reliable source of clinical advancement. The reality, however, is that bias, competing interests, and misinterpretation (or manipulation) of data are all rampant in our medical literature and continuing medical education. It is thus the important responsibility of the clinician reader to interpret such medical literature with a discerning eye, a healthy scepticism, and both feet firmly grounded in their own common-sense intelligence. That's right, I said it—*common sense*. Perhaps our faith in EBM as the "end-all, be-all" authority on best practice is so absolute and exclusive that it blinds us from our own experience and intelligence.

> It blinds us from our own experience and intelligence

Pathophysiologic rationale vs evidence-based medicine

Let's take the example of proton pump inhibitors (PPIs). Proton pump inhibitors, such as omeprazole, pantoprazole, or esomeprazole, reduce stomach acidity substantially and are used to treat peptic ulcer disease, gastroesophageal reflux disease, and other acid-related gastrointestinal diseases. Use of PPIs has increased markedly over the past few years, mostly owing to marketing strategies. Yet it only takes a moment of reflection back to our medical school days to remember how acid is actually quite important in the functioning of our digestive systems. Acid activates several proenzymes and, therefore, increases our digestion and absorption of nutrients. Acid causes intrinsic factor to become an active molecule, which then allows vitamin B12 absorption in the ileum. Acidity controls bacterial growth in the upper gastrointestinal tract and helps to preserve normal cellular function of the gastric mucosa. So speaks our common sense, based on our intelligence and education. This common sense would caution me against a liberal or prolonged use of strong antacids, as they would certainly disturb gastric homeostasis. And yet PPIs are now one of the fastest growing and most common prescriptions in North America, purportedly based on the conclusions of evidence-based research. This occurs while other research clearly shows how *Helicobacter pylori* (a causative factor for peptic ulcer disease and gastric dysplasia) is often associated with hypochlorhydria,[2] as is bacterial overgrowth syndrome; and that gastric dysplasia and carcinoid tumours are also associated with reduced acidity in the stomach, potentially contributed by *H pylori*.[3] More recent research seems to suggest that PPIs increase the risk of *Clostridium difficile* infection in hospitalized patients.[4,5] Does chronically reducing stomach acid, or even treating *H pylori* infections with antacids, make sense? The question must arise—have the "evidenced-based" recommendations for PPIs really proven themselves to be best practice?

Hormone replacement therapy (HRT) provides another example of a limitation of EBM. While we have known for more than 50 years that exogenous estrogens are associated with an increased risk of clotting and of breast cancer, we seemed to have developed a collective amnesia in the 1990s when we began prescribing HRT en masse to our menopausal patients for relief of their vasomotor symptoms, vaginal dryness, and for osteoporosis prevention. Common sense seemed to whisper that HRT, another example of exogenous hormones and analogous to oral contraceptive pills, would likely increase morbidity and mortality with respect to cardiovascular disease and breast malignancy. And yet it was only after the conclusions of the Heart and Estrogen/progestin Replacement Study,[6] Women's Health Initiative,[7] and Nurses' Health Study[8] trials that research finally caught

Cet article se trouve aussi en français à la **page 169.**

up with common sense and demonstrated the increased risk of heart attack and breast cancer associated with HRT in some groups. Unfortunately, it was only then that we began to decrease our prescriptions for these agents. While more recent analyses of these trials might call into question the *degree* of risk increase with HRT in certain age groups, common sense still tells us that exogenous estrogen use has potential risks that should be carefully weighed against any potential benefits.[9]

Examples of common sense being forsaken in clinical practice abound. Benzodiazepines bind to the same receptors as alcohol in the brain. And while we would never think of recommending alcohol to seniors for sleep or anxiety, we all too often prescribe benzodiazepines to our elderly patients, resulting in increased falls, confusion, and a worsening of depression and anxiety with chronic use. Cyclooxygenase-2 inhibitors, while marketed as safe for the gastrointestinal tract, have also demonstrated increased overall morbidity and mortality compared with traditional nonsteroidal anti-inflammatory drugs.[10] While the scandal of Vioxx and its cardiovascular risks should have been sufficient to summon rigorous caution and a careful reevaluation of other cyclooxygenase-2 inhibitors, it seems that we have quickly fallen prey to the marketing of a whole new generation of these agents.

And what about exercise and nutrition? Most of us would agree that an ounce of prevention is indeed worth a pound of cure. Our common sense tells us that what we eat and how much we move and exercise is the basis for health. Yet how much is nutrition and physical activity a part of our research literature, our continuing medical education, or our clinical practice?

Reconsidering complementary practices

Our exclusive reliance on the gospel of EBM, without a proper perspective of common sense, also has the risk of blinding us to the *benefits* of modalities or treatments that do not have large double-blind, placebo-controlled trials supporting them. Complementary and alternative medicine (CAM) is perhaps the greatest example of this. Herbal medicines such as milk thistle, hawthorn, ginkgo, and ginseng have a solid history of successful clinical use for hundreds to thousands (in the case of ginseng) of years. In addition, there are several small well-designed studies that have ascertained the important clinical uses of these treatments for hepatitis,[11] heart failure,[12] dementia,[13] and immunomodulation,[14] respectively. Anyone who rejects these plant medicines as ineffectual, quackery, or toxic has simply not looked at the research.

Acupuncture, which has at least a 5000-year-old history, is a widely used and thoroughly researched ancient technique of traditional Chinese medicine. The World Health Organization lists more than 30 ailments, from low back pain and depression, to hypertension, rheumatoid arthritis, and peptic ulcer disease, for which acupuncture has demonstrated efficacy in controlled clinical trials.[15] Yoga and meditation have shown benefits for an equally broad spectrum of "dis-ease," including anxiety, insomnia, asthma, and chronic pain.[16,17]

The problem with CAM practices is that there are often conflicting clinical research data. The studies on herbal medicines, for example, are small, mostly owing to the fact that a whole plant cannot be patented; therefore, there is no financial interest in funding large trials of these medicines. Also, smaller studies, no matter what their subject matter, are prone to increased bias, while statistical significance is difficult to attain. However, by combining the successful clinical history of such agents, the extensive pharmacologic research that has been performed, *and* the clinical research trials, we are suddenly provided with relatively safe options to treat many of the chronic diseases we are faced with today, at a lower cost and with generally fewer side effects. Certainly our French, Italian, and German physician peers seem to feel that there is enough evidence on CAM practices to include such subjects as part of their regular medical school curricula and, in many cases, as a part of their clinical practice. (*Ginkgo biloba* is the treatment most commonly prescribed by physicians in Germany for dementia.) What makes a treatment "alternative" is simply whether it is widely accepted as good clinical practice or not. Remember that there was a time—not too long ago—when washing one's hands before surgery was considered alternative and was ridiculed, and when bleeding a patient or prescribing a dose of mercuric chloride for a wide variety of ailments were common medical practices. I wonder, what will History say of our medicine of today?

Rethinking best practice

Much of the reform of medical school education in recent years has focused on training future physicians in *problem-based learning*—that is, reminding us to use our intellect and rationale, and not the latest widely publicized research article or textbook entry as the basis for our clinical decision making. As we clinicians gain experience through residency and in our medical practices, we further learn to hone these problem-solving skills through our continuing education, our clinical experiences, and our personal knowledge of our patients as individuals and unique human beings. It is this balance of the art and science of medicine that can distinguish us as healer-physicians capable of adapting and evolving our clinical decisions based on the patient seated in front of us and a clear and holistic analysis of best practice.

Evidence-based medicine and the research that supports it are essential aspects of determining best clinical practice as our medicine continues to change and evolve. And yet our experience has shown that EBM is not sufficient in and of itself. We do not live or practise in a laboratory, nor within the boundaries of double-blind,

placebo-controlled trials. We live in a real world with patients who are also people. We are the inheritors of traditions and histories in medicine from which we should have grown and learned. Placebo effects, human bias, research politics, competing interests, and subjective interpretation are plain realities of any research and can easily blur definitive conclusions.

I would offer to Dr Marchevsky and to all physicians to remember that *intuition, clinical experience*, and *pathophysiologic rationale* are indeed important tools, along with evidence-based literature, with which to discern the best care for our patients. Perhaps these common-sense tools can even broaden the scope of EBM to include measures of evidence that have guided healers and physicians for thousands of years before the first double-blind study. To honour such a breadth of perspective, howev er, requires us to loosen our tenacious grip of currently accepted doctrines of EBM as the definitive measure of good clinical practice. For in the end, it is really our common sense, nurtured by education, experience, intuition, and rationale, that is always our ultimate measure of evidence—in medicine as in life itself.

Dr Sherman *is a family physician practising in Victoria, BC, and is the coordinator of the Community Health Cooperative of Victoria initiative.*

Competing interests
None declared

Correspondence to: **Dr Mark Sherman,** *James Bay Community Project, 547 Michigan St, Victoria, BC V8V 1S5; telephone 250 388-6811; fax 250 380-0244; e-mail* **peacebearer@care2.com**

References

1. Marchevsky D. *Critical appraisal of medical literature*. New York, NY: Kluwer Academic/Plenum Publishers; 2000.
2. Amieva MR. Important bacterial gastrointestinal pathogens in children: a pathogenesis perspective. *Pediatr Clin North Am* 2005;52(3):749-77, vi.
3. Gologan A, Graham DY, Sepulveda AR. Molecular markers in *Helicobacter pylori*–associated gastric carcinogenesis. *Clin Lab Med* 2005;25(1):197-222.
4. Cunningham R, Dale B, Undy B, Gaunt N. Proton pump inhibitors as a risk factor for *Clostridium difficile* diarrhea. *J Hosp Infect* 2003;54(3):243-5.
5. Yearsley KA, Gilby LJ, Ramadas AV, Kubiak EM, Fone DL, Allison MC. Proton pump inhibitor therapy is a risk factor for *Clostridium difficile*–associated diarrhea. *Aliment Pharmaco Ther* 2006;24(4):613-9.
6. Hulley S, Grady D, Bush T, Furberg C, Herrington D, Riggs B, et al. Randomized trial of estrogen plus progestin for secondary prevention of coronary heart disease in postmenopausal women. Heart and Estrogen/progestin Replacement Study (HERS) Research Group. *JAMA* 1998;280:605-13.
7. Rossouw JE, Anderson GL, Prentice RL, LaCroix AZ, Kooperberg C, Stefanick ML, et al. Risks and benefits of estrogen plus progestin in healthy postmenopausal women: principal results from the Women's Health Initiative randomized controlled trial. *JAMA* 2002;288:321-33.
8. Colditz GA, Hankinson SE, Hunter DJ, Willett WC, Manson JE, Stampfer MJ, et al. The use of estrogens and progestins and the risk of breast cancer in postmenopausal women. *N Engl J Med* 1995;332:1589-93.
9. Rossouw JE, Prentice RL, Manson JE, Wu L, Barad D, et al. Post menopausal hormone therapy and risk of cardiovascular disease by age and years since menopause. *JAMA* 2007;297:1465-77.
10. Therapeutics Initiative. COX-2 inhibitors update: do journal publications tell the full story? *Ther Lett* 2002;43:1-2.
11. Salmi HA, Sarna S. Effect of silymarin on chemical, functional and morphological alterations of the liver. A double-blind controlled study. *Scand J Gastroenterol* 1982;17:517–21.
12. Pittler MH, Schmidt K, Ernst E. Hawthorn extract for treating chronic heart failure: meta-analysis of randomized trials. *Am J Med* 2003;114(8):665-74.
13. Le Bars PL, Katz MM, Berman N, Itil TM, Freedman AM, Schatzberg AF. A placebo-controlled, double-blinded randomized trial of an extract of *Ginkgo biloba* for dementia. *JAMA* 1997;278:1327-32.
14. Kiefer D, Pantuso T. Panax ginseng. *Am Fam Physician* 2003;68:1539-42.
15. World Health Organization. *Acupuncture: review and analysis of reports on controlled clinical trials.* Geneva, Switz: World Health Organization; 2002.
16. Patel G. Complementary and alternative medicine for non-cancer pain. *Med Clin North Am* 2007;91(1):141-67.
17. Schneider RH. Long-term effects of stress reduction on mortality in persons >55 years of age with systemic hypertension. *Am J Cardiol* 2005;95(9):1060-4.