

Comparative advantages

By Harold C. Sox, Jr., M.D.

Comparative effectiveness research (CER) is potentially the most important development in clinical research since the randomized trial. It is rising to prominence at a time when the high cost of health care is a growing problem for governments, businesses, and patients alike.

The basic concept of CER is to compare treatments and other health-care interventions to answer the question of greatest concern to patients: Which is best for me?

In 2009, I cochaired a committee, convened by the Institute of Medicine (IOM), that defined CER as “the generation and synthesis of evidence that compares the benefits and harms of alternative methods to prevent, diagnose, treat, and monitor a clinical condition or to improve the delivery of care.” Three key elements of CER distinguish it from other types of clinical research.

Active: First, CER compares active treatments to each other. This approach contrasts with studies that compare an active treatment to a placebo. Such studies are useful in the early stages of research but much less so for real-life decision-making. (Placebos should not be confused with “watchful waiting,” however, in which treatment is withheld to see if a problem will improve spontaneously. Watchful waiting is an important option for patients.)

Second, the patients, clinicians, and interventions involved in CER are representative of usual medical practice. Many clinical trials have narrow criteria that patients must meet to be enrolled, in order to increase the chance of detecting a treatment effect if one is present. This helps to prove that a treatment can work under ideal circumstances—again, an important result in the early stages of research—but not necessarily that it is the best treatment in typical practice, which is what patients want to know.

Vary: Third, CER focuses on helping individuals make decisions that are best for them. Patient populations are heterogeneous; some people are more likely than others to have a certain disease or to die from it. For example, researchers can estimate a person’s likelihood of developing colorectal cancer by asking about risk factors such as age, obesity, exercise, and family history. There is also treatment-response heterogeneity, which means that different people with the same condition may vary in how they respond to a treatment.

Although the IOM’s definition is new, the concepts of CER are not. The National Institutes of Health (NIH) has for decades funded comparisons of active treatments—such as the Dartmouth-run Spine Patient Outcomes Research Trial (SPORT), a randomized trial that compared surgery to other therapies for three causes of low back pain.



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What is new is a well-funded national CER program. The American Recovery and Reinvestment Act of 2009 allotted \$1.1 billion for CER. A year later, the health-reform law created the Patient-Centered Outcomes Research Institute (PCORI), which will have an estimated annual budget of \$500 million.

PCORI will set its funding priorities differently than other organizations that sponsor research. In the usual investigator-initiated model, a researcher has an idea, applies to an agency for support, and receives funding if the proposal is rated highly enough by a review group convened by the agency. In effect, the research community sets the priorities for the agency. But PCORI will itself set national CER priorities. They have not yet been announced, but the 2009 IOM committee may be a model; our priority-setting criteria included total spending on a condition, annual deaths from a condition, and geographic variation in caring for a condition.

Will CER slow the rising cost of health care? Perhaps, but CER studies should focus on value—reducing waste by helping to identify the most effective tests and treatments. Spending would not necessarily decline, however, as CER may show that some patients would benefit from treatments they are not now getting. This suggests that CER’s effect on the economy may be largely indirect—improving the health of the workforce and the productivity of the economy.

Home: Closer to home, I see advantages and challenges in three domains for Dartmouth-Hitchcock. First, CER will provide many opportunities to do research on interesting clinical questions. This type of research is a sweet spot for DH. The successful completion of SPORT helped to establish DH’s reputation for doing high-quality randomized trials—an important component of CER. DH also has an international reputation for observational research using large datasets. DH’s study of medical decision-making is among the best anywhere, which will be a big advantage in competing for CER funds.

Teaching clinical decision-making is a closely related domain. I believe DH’s clinical departments have not placed enough emphasis on developing medical students’ decision-making skills. Evidence-based decision-making requires well-honed decision-making skills. Developing those skills in students—and reinforcing them among residents—is the responsibility of the clinical faculty. DH’s reputation for excellent teaching provides a good basis for rising to the next level in fostering a thoughtful approach to decision-making.

Patient care is the third domain. CER will result in better evidence and improved tools to apply that evidence. But consistently translating evidence into decisions about patient care will be a challenge. DH’s commitment to quality improvement, and its new electronic health record system, are key components of a strong and supportive infrastructure to translate evidence into better practice. ■

The Grand Rounds essay offers insight or opinion from a member of the Dartmouth medical faculty. Sox, now an emeritus professor, chaired DMS’s Department of Medicine from 1988 to 2001 and from 2001 to 2009 was the editor of Annals of Internal Medicine.