



The Tyranny of Evidence-Based Medicine

Aha! I thought that title might get your attention. But my purpose today is not really to bash evidence-based medicine, but rather to place it in its proper perspective.

What is evidence-based medicine? Put very simply, it is nothing more than the application of hoary scientific principles to medical care. Let's not underestimate its importance—evidence-based medicine is by far the best thing that has happened to medical practice in the last half century. It has brought us from a largely anecdote-based practice to a much more scientific and data-driven mode of care.

At the same time that we're giving evidence-based medicine its proper respect and acclaim, however, we also need to acknowledge its limitations and pitfalls. There are some real problems with how evidence-based principles are being applied in the day-to-day practice of medicine. These problems result not only from medical practitioners who simply pay lip service to evidence-based medicine but also from those who indeed believe they are sincere adherents to its principles.

By now you may be wondering exactly what I'm blathering about. It may be simplest to give a few examples that illustrate what I consider the overextension and misinterpretation of evidence-based medicine.

LACK OF DATA DOES NOT EQUAL INADEQUACY

A classic example of evidence-based medicine being misconstrued is when some medical blowhard pronounces that therapy "X" should never be used because there are no studies to support its use. This may or may

not be a legitimate objection to the employment of a particular medical approach. If the proposed therapy has been tested against an alternative and found, with statistically significant data, to fall short of a competing approach, then fair enough. We should, after all, favor the therapy that bested therapy X in a valid, randomized, head-to-head comparison.

But many times the problem is not that therapy X has fallen short, but rather that therapy X has never been put to the test. It is critical to recognize that the absence of data in support of a given therapy is not in any way equivalent to positive evidence that the therapy is inferior to a com-

peting approach. The hackneyed case illustration that's often put forward to validate this point relates to the use of parachutes in preventing injury after ejection from a high flying airplane—to date there are a grand total of zero randomized studies demonstrating that parachutes are superior to placebo in preventing injuries upon contact with Mother Earth.

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You get the picture, I hope. The absence of data in support of a given therapy is just that: the absence of defined data bolstering the use of that therapy. But, as in the tired parachute example, that is a very far cry from stating (as many are tempted to do) that a given therapy, no matter how

STATISTICAL NUANCES CAN MEAN A WORLD OF DIFFERENCE

time-honored it may be, is worthless simply because a randomized, controlled trial has not been performed to prove its worth unequivocally. A more subtle but perhaps even more important issue relates to misinterpretation of the evidence—which often happens even when a randomized, controlled trial indeed has been conducted. For instance, let's say that new therapy "A" has been compared with longstanding therapy "B" in the treatment of a common and pernicious ailment. Now let's presume that therapy A was found to have a lower

odds ratio than therapy B (perhaps 0.8) for a well recognized adverse outcome commonly associated with the disease. The kicker, however, is that the *P* value for this apparent benefit of A over B is only .06, just above the widely accepted cutoff value of .05. Along comes the therapeutic nihilist (who may have a financial motive for favoring the old therapy or, perhaps, simply has a sentimental attachment to the more traditional therapy) who then brays loudly to the world that therapy A has failed its audition and should be consigned to the dust bin of history.

But is that really legitimate? What the results are really telling us is

that there is a 6% chance that the advantage observed for therapy A over therapy B in the study will not hold up in the “real world”—and a 94% chance that it will! There could very well have been a problem with the sample size that led to the *P* value missing its cutoff. Perhaps the investigators had too small a budget and had to compromise on the size of the study population. Perhaps they overestimated the potential magnitude of the hypothesized advantage of therapy A over therapy B. At any rate, an objective observer will concede that therapy A didn't quite meet its marks, but it truly would be the height of medical folly to reject therapy A forevermore simply because it didn't quite make it to a *P* value of

.05 or less. On the contrary, therapy A remains very promising and clearly is worthy of further study.

DON'T ABANDON COMMON SENSE

Evidence-based medicine is indeed a wonderful advance. It has brought scientific rationality to many backwaters of medicine that desperately needed it. But let's not throw the baby out with the bathwater. There's still a huge role for common sense in the interpretation of the many studies that come onto the radar screen each day. Use your head when looking at data and interpreting the sometimes facile conclusions that are served up—then you truly will be practicing evidence-based medicine at its best. ●

Author disclosures

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