

Searching for El Dorado: the impossibility of finding the right rate

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A great deal of time and effort has been spent by clinicians and health services researchers arguing about the right rate for various medical procedures. How many coronary artery bypass procedures are right for a given population? How much cataract surgery? ... and so on. Like Goldilocks in the Three Bears' house, one wants to find the rate that is "just right." On the face of it, the existence of some appropriate rate seems obvious and so one tries, by various analyses, to identify the appropriate indications for various procedures.

A little reflection on the task of finding the right rate for a procedure, however, may lead one to conclude that the matter is, perhaps, a little more complex than it first seemed. We may have been blinded by all the trees, and have failed to see the forest. If one takes a wider perspective, it becomes clear that it is essentially impossible to fix on a best rate for any *one* procedure in isolation. This insight brings important context to some key health policy issues.

The argument is relatively simple. Assume the best case scenario: perfect information about patients and the effects of a procedure on them. Suppose, for example, one could rank in order all the individuals who could benefit from coronary artery bypass surgery. Rank them in decreasing order of ability to benefit (say in terms of added quality-adjusted life-years or QALYs).¹ When the best candidate has this surgery, the increase in her welfare will be very great. When the next ranked candidate has the surgery, the gain is a bit less, and so on down the line. Presumably, there is a point at which one would stop because the expected gain is 0. Is that the "right rate"?

Clearly not. Our calculation does not take into account the cost of the procedure. Responsible policy requires evidence beyond clinical effectiveness. It is arguably inappropriate to spend \$100 000 on a procedure to extend someone's expected life by a day or two or to make a marginal improvement in its quality. But that is just the seemingly ridiculous end point of the argument. Is it appropriate to spend the money to gain one quality-adjusted life-week ... or month? Can one find an independent standard for the decision that can be defended? Arguments persist about what the socially acceptable price is for gaining a QALY, but there is not likely to be consensus on a single acceptable figure.²⁻⁴

As it happens, this problem has a parallel in economics. What is the optimal amount of bread a person should buy? The answer in economics is that one cannot answer the question in isolation. To know when to stop, one has to

consider not only what return one gets from an additional loaf of bread. One has to compare the gain from the last loaf to the increase in welfare one could get from spending the money on some other goods. Because the value to the individual of each additional bit of bread is usually less than the value of the previous amount, there comes a point when one is better off buying a bit of cheese to go with the bread. The consumer does best when the gains from the purchase of additional bits of different products are equal.

The parallel with medical procedures should be clear. It is reasonable to assume that money for medical procedures is finite. It should be clear that there is a point in the ranks of those waiting for bypass surgery at which one gains very few QALYs per dollar spent. It follows that in some other queue, say that for renal surgery, one could gain many more QALYs per dollar spent by performing renal surgery on a patient at the top of that queue. It is at that point that an economic (or utilitarian) approach would prescribe investing fewer dollars in bypass surgery and shifting them to renal surgery. The right rate is the one at which the gains at the margins are equal. One more step in the analysis underlines the difficulty of finding the truly right rate for medical procedures. To do that, one would have to consider *all* possible medical procedures and balance expenditures so that the marginal gains for each in QALYs per dollar spent are equal.

But that is only a partial answer. It prescribes the relative rates at which one stops performing procedures, not the absolute rates. If one posited a budget constraint — a total amount one was willing to spend on medical care — the right rate would consist of spending across all procedures so as to keep the marginal gains equal until the budget was exhausted. We clearly do not have the information necessary to perform those calculations, and will not for the foreseeable future. But that does not detract from a simple truth. It is impossible and inappropriate to consider trying to identify the "right rate" for a single procedure in isolation from considering other competing demands on the resources necessary for that procedure. The whole problem becomes even more complicated (and realistic) when one adds in the other types of investment that might improve health (early childhood education, regulation of smoking, safer highways and so on)

This argument helps to explain why there is such widespread fluctuation in the rates of various procedures across "small areas": why physicians in Nipissing district, Victoria and Peterborough put tubes in children's ears 3 to 4 times

more often than do physicians in Ottawa or Sudbury.⁵ Medical specialists operate (pun intended) within the narrow confines of their own specialties. They see only the marginal benefits that accrue to their procedures. They are not in a position to judge the potential benefits of alternative uses of the resources they consume. Moreover, they are not in a position to assess, definitively, the value of the expected outcomes to their patients. One might expect their individual judgements to differ on where to stop performing procedures in the ranks of those who can benefit. True, one can produce more uniformity in behaviour by deriving standards based on expert panels, etc., but those calculations will still be restricted to that narrow specialty. Given a tendency on the part of physicians to attempt to do good, one might expect practitioners in a particular specialty to push investment in their area well beyond the societal optimal level. And, of course, that is probably what happens. In addition, physicians are likely to be loath to cut back on marginal procedures for their patients unless they have assurances that their colleagues are doing the same for their patients.

We are almost certainly out of equilibrium with regard to our allocation of resources for medical care. So what is to be done? How can we move toward a better allocation of resources?

Our argument seems to imply the imperative for more research into the cost-effectiveness of investment in medical care. Some procedures, in some locales, appear to be on the low end of cost-effectiveness. Researchers in British Columbia⁶ reported that one-quarter of those undergoing cataract surgery had minimal problems with visual acuity before surgery and not surprisingly demonstrated little improvement. The sector driving the most rapidly rising costs, namely, pharmaceuticals, is frequently accused of direct-to-consumer and direct-to-physician advertising of new products offering marginal improvements. Attention needs to be paid to such areas.

Canadians are continually being warned that we cannot afford our medicare system. Is the assertion that one cannot identify the right rate an argument for skepticism about the unaffordability arguments? Absolutely. Acknowledging that no rate can be shown to be “right” points to the systemic inefficiency of *any* system, not because of sloppiness, or waste, or mismanagement, but because of the difficulty in sorting out all those competing claims for investing in marginally effective “things.” If we are to have a viable health care system, we must view those who argue for more

(whether medical treatment, devices or drugs) with healthy skepticism. Physicians and nurses and perhaps even drug companies must be given credit for believing in what they do. However, in our system, politicians set budget caps according to what they decide the public is willing to fund. We must encourage researchers to assess what works and what does not and trust clinicians to use that information to set reasonable priorities. Decisions must be based on clinicians’ commitment to patients, but they must also take into account the effect of those decisions on our universal health care system. Although this might sound like muddling through, physicians also owe their patients the preservation of the Canadian medicare system, a system that works and, in fact, works reasonably well.

But we will never get it exactly “right”!

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