A Question of Value

Proton therapy's benefits have a big price tag. Is it right for your hospital?

By Anthony J. Montagnolo

Forecasting the impact of innovative medical technology often feels like forecasting economics—that is, stepping into that land where even angels fear to tread. Nonetheless, every organization in health care must make its predictions when it comes to new clinical technologies. This year, a new trend has begun to pick up speed.

Proton beam radiation therapy has gained momentum not just as a peripheral treatment offered in a handful of locations, but as a potentially mainstream clinical therapy. As this trend has unfolded over the past few years, many questions about the technology have arisen and, perhaps as importantly, it has become a good case study for what board members should be considering in general as hospitals wrestle with the need to strategically prioritize their capital investments in clinical technology.

ECRI Institute, an independent nonprofit organization that researches the best approaches to improving patient care, and *Trustee* have teamed up to produce an occasional series that explores the value of new clinical technologies. The series is designed to help board members evaluate technology in the context of competing strategic priorities.

Briefly, proton beam radiation therapy targets and delivers beams of protons to a tumor with high precision and potentially less damage to surrounding healthy tissue than more conventional beams of X-rays. Reducing collateral tissue damage becomes especially advantageous in treatment of cancer of the eyes, brain and spinal cord, for example, or in the treatment of children, who are more susceptible to harm from radiation in general. From that perspective, proton beam therapy provides potential benefits that make it attractive as a clinical tool.

Is It Worth Millions?

As is often the case, the story does not end there. Following the "no free lunch" theory, protons are free in nature's atoms but expensive to produce and direct in a therapeutic beam. In fact, a traditional multiroom proton treatment facility costs about $100 million to $200 million to construct and outfit. Even the less-expensive

IMAGES FROM ISTOCKPHOTO

single-room treatment centers will cost about $30 million. Given the financial constraints of today's world, an expenditure of this magnitude gives one pause. And that pause should lead to asking key questions about this technology and perhaps lead to broader lessons about what a board should always ask regarding any capital expenditure of significant size.

Does It Work?

First question: How well does this really work? An even better question: What objective clinical evidence exists to support using this clinical technology over existing alternatives? Though the first question seems obvious, the corollary question emphasizes that we should compare a new technology to what we currently have; that is, look for its comparative effectiveness. Thus, for proton beam therapy, the question is whether it works better than more conventional therapies, not just that it does what it is purported to do. This isn't as simple as it seems. Many clinical trials are not true head-to-head comparisons, and much of the clinical literature does not provide conclusive data regarding whether one therapy or treatment is superior to another.

In the specific case of proton beam therapy, the clinical literature has little in the way of direct comparisons that might help us assess its effectiveness if we are trying to answer the corollary question. ECRI Institute's staff reviewed the literature in 2010 and concluded that no true analysis of the efficacy of proton therapy was possible given that the data available was insufficient.

This conclusion mirrors that of reports issued by the Agency for Healthcare Research and Quality, which similarly indicated that a systematic review of the clinical literature on this technology likely would not yield conclusions on the effectiveness of proton beam therapy.

While this lack of data should not be taken to mean that proton beam therapy does not work, it does mean that there is the possibility that it does not provide much benefit over conventional therapy. Basically, we just don't know. So, investing in this therapy carries the risk that the technology may not prove worth it—and with a $100 million to $200 million price tag on the line, that is a major risk.

A TRADITIONAL MULTIROOM PROTON TREATMENT FACILITY COSTS ABOUT $100 MILLION TO $200 MILLION TO CONSTRUCT AND OUTFIT.

Long-Term Strategy

The second key question: How does this new technology fit into our long-range strategy? Technology affects strategy, and strategy must take into account technology. Every health care provider will need significant investment in clinical technology to provide appropriate community benefit, stay competitive and attract talented physicians. The question is: Which new technologies support our strategy and which are less important?

Technologies that push the strategy forward clearly should be favored over less-critical technologies in less-critical clinical spaces at an organization. Though perhaps self-evident in some respects, in ECRI's experience, cracks appear in this logic at many institutions.

Simply, sometimes internal technology proponents advocate so passionately for their clinical beliefs that it creates an impression that a new technology is critical even if not in the strategic strike zone of that institution. Of course, those advocates may not have the technology needs of the whole institution readily in mind because they don't see that as part of their day-to-day responsibility.

Watchful Waiting

In the case of proton beam therapy, the downside to not aligning clinical technology with strategic priorities becomes immediately clear. It's the opportunity cost of spending so much money and staff time on a technology that, if not truly filling a strategic need, would drain a huge amount of financial capital that may be spent better in other places.

Further, given the relatively early stage of diffusion and lack of conclusive clinical data, even if cancer therapy is a strategic growth and development service line, it may be prudent to adopt a "watchful waiting" approach. Still, this also depends on the local competitive environment, research priorities and reimbursement.

In the end, what has changed for health care organizations and their boards is the margin of error with strategic capital decisions related to clinical technology. Clinical technology has become increasingly related to clinical performance, and this is unlikely to change in the future. Hospitals must invest in the future to deliver state-of-the-art clinical care. Meanwhile, capital dollars needed for such other purposes as information technology now impact the capacity to meet clinical technology needs and desires. This makes it even more critical for trustees to understand clearly management's assessment of the risks and benefits of new clinical technology.

Though no one has a crystal ball, these capital allocation decisions must be made with "eyes wide open" or falling behind or jumping too far ahead of the technology curve will become inevitable. And this means that boards, as stewards, may be pressed more to understand and weigh in on clinical technology forecasts and comparative-effectiveness research to ensure a healthy future. See clearly; choose wisely. Decisions matter. T

Anthony J. Montagnolo, M.S. *(amontagnolo@ecri.org), is executive vice president and chief operating officer at ECRI Institute, Plymouth Meeting, Pa.*