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Editorial

Beyond Surgical Outcomes Research: Value-based Surgery

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Value in healthcare is defined as the quality obtained for cost expended. Value-based surgery is surgical practice based on the concept of pursuing value. Value-based surgery encompasses ideas of cost-effectiveness, comparative research, and outcomes research, but looks at the outcomes and quality achieved from a more thorough perspective. Expectations of surgical practices and results are shifting partly due to renewed interest in national health legislation, but also in response to a need to achieve less with fewer resources. As our practices are expected to grow toward value-based surgery, so too should our research efforts focus on value.

The Patient-Centered Outcome Research Institute (PCORI) was created as part of the Patient Protection and Affordable Care Act in 2010 [1]. The goal of the institute is to focus on research that is patient-centered while keeping in mind the tenets of Comparative Effectiveness Research [2]. Comparative Effectiveness Research includes measures of cost-effectiveness as well as efficacy and helps to guide treatment decisions when more than one treatment option exists [3]. Value-based research goes further. The formula for value in healthcare is simple: quality divided by cost [4]. But, calculating value is anything but simple.

Cost-effectiveness is relatively easy to calculate, especially when it comes to comparing two treatments for a disease. While precise dollar figures may be difficult to attach, the process of choosing the more cost-effective treatment tends to be straightforward. For example, take two approaches for cholecystectomy: open and laparoscopic. For each procedure we can calculate the average procedure time, the cost of supplies and disposables, amortization and depreciation of equipment, the length of hospital stay, the total cost of hospital stay, and the number of postoperative visits. We can factor in the professional fees and hospital collections for each procedure and determine which is more cost-effective at one week, one month, and one year. We can even factor in the average rate of complications, such as wound infections, and the cost of them over one month, three months, or twelve months. Those factors may change the cost-effectiveness calculation or further reinforce the cost-effectiveness of one approach.

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But, what happens if we factor in the rates of long-term complications, such as incisional hernias and adhesive small bowel obstructions? What if, by the time these complications occur in say five or ten years, that only 50% of patients will be seeking care at the hospital where they underwent surgery and only 33% of patients still have the same health insurance company? The cost effects of the original decision between open and laparoscopic cholecystectomy cannot be calculated for a patient's new insurance company or a hospital out-of-state. The only way to calculate the cost effects would be to the healthcare system at-large, and since we do not have a single-payer system in the US, that calculation does little good.

Research by value-based surgery methods can help answer those questions. Value-based surgery aims to incorporate the general concept of cost-effectiveness but take it farther. Value-based surgery incorporates numerous outcome metrics, beyond those easily defined by costs, such as the amount and cost of pain medication required, the cost of other medication required, the time required to return to work, the time required to return to leisure activities, the time to regain normal appetite, freedom from disease recurrence, and freedom from long-term complications or side-effects. Unexpected outcomes—such as wound infections, readmission to the hospital, returning to the operating room, missing work, disease recurrence, the need for long-term medications, multiple postoperative visits, or chronic pain—are included in the value analysis. Valuation is often quantifiable but qualitative inputs can be included. A value-based analysis can guide surgical decision-making more accurately, and more completely, than a cost-effectiveness analysis.

The strength of value-based analysis is its applicability on both the micro- and the macro- level. Value-based analysis can be performed on two different surgical treatments for a given problem. Value-based analysis can also be performed for two or more surgeons performing the same procedure. Such an analysis can include operative time and costs, length of stay, rate of complications and associated costs, and payer mix. A value-based analysis at the level of the department can analyze the value of one or more surgeons focusing on certain procedures while others focus on different procedures. A value analysis at the level of the hospital may look at which surgical specialties or divisions get additional block time or preferred starting times. Such an analysis might include the Net Operating Income (NOI) for the procedures performed but could also factor in such things as the referral patterns of the surgeons to the hospital for laboratory or imaging studies or the surgeons' use of an affiliated outpatient surgery center. A value analysis of a health system could analyze the mix of services offered at various hospitals across a city, county, or state, and guide the regionalization of certain services such as cardiac surgery, major cancer resections, or transplants.

Value-based surgery (surgical practice based on value analysis) not only provides better outcomes for patients but provides more efficient care delivery for surgeons, departments, hospitals, and health systems. With increasing healthcare costs and a greater focus on cost containment, practice patterns will have to grow from those based on patient-centered cost-effectiveness into those derived from value-based care. We should begin shifting our research efforts in the same direction to stay ahead of the coming change.

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