

3. How should urologists continue to improve patient quality of care? Please define a specific quality of care issue and propose a solution?

Time-driven activity-based costing in urologic surgery cycles of care

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Pricing and cost accounting within the American medical system remain highly irrational and inaccurate, impeding efforts to curb domestic health care expenditures.¹ However, in light of recent initiatives such as the Medicare Access and CHIP Reauthorization Act (MACRA), the Affordable Care Act, and private payer bundled payment programs, there is clear momentum away from fee-for-service reimbursement that renders current costing practices a problem that can no longer be ignored.²

Historical methods of cost accounting such as ratio of costs to charges (RCC) or the resource-based relative value scale (RBRVS) have little association with true resource utilization.³ Additionally, these systems focus insularly on individual services rather than aggregating costs across the cycle of care for a given condition. Without a comprehensive understanding of care cycle costs, it therefore becomes highly challenging to measure value or constrain spending. This is particularly applicable to surgical care, as value must be derived by measuring cost and outcomes associated with not only a surgical procedure, but rather from all aspects of pre- and postoperative management of the associated medical condition.⁴

Time-driven activity-based costing (TDABC) is an accounting tool that has been utilized across many other industries to more effectively understand workflows and resource utilization to improve efficiency and quality.⁵ This is a bottom up approach that specifies the cost of each resource involved in a cycle of care, as well as the total time it is utilized. The necessary starting point in any TDABC analysis is creation of step-by-step, time-specific process maps that accurately depict the procedure or cycle of interest. These are assembled via observation of clinical spaces and interviews with relevant staff. Thereafter, it is possible to define which individuals are involved in each step and for how much time. Personnel cost per minute is estimated by dividing each individual's total annual compensation by number of minutes available for clinical care. Similarly, per minute depreciation-adjusted space and equipment costs are calculated from administrative data. The cost per minute of all resources is multiplied by associated time and then added together with consumable costs in order to determine overall cost. In this manner, the entirety of the care process is discretely outlined and costs become identifiable to a high degree of specificity.⁶

It has been advocated by Kaplan and Porter that a central tenant of measuring value in health care is utilizing the patient's medical condition as the unit of analysis, and furthermore that costs and outcomes should be measured over the full treatment cycle for that condition.⁷ Complex cycles of care, therefore, likely stand to benefit the most from value creation through successful application of TDABC methodology. In this context, "complex" signifies conditions that are high-cost, prevalent, longitudinal in nature, involve multiple providers, and feature a high degree of care variability. For

such conditions, TDABC allows clinicians and administrators alike to develop a common, transparent understanding of costs that allows for meaningful redesign of clinical pathways.

With urology encompassing an array of complex conditions as defined above, it serves as an ideal field for TDABC application. For example, management of urolithiasis involves a high degree of heterogeneity with respect to management approach (i.e., observation, type of surgical intervention, or timing of intervention) that ultimately has a profound impact on utilization of such high cost resources as imaging services, emergency department care, and operating room time. Through TDABC, various routes through a given process map can be compared with respect to cost and clinical outcomes, allowing delineation and standardization of best practices. Furthermore, more granular definition of the care pathway reveals opportunities to better utilize providers at the top of their qualifications. This could include, for example, midlevel providers seeing uncomplicated postoperative patients in place of a high cost capacity surgeon. Lastly, and of high importance to health care organizations, increased awareness of true resource utilization increases the ability to maximize profit margins under bundled reimbursement models.⁴

TDABC has been successfully applied in our and other institutions with respect to urologic conditions or urologic surgery episodes of care.^{8,9} Widespread implementation of TDABC will rely on more wholesale institutional buy in rather than the piecemeal approach that as of yet has been the standard, as well as integration of these costing

mechanisms into hospital accounting systems. The degree to which providers will pursue these more capital intensive, long-term investments depends on financial incentives to do so.¹⁰ As such, with government policy setting the tone for private payer emphasis on value-based reimbursement, the onus going forward lies largely with policymakers to legislate a payment environment that rewards more accurate cost accounting.

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