Determining the Value-Efficiency of Respiratory Care

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In order to determine, document, and communicate the value of respiratory therapists performing respiratory care procedures, the respiratory care profession needs to position itself to capture and report both time and value standards that can be applied in allocating respiratory care resources. To do this, we propose a new metric called value-efficiency. If we wish to use value-efficiency as a metric to justify respiratory care activities and support labor budgets, there are three key considerations: (1) What value does respiratory care add to the health care organization? (2) Are the interventions provided necessary and of clinical value? (3) What is the value of the respiratory therapist in the delivery of these services? Significant challenges are facing the respiratory care profession and a focus on value-efficiency is a direction the profession must pursue. This approach is a practical response to the increasing demands of payers, administrators, consultants, and patients. *Key words: value; efficiency; productivity; Uniform Reporting Manual; respiratory care managers; cost.*
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Introduction

Every organization attempts to survive and thrive by improving efficiency. In industry, efficiency is relatively easy to measure in terms of inputs (costs) versus outputs (products) and is intuitively understood in terms of profit/loss statements. But efficiency is not so easily defined or tracked in the health care industry. For example, a hospital inputs 3 kinds of people: well people, sick people, and dead people, although we seldom think of it in such stark simplicity. It has the same outputs, but we hope the distribution among the 3 is changed in a favorable direction (ie, more people in the well category). But the means for adjusting the distribution are highly complex,

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mostly not evidence based, and extremely difficult to track because hospital databases (the main source of process

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improvement data) are designed to optimize billing, not quality. As a result, hospital managers address the issue of efficiency by making simple adjustments to their baseline staffing numbers according to any major changes in operations (eg, adding a new ICU). The problem with this paradigm is that the baseline staffing budget is usually something inherited from a prior manager and is seldom questioned. To question the paradigm would be to attempt to justify the labor cost in terms of valuable patient care output. And this is exactly what payers of health care expenses are demanding. But how to do that?

The purpose of this paper is to propose a way to assign value to the activities of a respiratory care department and show how the combined value across all respiratory care activities can be used to improve efficiency calculations and justify staffing. If this can be achieved, we move closer to establishing a consensus on quality of patient care among those who order treatments, those who provide those treatments, and ultimately those who pay for the treatments.

Determining the Value-Efficiency of Respiratory Care

The efficiency of respiratory care has traditionally been calculated as the ratio of standard time allotted for patient care procedures to the actual labor hours expended performing those procedures. Since its inception in the 1970s, the American Association for Respiratory Care (AARC) *Uniform Reporting Manual* has provided guidelines and methods to quantify labor hours required in the provision of respiratory care.[1] It had always been the intent of the *Uniform Reporting Manual* to serve as a valid source for individual times associated with providing respiratory care procedures. By applying these *Uniform Reporting Manual* time standards to procedure counts, labor hours required could be determined in the process of making patient care assignments and reporting productivity. Whereas defining the number of labor hours required remains important, it is no longer enough. Payers now mandate that respiratory therapists clearly demonstrate value. In 2021, the AARC *Uniform Reporting Manual* was replaced with the new AARC *Safe & Effective Staffing Guide*,[2] which is inclusive of the traditional *Uniform Reporting Manual* time standards but also features the concept of staffing driven by value-efficiency as described in this paper. Just as time standards for the AARC *Safe & Effective Staffing Guide* were obtained through a survey process and subsequent statistical analysis, respiratory therapists must take the lead to develop standards and methods to better define the value in the provision of respiratory care.

It is time to shift the thinking of the respiratory care community to include the concept of value. Discussions within respiratory care leadership forums indicate that a minority of departments has incorporated the delivery of value in their staffing plans and operations, while others are looking at where to start.[3,4] Assuming departments adopt such approaches, we plan to survey and report more than just time standards for subsequent editions of the *Safe & Effective Staffing Guide*. This will be part of future research and scientific validation of the rubric to calculate value-efficiency.

Looking ahead to this research, the profession needs to position itself to capture and report both time and value standards that can be applied in justifying respiratory care resources. What follows below is an explanation of the importance of a value-driven approach along with ideas on getting started.

Could the United States Health System Survive Without Respiratory Therapists?

What would happen if all respiratory therapists vanished from hospitals tomorrow morning? Certainly, chaos would be the first response. Respiratory therapists are the only health care clinicians who are specifically trained and competency-tested to perform respiratory care procedures, but others can and do provide the same or similar services (as evidenced by the fact that very few hospitals outside North America employ respiratory therapists). Given proper training and competency testing for other health care workers, the system would fill the gap. The proof resides in data reported by the World Health Organization. The United States spends significantly more on health care than other countries, yet its overall performance continues to rank well below that of other industrialized nations.[5] A manager who recognizes that the United States health system could indeed survive without respiratory therapists (as most countries do) is a leader more likely to generate ideas that will sustain the practice of respiratory care based on unique and unquestionable value.[6]

Although the origins of the professional association the American Association for Inhalation Therapy date back to the 1940s, the profession of respiratory care really became accepted during the 1960s. During the same era, Medicare, Medicaid, and many of today's health care reimbursement systems were created based on a fee-for-service model. The profession evolved to take advantage of the fact that the government, and others, would reimburse hospitals for virtually any services provided by respiratory therapists, whereas if a nurse provided these same services payers considered these services part of the in-patient room and board.

What once kindled the creation and growth of respiratory care, eventually became a threat in the form of capitated reimbursement. In 1983, the creation of diagnostic-related groupings as a capitated reimbursement model for inpatient services shifted respiratory care practice from being revenue-generating centers to cost centers.[7] Payment systems continue to focus on capitated payment and other fixed reimbursement programs as a means of controlling the continued increase in health care expenditures. The shift in methods of payment has greatly increased focus on cost reduction. As a result, respiratory care departments are frequently the subject of workforce reductions, especially when the procedures performed are perceived as routine and customary rather than evidence-based and necessary. Efficient and productive use of labor has helped justify the expense of a respiratory therapist as caregiver. The advent of the Patient Protection and Affordable Care Act (ACA) expanded the focus to value, patient outcomes, and a variety of performance metrics that now drive reimbursement for the provision of care.[8]

No one argues against the idea that health care payers are now demanding value for their dollars. Administrators and consultants increasingly view the respiratory care profession, like many other allied health specialties: with suspicion due to scant amount of scientific evidence that value is being delivered. Consultants are increasingly focused on cost versus value issue as it relates to the minute details of daily professional activities. With the advancement of big data,[9] data mining/predictive analytics,[10] and deep learning artificial intelligence software,[11] these activities will become easier, faster, and more accessible to the average hospital administrator. This environment mandates a *call to action* and a new focus to rationalize the existence of respiratory care based on delivering value. This is not just the perception of value but the ability to quantify that value in terms of reducing cost, improving outcomes, and fiscally sound performance-based programs.[12]

The Legacy of Productivity Tracking in Respiratory Care

The profession has survived systematic critical scrutiny in the past. The respiratory care profession lived through the reengineering in health care delivery initiatives of the early 1990s when entire departments were downsized and in some cases eliminated.[13] Even today, there continues to be a rising tide of consultants recommending staffing reductions. They often apply data and productivity metrics from national benchmarking firms that may not accurately identify the resources required to adequately deliver respiratory care. Benchmarking is the process of comparing the performance of an entity against a group of similar entities (or a single entity with itself over time) to improve performance. The idea is to define common metrics (measurable variables reflecting performance) and then compare their values among members of a compare group to identify best performers. The goal of benchmarking is simply to describe and emulate the best practices that are identified. However, selecting the metrics upon which the best practice is identified is difficult. Because quality is difficult to define, respiratory care managers have focused more on tracking productivity or, more accurately, efficiency. Efficiency is commonly defined as the ratio of actual output to actual input, whereas productivity is usually defined as output compared to some standard expected output. Defined this way, efficiency is always less than 100% due to unavoidable operational activities that do not contribute to the desired output (ie, inefficiencies). Unfortunately, efficiency in many hospitals has been conflated with productivity, with values greater than 100% being commonly reported. Whereas properly applied methodology would not yield an efficiency value in excess of 100%, the reality is many departments find themselves in this situation for a variety of reasons. Efficiency values over 100% should force the questions *are the time standards accurate* and *do the activities being performed actually provide value*, along with the need to measure and report value-efficiency.

In striking contrast to most manufacturing businesses, health care organizations have grown under the paradigm that created Medicare and Medicaid in the 1960s, namely that everything health care professionals do is both important and essential to patient care and the more tasks that are done the more the organization should be reimbursed. As a result, health care organizations have developed the infrastructure that is designed for tracking billable activities but provides no means for tracking or even adequately defining efficiency. Thus, attempts by consultants to quantify efficiency have been based almost exclusively on billing data. A common efficiency metric has been the number of billed procedures divided by the labor hours required to deliver those procedures. Some consultants and organizations prefer the inverse of this equation and thus track worked hours per unit of service, commonly abbreviated WHPUOS.

As a metric, billed procedure counts are very imprecise because not all respiratory care procedures generate charges and not all procedures take the same amount of time. Quantifying output as a simple count of procedures gives all procedures the same weight. Thus, a department that spends time doing complex, time-consuming procedures will likely appear to have a lower efficiency than one that does many less labor-intensive procedures. Counting each procedure as a 1 does not address the intensity of services (ie, as measured by time required to complete each procedure). This is the fundamental difference between reporting systems based on a valid metric and those that merely use one facet (ie, procedures with charges).

The AARC *Safe & Effective Staffing Guide* should serve as the gold standard in identifying both billable, nonbillable activities, and the time required to perform those activities.

Through the application of procedure duration time standards and calculating the actual time spent doing activities that relate to the worked hours of personnel assigned to perform those activities, the AARC *Safe & Effective Staffing Guide* provides a solution for more accurately assessing labor efficiency or productivity. Benchmarking should be done using a similar approach. However, the procedures included in a benchmarking program should be limited to only those activities that are common to all departments. This is the baseline principle upon which the AARC benchmarking project was designed.[14]

By applying weighted time standard for each procedure, often referred to as relative value units, one can derive variable clinical hours required, (also known as activity hours) as a common metric to assess the output achieved by a workforce. The number of procedures performed is part of the routinely tracked billing data and is closely monitored in all hospitals, for both internal purposes as well as reporting to external organizations. Standard times per respiratory care procedure are well documented in the AARC *Safe & Effective Staffing Guide*. With this view, the highest departmental efficiency comes from the highest aggregate procedural time performed with the leanest organizational structure, meaning the fewest full-time equivalents required.

Flaws in the Paradigm

In health care, we all too often assume that all ordered services are necessary. However, only a small fraction of all medical activities (or respiratory care activities) is convincingly supported by high-level evidence (eg, randomized, controlled trials). According to Ioannidis "...approximately 1 million papers from clinical trials have been published to date, along with tens of thousands of systematic reviews—but most of them are not useful."[15] After decades of effort, the AARC has only 7 evidence-based clinical practice guidelines on only 5 topics: management of tracheostomy, airway clearance therapies, inhaled nitric oxide, care of the ventilator circuit, and discontinuing ventilatory support. Even when evidence is available, it is slowly and often poorly assimilated into actual practice. The application of procedure time standards may assist in quantifying the efficient use of labor. But if that labor represents activities that have little or no clinical value, the calculation of mathematical productivity actually overstates the effective productivity.

Most would agree that investing in resources to perform a service that is not needed is illogical and indeed wasteful.[16,17] Then why do some respiratory care departments continue to provide treatments that there may be no medical indications, no guidelines, no evidence, or no demonstrated change in outcomes for a specific condition? In contrast, why is there evidence for noninvasive ventilation, techniques for liberation from mechanical ventilation, or how to avoid ventilator-acquired conditions that are not incorporated into treatment protocols or standard practice? Why is it that departments are short staffed, with increasing patient demand, and at the same time they continue to perform unnecessary care that will make no difference to patient outcome? Managers must examine those issues that serve as barriers to delivering value in their settings. Subsequently, they must also develop strategies to implement systems that justify resources based on the value provided.

If labor efficiency is being measured through the application of procedure time standards, procedure counts, billable procedures, case mix index-adjusted discharges, or average daily census, none of these metrics reflects a clear understanding of the *value* the interventions provide. Ensuring hospital resources are only consumed in the provision of medically necessary interventions can be achieved through protocol programs or by systems that avoid interventions that have no scientific basis. [18] The challenge is then how to build such value into a productivity system.

A New Paradigm: Value-Efficiency

Doing the wrong things (ie, no evidence of effectiveness) the right way (ie, efficiently) is a paradigm that no longer supports respiratory care survival as a health care profession. W. Edwards Deming, a pioneer of quality control and adviser to some of the most influential international corporations, stated that "efficiency means doing things right, while effectiveness means doing the right things."[19] Obviously, both are important, so we could say that the elusive quality we seek in health care is simply a metric of efficiency combined with effectiveness or value-efficiency.

In general terms, the value-efficiency is more difficult to define than a simple cost/benefit ratio. Several important questions arise to define benefit: What value does the respiratory care department add to the health care organization? What difference does it make that a respiratory therapist is performing a specific intervention as compared to another health care provider? Who is the most appropriate provider regarding cost efficiency and desired patient outcomes? Historically, the respiratory care profession has grown by relentlessly increasing its scope of practice in response to patient demand without answering such questions. It is time to reexamine this assumption if we are to be accepted on the same terms as physicians, nurses, physical therapists, and others.

To incorporate value-efficiency as a mechanism to define the number and type of caregivers required, there are 3 key considerations:

(1) What value does respiratory care add to the health care organization?

(2) Are the interventions provided necessary and of clinical value?

(3) What is the value of the respiratory therapist in the delivery of these services?

Table 1. Desired System Patient Outcomes

- Reduce readmission rates
- Improve patient satisfaction
- Improve interventions associated with smoking cessation
- Improve vaccination compliance
- Decrease hospital length of stay
- Decrease time on ventilators
- Decrease time in the ICU
- Decrease cost/case
- Decrease infections
- Decrease ventilator-associated events
- Adopt roles to enable more effective use of nursing
- Adopt roles to enable physicians to manage cases effectively and efficiently

The ACA signed into law by President Obama on March 23, 2010, aimed at ensuring health care quality while managing costs. The ACA intended to provide new options and opportunities for affordable health care coverage. The ACA retained the capitated payment models of earlier reforms and added the new element of documented quality. Incentives exist in which hospital payment is also dependent on quality indicators inclusive of patient satisfaction and avoidance of readmissions. A prime example of where the respiratory therapist can add unique value is the ACA Hospital Readmissions Reduction Program. The program administers penalties for hospitals with higher-than-average unplanned readmission rates for designated diagnosis codes, which include COPD and pneumonia.[20] Although more study is suggested, the positive impacts that respiratory therapists can have on COPD admissions and costs for acute in-patient stays have been reported.[21] If the reforms of the past 30 years have not been an adequate incentive for the respiratory care community to fully adopt a protocol-driven care model, then perhaps the ongoing reforms in health care serve as a call for action. The safety, quality, and value metrics linked to reimbursement and avoidance of penalties provide a template to drive respiratory care staffing. Table 1 provides examples of safety, quality, and cost-related outcomes that demonstrate value, many that are part of the ACA.

Purchasers will continue to express a desire for more value for their dollar. Simple efficiency (input/output) is no longer in and of itself adequate. The performance of any intervention, and the individual providing the intervention, must demonstrate both value and efficiency.[22] If managers can demonstrate that employing a respiratory therapist improves value-efficiency, then it is likely the administrator will continue to invest resources to support these roles. In cases where the role of the respiratory therapist is justified using a focus on value, simple metrics like units of services will be less important in justifying resources. Management, support staff, and special roles that do not produce units of service can only be justified if each provides documentable value. Perhaps more daunting, respiratory therapy leaders must be prepared to clearly define the loss of value or adverse impact if the respiratory therapist is not engaged in the provision of a service.

Summary

Significant challenges are facing the respiratory care profession, and a focus on value-efficiency is a direction the profession must pursue if we are to be accepted as physician extenders and not simply efficient task completers. These concepts support a practical response to the increasing demands of payers, administrators, consultants, and patients. They embody the rational essence of survival in an environment of harsh natural selection.

We urge respiratory care leaders to consider value and value-efficiency in their staffing plans and care delivery. It is essential that we pivot from a qualitative definition of value to one based on a system that quantifies value to expand the current focus on efficiency and busyness to a holistic one encompassing value and efficiency in all clinical services. Work is underway to create, test, and validate a value-efficiency rubric that respiratory therapy leaders can use to critically evaluate all of their respiratory care services.

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