Philip Kittredge Memorial Lecture

Managing Respiratory Care: Where Is the Science?

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Managing a respiratory care department is challenging. Health care is one of the few businesses in which the fees for services are dictated by the payers. Recent changes in focus and expectations in the overall health care industry have strongly affected the job of the respiratory care manager. There is now stronger emphasis on improving the management of human resources. Good human-resources management requires understanding the work force, minimizing staff turnover, and finding ways to do more work with fewer employees. Respiratory care managers must: marshal strong evidence and compelling reasoning to compete for funding; make evidence-based (or at least carefully researched) purchasing decisions; implement protocols to optimize patient and clinical outcomes (including work efficiency); implement patient-safety initiatives such as "care bundles," to avoid preventable complications; and vigorously pursue initiatives that optimize the work flow and advance the professional status of respiratory therapists, such as rapid-response teams. *Key words: respiratory care management, respiratory therapist, age, diversity, protocols, staffing, evidence.* [Respir Care 2008;53(7):903–907. © 2008 Daedalus Enterprises]

Introduction

Management in respiratory care and in health care in general is challenging. Health care has a peculiar economic environment in that the fees for services are dictated by the payers (Medicare, Medicaid, and insurance companies). The expectations are high for us to create and maintain highly reliable processes, high employee satisfaction, high patient satisfaction, and good outcomes, in the context of rising demand for health care and an increasingly elderly patient population. I will discuss human resources management, the growing demand for respira-

tory care services, purchasing decisions, and quality-improvement initiatives that impact the respiratory care department and the RT.

Managing Human Resources

The health care work force is the most costly managed resource in health care today. Most health care organizations are faced with a shortage of health care providers. Many organizations are now focusing more on the employee, with strategies to attract new employees and reduce (costly) staff turnover by improving employee satisfaction.

Most of the statistics indicate that the health care work force is aging (ie, the mean age of the work force is increasing), as is the demand for health care services. The 2005 American Association for Respiratory Care human resources survey indicated that the mean age of RTs is 44.6 years,[1] and that the vacancy rate for RT jobs in hospitals grew from about 6% in 2000 to about 9% in 2005, which corresponded to approximately 11,500 vacant full-time RT jobs in 2005.[1]

Understanding employees' values and expectations can provide a manager with insight that assists in optimizing employee satisfaction and thereby in minimizing employee turnover. When I started in respiratory care management, the age difference between the RT employees and their

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Table 1. Generations in Today's Work Force

Born	Percent of Today's Work Force	Designation(s)	Important Social Influences and Characteristics	Supposed Trends in Personality Characteristics
Before 1945	16	Mature The Silent Generation	Many veterans Dramatic change between hard economic times and the prosperity of the 1950s Mostly blue-collar	Mechanically savvy but tend not to be highly adept with newer information technologies Teamwork Commitment Loyalty Sacrifice Discipline Conservative
1946–1960	26	Baby Boomers	First generation to be raised on television Social foment and ferment of the 1960s	Idealism Self-Empowerment Individualism Seek self-improvement High self-expectations Wide range of experience and aptitude with information technology May tend to hold management responsible for fixing problems
1961–1981	22	Generation X* The Me Generation	Advent of computing and information technology Decreasing likelihood that average person would achieve or surpass the economic status of his or her parents Increased ethnic and social diversity in America	Seekers of status More accepting (than previous generations) of ethnic and social diversity Pragmatic Greater interest in work/life balance Technically savvy Alienated Cynical May appear "detached"
After 1981	36	Generation Y* Millennials Echo Boomers Nexters	Grew up using computing and information technology International foment Economic boom then bust Further increased ethnic and social diversity	"Coddled" Well-informed Open to diversity Technically savvy

* Both Generation X and Generation Y people may be impatient with traditional organization hierarchies, may tend to want more democratic and diverse teams, may tend to want be part of the decision-making process, and may be more likely (than older people) to question and challenge authority, to view the "chain of command" as inefficient, and to believe that results and outcomes should direct the organization and the team. (Adapted from References 2 and 3.)

supervisors was less than 10 years, so I was dealing with folks in my own generation. Our values, experience, understandings, and expectations about work were similar, which made it easier to manage.

I have not found any literature that specifically addresses age diversity in the respiratory care work force, so I will extrapolate from other literature to discuss how today's work-force age diversity impacts the workplace. Today's work force is more age-diverse than ever before. People are living longer, are generally healthier and therefore able to work for more years, and many are financially unable to retire. The work-force age range is about 60 years.[2] Forman and Carlin described 4 age-based categories (Table 1).[2]

Creating and sustaining employee satisfaction in a diverse work force is challenging, but there are principles of achieving employee satisfaction that apply to all employees. Appropriate recognition of and reward for good work is essential, as is gaining employee respect by leading by example and never asking employees to do anything that you would not do.

I think the Cleveland Clinic's respiratory care department exemplifies good management practices.[4,5] Their approach gives staff opportunities to participate in department management. Three themes have guided their management approach over a decade of study:

1. To enhance professionalism among the RTs
2. To assure communication
3. To sustain a participatory environment

In the context of growing demand for respiratory care services and a shortage of qualified candidates for available RT jobs, they reduced employee turnover from 11.5% in 1991 to 5% currently.[4] Their initiatives to enhance employee satisfaction save the department a great deal of

money by decreasing the amount of new-employee training, and sustain a department rich in expertise.

Growing Demand for Services

Although most respiratory care departments have had increased demand for respiratory care services, few have documented that growth in the literature. The Cleveland Clinic documented their increased demand. Between 1991 and 2001 they had a 2.4-fold increase in intensive care unit (ICU) respiratory care demand, and a 1.8-fold increase in non-ICU respiratory care demand.[4]

Some of the increasing demand for services was caused by increased life expectancy, which in the United States has increased to a record 77.6 years, and the mortality rate of most of the leading causes of death has decreased.[6] For respiratory care managers this requires finding ways to deliver services to an older population that has more co-morbid conditions, and increasing the efficiency of respiratory care services and the quality of care, all in the context of high pressure to lower costs. In the days prior to the invention of "diagnosis-related groups" this was less of a problem. Managers were working in a fee-for-service environment where the more work was completed, the more the hospital was paid. Higher volume meant more revenue. In today's environment, with "capitated payments," the pressure is on the manager to deliver the services without increasing the costs. Some recent evidence-driven changes in respiratory care practice, such as the switch from small-volume nebulizers to metered-dose inhalers, provide substantial cost savings. The Cleveland Clinic found substantial savings in initial instruction and treatment with metered-dose inhaler ($1.46 versus $3.57 for small-volume nebulizer).[4] Similar efforts to identify and implement cost-saving measures are underway throughout the country.

How does a respiratory care manager cope with increasing demand for services and limited human resources? The answer is definitely *not* "concurrent therapy" (sometimes referred to as "stacking").[7] Concurrent therapy is potentially harmful in that it can be associated with less-than-thorough patient assessments, which in turn can lead to incorrect clinical decisions and errors.

Part of the correct answer to the question of how we can do more with less is *protocols* (also called "order sets" and "pathways"). In 1981 Tietsort introduced the respiratory care protocol,[8] and since then many studies have indicated that protocols save money while delivering the best care and minimizing misallocated treatments (ie, treatments that provide no clinically important benefit). Protocols are now widely accepted, evidence-based, and customized to institutional preferences. They assist in meeting evidence-based standards of care and they improve employee satisfaction among RTs, because with protocols RTs are assigned some

responsibility for patient assessment and decision making. The key to success in implementing protocols is to have a system with which to measure protocol effectiveness in your department.

Pikarsky et al studied aerosol administration practices at Crouse Hospital in Syracuse, New York, and found that a 5-min timed administration of levalbuterol and racemic albuterol via breath-actuated nebulizer was safe and efficient, compared to via small-volume nebulizer. They found substantial time/cost savings from their timed aerosol-administration method, with no adverse effect on the quality of aerosol delivery.[9] Such efficiency-improvement strategies are part of the answer to the problem of RT staff shortages and seasonal census increases.

Pikarsky et al also found that RT time was decreased by 534 hours ($12,704 in labor cost), whereas the increased device cost was $8,530, so the overall savings was $4,174. Their respiratory care department's total expenses in the first 3 months of 2005 were 8.6% under budget and 7.9% below the same period in 2004.[10] Both of the latter studies show that protocols can increase efficiency and save money while providing high-quality care, and without any adverse impacts.

Early observational studies suggested that protocols could decrease the misallocation of respiratory care services without compromising care. Later studies found that protocols that engage RTs as decision-makers had no adverse effects. A 1986 historical control study[11] found that guidelines implemented by RTs were associated with marked reductions (by 55% to 92%) in all categories of respiratory care, and with no change in pulmonary-related morbidity or mortality. In patients who underwent coronary artery revascularization, the protocol was associated with a 5-day shorter mean hospital stay and fewer pulmonary complications (16.7% vs 5.5%). Other studies have also found that RTs can be effective in providing non-ICU adult in-patient care. So there is strong evidence that RTs should be empowered to implement protocols.[11] Other studies have indicated that RT-implemented mechanical ventilation weaning protocols decrease ventilator days and shorten hospital stay, compared to physician-directed weaning.[12,13]

My conclusion from the above studies is that protocols are safe, they reduce misallocation of treatment, and they improve RT work efficiency (eg, faster treatments) and have other human-resources benefits, but have no adverse effects. Protocols are a "win-win" for RTs, respiratory care managers, patients, and institutions.

Purchasing Decisions

The respiratory care manager is typically the leader in decisions on both capital-expenditure and disposable respiratory care equipment. Deciding what products to inventory and which gadgets to buy is a daunting task. One of the issues

is how much scientific evidence is available to guide the decisions. Many medical devices that have been cleared by the Food and Drug Administration and are safe do not have strong evidence about how effective or efficient they are, or that they are superior to competitor devices. Consider high-frequency assisted-airway-clearance devices. Chatburn pointed out that intrapulmonary percussive ventilation, high-frequency chest-wall compression (*The Vest*), and high-frequency chest-wall oscillation are a ubiquitous standard of care, but that even after 20 years of research, strong evidence of their efficacy is lacking. There is insufficient evidence even to support their use—let alone evidence to judge any of them superior.[14]

Purchasing decisions on mechanical ventilators are also challenging. Very few of the numerous available ventilation modes and features have strong clinical evidence of efficacy or superiority. Instead, many of the modes and features cannot be considered anything more than marketing tools of the ventilator manufacturers. Purchasing decisions should be based on the available scientific evidence, and manufacturers' claims should be assessed with skepticism.[15]

But how do we make a decision when strong evidence is lacking? The "decision matrix" is one systematic method.[16] It may also be useful to seek opinions from end users (physicians, RTs, and patients) about ventilators you are considering. Other decision-making tools include benchmarking and economic evaluation, including study of the labor/time required to operate the device, and other after-purchase costs.

Quality-Improvement Initiatives

The 1999 report "To Err is Human: Building a Safer Health System,"[17] by the Institute of Medicine, catalyzed a great deal of discussion, debate, and research, and numerous initiatives to minimize error in health care. The vigorous recent emphasis on quality of care and patient safety has strongly affected virtually all public and private health care organizations, and the Centers for Medicare and Medicaid Services and the Joint Commission have become even more stringent in their requirements and oversight. Today many turn to organizations such as the Institute for Healthcare Improvement for guidance in quality-improvement efforts, and that institute has initiated various initiatives. In 2001 the Institute for Healthcare Improvement and the Veterans Health Administration launched work on designing an idealized ICU. The Institute for Healthcare Improvement also became the national office of the Pursuing Perfection program (sponsored by the Robert Wood Johnson Foundation),[18] which developed the "care bundle" for prevention of ventilator-associated pneumonia[19] and began the initiative to develop rapid-response teams.[20] These initiatives have created new opportunities

for RTs and respiratory care managers. In particular, rapid-response teams helped to elevate RTs' status as professional clinicians. The majority of rapid-response teams in the United States are composed of a registered nurse and an RT. Rapid-response teams were developed in response to the discovery that adult patients in general medical and surgical units often show evidence of physiological deterioration hours before cardiac or pulmonary arrest.[21,22] In 2008 the Joint Commission added a National Patient Safety Goal that requires the planning, development, and implementation of rapid-response teams by 2009.[23] We should enthusiastically take part in such initiatives and manage our resources so as to fully participate. Adding to our workload in this fashion will enhance our professionalism and make a career in respiratory care more attractive to potential recruits.

Summary

In managing human resources, respiratory care managers need to know and deal with the diverse expectations, backgrounds, mindsets, and objectives of today's age-diverse work force, and to utilize employee-satisfaction principles that motivate and engage the several generations in the work force, to create and sustain a sense of teamwork, ongoing education, growing professionalism, and staunch dedication to providing the highest quality care, while using the strongest evidence and proven techniques to maximize efficiency and minimize costs. Such ongoing efforts to improve the work environment in respiratory care will minimize employee turnover and help build highly professional respiratory care departments. The high pressure to lower costs and minimize error means we have to do more with less, which means we need to *work smarter*. Protocols focus care on the patients with the greatest needs, and can minimize (perhaps even eliminate) misallocation of care and problematic practices such as concurrent therapy, and thereby improve patient safety.

Purchasing decisions must be made only after thorough research and review of the most up-to-date and scientific evidence available. Bear in mind that many devices and modes that seem to be based on compelling physiologic rationales do not have reliable scientific evidence of efficacy, efficiency, or superiority, and "new" does not necessarily mean "better." If there is no scientific evidence about which device is better, carefully weigh the opinions of clinicians who have used the device(s) you are considering purchasing, and use a decision matrix to formalize and commemorate your decision-making process. The most important goal is optimizing patient outcomes. The secondary goal is optimizing clinical outcomes such as costs and clinician time required to administer treatments.

The recent high emphasis on patient safety requires the respiratory care community to support and contribute to

the advancement of patient-safety initiatives such as the care bundle for prevention of ventilator-associated pneumonia, and rapid-response teams. Respiratory care managers should be forward-looking and use evidence and insight from various fields of research to build respiratory care departments that are devoted to high professionalism, employee satisfaction, and a perpetual search for improved patient and clinical outcomes.

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