

An Analysis of Features of Respiratory Therapy Departments That Are Avid For Change

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BACKGROUND: Models of organizational change-readiness have been developed, but little attention has been given to features of change-avid health-care institutions, and, to our knowledge, no attention has been given to features of change-avid respiratory therapy (RT) departments. **METHODS:** We conducted an exploratory study to compare RT departments we deemed change-avid or non-change-avid, to identify differentiating characteristics. Our assessments regarding change-readiness and avidity were based on structured, in-person interviews of the technical directors and/or medical directors of 8 RT departments. Based on a priori criteria, 4 of the 8 RT departments were deemed change-avid, based on the presence of ≥ 2 of the following 3 criteria: (1) uses a management information system, (2) uses a comprehensive RT protocol program, (3) uses noninvasive ventilation in $> 20\%$ of patients with exacerbation of chronic obstructive pulmonary disease. Our ratings of the departments were based on 2 scales: one from Integrated Organizational Development Inc, and the 8-stage change model of Kotter. **RESULTS:** The ratings of the 4 change-avid departments differed significantly from those of the 4 non-change-avid departments, on both the Integrated Organizational Development Inc scale and the Kotter scale. We identified 11 highly desired features of a change-avid RT department: a close working relationship between the medical director and the RT staff; a strong and supportive hospital “champion” for change; using data to define problems and measure the effectiveness of solutions; using redundant types of communication; recognizing resistance and minimizing obstacles to change; being willing to tackle tough issues; maintaining a culture of ongoing education; consistently rewarding change-avid behavior; fostering ownership for change and involving stakeholders; attending to RT leadership succession planning; and having and communicating a vision for the department. **CONCLUSIONS:** In this first exploratory study we found that change-avid RT departments can be differentiated from non-change-avid RT departments with available assessment tools. Highly desired features of a change-avid RT department were identified but require further study, as does the relationship between change-avidity and clinical outcomes. *Key words:* health services, health care delivery, respiratory therapy department, respiratory care, organizational change, health care, professionalism, respiratory therapist, respiratory care profession, management, personnel, staffing, intensive care. [Respir Care 2008;53(7):871–884. © 2008 Daedalus Enterprises]

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Introduction

Change is a cornerstone of medical life.^{1,2} Beyond the inevitability of change for business success in general, in the specific context of health care, medical leaders have identified institutions' appetite for change as a differentiating and advantaging feature of the best medical centers.³ Indeed, effective change management, which is a major focus of the field of organizational development,^{1,2,4-7} has been advocated as an important characteristic of the most effective organizations in many business sectors, including health care.⁸

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Though the stages and processes of change have been the subject of considerable commentary and modeling,^{4,5} relatively little attention has been given to the process or drivers of change in health care,^{1,2,7} and, to our knowledge, no studies have addressed the determinants of change in the specific context of respiratory therapy (RT). To address this gap, we assessed and characterized change-readiness in RT departments by comparing the characteristics of departments deemed change-avid (ie, that embrace change in the sense of adopting recent innovations in RT) versus those deemed non-change-avid, according to explicit *a priori* criteria. With the goal of offering guidance about how to establish a change-avid RT department, this analysis also allowed us to identify specific highly desired features of a change-avid RT department that extend beyond existing, more generic models.

Methods

This study was approved by the institutional review board of the Cleveland Clinic, and all participants granted informed consent.

Change avidity of participating RT departments was defined *a priori* according to 3 features of RT practice. In keeping with adoption of current guideline-based recommendations and/or emerging trends in respiratory care, departments were considered change-avid if they satisfied ≥ 2 of the following 3 criteria and non-change-avid if they satisfied only one of these criteria:

1. The department uses a comprehensive respiratory care protocol service.
2. The department uses a management information system in administering RT services.

3. The department uses noninvasive ventilation in $> 20\%$ of patients admitted for exacerbation of chronic obstructive pulmonary disease. This criterion was based on the estimate of 20% as the mean rate of using noninvasive ventilation for patients with chronic obstructive pulmonary disease exacerbation in a recent survey of New England hospitals.⁹

To select participating departments, we assembled a national convenience sample of RT departments. Specifically, after developing the criteria for change avidity, we generated a list of RT departments in 21 hospitals in 13 states, whose leaders were known to us and were deemed likely to accept an invitation to visit Cleveland Clinic to candidly discuss their RT departments. We mailed a survey (Appendix 1) to 15 of these technical directors, who we chose based on our assessment of those deemed most likely to be able to visit the Cleveland Clinic. The goal was to compare 4 change-avid and 4 non-change-avid departments. The departments that responded were invited to visit if 2 RT leaders (preferably the technical director and the medical director) expressed willingness to travel to the Cleveland Clinic and participate in an in-person structured interview (Appendix 2) designed to assess aspects of change avidity and readiness, including characteristics of the department's practices according to the 8-stage change model proposed by Kotter.⁴

The interviews were conducted over working dinners (3–4 h duration) in which a group of the investigators met with the visiting RT leaders to obtain their responses (see Appendix 2). All investigators present at the interview recorded individual ratings and impressions, and met as a group within a week after the interview dinner to debrief and identify impressions and themes regarding the visiting department's change posture.

In addition, after each interview, each investigator rated the interviewed department on 2 change-readiness scales: one from Integrated Organizational Development Inc (Table 1), and an instrument we developed to assess RT departments, based on Kotter's 8-stage change model (Table 2).⁴ On these scales, a rating of 2 is assigned for a criterion that is "satisfied a lot," a rating of 1 is assigned when the criterion is "satisfied a little," a rating of 0 is assigned when the rater is unsure whether the criterion is satisfied, and a rating of -1 is assigned when the criterion is "not occurring." Mean values from all the raters for each question, on both instruments, were used in the data analysis.

After all 8 interviews were completed, the entire team of investigators met again to discuss and determine themes that characterized the change-avid and non-change-avid departments and to collectively review insights and lessons about change readiness, based on the interviews. The goal of this final investigator meeting was to develop a list of highly desired features for a change-avid RT depart-

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Table 1. Criteria in the Change-Assessment Instrument From Integrated Organizational Development Inc

1. This organization has a clear focus and sense of direction for the future.
2. Changes are made in a way that is consistent with the organization's mission.
3. The leadership team is knowledgeable/up to date about strategic issues.
4. Change at this organization is carefully considered and well-planned.
5. The leadership team is open to different ideas and opinions.
6. Employees are actively involved in planning and implementing change.
7. The rationale for change is effectively communicated to employees.
8. Change at this organization is driven by facts and information, rather than speculation or opinion.
9. This organization rewards innovation and creativity.
10. In responding to change, the leadership team does a good job of keeping employees motivated.
11. Employees receive adequate training to keep up with changes within the organization.
12. Adequate resources are provided to accommodate new processes or standards.
13. The organization monitors and evaluates the impact of changes made.
14. Problems arising from change are systematically identified and resolved.
15. Communication within the organization keeps employees well-informed about what is happening and what to expect.
16. This organization consistently follows through with plans and decisions.
17. This organization is perceived as innovative/progressive.
18. This organization celebrates its success in achieving positive change.
19. Given the current marketplace/environment, the pace and scope of change at this organization are appropriate.
20. Overall, how would you rate the organization's response to change?

ment and a "payoff matrix"¹⁰ (Fig. 1), which plots the magnitude of payoff against the difficulty of achieving the payoff. The 4 cells in the payoff matrix represent interventions that are either (1) easy to do and have a big payoff ("gems"), (2) tough to do but have a big payoff ("require extra effort"), (3) easy to do but have a small payoff ("quick hits"), and (4) tough to do and have a small payoff ("proceed with caution").

The ratings were compared with 2-way analysis of variance (SigmasStat, Systat Software, San Jose, California). Differences with p values < 0.05 were considered statistically significant.

Results

Table 3 presents the characteristics of the surveyed RT departments. The overall ratings of the change-avid RT departments differed significantly from those of the non-change-avid departments, on both the Kotter and Inte-

Table 2. Change Criteria in Kotter's 8-Stage Change Model

1. Establishing a Sense of Urgency Examining the market and competitive realities Identifying and discussing crises, potential crises, or major opportunities
2. Creating the Guiding Coalition Putting together a group with enough power to lead the change Getting the group to work together as a team
3. Developing a Vision and Strategy Creating a vision to help direct the change effort Developing strategies for achieving that vision
4. Communicating the Change Vision Using every possible vehicle to constantly communicate the new vision and strategies Having the guiding coalition role-model the behavior expected of employees
5. Empowering Broad-Based Action Getting rid of obstacles Changing systems or structures that undermine the change vision Encouraging risk-taking and nontraditional ideas, activities, and actions
6. Generating Short-Term "Wins" Planning for visible improvements in performance (wins) Creating those wins Visibly recognizing and rewarding people who make the wins possible
7. Consolidating Gains and Producing More Change Using increased credibility to change all systems, structures, and policies that don't fit together and don't fit the transformation vision Hiring, promoting, and developing people who can implement the change vision Reinvigorating the process with new projects, themes, and change agents
8. Anchoring New Changes in the Culture Creating better performance through customer-and-productivity-oriented behavior, more and better leadership, and more effective management Articulating the connections between new behaviors and organizational success Developing means to ensure leadership development and succession

(Adapted from Reference 4.)

grated Organizational Development Inc scales. Specifically, on the Kotter scale (Table 4), the overall mean score for the change-avid RT departments was 1.2 versus 0.2 for the non-change-avid departments (p < 0.001). On the Integrated Organizational Development Inc scale, the difference between the change-avid and non-change-avid RT departments (Table 5) was also significant (3.2 vs 2.4, respectively, p < 0.001). With the Integrated Organizational Development Inc model, the 5 features about which the change-avid department ratings differed most from the non-change-avid departments were numbers 3, 6, 17, 18, and 20 (in Table 1), which relate to knowledgeable/up-to-date leadership team, employee involvement in change,

	Easy to Do	Tough to Do
Big Payoff	Gems	Requires Extra Effort
Small Payoff	Quick Hits	Proceed With Caution

Fig. 1. "Payoff matrix" for rating the magnitude of the payoff against the difficulty of achieving the intervention. The 4 cells (gems, quick hits, requires extra effort, and proceed with caution) identify the advisability of undertaking specific interventions.

celebrating wins, overall sense of the department's progressiveness, and the organization's overall response to change. With the Kotter model, the elements that differed most between the change-avid and non-change-avid departments were numbers 3, 4, 5, 8, and 17 (in Table 2), which relate to organizing a team to lead change, developing a vision for change, modeling desired behaviors, and sustaining change.

Table 6 presents the highly desired features of a change-avid RT department, which we identified in our debriefing and discussion of themes, and which we group under 3 overarching competencies needed to effect change:

1. Being aware of the need for change
2. Being accountable for the results of change
3. Attaining or executing change¹¹⁻¹⁴

The 11 highly desired features in Table 6 demonstrate substantial but incomplete overlap with the elements of the Kotter model (data not shown).

To offer practical advice for developing a change-avid RT department, we applied the "payoff matrix" to the 11 highly desired features. The payoff "gems" were 3, 4, and 8 in Table 6. Features deemed to justify "extra effort" were 1, 2, 5, 6, 7, 9, and 10. Developing and communicating a vision for the department (feature 11) was deemed a "quick hit." "Caution" items included those that were the converse of highly desired features:

1. A "top-down," authoritative culture
2. Lack of vision and passive leadership
3. Being reactive only (ie, lack of proactive decision making)
4. Depending only on external forces to drive change
5. Limited communication, especially little attention to feedback from "front-line" RT staff
6. A disengaged RT staff
7. Failure to gather data to help define issues that indicate needed changes or to measure the effectiveness of interventions

8. Inattention to developing leaders and to succession planning for RT staff

Discussion

In this first available assessment of change avidity in RT departments, we observed that:

1. Change-avid departments differed significantly from non-change-avid departments, according to the 2 change-assessment models we employed.
2. Features on which the ratings differed the most between the change-avid and non-change-avid departments regarded engaging employees in the change effort, celebrating wins, developing a knowledgeable/up-to-date leadership team, having a vision for change, leaders who model desired behaviors, and assuring that change efforts are sustainable.
3. Our thematic analysis suggested 11 highly desired features of a change-avid RT department. Using the "payoff matrix" method, the "gems" (easy but with a big payoff) include: using data and other evidence to define problems and measure the effectiveness of proposed solutions; using multiple and redundant types of communication to cascade information throughout the RT department; and consistently rewarding and recognizing change-avid behavior among the RT staff.

Our findings have important implications for change readiness in RT departments. First, to the extent that our analysis showed significant differences between change-avid and non-change-avid RT departments with both the change-assessment tools we used, our data support the relevance of these change-readiness models to RT. Furthermore, that the 2 groups differed most regarding having a vision and an effective leading coalition, engaging RT staff, and celebrating wins suggests that these features offered the greatest discrimination between change-avid and non-change-avid RT departments. Though quantitative differences were observed, we suggest that the major value of the ratings in this exploratory analysis was to identify the domains of greatest distinction between the change-avid and non-change-avid departments as hypotheses for future studies.

Beyond supporting existing models, our thematic analysis suggests some highly desired features of change-avid RT departments (see Table 6) and offers some insights about change readiness that are more specific to RT than those addressed by more generic change models.^{4,5,7} We believe this analysis may be of special interest to medical directors and other RT leaders who wish to implement and encourage change. Assurance that these highly desired features are present, especially the "gems," offers specific guidance to create a change-avid RT department. Many of these highly desired features reflect characteristics of excellent leadership,¹⁵ such as effective communication

Table 3. Characteristics of the 8 Participating Respiratory Therapy Departments, by Change-Avidity Classification

Department	Change-Avid Departments				Non-Change-Avid Departments			
	A	B	C	D	E	F	G	H
Number of respiratory therapists (% who are RRTs)	112 (98)	103 (83)	59 (90)	63 (87)	145 (67)	27 (22)	52 (92)	65 (94)
Number of supervisors	9	14	9	7	8	3	No formal supervisors	6
Tenure of respiratory therapy manager	3–26 y	19.1	2–29 y	1–20 y	12.9 y mean	9 mo	1 mo to 3 y	< 6 mo
Tenure of respiratory therapy administrator	8 mo	20 y	6 y	3 y	7 y	1.5 y	3 y	9 y
Tenure of medical director	23 y	7 y	5 y	10 y	10 y	ND	5 y	“Many years”
Specialty of medical director	Pulmonary	Pulmonary	Pulmonary/Critical Care	Pulmonary/Critical Care	Anesthesiology	Pulmonary	Pulmonary	Pulmonary
Estimated contact time of respiratory therapy manager with medical director	1 h/wk	5–6 h/wk	30 min/wk	0–1 h/wk	30 min/wk	No regular meetings	1 meeting/mo	1 h/wk
Annual staff turnover rate (%)	8.50	10 in 2005 5 in 2006	< 10	1–2	16	ND	5	High
Number of hospital beds	1,010	420	500	529	795	230	562	623
Number of pulmonary physicians	32	40	32	9	12	ND	0	ND
Number of patients per year served by respiratory therapy department	19,000	7,500–8,000	17,000	30,000	ND	17,826	ND	23,485
Study subjects	n = 2 Technical director/department manager and manager of information systems/administrative director of pulmonary rehabilitation	n = 2 Technical director/department manager and medical director	n = 2 Technical director/department manager and medical director	n = 2 Technical director/department head and department manager	n = 2 Technical director/department manager and medical director	n = 2 Technical director/department manager and department administrator	n = 1 Staff therapist	n = 2 Technical director/department manager and staff coordinator
Number of investigators who participated in interview	8	8	4	6	7	7	8	7

RRT = Registered Respiratory Therapist
ND = not applicable

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Table 4. Ratings of Individual Respiratory Therapy Departments, Based on the Kotter's Model of Change⁴

Element of Kotter Model*	Mean Rating From Investigators							
	Change-Avid Departments				Non-Change-Avid Departments			
	A	B	C	D	E	F	G	H
Examining the market and competitive realities	1.5	1.4	1.8	0.50	1.3	0.4	0.4	-0.6
Identifying and discussing crises, potential crises, or major opportunities	1.4	1.9	1.8	1.3	1.4	0.00	1.0	-0.50
Putting together a group with enough power to lead the change	1.9	1.9	2.0	1.0	1.7	-0.3	1.1	-0.9
Getting the group to work together as a team	1.6	1.9	2.0	1.2	1.4	-0.6	0.8	-1.0
Creating a vision to help direct the change effort	1.3	1.8	1.5	-0.2	0.4	-0.6	0.3	-0.6
Developing strategies for achieving that vision	1.6	1.9	1.3	0.2	0.7	-0.3	0.9	-0.4
Using every possible vehicle to constantly communicate the new vision and strategies	0.9	2.0	0.8	0.7	1.1	-0.3	0.1	-0.6
Having the guiding coalition role-model the behavior expected of employees	1.0	1.8	1.3	1.3	1.0	-0.1	0.3	-0.7
Getting rid of obstacles	1.0	1.6	2.0	-0.2	1.6	0.6	0.8	-0.4
Changing systems or structures that undermine the change vision	1.3	1.4	1.5	0.0	1.6	-0.1	0.8	-0.9
Encouraging risk-taking and nontraditional ideas, activities, and actions	1.5	1.9	1.5	0.5	1.6	-1.0	0.5	-0.3
Planning for visible improvements in performance (wins)	1.4	1.6	1.3	0.5	1.3	-0.6	0.4	-0.3
Creating those wins	1.4	1.8	1.0	0.2	1.6	-0.3	0.6	-0.7
Visibly recognizing and rewarding people who make the wins possible	1.4	2.0	1.0	-0.5	1.3	-0.7	-1.0	0.9
Using increased credibility to change all systems, structures, and policies that don't fit together and don't fit the transformation vision	1.0	1.6	1.3	0.0	1.4	-0.6	0.9	-0.6
Hiring, promoting, and developing people who can implement the change vision	2.0	1.5	1.5	1.0	1.0	0.0	0.3	0.0
Reinvigorating the process with new projects, themes, and change agents	1.3	2.0	1.8	1.2	1.3	-0.7	0.4	-0.1
Creating better performance through customer- and-productivity-oriented behavior, more and better leadership, and more effective management	1.5	1.3	1.5	1.0	1.4	0.1	0.4	-0.6
Articulating the connections between new behaviors and organizational success	0.8	1.3	1.0	-0.5	1.0	0.0	0.0	-0.4
Developing means to ensure leadership development and succession	1.5	0.1	0.8	0.5	1.0	-0.6	-0.4	-1.0
Mean	1.4	1.6	1.4	0.5	1.3	-0.2	0.4	-0.4
Standard Deviation	0.32	0.43	0.39	0.59	0.32	0.40	0.49	0.41
Overall Group Mean	Change-Avid Departments 1.2				Non-Change-Avid Departments 0.2			

*See Table 2

(item 4 in Table 6), attention to resistance (item 5), rewarding and recognizing contributions (item 8), embedding change in the culture through leadership succession (item 10), and offering and communicating a vision (item 11). To this extent, our findings confirm the importance of strong leadership to effect change. We propose these criteria for future assessments of change readiness in RT and perhaps related health-care contexts. We also propose a new, specific rating instrument (Table 7) that, like our

adaptation of the Kotter model,⁴ applies ratings to the elements of an existing model (our highly desired features list). We offer this new instrument with the understanding that it requires validation in hypothesis-testing studies.

In the context that this study addresses new and, we believe, important issues in RT, several shortcomings of the analysis warrant mention. First, because we analyzed only 8 RT departments, which was a convenience sample based on our awareness of these departments and the de-

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Table 5. Ratings of Individual Respiratory Therapy Departments, Based on the Change-Assessment Instrument From Integrated Organizational Development Inc

Element of the Integrated Organizational Development Inc. Modes*	Mean Rating From Investigators							
	Change-Avid Departments				Non-Change-Avid Departments			
	A	B	C	D	E	F	G	H
This organization has a clear focus and sense of direction for the future.								
Changes are made in a way that is consistent with the organization's mission.	3.3	3.6	3.8	2.3	3.3	2.6	2.5	1.4
The leadership team is knowledgeable/up-to-date about strategic issues.	3.1	3.5	3.5	2.5	3.3	2.7	3.0	2.0
Change at this organization is carefully considered and well-planned.	3.8	3.9	4.0	2.7	3.6	2.4	2.3	1.7
The leadership team is open to different ideas and opinions.	3.0	3.8	3.3	2.5	2.7	2.6	2.5	1.7
Employees are actively involved in planning and implementing change.	3.5	3.6	3.5	3.0	3.0	2.0	2.6	2.1
The rationale for change is effectively communicated to employees.	3.0	3.8	3.8	2.8	2.7	1.1	2.1	1.9
Change at this organization is driven by facts and information, rather than speculation or opinion.	3.1	3.9	3.0	2.7	3.0	2.0	2.1	1.9
This organization rewards innovation and creativity.	3.6	3.5	3.5	2.3	3.7	2.6	2.5	2.1
In responding to change, the leadership team does a good job of keeping employees motivated.	3.1	4.0	3.0	2.0	2.9	1.7	1.6	2.4
Employees receive adequate training to keep up with changes within the organization.	3.3	3.6	3.0	2.5	3.1	1.9	2.4	1.9
Adequate resources are provided to accommodate new processes or standards.	2.8	3.1	3.3	3.0	3.0	2.6	2.6	2.4
The organization monitors and evaluates the impact of changes made.	3.0	3.1	3.3	3.0	3.4	2.4	3.0	1.9
Problems arising from change are systematically identified and resolved.	3.5	3.8	3.8	2.2	3.7	1.9	2.8	2.1
Communication within the organization keeps employees well-informed about what is happening and what to expect.	3.1	3.4	3.5	2.5	3.4	1.9	2.4	1.9
This organization consistently follows through with plans and decisions.	3.0	3.6	3.3	2.5	3.1	2.4	2.6	1.7
This organization is perceived as innovative/progressive.	3.0	3.4	3.0	2.8	3.3	2.6	2.5	1.9
This organization celebrates its success in achieving positive change.	3.8	4.0	3.8	2.0	2.9	1.3	2.4	1.9
Given the current marketplace/environment, the pace and scope of change at this organization are appropriate.	3.3	4.0	3.0	2.0	3.0	1.7	1.8	1.9
Overall, how would you rate the organization's response to change?	3.4	3.8	3.8	2.2	3.3	2.1	2.4	1.9
This organization has a clear focus and sense of direction for the future.	3.4	4.0	3.5	2.0	3.0	1.6	1.9	1.3
Mean	3.2	3.7	3.4	2.5	3.2	2.1	2.4	1.9
Standard Deviation	0.27	0.27	0.32	0.35	0.30	0.47	0.36	0.28
Overall Group Mean	Change-Avid Departments 3.2				Non-Change-Avid Departments 2.4			

*See Table 1

partment representatives' willingness to participate, the generalizability of our findings can be questioned. Furthermore, we recognize that selection of programs leaders who could visit the Cleveland Clinic may have introduced selection bias. For example, however unlikely, if willing-

ness to visit the Cleveland Clinic was a proxy for particular progressiveness among change-avid groups or particular lack of competing demands among non-change-avid programs, our criteria for selecting participants could have exaggerated the differences between the change-avid and

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Table 6. Highly Desired Features of a Change-Avid Respiratory Therapy Department

Feature	Supportive Quotations From Interviewees
1. Having a close and collegial working relationship between the medical director and the respiratory therapy staff	None obtained
2. Having a strong and supportive champion for change in the hospital administrative structure (eg, hospital leaders, medical director)	“Change works best when Respiratory Care drives the change.” “We need a clinical, not an emotional path for change.”
3. Using data and other evidence to define problems and to measure the effectiveness of proposed solutions	“Supportive administration allows discussion prior to decision.” “We need data-driven changes rather than fist-pounding.” “The physician staff responds best to evidence-based literature.” “We spend as much time rejecting bad ideas as considering good ones.”
4. Using multiple and redundant types of communication to cascade information throughout the respiratory therapy department	“With regard to communication, in addition to monthly staff meetings and one-on-one consultation, we need continued updating on progress and success of change efforts.”
5. Being attentive to the forces of resistance and obstacles to change and being able to navigate within institutional systems and people to achieve change	“Implementing change is not the problem. Initializing change is.” “Change sometimes causes ‘pushback’ from the staff. We will wait until this (pushback) passes.” “To accomplish change, get administrative ‘buy-in’ and identify resisters. May need Medical Director intervention.” “We listen to the staff and, as a result, they don’t do mindless treatments.”
6. Being willing to confront, engage, and gain closure on tough issues	“It is easier to implement change for new ‘jazzy’ technology than for established techniques (eg, spontaneous breathing trials and noninvasive positive pressure breathing).”
7. Having and maintaining a culture of internal, self-imposed, systematic, ongoing education and knowledge acquisition	“Getting people to understand the reason they’re using protocols is the biggest challenge.” “Ideas are explored and encouraged in a forum called ACT: Accomplishing Change Together.”
8. Consistently rewarding and recognizing change-avid behavior among the respiratory therapy department members	“I think people want to work for us at a lower wage and higher workload because it’s a fun place to work, professionally challenging, and employees are listened to.” “Therapists run groups such as a rewards program with \$10,000 for 125 employees.” <i>From a non-change-avid program:</i> “The staff survey showed a low rating for promoting respiratory therapists’ ideas from staff to the top.”
9. Fostering ownership for change rather than just complying with external policies and demands and, as part of this ownership, taking the time to identify and involve stakeholders in change (eg, physicians, nurses, hospital thought-leaders and decision-makers)	“It works well when the respiratory therapy department drives the change.” “In regard to influencing change, track progress or reasons not to proceed. Hold people accountable.” “Most clinical supervisors strive for autonomy rather than institutional advancement.”
10. Paying attention to leadership development and succession planning in the respiratory therapy staff	“New leaders must attend an institutional 3-day workshop.” “Concentrate on wise hiring decisions.” “Clear role plus skill equals strength.”
11. Having and communicating a vision in the department	“Professionalism and autonomy are granted and demanded throughout the hospital.”

non-change-avid departments. On the other hand, the finding that 2 available change-assessment tools identified differences between the 2 groups suggests that generic change assessments apply to RT departments and that our findings about these 8 departments are robust.

A second potential limitation is that, by design, it was a hypothesis-generating study and thus intended only to help build a model by which to differentiate change-avid from non-change-avid departments, but not to confirm that the model works. Furthermore, our classification of departments as change-avid and non-change-avid were

based on self-reported versus directly observed features of the departments and their practice (eg, use of noninvasive ventilation and protocols). If the departments’ actual practices differed from those reported, our analysis was at risk of misclassifying the participating departments. Ultimately, confirming the model and our proposed change-assessment instrument (see Table 7) will require evaluating an independent group of directly observed RT departments according to the differentiating features we defined in the present study and demonstrating that these features and the ratings with the instrument importantly

Table 7. Rating Form to Assess Respiratory Therapy Departments, Based on the Highly Desired Features of a Change-Avid Department

Feature	Rating*
Has a close and collegial working relationship between the medical director and the staff	12345
Has a strong and supportive champion for change in the hospital administrative structure (eg, hospital leaders, medical director)	12345
Uses data and other evidence to define problems and to measure the effectiveness of proposed solutions	12345
Uses multiple and redundant types of communication to cascade information throughout the department	12345
Is attentive to the forces of resistance and obstacles to change and is able to navigate within institutional systems and among people to achieve change	12345
Is willing to confront, engage, and gain closure on tough issues	12345
Has and maintains a culture of internal, self-imposed, systematic, ongoing education and knowledge acquisition	12345
Consistently rewards and recognizes change-avid behavior among the department members	12345
Fosters "ownership" of change rather than just complying with external policies and demands and, as part of this ownership, takes the time to identify and involve stakeholders in change (eg, physicians, nurses, hospital thought-leaders, and decision-makers)	12345
Pays attention to leadership development and succession planning in the staff	12345
Has and communicates a vision in the department	12345

* Rating system: Demonstrates: 1 = consistently, 2 = often, 3 = sometimes, 4 = rarely, 5 = never.

differentiate between departments deemed change-avid and non-change-avid.

A third potential limitation is that our classification of departments as change-avid or non-change-avid was based on 3 arbitrary (albeit explicit and predefined) criteria: use of RT protocols, use of a management information system, and sufficient use of noninvasive ventilation in patients with exacerbation of chronic obstructive pulmonary disease. Furthermore, it could be argued that classifying the hospitals by an alternative 5-category change-assessment classification system (ie, innovators, early adopters, early majority, late majority, or laggards⁵) would have been preferable. In the context that our study was exploratory and that the small sample size precluded meaningful comparison across 5 categories, we submit that a dichotomous classification and analysis was appropriate, though we recognize the value of richer classification in a larger, future sample.

A fourth potential shortcoming is that our identifying as a highly desired feature the use of data and other evidence to define problems and to measure the effectiveness of proposed solutions could be perceived as circular reasoning, because use of a management information system was one of the criteria by which RT departments were defined as change-avid. On the other hand, we submit that the 3 criteria we used to classify RT departments as change-avid or non-change-avid represent three of the most important and widely studied recent developments in RT.^{9,16-22} Perhaps more importantly, the ratings assigned to the 8 RT departments using the 2 change-assessment models independently segregated the 8 departments into nearly the same 2 groups as did our a priori criteria. As shown in Tables 4 and 5, the mean scores for each department could have been segregated into change-avid versus non-change-avid groups using their obvious cut points without reference to a priori criteria. With the Kotter scale, change-avid scores could have been defined as ranging from 1.3 to 1.6, and non-change-avid scores could have been de-

finied as ranging from -0.5 to 0.5. With the instrument from Integrated Organizational Development Inc, change-avid scores would have ranged from 3.2 to 3.7 and non-change-avid scores would have ranged from 1.9 to 2.5. Using this scheme, one hospital from each group would have changed classification from change-avid to non-change-avid, compared to the assignments we obtained with our a priori criteria system. Those 2 hospitals differed most notably in dealing with obstacles and changing the culture, with the Kotter model.⁴ With the Integrated Organizational Development Inc model they differed most in creating a vision for the future and using data to assess the need for change and to monitor change efforts. In either case, grouping on the basis of the scores alone would not have conflicted with the themes suggested by the a priori grouping.

A fifth shortcoming is that the change-avid status of the visiting RT departments was known to the investigators (based on the explicit criteria) at the time of the interviews, which raises the possibility that ratings and impressions were biased by expectation. Though we cannot discount the possibility of such bias, the concordance of the raters' impressions and the emergence of consistent highly desired features among the change-avid RT departments buttresses our confidence in the findings. This point emphasizes the need to validate the findings of this hypothesis-generating study in a subsequent, hypothesis-testing study. In a future study, the raters should be blinded to the change-avidity of the participants.

The final shortcoming is that we did not address the relationship between change avidity and departmental success, for instance, as measured by superior clinical outcomes or departmental performance (eg, efficiency or demonstrating value in clinical work). Indeed, though we believe that change-avidity in RT is a key contributor to providing excellent clinical care, we recognize that evidence to support that link is sparse. On the other hand, in businesses other than health

care, ample evidence supports the relationship between change-avidity and business success.²³⁻²⁵ For example, in a study of 160 companies in 40 industries, Nohria and Robertson²⁵ reported that “winners” (ie, businesses that outperformed their rivals over a 10-year time frame) yielded a 945% return, which was more than 10 times higher than some of their competition. Four primary management practices surfaced from over 200 different tools and techniques, several of which regarded fostering a performance-oriented and change-avid culture, and which increased productivity at nearly twice the industry average. Even when such top performers bested their rivals, they continued to look outside their industry to continue to change and improve, despite being the best.

In another heralded study, Collins and Porras²⁴ searched for companies (founded prior to 1950) that had enduring qualities that caused them to remain leaders of their industries. With such so-called “visionary” companies, one dollar invested would have grown to \$6,356—more than 15 times the growth of the general market. One of the many distinguishing characteristics Collins and Porras point out is that such organizations consistently asked, “How can we do better tomorrow than we did today? Comfort is not the objective. . . . Indeed, visionary companies install powerful mechanisms to create discomfort—to obliterate complacency—and thereby stimulate change. . . before the external world demands it.”

Overall, ample evidence supports the association between change-avidity and success in business, but such studies are lacking (and needed) in health care. We hope that this study will prompt research on the relationship between change avidity and clinical outcomes and value in health care.

Conclusions

RT departments that are change-avid can be distinguished from those that are not in several ways. Highly desired features of a change-avid RT department include using data to define the need for change, developing and communicating a vision, having leaders and advocates for change, and instilling in the department a culture that values change and celebrates successes. Our hope is that this research will prompt further inquiry on the relationship between change-avidity and clinical outcomes in respiratory care.

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Appendix 1

Mailed Survey

Name of person completing this questionnaire: _____

Structure and Process of the Respiratory Care Group

What is your departmental table of organization?

How many RTs do you have?

How many RTs are registered (RRT)?

Do you use PRN staff? Yes ___ No ___ Do Not Know ___ If yes, how many PRN staff do you have (total in the department)?

How many supervisors do you have?

What is the tenure of the management staff?

Describe the administrative/supervisory structure of the department.

Do you utilize "clinical specialists" or "lead RTs"? Yes ___ No ___ Do Not Know ___

Does someone have an education supervisor role for your department? Yes ___ No ___ Do Not Know ___ If yes, who is this?

What is the department's scope of practice?

ICU care? Yes ___ No ___ Do Not Know ___

Adult? Yes ___ No ___ Do Not Know ___

Pediatric? Yes ___ No ___ Do Not Know ___

Emergency room? Yes ___ No ___ Do Not Know ___

Other:

How many RTs staff each area (by shift)? Days _____ Evenings _____ Nights _____ Other _____

What are your staff growth trends? Is the number of RTs: Increasing _____ Stable _____ Decreasing _____

What is your average yearly RT turnover rate? _____%

Describe your staffing patterns:

Shift duration: _____ hours

Number of staff on each shift: Days _____ Evenings _____ Nights _____ Other _____

Characteristics of the Medical Center

How many beds in the hospital? _____ beds

How many people are employed in your hospital? _____ people (total)

How long has your current chief executive officer (or main hospital leader) been in her/his position?

How long have you had your current RT department administrator?

How many patients are served by the RT department yearly (eg, in 2005)?

How many outpatient visits to your facility yearly?

How many hospital admissions yearly?

How many emergency room visits yearly?

How many surgeries yearly?

Is the RT department associated with a physician group (eg, pulmonary, critical care, anesthesiology)? Yes ___ No ___ Do Not Know ___ If yes, with what clinical specialty is the RT department associated?

How many faculty are in the pulmonary department in your hospital?

How many faculty are in the anesthesiology department in your hospital?

Characteristics of the Respiratory Therapy Medical Director

Does your medical director have a specialty (eg, pulmonology, critical care, anesthesiology)? Yes ___ No ___ Do Not Know ___ If yes, what specialty is it?

Who is the chairperson of the department overseeing respiratory therapy? Name:

How long has the chairperson held this position?

How long has your medical director held his/her position?

Do you have regular meetings with your medical director? Yes ___ No ___ Do Not Know ___

How much direct contact (in hours per week) does the manager of respiratory therapy have with the medical director? _____ hours/week

Does your medical director participate in (check all that apply): Financial Decisions ___ Equipment Decisions ___ Medical

Procedure/Policy Writing ___ Nonmedical Policies ___ Hiring decisions ___

Characteristics of the Respiratory Care Budget and Capital Purchasing

What is your department's annual gross revenue (eg, for 2005)? \$ _____

What is your department's annual net revenue? \$ _____

What are your annual salary expenses? \$ _____

What are your annual equipment expenses? \$ _____

What are your annual capital expenditures? \$ _____

Institutional Experience and Use of Respiratory Care Protocols, Management Information Systems, and Noninvasive Ventilation

Respiratory Care Protocols

Are respiratory care protocols used in your center? Yes ___ No ___ Do Not Know ___

Do you have a comprehensive assess-and-treat program? Yes ___ No ___ Do Not Know ___ If yes, how long has it been effect?

Did you collect data on misallocated therapy prior to beginning the program? Yes ___ No ___ Do Not Know ___

Do you have a quality monitoring program in place for protocols? Yes ___ No ___ Do Not Know ___

CHANGE-AVID RESPIRATORY THERAPY DEPARTMENTS

Management Information System

Do you have a management information system in place? Yes ___ No ___ Do Not Know ___

If yes, what system do you use?

If yes, how long has it been in use?

Noninvasive Ventilation

Do you use noninvasive ventilation? Yes ___ No ___ Do Not Know ___

If yes, in what settings is noninvasive ventilation used?

In the ICU? Yes ___ No ___ Do Not Know ___

In the emergency department? Yes ___ No ___ Do Not Know ___

On the regular nursing floors? Yes ___ No ___ Do Not Know ___

If yes, what percent of total use of noninvasive ventilation occurs on the floors: ___%

What is the approximate volume of noninvasive ventilation used?

For what percent of patients with acute exacerbation of COPD do you believe you use noninvasive ventilation as treatment? ___%

Does your hospital have a protocol and/or procedure statement for noninvasive ventilation? Yes ___ No ___ Do Not Know ___

Change Readiness (based on ratings using standard assessment instruments)

Please list:

Any changes that occurred in the respiratory care department since the management information system was implemented:

Any changes that occurred since protocols were implemented:

All examples of change in respiratory care practice in your department in the last 2 years:

All major equipment purchases in respiratory care in the last 2 years (eg, equipment > \$5,000):

Appendix 2

In-Person Interview

RT Department Characteristics

Please describe the leaders of the respiratory therapy group. Who are they? (eg, medical director, technical director)

Names:

Demographic features of the medical director:

Demographic features of the technical director:

Tenure of medical director:

Tenure of technical director:

What are the growth trends? Is the number of RTs: Increasing__ Stable__ Decreasing__

Please describe how RTs sign out to each other or conduct change-of-shift:

Financial Decisions

How are capital decisions made for the organization?

Who is involved? Name(s)/Title(s):

Who makes the final decision? Name(s)/Title(s):

Please describe how spending capital for respiratory care purchases is decided.

Who makes the decision? Name(s)/Title(s):

Describe the process by which applications are made:

Are staff RTs involved in suggesting needed purchases?

What is the time frame for making capital requests (eg, When are requests placed? How long between the request and acceptance or rejection of the request?):

Innovation and Change

Respiratory Care Protocol System

Describe your protocol system:

Describe your quality monitoring system for protocols:

Noninvasive ventilation

Describe the use of noninvasive ventilation in your center.

Used in the ICU only? Yes__ No__ Do Not Know__

Used in the emergency room? Yes__ No__ Do Not Know__

Used for managing acute respiratory failure outside the intensive care unit? Yes__ No__ Do Not Know__

Describe how noninvasive ventilation was introduced into your practice? For example, did the RTs drive this? Management policy?

What percentage of patients with acute respiratory failure is treated with noninvasive ventilation at your hospital? ____%

What percentage of patients with acute exacerbation of COPD causing acute respiratory failure is treated with noninvasive ventilation at your hospital? ____%

Do you have a protocol for noninvasive ventilation? Yes__ No__ Do Not Know__

Management Information System

Describe your management information system (manufacturer/model/how is it used)?

Please list the advantages of the system:

Please list the disadvantages:

What would you like your system to do for you that it does not do now?

Institutional Organization Regarding Decision-Making and Innovation

How are decisions for implementing new programs, resources, etc, made in respiratory care?

How involved are staff RTs in making decisions regarding equipment and other capital expenditures?

How are RTs' ideas encouraged and explored?

Are there regularly scheduled meetings to discuss ideas? Yes__ No__ Do Not Know__

Do RTs present ideas to the supervisor? Yes__ No__ Do Not Know__

Does the supervisor then present the idea to the manager? Yes__ No__ Do Not Know__

When does the administrator get involved? Yes__ No__ Do Not Know__

How are the ideas written up?

Who follows the process?

Is there a regular forum to discuss respiratory care issues? Yes__ No__ Do Not Know__ If yes, please describe the forum:

Do you believe there is evidence of continued change-avidity in your department? Yes__ No__ Do Not Know__

Does prior commitment to certain technologies thwart future change because of the sense of having invested and a need to "stay the course"? Yes__ No__ Do Not Know__ If yes, please describe how:

What is the vision for the RT department?

Do you think that changes in the department are carefully considered? Yes__ No__ Do Not Know__ Please give an example:

How are directions for change communicated to staff RTs?

How are problems in the department handled? Please give an example:

Are new ideas welcome from the staff RTs? Yes__ No__ Do Not Know__ Please give an example:

Are performance standards and targets set? Yes__ No__ Do Not Know__ Please give an example:

CHANGE-AVID RESPIRATORY THERAPY DEPARTMENTS

How well are such standards set? (Please mark the position that represents your view on the line below)

Very Well _____ Poorly

Is the performance of the department measured? Yes ___ No ___ Do Not Know ___

By whom?

How are performance measures provided to the department?

Who provides these measures?

Are measures explained and made clear to the staff?

Is progress towards performance goals in the department measured? Yes ___ No ___ Do Not Know ___

How is this progress communicated to the department?

Who provides this information?

How are these data on progress used to enhance performance? Please provide an example:

Is the department prepared to change? Yes ___ No ___ Do Not Know ___ Please give an example:

Is there a regular program to learn about and evaluate respiratory care techniques and technologies? Yes ___ No ___ Do Not Know ___

Please provide an example of how new techniques/technologies are brought into the department and initiated:

Please describe a recent example of a change effort in your department:

For this change effort, was there a sense of urgency created to make the change? Yes ___ No ___ Do Not Know ___

Please describe how this sense of urgency occurred.

Who created the sense of urgency?

Was this change effort lead by a group? Yes ___ No ___ Do Not Know ___ If yes, who were the members of that group (titles and organizational roles)?

Was the vision and strategy for making the change made clear? Yes ___ No ___ Do Not Know ___ If yes, please describe the vision:

Please describe the strategy as you understand it:

Was the change effort communicated? Yes ___ No ___ Do Not Know ___ If yes, please describe how the change effort was communicated:

Did you feel empowered to aid the change effort? Yes ___ No ___ Do Not Know ___

Were there any obstacles to the change? Yes ___ No ___ Do Not Know ___ If yes, please describe how were the obstacles handled:

Was the progress of the change effort acknowledged and celebrated? Yes ___ No ___ Do Not Know ___ If yes, please describe the acknowledgement and recognition:

Did the change effort succeed? Yes ___ No ___ Do Not Know ___ If yes, were further efforts made to produce change? Yes ___ No ___ Do Not Know ___ If yes, please describe the changes:

Were more people hired or promoted to assist the change? Yes ___ No ___ Do Not Know ___

If the change effort succeeded, was there any effort to show how the change effort was related to the success of the department? Yes ___ No ___ Do Not Know ___

Please describe the department's plans for leadership development and succession planning:

Please list some changes you faced in the last year?

Were these changes presented to the staff: All at Once ___ With a Gradual Phase-In ___ Do Not Know ___

Have there been instances where prior commitments have halted change due to a large investment of time and money in those earlier projects? Yes ___ No ___ Do Not Know ___ If yes, please describe the situation in detail: