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Designing a Physician Leadership Development Program Based on Effective Models of Physician Education

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Introduction

Facing challenges in quality, safety, patient centeredness and cost, healthcare is evolving to adopt leadership practices of highly effective organizations (Goonan & Stoltz, 2004). It is important that physicians take a proactive role in these healthcare reforms (Becher & Chassin, 2001; Porter & Teisberg, 2007) as effective physician leadership has been shown to improve performance (Pronovost et al., 1999; Wholey et al., 2014). Creating collaborative leadership poses challenges because physician culture is quite different from other leadership cultures (Edwards, 2005). Additionally, traditional physician training includes little focus on leadership development (Busari, Berkenbosch, & Brouns, 2011; D'Cruz, 2003) necessitating further training to achieve the potential of collaborative management.

The leadership competencies required by physicians have been widely discussed, with a great deal of agreement (National Center for Healthcare Leadership, 2005; Wides, Marks, Durgan, Mertz, & Mutha, 2013). While the number of physician leadership programs continues to grow (Association of American Medical Colleges, 2012; Frich, Brewster, Cherlin, & Bradley, 2014), there is little discussion of the theoretical framework of the programs and few published results of the effectiveness of leadership training, especially as to impact on organization-level outcomes (Frich et al., 2014). In this paper we hypothesize that learning approaches known to be effective for other types of physician education are successful when applied to leadership training. Our study demonstrates that a group of physicians made significant gains in leadership competencies after participating in the Stanford Leadership Development Program. Program assessment included a four-level evaluation model for training programs, including: Reaction, Learning, Behavior, and Results (Kirkpatrick & Kirkpatrick, 2006). We find impacts of the program at each level.

Theory

The Stanford Leadership Development program learning model followed the “Activation - Demonstration - Application - Integration” framework derived by Merrill (2002) from studies of effective education. This model recalls existing knowledge (Activation); discusses concepts, demonstrates procedures, visualizes processes, and models behavior

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(Demonstration); uses new knowledge and skills to solve problems (Application); and synthesizes and reflects on learning to incorporate it into everyday life (Integration). Moore (2003) described the logical sequence: a satisfying educational activity, learning, demonstrated competence, enhanced patient management performance and ultimately enhanced health status of patients. Leadership training follows the same sequence but focuses on performance that enhances processes and systems in healthcare as the desired outcome. Learning includes knowledge, skills and attitudes, which constitute competence. Competence reflects the capability demonstrated in the educational setting while performance is what is done in the actual leadership role (D. E. Moore, Jr., Green, & Gallis, 2009). Slotnik (1999) found that physicians typically learn in self-directed learning episodes in the following stages: (0) scanning for problems, (1) deciding to engage in learning tasks, (2) learning new knowledge and skills, and (3) gaining experience by practice. The program adopted learning approaches efficacious with physicians and applied these to leadership development (Marinopoulos et al., 2007).

Contemporary leadership training aims to produce a different leader than in the past. The heroic leader who sought to control people and systems (Bradford & Cohen, 1997) has been replaced with the transformational leader who develops people and organizations to become more effective problems solvers and innovators. Such leaders inspire others to greater levels of motivation and performance through managing the meaning of the work by helping individuals view work as worthwhile and important in the context of the values of the organization and having substantial and perceivable impact on the lives of other people (Gabel, 2012).

Creating leadership effectiveness is also contextual and depends on the position and status of physicians within the healthcare system, the organization's strategies and stance on engaging physicians in leadership, and the broader impact of government programs (Denis & van Gestel, 2016). Healthcare systems in other countries illustrate different models to engage physicians in improving quality and efficiency (Denis & van Gestel, 2016; Touati, Roberge, Denis, Pineault, & Tremblay, 2006). Approaches depend on physician autonomy and entrepreneurship, state of medical profession organization, degree of collaboration between the medical profession and government, emphasis on accountability, compensation models, health insurance structures, and integration of the medical profession with hospitals (Denis & van Gestel, 2016). Elements of all of these forces in various forms can be found across the United States.

Method

Program planning and development

In 2005-6, a formal School of Medicine leadership needs assessment recommended competencies including: vision, integrity, interpersonal skills, effective communication, diversity awareness, structured decision-making, change management, motivation and feedback, and personal accountability. This list of competencies is quite similar to several other competency frameworks (National Center for Healthcare Leadership, 2005; Wides et al., 2013). Concurrently, Stanford Hospital and Clinics identified a compelling need for developing physician leadership to: strengthen implementation of quality, safety, patient-

centered and cost effectiveness projects; create common physician behavior expectations; and improve participatory decision-making.

The curriculum (Table 1) was created based on competency models, institutional needs assessments, and recurring topics found in other programs. Fifteen instructors were recruited, both external and internal to the institution, each an expert in one of the topics in the program who taught this subject in each of the four years. Minor adjustments were made to the curriculum and presenters over the four years of the program based on participant feedback.

The option of sending leaders to one of a number of highly respected national leadership programs was rejected in favor of an in-house model. Physicians from the same institution learning together and having common experiences offered the added benefits of building a leadership culture, linking the curriculum to local strategic priorities, and supporting application of skills through group re-enforcement (Conger, 2010).

Program implementation

Participant nominations were solicited annually from senior leaders of both the school and hospital. Selection criteria were: (1) current leaders crucial to organizational priorities, (2) incoming leaders of programs and units, and (3) individuals with considerable leadership potential, “rising stars.” Nominators rated each of their nominees, and a committee of four school and hospital leaders selected final participants. To impact diversity in leadership ranks, inclusion of females and underrepresented minorities was closely monitored.

Leadership program participants completed baseline assessments of their leadership competence and received 360-feedback from a supervisor, peers, and direct reports to identify strengths and improvement opportunities. They also completed the Myers Briggs Type Indicator and the Thomas-Kilmann Conflict Mode Instrument. This “Activation” component raised awareness of both general and specific learning needs and re-enforced the decision to take the course (Slotnick Stages 0 and 1).

The “Demonstration” component used educational methods that have been shown to be effective in continuing medical education (Marinopoulos et al., 2007). The program consisted of six sessions, each lasting one and one-half days, spread over nine months, and held at a conference facility away from the institution. This supported participant networking and interspersed periods of learning with practice of newly acquired approaches. Before each session, participants spent 3-4 hours reading topical material, preparing cases or writing mini-cases from their own experience. Instruction was problem based using case studies from the literature and participants’ own previous problems. As passive learning and didactic presentations have not proven effective (Grimshaw, Shirran, & Thomas, 2001), sessions were largely experiential (Kolb & Kolb, 2005). Learning methods included case study, role-play, discussions in dyads, brief reflection and writing assignments, responses to video vignettes, brainstorming, and small group problem-solving assignments, with minimal emphasis on didactic lectures (Slotnick Stage 2).

In the “Activation” component, each participant carried out an active learning project leading a multidisciplinary team to gain further experience with new skills (Slotnick Stage 3). Because learning is promoted when new knowledge is integrated into the learner's world (Merrill, 2002; Wides et al., 2013), participants selected their projects based on their own real leadership roles. An executive sponsor was required for each project and a coach skilled in team process management worked with the leader. Projects were monitored at several points during the program both by the coach and through project progress reports submitted by participants. The final “Integration” was observed when project results were presented at the end of the program, demonstrating how leadership concepts were being applied at the individual level, as well as showing impact on the institution. See Figure 1 for the Learning Model in detail.

Between 2008-2011 (4 cohorts), 113 individuals were enrolled, 65 (57.5%) men and 48 (42.5%) women. Race/ethnicity was 76 Caucasian (67.3%), 25 Asian (22.1%), and 12 (10.6%) underrepresented minority including Black/African American, Hispanic/Latino, Native American/Alaska Native, and Native Hawaiian/Pacific Islander. Overall, clinical faculty demographics during this time period were 63.0% men, 37.0% women, 66.8% Caucasian, 23.0% Asian, 6.0% underrepresented minority, and 4.2% unknown race/ethnicity. Nineteen of those enrolled in the program were high-level staff leaders in the school and hospital; the remaining 94 were faculty members. Invitations to participate in the program were highly selective. Table 2 shows detail of enrollees by professional category and year. Of 113 faculty and staff leaders enrolled, 104 completed the program (92.0%). Participants left the program only because of competing professional or personal commitments, unexpected at the time of initial enrollment. No one criticized the program as a reason for dropping out.

Program evaluation

The evaluation followed Moore's (2003) general framework that has subsequently been developed in greater detail (D. E. Moore, Jr. et al., 2009). We used Kirkpatrick's four levels of evaluating training programs to assess elements of this framework (Kirkpatrick & Kirkpatrick, 2006; Phillips & Stone, 2002). This model, a widely used framework in the corporate, government, and academic worlds, has been validated in multiple case studies (Kirkpatrick & Kirkpatrick, 2006). It offers a systematic approach to understanding a program's impact on multiple levels. Level 1 – *Reaction*; Level 2 – *Learning*; Level 3 – *Behavior*; Level 4 – *Results*. These levels can be assessed with subjective and/or objective evidence. We employ subjective evidence for Levels 1, 2 and 3, and apply objective evidence to Levels 3 and 4. The integration of Moore's framework and Slotnick's stages with the Kirkpatrick model is shown in Table 3.

To understand Level 1, participants' *reaction* to the course, participants completed ratings at the end of each session on the effectiveness of the speaker. In addition, at the end of the final day, a rating was provided on the overall effectiveness of the program. To assess Level 2, *learning*, participants completed a pre-survey at the beginning of the first session and a post-survey at the end of the last session. Survey questions included ratings of knowledge, skills, and attitudes related to leadership and organizational management. We further evaluated

learning through retrospective pre-post self-assessment ratings obtained on the last day of the course (Skeff, Stratos, & Bergen, 1992).

To assess Level 3, participants' *behavior*, we used responses to the prompt, "rate how often you plan to use the following leadership strategies," in the 2010 and 2011 program years. These reported plans captured participants' planned leadership behavioral changes. Making a commitment to change is associated with actual implementation of change (Wakefield et al., 2003). We also evaluated actual behavioral changes using self-reported distribution of work on participants' project teams in the project's early, middle, and end phases, as well as evidence of leadership behaviors demonstrated in project work and final project presentations. Level 4, *results*, is based on participants' final projects. The degree of impact of projects was assessed using the Institute of Healthcare Improvement scale (Institute for Healthcare Improvement, 2004), rated by a trained research staff member unaffiliated with the leadership program or its participants. Each project rating was accompanied by a detailed text description of how the project had reached a particular numerical rating. Ratings span a range of 1.0 – A team has been formed, to 5.0 – Outstanding sustainable results.

Statistical analysis

Responses to pre- and post-surveys items were based on a 1-to-5 scale, 1="low," 3="average," and 5="high." As frequency distributions are more informative than summary statistics (e.g., means) with such an ordinal scale, our pre-post comparisons focus on the percentage of participants reporting ratings 4-5 (i.e., above "average"). We use Pearson's chi-square unmatched paired test to infer whether post-survey responses differ significantly from pre-survey responses. The application of unpaired tests may underestimate statistical significance assuming (usually) positive correlations between pre - and post-responses and, as such, our results may reflect conservative estimates of pre-post changes (Sainani, 2010). Since retrospective self-assessment ratings used a wider scale (1-to-10) and asked participants to rate leadership effectiveness and influence both before the program and at the end of the program, we ran paired tests on these data using the Wilcoxon signed-rank test of distributions. Changes in distribution of project work from early phases compared to the end of the program were analyzed using the Mann-Whitney-Wilcoxon (unpaired) test of distributions. All data were analyzed using Stata version 12.

Results

Level 1 Reaction

The mean rating of individual presenters across years was 4.5 out of 5 (SD: 0.36). At the end of each program year, participants rated the program as highly effective overall (mean: 4.5; SD: 0.17).

Level 2 Learning

Table 4 shows significant improvements in respondents' knowledge, skills, and attitudes throughout the program. Participants also showed significant gains across all items related to understanding the organizational system in which they work. The percentage of above

average ratings on all items is significantly higher ($p < .01$) on the post-survey compared to the pre-survey. In terms of skills obtained, in self-ratings of leadership ability pre-program compared to post-program, just six of ten pre-survey leadership items had over 50% of respondents rating themselves above average (ratings 4-5), vs. all ten post-survey items. All pre-post differences are statistically significant ($p < .05$) except for abilities to communicate effectively when making presentations, resolve conflicts, and negotiate effectively. Skills were also gained in team management ability. None of the four items on the pre-survey had over 50% of respondents reporting above average ratings, vs. all items on the post-survey. All differences are statistically significant ($p < .001$).

Attitudes with regard to approaches to team practices were also changed. Significant gains ($p < .01$) were reported across all items in this area. Finally, we found less change in pre-compared to post-surveys with regards to perceptions of institutional support and connectedness. While there were significant gains across items related to connectedness to colleagues and institutional support from the school ($p < .05$) for four of the six items, pre-post ratings did not increase significantly regarding participants' perceptions of support for career development or general hospital support.

At the end of the last day of the program, respondents were asked to rate their effectiveness as leaders and how much power or influence they had looking back to the beginning of the program (*before*) and at its end (*now*) – retrospective pre/post self-assessment (Skeff et al., 1992). “Effectiveness as a leader” increased significantly from a mean of 5.1 (SD: 1.5) *before* to 7.3 (SD: 1.1) *now* on a scale of 1 to 10 ($p < .001$). “Power and influence in carrying out leadership tasks” also increased significantly from 4.7 (SD: 1.8) *before* to 7.0 (SD: 1.3) *now* ($p < .001$).

Level 3 Behavior

The 2010-2011 post-survey asked participants to assess their planned personal behavioral changes. Over 80% of respondents reported plans to use their newly acquired leadership strategies. All respondents planned to use resources to effect change, and over 90% reported plans to deal with interpersonal issues, inspire others to act with a vision, create and articulate a vision, and communicate effectively when making presentations.

In terms of actual changes in leadership behavior the self-reported distribution of work within project teams gradually shifted from the leader more to team members, as leaders acquired more team leadership skills. Team members' share of work increased from a mean of 20% at the project's early stages to 36% at the end of the project, while the leader's share of work declined from a mean of 72% to 51% ($p < .01$). Additionally, project presentations at the end of the program demonstrated direct application of leadership concepts and leadership initiative in effective team management, elements of sound project design, engagement of organizational sponsors and stakeholders, managing change, use of data to guide actions, and effective presentation of results.

Level 4 Results – Project Outcomes

Over the full four program years (2008-2011) participants completed projects across a wide variety of areas including: quality and process improvements (51%), new clinical programs

(24%), business plans (10%), new research programs (9%), and new educational programs (7%). A number of important results were achieved including: improvements in quality of care, patient safety and efficiency of care processes; enhanced patient satisfaction; and new program development (Table 5).

Project evaluation consisted of a two-fold process. First, did participants complete their projects by the end of the course? 100% of participants completed their projects at the course's conclusion. The second component of project evaluation employed ratings using the Institute for Healthcare Improvement Assessment Scale for Collaborative Improvement Projects (Institute for Healthcare Improvement, 2004). This scale rates projects along a continuum from 1.0 – A team has been formed, to 5.0 – Outstanding sustainable results. The program participants far exceeded expectation with 58% reaching level 3.0 – *moderate improvement in process measures* – and over one fifth of participants (22%) attaining level 4.0 or greater, indicating *significant improvement in outcome measures*.

Discussion

Three major findings can be summarized from the leadership development program evaluation. (1) Participants reported positive reactions, increases in self-assessed leadership skills, and plans to use acquired skills in future leadership positions. (2) Participants successfully led a wide range of projects, while demonstrating effective leadership behaviors. (3) Participants completed team projects, which improved care delivery in multiple ways. These results support the hypothesis that learning approaches known to be effective for other types of physician education are successful when applied to leadership development training. Across all four assessment levels, the program was effective in improving leadership competencies essential to meeting the complex needs of the changing healthcare system.

Problems in healthcare quality have been documented for some time, but effective leadership for change has not emerged from consumers, purchasers, government, organized medicine or academic medicine. Physician leadership is a more promising option for improvement (Becher & Chassin, 2001; Porter & Teisberg, 2007). Physician executives play a valuable role in organizational effectiveness and are expected to play an expanding role in quality and efficiency (Dunham, Kindig, & Schulz, 1994). Individuals exposed to leadership training have shown transformational leadership qualities in settings as varied as community clinics (Xirasagar, Samuels, & Curtin, 2006) and orthopedic surgery (Day et al., 2010).

The design model of our program, with an emphasis on experiential learning, impacted knowledge, skills, attitudes. Alternative approaches to teaching effective communication, negotiation, and conflict management may be necessary as the program had less impact in these areas. The greater challenge of impacting these abilities has been previously reported (McDade, Richman, Jackson, & Morahan, 2004), and suggests a need for more experiential learning with these three particular topics (Kolb & Kolb, 2005).

Learning and improved behavior in working with a team was an important outcome of the program. Well led, well-functioning teams achieve significant improvements in care

processes and patient outcomes, and can reduce morbidity and mortality (Weaver, Sydney, & Rosen, 2014). The role of the physician leadership is critically important in the structure, context, process and productivity of teams (Majmudar, Jain, Chaudry, & Schwartz, 2010).

Action learning projects were an important part of the program. Action learning is optimal when it addresses specific organizational challenges and real improvement opportunities, and is augmented when team-based projects are used (Marquardt, Leonard, Freedman, & Hill, 2012; Wides et al., 2013). Our participants' projects were chosen from their real work settings as leaders. All leadership development participants completed their projects compared to only 75% project completion reported by a different program for participants from multiple organizations (Wides et al., 2013), suggesting another advantage of in-house training. Including team projects in physician leadership training is uncommon. Only six of forty-five leadership development programs in a systematic review included project work (Frich et al., 2014), despite the evidence that this method reinforces the development of leadership skills; reinforces transformational, political and professional aspects of leadership; and allows participants to understand themselves as developing leaders (Marquardt et al., 2012).

The study revealed some concerns about the institution and possible barriers to leadership development. The impact of organizational context on leadership work was previously noted (Denis & van Gestel, 2016). Even though there were significant improvements at the end of the program in perceptions of institutional support and connectedness, participants still had concern about support for career development and general hospital support. In addition to a training program, organizations wanting to develop physician leaders need to look at how this role will be supported.

The study has several limitations. First, the highly selective nomination process of participants drawn from a pool of emerging leaders makes it difficult to determine, in the absence of a control group, whether outcomes observed are attributable to the program or individual participant. Second, self-assessments of learning are subject to reporter bias. Participant enthusiasm, desire to improve, and relatively limited leadership experience may result in overestimation of how much has been learned. Additionally, time series designs in evaluation, such as the pre-post testing we employ, are subject to response-shift bias (Hannum & Martineau, 2008). At the beginning of any program, participants in their more naive state may rate their pre-training leadership abilities higher than at the end when they have a clearer understanding of what effective leadership entails. Retrospective pre/post self-assessments can address this bias (Hannum & Martineau, 2008; Skeff et al., 1992). Using this method, the significant improvements we see in leadership effectiveness and influence add further weight to the program's impact on learning. Third, the shift in work from team leader to team members and project results occur in the context of the program and may not persist in the leader's true work environment when the leader is not under the same scrutiny. However, as the projects and team members were drawn from the leader's actual leadership work roles, these new achievements may be more readily generalized. Fourth, the program was conducted in an academic medical center and may not be generalizable to other settings. Finally, this is a one group pre-post design study that is not as strong as other methods. However, stronger designs such as a case control or randomized controlled trial would be

difficult in leadership development. Our results should be interpreted with these limitations in mind until confirmed by further studies and methods.

Practice Implications

Physicians respond positively to a leadership development program when the framework follows principles established for continuing medical education. Leadership development programs can both increase physician leadership competencies and add value to healthcare institutions. Active learning projects provide opportunities to practice leadership skills addressing real word problems. In-house leadership development programs offer the advantage of greater alignment between program competencies and institutional priorities. Program assessment should include evidence of behavior change and results in addition to the more traditional focus on participant reaction and learning alone.

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Biography

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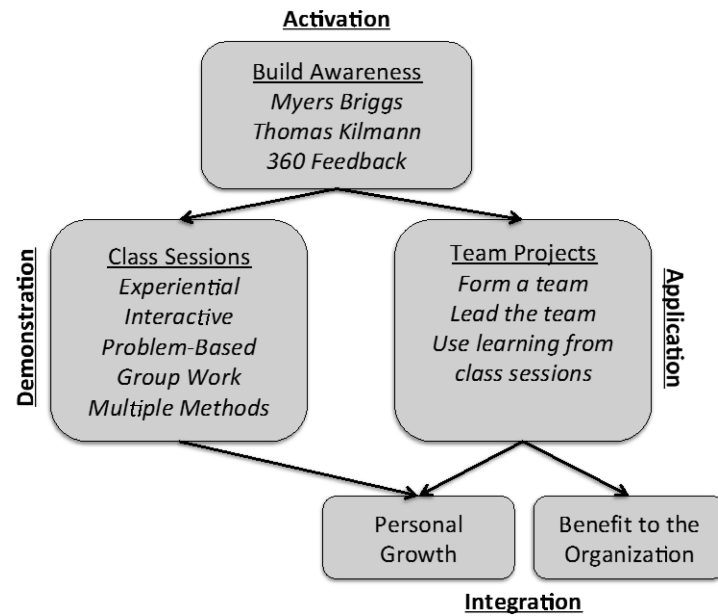
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Note: The Stanford Leadership Development Program utilizes Merrill's learning framework: Activation – Demonstration – Application – Integration.

Figure 1.
Physician Learning Model in the Stanford Leadership Development Program

Table 1**Stanford Leadership Development Program Competency Based Curriculum**

■ Personal Development as a Leader
– Assessments
– Leadership styles
■ Managing People & Relationships
– Performance management
– Power, influence & authority
– Managing conflict
– Negotiation
– Recruiting & developing talent, mentoring
– Team dynamics
– Diversity in appointments & promotions
– Difficult conversations
– Legal land mines in human resource management
■ Managing Groups & Projects
– Project planning & management
– Organizational alignment
– Change management
– Meeting management
– Managing teams
■ Managerial Finance & Accounting
– Financial statements, funds accounting
– Revenue cycles, cost accounting, budgets
– Incentives
– Business plans
■ Understanding the System
– Organizational structure – school, hospital
– Planning & decisions
– Finances
– Decision makers in the organization

Table 2

Detailed Description of Stanford Leadership Development Program Enrollees by Medical Specialty and Administrators in Each Cohort

Specialty	2008	2009	2010	2011	Total	All %	MD %
Anesthesia	1		3	1	5	4%	5%
Comparative Medicine	1		1	1	3	3%	3%
Dermatology			2		2	2%	2%
Medicine	3	11	4	3	21	19%	22%
Neurology		1	3	1	5	4%	5%
Neurosurgery		1		2	3	3%	3%
Obstetrics & Gynecology	1	3	4	1	9	8%	10%
Ophthalmology			1		1	1%	1%
Orthopedics				1	1	1%	1%
Otolaryngology				1	1	1%	1%
Pathology	2		2	2	6	5%	6%
Pediatrics	1	1	1	3	6	5%	6%
Psychiatry		2		2	4	4%	4%
Radiation Oncology			2	2	4	4%	4%
Radiology	1	1	4	4	10	9%	11%
Surgery	1	2	2	5	10	9%	11%
Urology		1	2		3	3%	3%
Administration		5	8	6	19	17%	
TOTAL	11	28	39	35	113	100%	
MD TOTAL	11	23	31	29	94		100%

Table 3

Comparing the Kirkpatrick Four Level Model of Evaluating Training to the Moore Framework of Physicians Education Adapted to Leadership and the Slotnick Stages of Learning Episodes

Moore Framework	Slotnick Stages	Kirkpatrick Levels of Evaluation
	Stage 0: Scanning for potential problems	
Enrolls in educational activity	Stage 1: Deciding to take on the problem	
Satisfied with education activity		Level 1: Reaction
Learning declarative knowledge	Stage 2: Learning the required knowledge and skills	Level 2: Learning
Learning procedural knowledge	Stage 2: Learning the required knowledge and skills	Level 2: Learning
Improved competence		Level 2: Learning
Improved physician performance	Stage 3: Gaining experience	Level 3: Behavior
Improved processes and systems		Level 4: Results
Improved organizational outcomes		Level 4: Results

Note. Moore Expanded Outcomes Framework for planning and evaluating continuing medical education (D. E. Moore, Jr. et al., 2009); Slotnick Stages of Physician Learning Episodes that physicians seeking new knowledge and skill typically follow (Slotnick, 1999); Kirkpatrick Four Levels of Evaluating Training (Kirkpatrick & Kirkpatrick, 2006).

Table 4

Learning: Knowledge, Skills, and Attitudes Gained Among Respondents in Pre- and Post-Program Surveys in the Stanford Leadership Development Program in Years 2008-2011

	% rating 4-5		p-value ¹
	Pre	Post	
KNOWLEDGE: UNDERSTANDING OF ORGANIZATIONAL SYSTEM			
Leadership structure	45%	82%	0.001
Avoid legal pitfalls in human resources	35%	67%	0.001
Formulate and integrate reward systems	32%	67%	0.003
Financial management	32%	58%	0.001
Evaluate challenges facing academic medicine in the US	34%	72%	0.001
Basic concepts in managerial accounting and finance	21%	56%	0.001
SKILLS: LEADERSHIP ABILITY ²			
Coach and give guidance	73%	94%	0.017
Inspire others to act in accordance with a vision	60%	91%	0.003
Create and articulate a vision	55%	91%	0.001
Recognize unconscious bias, use a range of skills in working with individuals of different gender, ethnicity, professional roles and work styles	56%	82%	0.021
Carry out performance evaluations, provide constructive feedback	38%	76%	0.001
Communicate effectively when making presentations to groups	69%	73%	0.745
Use resources to effect change	50%	73%	0.048
Deal with difficult interpersonal issues	40%	73%	0.005
Resolve conflicts	54%	70%	0.169
Negotiate effectively	41%	61%	0.098
SKILLS: TEAM MANAGEMENT ABILITY			
Lead and support teams in achieving their objectives	42%	89%	<0.001
Lead effective meetings	47%	87%	<0.001
Evaluate the effectiveness of projects that you lead	34%	81%	<0.001
Structure decision-making in groups	31%	74%	<0.001
ATTITUDES: TEAM PRACTICES			
When you are a member of a team, participate fully	83%	96%	0.004
Work toward a solution rather than just identifying a problem	69%	96%	<0.001
Create a team, take charge, initiate action when you see a problem	63%	91%	<0.001
Take responsibility for getting the most out of team members	43%	90%	<0.001
ATTITUDES: PERCEPTIONS OF INSTITUTIONAL SUPPORT			
Feeling connected to and supported by your colleagues at work	63%	80%	0.013
Stanford University is a place where careers can develop	72%	78%	0.304
Connected and supported in your relationships with colleagues	58%	72%	0.046
Anyone is watching your progress/performance	49%	66%	0.014
The School of Medicine cares about you	39%	59%	0.006

	% rating 4-5		p-value ¹
	Pre	Post	
Stanford Hospital & Clinics cares about you	36%	48%	0.094

n=104.

¹ p-value from the Pearson's chi-square test of independence.

² Leadership Ability questions were asked in both pre- and post-program surveys in 2008 and 2009 only. n=40 for these questions.

Table 5

Examples of Principal Outcomes of Action Learning Projects Led by Stanford Leadership Development Program Participants in Years 2008-2011

- Standardized the process and outcomes of internal medicine consultation for cardiac risk reduction in pre-operative patients
- Created a business, marketing, and clinical plan for a new allergy and immunotherapy service in Otolaryngology – Head and Neck Surgery
- Improved percent surgical pathology cases meeting 4 day turnaround time from base line of 72-90% to 87-100%
- Increased percent of pneumonia patients receiving 1st antibiotic dose within 4 hours of arriving in the ED from baseline of 73% to 100%.
- Decreased length of intubation for Cardiothoracic ICU patients from 40-90 hours to 15-28 hours, and the ICU length of stay from 4-8 days to 2-4 days.
- Reduced risk to patients from internal jugular vein central line placement through house staff simulation training in the procedure using ultrasound guidance
- Reduced mislabeled type and cross/screen specimens in the Transfusion Service by implementing a two specimen process
- Created primary ovarian insufficiency Web site for patient information and templates for of collection patient data collection
- Reduced red bag trash during urologic surgeries by 58% with resulting cost savings and less environmental impact
- Reduced turnaround time in the endoscopy suite by 21.6%
- Established a roadmap for improving the current patient and family-centered approach to the care of orthopedic surgery patients
- Achieved a 34% reduction in routine lab tests ordered by the Neurology Service patients on one unit in the hospital.
- Achieved an increase patient satisfaction survey percent “very good” response to “wait time to see doctor” from 31% to 51% by implementing a pilot involving placing a physician in the Emergency Department triage area
- Reduced the supplier prices for spinal implants by 23-45%