JONA
Volume 44, Number 1, pp 30-36

THE JOURNAL OF NURSING ADMINISTRATION

Addressing Hospital-Acquired Pressure Ulcers

Patient Care Managers Enhancing Outcomes at the Point of Service

Jeanine M. Frumenti, DNP, RN
Abby Kurtz, EdD, RN-BC

An innovative leadership training program for patient care managers (PCMs) aimed at improving the management of operational failures was conducted at a large metropolitan hospital center. The program focused on developing and enhancing the transformational leadership skills of PCMs by improving their ability to manage operational failures in general and, in this case, hospital-acquired pressure ulcers. The PCMs received 8 weeks of intense training using the Toyota Production System process improvement approach, along with executive coaching. Compared with the control group, the gains made by the intervention group were statistically significant.

Pressure ulcer (PU) prevention measures, including education and training, changes in policies and procedures to reflect state-of-the-art treatments, assessments of patients at risk, increasing staff competencies, and development of performance improvement tools, have been cited in the literature.[1-4] Regardless of these numerous evidence-based approaches, the incidence of hospital-acquired PUs (HAPU) continues to remain a personal and economic health concern. Hospital-acquired PUs are reported to cost an average of $129,000 per hospitalization.[5] In addition, the personal toil of these devastating and often life-limiting conditions can include further complications such as fatal septic infections.[6] For this reason, a team was formed at Bronx-Lebanon Hospital Center (BLHC) to address the incidence of HAPU through the enhancement of leadership skills and performance improvement techniques for a cohort of patient care managers (PCMs). Nurse leaders at BLHC believed that to truly impact clinical practice outcomes, education and enhancement of skills at the level of PCMs were essential and thus supported the program.

Author Affiliations: Vice President, Patient Care Services/Chief Nursing Officer (Dr Frumenti), and Director, Nursing Education & Research (Dr Kurtz), Bronx-Lebanon Hospital Center, New York.
The authors declare no conflicts of interest.
Correspondence: Dr Frumenti, Bronx-Lebanon Hospital Center, 1650 Grand Concourse, 2nd Fl, Bronx, NY 10457 (*Drneen2011@gmail.com*).
DOI: 10.1097/NNA.0000000000000018

About the Project

The HAPU prevention project was developed with an overall goal to reduce the prevalence rate of HAPUs from the 2010 rate of 8.4% to 7.4% identified as the National Database Nursing Quality Indicators (NDNQI). The intervention was planned to combine process improvement (PI) methodology and education of nurse managers with a coaching intervention during a 12-week period.

The specific aims of the project were to determine the leadership skills of 3 PCMs as a cohort; to evaluate the impact of executive coaching on the prevalence of HAPU and performance indicators of PU management on positioning,[3] staging,[4] and completion of the Braden Scale[7]; and to determine the impact of executive coaching by the chief nursing officer (CNO) on the leadership skills of the selected PCMs as perceived by their nursing staff and through improvement in the unit incidence of HAPU.

To identify staffs' baseline perception of leadership skills among the cohort of PCMs, a Global

Transformational Leadership Scale[8] and Leadership Effectiveness Assessment Profile[9] (GTLS/LEAP) survey was conducted on the 7 medical/surgical nursing units, 3 of which were under the direction of the selected PCMs. Results were used to identify leadership training needs. This approach was taken because high-level leadership performance on the part of unit nurse managers has significant influence on the quality of clinical outcomes.[10,11] Because the prevalence rate of HAPU at this institution was higher than the national benchmark, reduction of that rate became the clinical measure selected to assess performance of enhanced PI of the PCMs before and after the intervention. The executive team and nursing leadership, including the CNO, supported this plan and the identified measurement indicators as the project moved forward.

Review of the Literature

A comprehensive review of the literature concerning the improvement of operational failures was conducted using Medline, PubMed, Cochrane Library, Harvard Business Review, and CINAHL database. The initial search term was *nursing leadership*. The next level included the terms *transformational leadership*, *leadership training*, *executive coaching*, and *operational failures*. Although the initial search yielded 95 published articles, after abstract reviews, the list was reduced to 39 papers and 3 reference, nonresearch materials.

The literature reporting transformational leadership development substantiated the need to determine best practices for PCMs during instances of operational failure and use those exemplars as teaching opportunities and indicated that leadership training and greater organizational support for PCMs would be effective support in the management and mismanagement of operational failures.[12]

Operational Failures

Operational failures on nursing units result from a combination of factors including lack of necessary resources and absence of systematic proactive approaches to deal with task interdependence and the uncertainty characteristic of many nursing and patient care interactions.[13-15] It was reported that operational failures could be reduced by designing work systems that facilitate coordination and communication among members of the healthcare team and developing consistent problem-solving procedures.[13] The literature reinforced the belief that operational failures present opportunities for nursing leadership to improve effectiveness and outcomes, including reducing preventable complications, reducing length of stay, and lowering the cost of care per patient. Several studies focused on understanding the nature of operational failures that nurses may encounter and their role in quality and operational excellence.[13-19] Findings include the following:

- Most operational failures result from the lack of control of processes.[17]
- Employees sometimes compensate for these failures by establishing "workarounds," enabling the overcoming of a fault without actually correcting the underlying issue.[17-19]
- Workarounds deter organizational learning by not supporting the establishment of preventative measures.[17-19]

The Toyota Production System (TPS) has been successfully used as a PI model to address operational failures in healthcare settings[20,21] by adhering strictly to 4 rules:

Rule 1: All work shall be highly specified as to content, sequence, timing, and outcome.
Rule 2: Every customer-supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests and receive responses.
Rule 3: The pathway for every product and service must be simple and direct.
Rule 4: Any improvement must be made in accordance with the scientific method, under the guidance of a teacher, at the lowest possible level within the organization.[22]

The TPS methodology focused on the application of the scientific method at the frontline to understand current conditions, identify the root causes of the operational failures, specify countermeasure, and embed tests to evaluate the effectiveness of the countermeasures.[20-24]

Transformational Leadership

Thirty-seven articles highlighting transformational leadership were reviewed. Only 1 article was a level 1 study,[25] which was a combination of a narrative summary of quantitative research papers and a meta-synthesis of qualitative data. The remaining articles were studies that used mainly observational and correlation designs. Findings of the meta-synthesis of the qualitative data supporting transformational leadership include the following:

- Staff development is the responsibility of leadership.
- Collaboration among healthcare teams can improve patient and staff outcomes.
- Leaders who advance their education and leadership training are able to develop the necessary

skills to improve the work environment for staff.
- Leaders who show characteristics associated with emotional intelligence are more likely to have an impact on staff, patient, and organizational outcomes.
- A supportive organizational structure benefits those in leadership roles and assist them to provide support for staff.

Supervisors who exhibit transformational leadership qualities and behaviors are likely to produce staff of similar characteristics and positive patient outcomes.

Executive Coaching

Executive coaching includes partnering with another in a creative process that inspires the person to maximize their personal and professional potential.[26] Executive coaching focuses on getting things done through leadership and maximizing and sustaining effective performance and highlighting the concept of authentic leadership and the role of the coach in facilitating the development of self-mastery for improved performance among their protégé.[27] Literature on coaching supported the assumption that coaching leads to a higher level of engagement among leaders, enhanced communication skills, improved decision making, self-awareness, and improved outcomes. In the literature, positive and effective performance outcomes[26-29] were related to techniques of how to coach.[30]

Methods

The project received approval for expedited review by the institutional review board at both BLHC and Johns Hopkins University School of Nursing. The GTLS/LEAP leadership questionnaires were distributed to a convenience sample of 308 staff members on 7 medical-surgical units to establish baseline information on the cohort PCMs' perceived leadership skills. A total of 231 (76%) completed questionnaires were returned. A subset of 127 (41% of the returned total of 231) staff members completed questionnaires from the units of the 3 cohort PCMs. Staff participating in the overall survey was 77% registered nurses (RNs) (n = 178), 3% licensed practical nurses (LPNs) (n = 7), and 20% nursing aides (NAs) (n = 46). The educational background of the RN team included 25% (n = 44) with associate degree in nursing (ADN) or diplomas, 64% (n = 114) with bachelor of science in nursing (BSN), 2% (n = 4) with master's degrees, and the remaining 9% (n = 16) did not indicate their highest RN education. Thirty-five percent (n = 62) of the RN respondents from the overall survey reported up to 5 years of nursing experience, and 65% (n = 116) reported 6 to more than 21 years. Of the respondents to the age question (n = 73), 14% (n = 10) were younger than 30 years, 44% (n = 32) were 31 to 40 years old, and 42% (n = 31) were 40 to 60 years old (Table 1). The same GTLS/LEAP questionnaire was used for the postintervention assessment. The control, nonintervention group consisted of 4 PCMs with a total managerial experience of 32 years. The intervention group consisted of 3 PCMs of medical-surgical units with a total nurse managerial experience of 26 years. The intervention PCMs were selected because their units have either a high prevalence of HAPUs or had the lowest baseline GTLS/LEAP scores. The mean GTLS/LEAP score for the 7 PCMs was 3.6, with ratings from 1 = very little to 5 = always. Large variances in the mean GTLS/LEAP scores across the 7 PCMs (highest was 4.8 and lowest was 1.4) concerned management and signaled the need for leadership training for the PCMs. Themes emerged from the literature as supported interventions, TPS training[20] with emphasis on providing support for leadership growth with sustainable results,[21] and executive coaching.[26-30]

The curriculum was developed by the author. It was reviewed by the coauthor and doctoral adviser for congruence with the previous support of the interventions and the intended goals as validation. An external facilitator provided TPS training for 2 weeks of intense didactic and experiential training to the intervention group. The TPS curriculum focused on the scientific method and its essence at the frontline of patient care, the TPS's 4 rules in improving processes, and the application and documentation of the scientific method in managing operational failures.

Table 1. Demographics

	n	%
Staff title		
RN	178	77
LPN	7	3
NA	46	20
RN educational background		
ADN or diploma	44	25
BSN	114	64
Master's degree	4	2
Did not indicate	16	9
Years of nursing experience		
Up to 5 y	62	35
>5 y	116	65
RN age		
<30 y	10	14
31-40 y	32	44
41-60 y	31	42

As a result of the training, the PCMs in both the intervention and control groups chose to work on the operational failure of PU management, which is a continuing organizational top priority. Each of the 3 PCMS in the intervention cohort selected a different aspect of HAPU management and intervention to focus on for their unit intervention. The 1st focused on working with her staff to turn and position patients every 2 hours,[3] the 2nd implemented an accurate, evidence-based staging protocol,[4] and the 3rd focused on improving Braden Scale documentation.[7] The PCMs were empowered to apply the TPS method in addressing their identified focus.

After the TPS training, the CNO provided executive coaching to develop and transform leadership skills and knowledge. The CNO had been trained as coach and used the Coaching Work Toolkit,[24] as the framework for the coaching sessions. Over an 8-week period, the PCMs each received an individual 45-minute weekly coaching session with the CNO. Goals of the sessions focused on improving effective communication between the PCMs and staff and enhancing their quality improvement methodology.

The following accounts are verbatim feedback of the intervention group on their learning experience from the coaching sessions that they received from the CNO:

- PCM 1: "The TPS training in conjunction with coaching from the CNO has made me a more effective, efficient and fair leader. I have learned to make introspective evaluation of my reaction to issues or concerns that may arise on the unit or that my staff may have. I learned not to be judge mental, to listen with an open mind, to reevaluate my thought processes and avoid implementing quick fixes. This program reinforced the importance of involving all staff on all levels in the decision making process, to bring forth their concerns and by evoking solutions from them translates to remarkable success in sustaining tangible results."
- PCM 2: "The coaching sessions were very beneficial to me. They helped me recognize my strengths and weaknesses. Most importantly they helped me challenge myself and face the weaknesses. I believe I have developed as a manager. We implemented different strategies to help me move past my weaknesses (delegation assignment). This established a different relationship between my staff and me. I was failing them, by not pushing them and allowing them to take on certain projects. It was really an awesome experience for me."
- PCM 3: "The TPS training that I attended has broadened my horizon and enlightened me about my role and function as a leader. It helped me identify different talents in each and everyone in my team, and to utilize the expertise of each team member. This has produced a better outcome for the patient and improving the organization. My coaching with the CNO helped me to learn to acknowledge staff needs and address their needs appropriately, while achieving professional satisfaction and team empowerment."

Results

Aim 1

As shown in Table 2, the intervention group had a preintervention mean (SD) GTLS score of 3.52 (1.46) and a mean (SD) LEAP score of 3.39 (1.48). The control group had a preintervention mean (SD) GTLS score of 2.83 (1.41) and a mean (SD) LEAP score of 2.82 (1.45). The GTLS/LEAP questionnaire measures the transformational leadership skills of PCMs, with higher ratings (1-5, from "never" to "always") as more transformational. These baseline leadership scores reflected that, as a group, they were perceived as

Table 2. Aim 1: Baseline

		Preintervention, October 2010
Results: GTLS/LEAP		Mean (n)
Section 1: Rates the leadership skills of your PCM	Intervention	3.52 (398)
	Control	2.83 (471)
Section 2: Rates your perception of leaders	Intervention	3.39 (528)
	Control	2.82 (638)
Section 3: Organizational Climate	Intervention	3.14 (224)
	Control	2.97 (274)
If I were to be led by a nurse manager, I will choose my PCM	Intervention	66.7% (54)

All intervention groups showed improvement at the 95% confidence level.

Table 3. Aim 2: Positioning, Staging, and Braden Score

Results: PI-PU Data	Mean (SD)	Baseline	Target	Study Period (12 wk) Dec 2010	Jan 2011	Feb 2011	Mar 2011	Postintervention (12 mo) 2Q 2011	3Q 2011	4Q 2011
Turning and positioning,[a] %	93 (7.91)	60	90	100	100	93	85	93	94	79
Staging,[b] %	93 (4.39)	30	50	60	87	100	95	97	100	100
Braden Scale assessment,[c] %	80 (13.25)	35	55	[d]	57.4	92.2	94.3	92.3	94	95

[a]Measured by documentation in RN flowsheet in an electronic medical record.
[b]Measured by 2 RN consensus on staging and documentation in electronic medical record.
[c]Measured by RN documentation in electronic medical record.
[d]No data collected.

exhibiting leadership behaviors more than "sometimes" but less than "frequently."

Aim 2

Each of the 3 PCMS in the intervention cohort selected a different aspect of HAPU management and intervention to focus on for their unit intervention. The 1st focused on working with her staff to turn and position patients every 2 hours, the 2nd implemented an accurate, evidence-based staging protocol, and the 3rd focused on improving Braden Scale documentation. The pressure ulcer-performance improvement (PU-PI) data for each intervention unit was collected before and after intervention to determine changes in the compliance rate of the identified indicators. Results indicated that the intervention group exceeded their performance target and scores were sustained throughout the 12 months (Table 3). Turning and positioning significantly improved from 69% to beyond the target goal of 90% and was sustained between 79% and 100% for 12 months. Accurate staging significantly improved from 30% to beyond the target goal of 50% and was sustained between 95% and 100% for 12 months. Finally, documentation of Braden Scale significantly improved from 35% to beyond the target goal of 55% and was sustained between 92% and 95% for 12 months.

Aim 3

The efficacy of the coaching skills was determined by evaluating the results of the preintervention and postintervention scores on the GTLS/LEAP questionnaire (Table 4). Both the GTLS and the LEAP instruments demonstrated a significant improvement from the preintervention to postintervention group at 6 and 12 months. Mean GTLS scores before intervention were 3.52 and rose to a postintervention score of 3.92 at the 95% confidence level (Table 4). Similarly, the postintervention LEAP mean score significantly improved at the 95% confidence level to 3.88 from a baseline mean score of 3.39. Compared with the

Table 4. Aim 3: Baseline + Intervention/Pre- and Post-GTLS/LEAP

Results: GTLS/LEAP		Preintervention, October 2010 Mean (n)	Postintervention, March 2011 Mean (n)	Postintervention, November 2011 Mean (n)
Section 1: Rates the leadership skills of your PCM	Intervention	3.52 (398)	3.92 (391) ↑	4.36 (287) ↑
	Control	2.83 (471)	3.26 (452) ↑	2.93 (348) ↓
Section 2: Rates your perception of leaders	Intervention	3.39 (528)	3.88 (558) ↑	4.16 (408) ↑
	Control	2.82 (638)	3.13 (646) ↑	2.78 (488) ↓
Section 3: Organizational climate	Intervention	3.14 (224)	3.62 (219) ↑	3.68 (161) ↑
	Control	2.97 (274)	3.27 (258) ↑	3.22 (192) ↓
If I were to be led by a nurse manager, I will choose my PCM	Intervention	66.7% (54)	85.2% (54) ↑	100% (39) ↑

All intervention groups showed improvement at the 95% confidence level.

Table 5. Aim 3: Prevalence Study Hill Rom

Results: Prevalence Study	Preintervention, October 2010	Target	Postintervention, Mar 10, 2011	Postintervention, Jan 11, 2012
Intervention group	10.59%	7.4%	7.29%	7.76%
Control group	7.20%	7.4%	6.61%	4.26%

control group, the intervention group's postintervention scores at 12 months continued to show an increase in their leadership scores.

The control group mean scores also showed significant improvement from preintervention (Table 4). Mean GTLS scores before intervention were 2.83 and rose to a postintervention score of 4.36 at 6 months at the 95% confidence level. Postintervention LEAP score at 6 months also significantly improved at the 95% confidence level to 3.39 from a baseline mean score of 2.82. However, the scores of the control group at 12 months were not sustained.

Preintervention and postintervention prevalence studies were also conducted by Hill-Rom as a neutral 3rd party to assess HAPU prevalence rates (Table 5). The preintervention prevalence study conducted by Hill-Rom indicated a baseline HAPU rate of 10.59% for the intervention group and 7.20% for the control group, compared with a national benchmark of 7.4% (NDNQI 2009). A postintervention prevalence study at 12 months indicated that the HAPU prevalence rate was reduced from 10.59% to 7.76% for the intervention group and from 7.20% to 4.26% for the control group. Both had a significant decrease of 2.83% and 2.94% for the intervention and control groups, respectively. The differences in the acuity levels and risk levels for pressure development between the 2 groups are reflected in the baseline HAPU prevalence rate scores. After the study, 2 of the 3 PCMs in the cohort became coaches for others in the facility on the application of the TPS methodology to address HAPU. Their influence may have impacted the improvement of the HAPU prevalence rates among the units in the control group.

Conclusion and Implications for Nurse Leaders

Operational failures and their corresponding impact measures are costly to organizations.[24] Human capital is the most valuable asset in an organization.[5] The use of accepted PI tools, enhanced by coaching strategies, can provide PCMs the skills needed to manage operational failures, as well as provide a scientific method of evaluation. This project demonstrated that coaching behaviors on the part of the CNO and education focused on performance improvement using a proven framework (TPS) can positively influence the leadership behaviors of PCMs and patient outcomes. This project increased the leadership skills of cohort PCMs by embracing adaptive transformational techniques and improving their approach to addressing operational failures.

References

1. Padula CA, Osborne E, Williams J. Prevention and early detection of pressure ulcers in hospitalized patients. *J Wound Ostomy Continence Nurs*. 2008;35(1):65-75.
2. Catania K, Huang C, James P, Madison M, Moran M, Ohr M. PUPPI: the pressure ulcer prevention protocol interventions. *Am J Nurs*. 2007;107(4):44-52.
3. National Guideline Clearinghouse (NGC). *Guideline synthesis: prevention of pressure ulcers*. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); December 2006. Revised January 2011. http://www.guideline.gov. Accessed February 2011.
4. National Pressure Ulcer Advisory Panel. NPUAP pressure ulcer stages/categories. 2007. http://www.npuap.org/resources/educational-and-clinical-resources/npuap-pressure-ulcer-stagescategories/. Accessed February 2011.
5. Brem H, Maggi, J, Nierman D, et al. High cost of stage IV pressure ulcers. *Am J Surg*. 2010;200(4):473-477.
6. Redelings MD, Lee NE, Sorvilo F. Pressure ulcers: more lethal than we thought? *Adv Skin Wound Care*. 2005;18(7):367-372.
7. Bergstrom N, Braden BJ. Predictive validity of the Braden Scale among black and white subjects. *Nurs Res*. 2002;51(6):398-403.
8. Carless S, Wearing A, Mann L. A short measure of transformational leadership. *J Bus Psychol*. 2000;14(3):389-405.
9. Appel VH, Grubb PD, Elder ED, Leamon RE, Watson TW, Earles JA. *Leadership Effectiveness Assessment Profile (LEAP): Organizational Taxonomy Enlisted Pool Development*. Brooks, AFB, TX: Manpower and Personnel Division, Air Force Human Resource Laboratory; 1991.
10. Wong CA, Cummings GG. The relationship between nursing leadership and patient outcomes: a systematic review. *J Nurs Manag*. 2007;15;508-521.
11. Wurster J. What role can nurse leaders play in reducing the incidence of pressure ulcers? *Nurs Econ*. 2007;25(5):267-269.

12. Nielson K, Randall R, Yarker J, et al. The effects of transformational leadership on followers' perceived work characteristics and psychological well-being: a longitudinal study. *Work Stress*. 2008;22(1):16-32.
13. Tucker AL. The impact of operational failure on hospital nurses and their patients. *J Operations Manage*. 2004;22: 151-169.
14. Carayon P, Gurses A. A human factors engineering conceptual framework of nursing workload and patient safety in intensive care units. *Intensive Crit Care Nurs*. 2005;21:284-301.
15. Carayon P, Gurses A. Exploring performance obstacles of intensive care nurses. *Appl Ergon*. 2009;40:509-518.
16. Tucker A. An empirical study of system improvement by frontline employees in hospital units. *Manufacturing Serv Operations Manage*. 2007;9(4):492-493.
17. Kanste O. The association between leadership behavior and burnout among nursing personnel in health care. *Vard Norden*. 2008;28(3):4-8.
18. Rodwell J, Noblet A, Demir D, et al. Supervisors are central to work characteristics affecting nurse outcomes. *J Nurs Scholarsh*. 2009;41(3):310-319.
19. Kleinman CS. Leadership: a key strategy in staff nurse retention. *J Contin Educ Nurs*. 2004;35(3):128-132.
20. Kenagy J. *Designed to Adapt: Leading Healthcare in Challenging Times*. Bozeman, MT: Second River Health Care Press; 2009.
21. Kenney C. *Transforming Health Care: Virginia Mason Medical Center's Pursuit of the Perfect patient Experience*. New York, NY: CRC Press; 2011.
22. Spear S, Bowen HK. Decoding the DNA of the Toyota Production System. *Harv Bus Rev*. 1999;77(5):97-106.
23. Spear SJ. Learning to lead at Toyota. *Harv Bus Rev*. 2004; 82(5):78-86.
24. Edmondson A, Tucker A. Why hospitals don't learn from failures: organizational and psychological dynamics that inhibit system change. *Calif Manage Rev*. 2003;45(2):56-57.
25. Pearson A, Laschinger H, Porritt K, Jordan Z, Tucker D, Long L. Comprehensive systematic review of evidence on developing and sustaining nursing leadership that found a healthy work environment in health care. *Int J Evid Based Healthc*. 2007;5:208-253.
26. Karsten M, Baggot D, Cahill M, Brown A. Professional coaching as an effective strategy to retaining frontline manager. *J Nurs Adm*. 2010;40(2):140-144.
27. Davidhizar R. Leading with Charisma. *J Adv Nurs*. 1993;18: 675-679.
28. Whitmore J. *Coaching for Performance*. London, England: Brealey; 2007.
29. Lee G. *Leadership Coaching: From Personal Insight to Organizational Performance*. London, England: Chartered Institute of Personnel Development; 2003.
30. Zeus P, Skiffington S. *The Coaching at Work Toolkit: A Complete Guide to Techniques and Practices*. San Francisco, CA: McGraw Hill; 2005.