CE

2.0 ANCC Contact Hours

Improving Transition of Care for Veterans After Total Joint Replacement

Uthona R. Green ▼ Valorie Dearmon ▼ Helen Taggart

BACKGROUND: Patients transitioning from hospital to home are at risk for readmission to the hospital. Readmissions are costly and occur too often. Standardized discharge education processes have shown to decrease readmissions.

PURPOSE: The purpose of this quality improvement project was to utilize evidence-based practice changes to decrease 30-day all-cause readmissions after total joint replacement.

METHODS: Review of literature revealed that improved discharge education can decrease unnecessary readmissions after discharge. A quality improvement project was developed including standardized total joint replacement discharge education, teach-back education methodology, and improved postdischarge telephone follow-up. The quality improvement project was initiated and outcomes were evaluated.

OUTCOMES: Improving coordination of the discharge process, enhanced education for patients/caregivers, and postdischarge follow-up decreased total joint replacement readmissions.

Arthritis affects one out of every five Americans; it is estimated that by 2030, more than 67 million elderly adults will be diagnosed with osteoarthritis (Murphy & Helmick, 2012). The most effective surgical treatment for debilitating osteoarthritis of the knee and hip is total joint replacement (TJR) (American Academy of Orthopaedic Surgeons, 2013). Transition of care from hospital to home for TJR patients, if not well planned, results in unnecessary adverse events, medication errors, and hospital readmissions (Snow et al., 2009; Voss et al., 2011). Hospital readmissions that occur within 30 days are common and costly. Medicare estimates that 20% of all elderly adults have unplanned hospital readmissions costing 2.6 billion dollars each year (Centers for Medicare & Medicaid Services [CMS], n.d.). As the demand for TJR surgery continues to grow, so will the need for safer, higher quality, and more cost-effective services (Cram et al., 2012; Mori, Beun, & Bailey, 2012). Improving coordination of the discharge process, enhanced education for patients/caregivers, and postdischarge follow-up are effective in decreasing TJR readmissions (Dossa, Bokhour, & Hoenig, 2012; Foust, Vuckovic, & Henriquez, 2011).

Readmission within 30 days after discharge increases risks to patients and costs for healthcare institutions. The CMS spends close to 16 billion dollars a year on readmissions and estimates that 12 billion dollars of readmission costs are preventable (Cloonan, Wood, & Riley, 2013; CMS, 2010). In 2012, the CMS began penalizing hospitals for 30-day readmissions for heart attacks, heart failure, and pneumonia. In 2015, the CMS will begin calculating readmission measures and penalizing hospitals for knee and hip TJR readmissions (American Hospital Association, 2013; CMS, 2013). This increases the urgency for evaluating current practices and identifying areas for improvement.

The orthopaedic surgery department of a Veterans Affairs Medical Center offers TJR surgery to veterans with debilitating osteoarthritis. This article describes a quality improvement project designed to improve the transition of care from hospital to home for patients following TJR surgery. Improving the discharge process aligns with the Institute of Medicine's aims and The Joint Commission's quest for quality care (Institute for Healthcare Improvement [IHI], 2011; The Joint Commission, 2013).

The facility's orthopaedic team performs approximately 250 TJR (knee and hip) surgeries yearly. In 2013, the rate of hospital readmissions for the TJR patient population was 5.5% for knee and 4.5% for hip replacements compared with the IHI benchmark rates of 2.5% and 4.3%, respectively (Premier Inc. and IHI, 2013). Exceeding national benchmark readmission rates provided impetus for this quality improvement study. A close look at the facility's transition of patients from hospital to home indicated improvement opportunities for discharge education and postdischarge

Uthona R. Green, DNP, RN, ACNS-BC, Dayton VAMC Orthopedic Advanced Practice Nurse, Dayton, OH.

Valorie Dearmon, DNP, RN, NEA-BC, Chair and Assistant Professor, Department of Adult Health Nursing, University of South Alabama College of Nursing, Mobile, AL.

Helen Taggart, PhD, RN, ACNS-BC, Instructor, Department of Adult Health Nursing, University of South Alabama College of Nursing, Mobile, AL.

The authors and planners have disclosed that there are no conflicts of interest, financial or otherwise.

DOI: 10.1097/NOR.0000000000000124

follow-up processes. Specifically, the reviewed data indicated that at one point 14% of TJR patients were discharged without information regarding medications, and that 15% had complained of the inability to contact orthopaedic team members with questions pertaining to pain management and signs and symptoms of infection.

Clinical Question

Will a standard discharge protocol for veterans after a TJR surgery reduce the 30-day readmission rate?

Review of Literature

A search of the literature for best practices to improve transition from hospital to home after TJR surgery was conducted. Reducing readmission rates has been studied predominantly in patients with chronic diseases postdischarge rather than acute populations. Review findings underscored the importance of standard education content, use of an evidence-based education technique, and postdischarge follow-up call as effective interventions to reduce hospital readmissions.

Project Re-Engineered Discharge (RED) is a patient-focused systematized approach to discharge planning, developed by Jack et al. (2009) of Boston University Medical Center and supported by the Agency for Healthcare Research and Quality. Project RED bundles interventions to improve patient readiness for discharge and reduce preventable readmissions (Agency for Healthcare Research and Quality, 2013). The bundle includes a designated discharge advocate to ensure scheduled discharge appointments, medication reconciliation, and patient- customized education initiated on admission and continuing through the hospital stay. In a randomized trial of 749 patients, Jack et al. compared RED program interventions with a usual care group and found strong evidence favoring the bundled interventions. Results demonstrated a 30% decrease in emergency department visits, and 30-day readmissions. Subsequently, Markley et al. (2013), using a retrospective study design in a quality improvement project, demonstrated the effectiveness of the RED program in decreasing 30-day readmission from 23.3% to 15% after hospitalization; however, the quality improvement study was conducted in only one community facility and its generalizability is affected by this limitation.

White, Garbez, Carroll, Brinker, and Howi-Esquivel (2013), in a prospective cohort study of 276 patients with heart failure educated on self-care information using the teach-back method, assessed information retention and correlated findings to hospital readmissions. Standardized data were evaluated using the McNemar test comparing proportion of correct answers. Study results showed that patients with longer durations of education retained significantly ($p < .001$) more information than patients with brief education. However, the study failed to link retention of discharge information to a reduction in 30-day readmissions.

Other studies of orthopaedic and nonorthopaedic patients exhibited variable outcomes from using a structured discharge process. Ben-Morderchai, Herman, Kerzman, and Irony (2010) conducted a small comparison study of 95 orthopaedic surgical patients. The intervention group received formal and customized discharge instructions compared with standard noncustomized instructions. Participants in the intervention group had fewer complaints and were found to be more compliant with follow-up. Johnson, Laderman, and Coleman (2013) performed a nonsystematic review of literature involving posthospital telephone follow-up. The authors identified three relevant factors of effective telephone follow-up: who should make the call, when to make the call, and what information is essential. Study reports of this IHI-funded State Action on Avoidable Readmissions, a multistate approach utilizing telephone follow-up, showed that utilization of call-back systems, no matter who performed the call, had best results when predischarge information was reviewed in a teach-back method.

Evidence pertaining to ways to reduce hospital readmissions includes a variety of interventions. The most studied interventions reported consistent measures to ensure readiness for discharge by ensuring follow-up appointments, providing medication reconciliation, providing patient customized education throughout hospitalization, using plain language and assessing patient understanding of discharge instructions, and providing a telephone follow-up after discharge.

Methods

Ethical Issues

This quality improvement study was designed to improve patients' transition from hospital to home following a TJR. The project involved veterans who chose to utilize Veterans Affairs (VA) services. Patient-sensitive data were not used in the QI study and all veterans received the same interventions; therefore, patients were not at risk and the project was deemed exempt by the VA institutional review board. The local nurses' union president approved the staff education on utilization of teach-back. The interventions did not pose a conflict of interest for nursing staff and fell within the scope and standards of practice and licensure.

Setting

The setting for this TJR quality improvement study was a 32-bed medical/surgical unit where orthopaedic surgical patients received care in a VA Medical Center. The VA Medical Center is a state-affiliated teaching institution serving approximately 50,000 veterans (U.S. Department of Veterans Affairs, 2013).

The target population was hospitalized patients planning to return home following TJR performed at the medical center. Inclusion criteria includes English-speaking, male and female veterans between 18 and 88 years of age. Veterans planning transition to a rehabilitation facility postdischarge were excluded.

Planning the Intervention

Planning began with the establishment of an interprofessional process improvement team, including membership from each discipline involved in TJR care (IHI, 2013). First, the TJR improvement team compared institutional outcome data with national benchmark standards, identifying an opportunity to improve outcomes. Next, the team did a virtual walk-through of the existing TJR hospital to home process, surveying for problem areas and comparing current practice with "best practice." Study of the institutional processes revealed unsystematic discharge instructions given last minute, opposed to best practice recommendations for patient-centered education throughout hospitalization. The lack of standardized educational resources led to inconsistencies in providing patient discharge information. Moreover, investigation uncovered confusion among nurses about TJR discharge protocol. Finally, the team noted that the follow-up telephone call, being made within 72 hours of discharge, was assigned to an outpatient nurse unfamiliar with both the patient and the TJR protocol. The generically scripted telephone conversation, used for all discharged patients, did not include information specific for post-TJR patients. Identified gaps included (1) variable education content, (2) ineffective teaching methodologies, and (3) a nonspecific postdischarge telephone follow-up process. On the basis of gaps in *actual* versus *best practice,* a standardized discharge protocol was developed prioritizing the interventions to revise the education packet, implement teach-back methodology, and modify the postdischarge follow-up process.

Implementation

Education Packet

The education packet for patients was updated and expanded to include discharge instructions from each discipline (nursing, pharmacy, and physical therapy) engaged in care of patients admitted for TJR surgery. The education process was revised to provide discharge education from *last minute* instruction before discharge to beginning at admission. The documentation of teaching and use of education packets throughout hospitalization coordinated standardized teaching and improved the ability of staff to identify unmet educational needs. Education on the revised TJR discharge packet and process was provided to nurses by the orthopaedic clinical nurse specialist (CNS). Ancillary department representatives on the project team educated their respective team members.

Teach-Back Method

The importance of good communication among healthcare providers and patients cannot be underestimated. The process improvement team identified teach-back as an evidence-based practice and patient-centered teaching methodology. The teach-back method of education is recommended by National Quality Forum (2010) to improve safety and decrease adverse events. Using plain language to deliver discharge education, and asking patients to repeat what was said in their own words, is the basis of teach-back method. Nurses were educated on the teach-back method using the "Always Use Teach-back" training tool developed by Iowa Health Systems (2013). Following education, nurses were observed for skill in using the best practice technique.

Discharge Follow-Up Phone Call

The process for telephone follow-up was revised to integrate best practice strategies. The new process included having the CNS or orthopaedic nurse liaison place follow-up phone calls to assess patient understanding of discharge instructions and determine the need for intervention or further education. Familiarity with the patient and the TJR protocol allowed the team member to address concerns in an appropriate and timely manner.

Methods of Evaluation

Evaluation of the performance improvement project consisted of performance and process outcomes. Process measures assessed the effectiveness of the interventions used to achieve the performance outcome. The success of the intervention was measured by looking at 30-day all-cause readmissions rates before applying the intervention. Thirty-day all-cause readmissions are a performance measure being tracked and compared in all VAs nationally.

Formalized education processes were used as interventions to improve discharge process. Process measures included the number of staff members educated on discharge packet, observation of staff's use of teach-back, and review of call-log information. Education of staff underscores success of any change project. All 30 nurses on the 32-bed medical/surgical unit, a physical therapist, and pharmacist providing TJR care were targeted to receive education on the revised discharge processes and educational plan. The CNS and other TJR team providers later evaluated nurses' use of teach-back and skill in the technique when providing discharge education to patients. A teach-back monitor guided the evaluation process (see Figure 1). The goal was to observe each of the 8-day shift nurses providing discharge instructions following staff education on teach-back methods. An overview of the educational process change was provided to the physical therapist and the pharmacist who are members of the process improvement team. Direct observation of nurses using teach-back provided some insight into their continued use of this methodology.

Effectiveness of the revised discharge process and education method to improve patient knowledge and prevent unnecessary readmission was assessed through a review of the patient call-back data log. Recorded data indicated veterans' understanding of discharge instructions and whether further education or follow-up was provided when indicated (see Figure 2). The CNS reviewed the log and provided feedback to the nursing staff and TJR team offering insight on the outcomes of their discharge education and directing future revisions to the discharge process.

Nurse Number ID	Use of caring tone of voice and attitude		Display comfortable body language and male eye contact		Use plan Language		Ask the patients to explain back using their own words		Use nonshaming open-ended questions		Avoid asking questions that can be answered with the simple		Emphasize that the responsibility to explain clearly is on you, the provider		If the patient is not able to teach back correctly, explain again and recheck		Use reader-friendly printed materials to support learning		Document use of and patient response to teach-back		Name signs and symptoms of infection (warmth, redness swelling of drainage)	Name ways to decrease pain (rest, ice elevation, take pain medication)	Comments/Questions
	Met	Unmet	Met	Unmet	Met	Unmet	Met	Unmet	Met	Unmet	Met	Unmet	Met	Unmet	Met	Unmet	Met	Unmet	Met	Unmet	# of items	# of items	
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Figure 1. Teach-Back Competency Evaluation Form.

Results

Outcomes

Comparison of the admission rates pre- and postintervention showed a 36% decrease in readmission following the interventions. There were 39 TJR surgeries that met the inclusion criteria in the 12-week preintervention period with three (7%) readmissions. There were 44 TJR surgeries that met the inclusion criteria in the 12-week postintervention period with two (4.5%) readmissions (see Figures 3 and 4).

Reasons for readmission were different between pre- and postintervention. Pre intervention, 2 patients were readmitted for postoperative knee infections and one with cellulitis and urinary tract infection. In the postintervention period, one patient returned for hip dislocation; however, his initial surgery and discharge were prior to full implementation of project interventions. The other readmitted patient developed pulmonary embolism 3 weeks postsurgery. The second patient reported that he utilized the orthopaedic postoperative education and contact information supplied in the discharge folder to identify the problem and notify the orthopaedic team of sudden shortness of breath. Because the reasons for readmission were so different and the sample size was so small, it is hard to draw any inferences about the effect of the intervention on specific complications. A longer period of observation would help define areas that might be improved.

Education on the new discharge folder was provided to all shifts for a total of $n = 28$ (93%) registered nurses, one physical therapist and one pharmacist on the target unit. Nurses were given the opportunity to provide feedback regarding some of the discharge instructions, and revisions were made because of their comments.

Teach-back in-services were provided to the same nurses. Later over a 3-week period during the intervention phase, a total of 10 discharges were monitored for the use of the teach-back method; in nine of these instances, the staff used the teach-back method, asking the veterans to repeat instructions in their own words. At a 1-month reassessment, after intervention, the project team assessed that staff members on the target unit were experiencing stress from unexpected management changes and an increase in workload assignments; these changes appeared to distract them from using the new education packet and teach-back methodology. In response, the project leader

(A)

1	Any questions about your condition?
2	Any questions about your treatment?
3	Any questions about your medication?
4	Do you know who your primary nurse who coordinated your care while you were in the hospital?
5	Were you provided with a copy of your updated medication list upon discharge from this facility?
6	Do you know where to call to get more information?
7	Any problems with equipment?
8	Any problem with supplies?
9	Do you have any question about your pending appointments, consults, or pending tests?
10	Do you have any question about your plan of care?
11	Do you know who to contact if you have problem or feel worse?
12	Name signs and symptoms of infection (warmth, redness, swelling, drainage)
13	Name ways to decrease pain (rest, ice, elevation, and take pain medication)

(B)

		Q1		Q2		Q3		Q4		Q5		Q6		Q7		Q8		Q9		Q10		Q11				
Date	Patient	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	# S & S Inf.	# Pain Interventions	Comments Follow-Up
		4	**34**	**0**	**38**	**0**	**38**	**3**	**35**	**38**	**0**	**38**	**0**	**0**	**38**	**0**	**38**	**4**	**34**	**4**	**34**	**38**	**0**	[a]	[a]	[b]

[a]Signs and symptoms of infection and pain interventions were reinforced in all calls.
[b]Common comments and additional topics of reinforcements:
When can I remove bandages?
When and where is my follow-up appointment?
Reinforced ice and elevation to decrease pain.
Redness, warmth, increased pain, and drainage reinforced as signs of infection.

FIGURE 2. **A**, Post-Hospital Call Back Questions. **B**, TJR Post-Hospital Call Log Data.

spent additional time working with individual nursing staff to emphasize the main teaching points and encourage the use of the new protocol. It is necessary to continue this assessment and education as an ongoing process.

Telephone follow-up discharge calls were done by either the orthopaedic nurse liaison or the CNS. A telephone follow-up log identified that 34 calls were made to those who were discharged, 7 patients were not reached. All of the patients who were contacted were given reinforcement of discharge education, about signs and symptoms of infection, pain control, and/or follow-up appointments. The designated project team members were able to answers questions and concerns specific to the TJR postoperative protocols. The high percentage of patients needing additional information reinforced the need for the orthopaedic staff to continue

	Preintervention		Postintervention		Totals	
	Total Knee	Total Hip	Total Knee	Total Hip	Pre	Post
No. of Total joint replacement	25	14	30	14	39	44
Male	23 (92%)	14 (100%)	27 (90%)	13 (93%)	37 (95%)	40 (90%)
Female	2 (8%)	0 (0%)	3 (10%)	1 (7%)	2 (5%)	4 (10%)
White	22 (88%)	10 (72%)	28 (93%)	12 (86%)	32 (83%)	40 (90%)
African American	3 (12%)	4 (28%)	2 (7%)	2 (14%)	7 (17%)	4 (10%)
Readmissions	3 (12%)	0 (0%)	0 (0%)	2 (14%)	3 (7%)	2 (4.5%)

FIGURE 3. Total Joint Replacement Readmission Data.

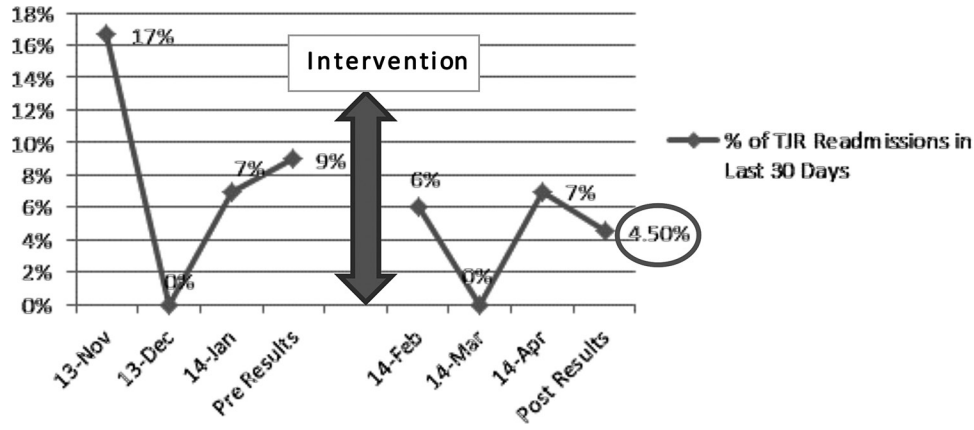

FIGURE 4. 30-Day TJR readmissions.

the calls. Information from these calls was used to improve educational materials.

Discussion

The decreased readmission rates reflect improvement in educational materials, educational process, and the follow-up procedure. This improved discharge process provided the nursing staff with a teaching model that stressed realistic assessment of patient understanding. The TJR education folder provided nurses and patients an educational tool to use and also provided patients with orthopaedic staff contact information. The improved telephone follow-up system allowed the orthopaedic project team to assess the educational intervention and provided staff with real-time feedback for process improvement.

The outcomes could have been influenced by simple increased attention to the subject or the Hawthorne effect. Several things could have prevented the outcomes from being even better. There were significant staffing and workload changes on the unit. Facility staff changes and workload are a constant in healthcare and will always be a variable in quality improvement projects. Also the interventions may have been better received by staff if the project had been broken into two segments, education on teach-back and then TJR discharge education. Nonetheless, both issues seemed to have an impact on project implementation. There is little evidence in the literature pertaining specifically to TJR readmissions, the findings of this QI project support evidence from other studies that structured discharge processes and instructions result in a decrease in 30-day all-cause readmissions (Ben-Morderchai et al., 2010; Jack et al., 2009; Markley et al., 2013). The use of bundled interventions makes it difficult to differentiate which intervention was most successful (Jack et al., 2009).

The use of teach-back in the QI project provided a format for the nursing staff to follow when giving TJR discharge education. During evaluation of the process, the nursing staff reported that they lacked time to use teach-back. Additional barriers to changing nursing practice have been described in the literature as busy schedules, high patient-to-nurse ratios, time constraints placed by patients and families, and lack of interest in the teach-back process (Kornburger, Gibson, Sadowski, Maletta, & Klingbeil, 2013).

The telephone follow-up process change was successful and the orthopaedic team members found ownership of the calls to be useful in reinforcement of educational topics such as signs and symptoms of infection and the use of ice and elevation to decrease pain. However, this finding contrasts with a previous study that reported that it did not matter who made the call as long as teach-back methodology was used to review discharge information (Johnson et al., 2013).

Limitations

The number of surgeries in the limited postintervention time period was lower than anticipated, subsequently resulting in a small sample with limited generalizability. The patient population was primarily white males, which introduced the risk of racial and gender bias and limits the generalizability of the findings. Another potential limitation was that patients might have been admitted to other area hospitals for complication; however, the orthopaedic team was not aware of any such case.

Other variables that may have affected project outcomes include concurrent changes made in orthopaedic surgical practice, including changes in the preoperative scrub regimen, postoperative dressings, and methicillin-resistant *Staphylococcus aurous* protocol. All these changes were implemented to meet evidence-based practice standards to decrease infections as part of ongoing process improvement and they may have impacted the readmission rate (Smith & Dahlen, 2013). In clinical practice, it is common to have multiple improvement initiatives introduced simultaneously, and this makes it difficult to assign responsibility for success to any one intervention.

Conclusions

The evidence-based interventions in this quality improvement project were shown to be effective in reducing readmissions after TJR surgery. The urgency for evaluating and improving current discharge practices exists because of the CMS's future plans to penalizing hospitals for knee and hip TJR readmissions. This

quality improvement project utilized a number of National Quality Forums standards for safe practice, and even though the sample was small, the positive outcomes suggest its efficacy and importance. This article followed SQUIRE guidelines for reporting healthcare quality improvement research (Davidoff, Batalden, Stevens, Ogrinc, & Mooney, 2008).

Acknowledgments

The authors thank Beth Cameron, DNP; Carol Miller, DNP; Kathy Graul, BSN; Shelly Logan, CNL; and Wanda Beeman, BSN, for their assistance throughout the quality improvement project.

References

Agency for Healthcare Research and Quality. (2013). *Tool 1: Overview: Re-engineered discharge (RED) toolkit*. Retrieved from http://www.ahrq.gov/professionals/systems/hospital/toolkit/redtool1.html

American Academy of Orthopaedic Surgeons. (2013). *Total knee replacement*. Retrieved from http://orthoinfo.aaos.org/topic.cfm?topic=a00389

American Hospital Association. (2013). *Fact Sheet Readmissions Reduction Program*. Retrieved from http://www.aha.org/content/13/fs-readmissions.pdf

Ben-Morderchai, B., Herman, A., Kerzman, H., & Irony, A. (2010). Structured discharge education improves early outcome in orthopedic patients. *International Journal of Orthopaedic and Trauma Nursing*, *14*, 66–74. doi:10.1016/j.joon.2009.02.001

Centers for Medicare & Medicaid Services. (n.d.). *Community-based care transitions program fact sheet*. Retrieved from http://www.cms.gov/Medicare/Demonstration-Projects/DemoProjectsEvalRpts/downloads/CCTP_FactSheet.pd

Centers for Medicare & Medicaid Services. (2010). *Report on Medicare statistics*. Retrieved from http://www.rwjf.org/content/dam/farm/reports/reports/2013/rwjf404178

Centers for Medicare & Medicaid Services. (2013). *CMS final rule to improve quality of care during hospital inpatient stays*. Retrieved from http://www.cms.gov/newsroom/mediareleasedatabase/fact-sheets/2013-fact-sheets-items/2013-08-02-3.html

Cloonan, P., Wood, J., & Riley, J. B. (2013). Reducing 30-day readmissions: Health literacy strategies. *The Journal of Nursing Administration*, *43*, 382–387. doi:10.1097/NNA.0b013e31829d6082

Cram, P., Lu, X., Kates, S. L., Singh, J. A., Li, Y., & Wolf, B. R. (2012). Total knee arthroplasty volume, utilization, and outcomes among Medicare beneficiaries, 1991-2010. *Journal of the American Medical Associations*, *308*, 1227–1236. doi:10.1001/2012.jama.11153.

Davidoff, F., Batalden, P., Stevens, D., Ogrinc, G., & Mooney, S. (2008). Publication guidelines for quality improvement in health care: Evolution of the SQUIRE project. *Quality Safety Health Care*, *17*(Suppl. 1):i3–i9.

Dossa, A., Bokhour, B., & Hoenig, H. (2012). Care transitions from the hospital to home for patients with mobility impairments: Patient and family caregiver experiences. *Rehabilitation Nursing*, *37*, 277–285. doi:10.1002/rnj.047

Foust, J., Vuckovic, N., & Henriquez, E., (2011). Hospital to home health care transition: Patient, caregiver and clinician perspectives. *Western Journal of Nursing Research*, *20*(10), 1–19. doi:10.1177/0193945911400448

Institute for Healthcare Improvement. (2011). *Across the chasm: Six aims for changing the health care system*. Retrieved from http://www.ihi.org/knowledge/Pages/ImprovementStories/AcrosstheChasmSixAimsforChangingtheHealthCareSystem.aspx

Institute for Healthcare Improvement. (2013). *Science of improvement: How to improve*. Retrieved from http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementHowtoImprove.aspx

Iowa Health System. (2013). *Teach back basics toolkit*. Retrieved from http://www.ihconline.org/aspx/general/page.aspx?pid =107

Jack, B. W., Chetty, V. K., Anthony, D., Greenwald, J. L., Sanchez, G. M., Johnson, A. E., … Culpepper, L. (2009). A reengineered hospital discharge program to decrease rehospitalization: A randomized trial. *Annals of Internal Medicine*, *150*, 178–187. Retrieved from PubMed

Johnson, M., Laderman, M., & Coleman, E. A. (2013). Enhancing the effectiveness of follow-up phone calls to improve transitions in care: Three decision points. *Joint Commission Journal on Quality & Patient Safety*, *39*(5), 221–227. Retrieved from EBSCO

Kornburger, C., Gibson, C., Sadowski, S., Maletta, K., & Klingbeil, C. (2013). Using "teach back" to promote a safe transition from hospital to home: An evidence-based approach to improving the discharge process. *Journal of Pediatric Nursing*, *28*, 282–291. doi:10.1016/j.pedn.2012.10.007

Markley, J., Andow, V., Sabharwal, K., Wang, Z., Fennell, E., & Dusek, R. (2013). A project to reengineer discharges reduces 30-day readmission rates. *American Journal of Nursing*, *113*(7), 55–74. doi:10.1097/01.NAJ.0000431922.47547.eb.

Mori, C., Beun, S., & Bailey, A. (2012). Bone up your program: Certification process for the total knee and total hip replacement center. *Orthopaedic Nursing*, *31*, 287–293. doi:10.1097/NOR.0b013e31826649ca

Murphy, L., & Helmick, C. (2012). The impact of osteoarthritis in the United States: A population health perspective. *American Journal of Nursing*, *112*(3), 13–19.

National Quality Forum. (2010). *Safe practice for better healthcare 2010 update*. Retrieved from http://www.qualityforum.org/Publications/2010/04/Safe_Practices_for_Better_Healthcare_%E2%80%93_2010_Update.aspx

Premier, Inc. and Institute for Healthcare Improvement. (2013). *Integrated care pathway for total joint arthroplasty*. Retrieved from https://www.premierinc.com/wps/wcm/connect/91e33b23-3349-4f31-b9c0-a950a1ebe514/Premier-IHI_TJACarePathway.pdf?MOD=AJPERES

Smith, M. A., & Dahlen, N. R. (2013). Clinical practice guidelines surgical site infection prevention. *Orthopaedic Nursing*, *32*, 242–248. doi:10.1097/NOR.0b013e3182a39c6b

Snow, V., Beck, D., Budnitz, T., Miller, D. C., Potter, J., Wears, R. L., … Williams, M. V. (2009). Transitions of Care Consensus Policy Statement: American College of Physicians, Society of General Internal Medicine, Society of Hospital Medicine, American Geriatrics Society, American College of Emergency Physicians, and Society for Academic Emergency Medicine. *Journal of Hospital Medicine*, *4*, 364–370. doi:10.1002/jhm.510

The Joint Commission. (2013). *Disease specific care certification: Orthopedic joint replacement*. Retrieved

from www.jointcommission.org/certifcation_joint_replacement.aspx
U.S. Department of Veterans Affairs. (2013). *Veteran population*. Retrieved from http://quickfacts.census.gov/qfd/states/39/3921999.html
Voss, R., Gardner, R., Baier, R., Butterfield, K., Lehrman, S., & Gravenstein, S. (2011). The care transitions intervention translating from efficacy to effectiveness. *Achieves of Internal Medicine*, *17*, 1232–1237. doi:10.1001/archinternmed.2011.278
White, M., Garbez, R., Carroll, M., Brinker, E., & Howie-Esquivel, J. (2013). Is "teach-back" associated with knowledge retention and hospital readmission in hospitalized heart failure patients? *Journal of Cardiovascular Nursing*, *28*, 137–146.

For more than 100 additional continuing nursing education activities on orthopaedic topics, go to nursingcenter.com/ce.