



Joint Venture

Transforming total joint replacement care at Michigan Medical

Featuring **Steven J. Bernstein, M.D., M.P.H.**

In January of 2018, AMGA named Michigan Medical as an honoree for the 2018 Acclaim Award. The award, supported by AMGA Foundation, the association's nonprofit arm, is designed to recognize and celebrate the successes that medical groups and other organized systems of care have achieved in improving the value—the quality and cost of care—of the healthcare services they provide to their communities. It honors organizations that are meeting the IOM Aims for Improvement and are taking the necessary steps to become a High-Performing Health System™ as defined by the AMGA.

Michigan Medicine is one of the largest health systems in Michigan and one of the nation's leading academic medical centers. The organization employs more than 2,700 physicians across 19 clinical specialties, including primary care. It provides both inpatient and outpatient care through three hospitals (adult, pediatric, and women's) with 1,000 inpatient beds, and 40 ambulatory locations with 140 clinics, specialty centers for cancer, depression, cardiovascular care, and home care services. In 2016, the organization had approximately 50,000 admissions, 100,000 emergency room visits, and 2.3 million ambulatory visits. The system also trains more than 1,200 house-officers and 700 medical students.

As part of the Acclaim Award application process, the organization was asked to highlight narratives describing

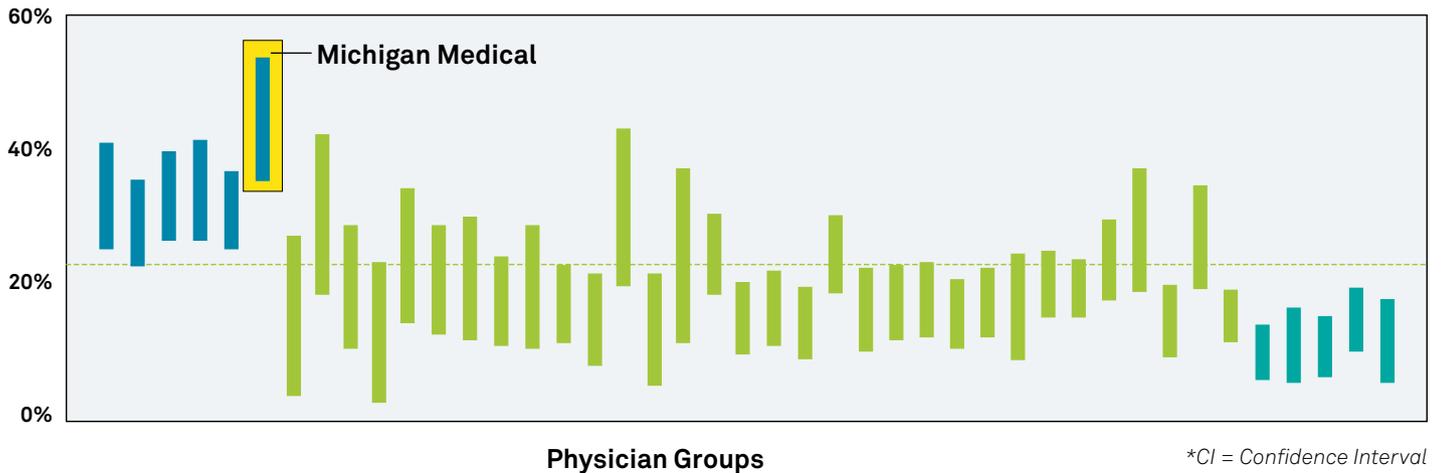
the design and deployment of major components—projects, phases, or tactical plans—that were part of their plan to transform the way they deliver health care in order to more fully achieve the AMGA High-Performing Health System™ attributes, improving both the quality and cost of care. Here, we share one of Michigan Medical's narratives.

The Problem

Michigan Medical participates in 18 statewide collaboratives sponsored by a major insurance company but run independently by participating physician organizations. One of these collaboratives focuses on joint replacement. In 2014, data showed that the group had the highest risk-adjusted discharge rate to skilled nursing facilities (SNF) after total hip arthroplasty across 43 physician groups (see Figure 1). Additional data from their Medicare Shared Saving Program ACO, which included 11 physician organizations, showed that the group had the highest length of stay (LOS) in SNFs after joint replacement, at 27 days. Health system leaders created a charge to reduce the proportion of patients discharged to SNFs and to reduce LOS in a SNF after a total joint replacement. In 2016, Michigan Medical performed 663 hip replacements and 396 knee replacements.

Figure 1

Risk-Adjusted Discharge Rate (95% CI*) to Skilled Nursing Facility after Hip Replacement, (2/2013–1/2014)



Improvement Team and Interventions (Phase 1)

A multidisciplinary team (see “Initial Team Members”) was formed and its initial focus was on reducing SNF LOS for joint replacement patients from 27 to 14 days (~50%). They identified a SNF in the community as a pilot site for this work. The project team developed two interventions: (1) a “SNF Expectations Document”; and (2) a post-discharge care pathway for patients discharged to a SNF after a total joint replacement.

The “SNF Expectations Document” was developed after they recognized that the orthopaedic surgeons and health system physical and occupational therapists had never explicitly communicated post-discharge care expectations to the SNFs. The document listed a standard post-discharge care bundle, including 20 steps for total joint replacement patients who were discharged to a SNF. Topics included beginning therapy on day zero, pain management, and proper leg elevation. These expectations were also incorporated into patient education materials so that everyone involved would have a shared understanding of how a SNF stay post-surgery should progress.

The project team also worked with the SNF physicians and staff to develop a care pathway for patients discharged from a SNF to home after a total joint replacement. A care pathway serves as a guide through clinical care and recovery expectations for clinical staff, patients, and families. That post-SNF discharge pathway included functional goals, educational goals, and care transition goals.

Initial Results

After introducing the expectations document and the clinical care pathway, the health system saw a 37% decrease in LOS

from 27 days to 17 days. While this did not reach the desired goal, it was felt to be a successful first step.

The next area targeted was to reduce the number of patients sent to a SNF to the state average of 23% and to decrease hospital LOS after a total joint replacement. The project was moved from the Population Health Office to the health system’s Clinical Design and Innovation team (CDI), which uses Lean principles to create a standard approach to measure and improve value for an episode of care. The project team was reorganized to reflect the shift in focus (see “Reorganized Team Members”). The new team conducted a root cause analysis (RCA) to determine why the health system sent such a large percentage of patients to SNFs after surgery.

The process began years earlier, when the hospital had high occupancy levels, and orthopaedics offered to discharge patients to SNFs for rehabilitation to open hospital beds. Based on several gemba walks (gemba means “the real place” in Japanese, and is a Lean principle that involves going to the site where care is delivered and observing and asking questions), the team also identified that a lack of inpatient and outpatient care pathways led to patient uncertainty regarding post-surgical care. This feeling of uncertainty led to higher SNF admissions and longer hospital LOS prior to discharge.

The project team also met with patients and learned that going to a SNF had become a community expectation. This was partially due to a shared understanding held by patients who had witnessed friends and family undergo joint replacement surgery followed by a SNF stay, and partially due to unintentional expectations set by the orthopaedic surgeons. In the pre-surgical class attended by all joint replacement

patients, the curriculum suggested that a SNF visit post-surgery was standard.

Interventions (Phase 2) and Overcoming Barriers

Developing the Inpatient Care Pathway

The inpatient care pathway was led by the team’s Administrative Manager and was implemented on April 1, 2015. The initial rollout lasted only two weeks, and the care pathway was negatively received by nurses providing post-surgical care. The care pathway was designed without any input from the frontline personnel, and nurses caring for patients on the recovery unit did not want to use the tool.

The project team met with nursing staff from the recovery unit and learned that the care pathway was overly complicated; it outlined post-surgery requirements by hours and was difficult to follow unless you were aware of the exact time of a patient’s surgery. In addition, the pathway required nurses to duplicate documentation that was already in the EHR. After receiving the

recovery unit nurses and orthopaedic outpatient clinic staff in its initial development. Major themes were identified based on common questions asked by patients in the clinic. The outpatient pathway also includes exercises that the patient should complete at home, and where and when to call with concerns.

The outpatient care pathway was introduced to patients in the pre-surgery class beginning September 1, 2015. The outpatient care pathway has been overwhelmingly accepted by physicians, staff, and patients. The team continuously receives feedback on the pathway from patients, and adjusts the pathway to make it as patient-centered as possible.

Modifications to Pre-surgical Curriculum

The curriculum of the preoperative class, which is required for all patients undergoing a total joint replacement, was changed to align with the outpatient care pathway. The class discussed what is “normal” and “not normal” after joint replacement, what patients should expect after discharge, and how to care for themselves. The orthopaedic surgeons also intro-

duced the concept of a “support coach,” the patient’s caregiver who plays an active role from pre-surgery through discharge home. All patients who are discharged directly home are required to have a support coach who attends the pre-surgical class with the patient and is physically present with the patient before and after surgery, and at home until it is safe for the patient to be home alone.

Culture Change Through Standard Language

Realizing that many patients expected to be discharged to a SNF, surgeons and staff intentionally adopted standard language about surgical discharge to convey the same message—that patients would be discharged to home the day after surgery, that they needed an active support coach, and that they needed to immediately engage in proactive healing activities like icing and elevation.

Table 1

Initial and Reorganized Team Members

Initial Team Members		
Medical Director, Population Health	Orthopaedic Surgeon	RN Case Manager
Medical Director, Subacute Service	Physician Assistant, Orthopaedics	Physical Therapist
Project Manager, Population Health	Occupational Therapist	
Reorganized Team Members		
CDI Project Manager	Industrial Engineer	Data Analyst
Orthopaedic Surgeons	Physical and Occupational Therapists	Nurse Practitioners
Physician Assistants	Anesthesiology	Nurses

feedback, the project team worked with frontline staff to revise the pathway. It now requires no nursing staff documentation and focuses only on the day of surgery and the day after surgery, and does not delineate requirements by the hours post-surgery.

Developing the Outpatient Care Pathway

The outpatient care pathway was designed to set appropriate post-surgery expectations. Its development was led by the team’s orthopaedic physician assistant, and included the

Standardized Pain Protocol

Working closely with anesthesiology, the pain management protocol to be used both in the operating room and postoperative management was modified. These changes include preoperative adductor canal block and use of oral celecoxib, gabapentin, and acetaminophen and a clonidine patch; intra-operative use of neuraxial anesthesia (spinal or epidural), periarticular bupivacaine (for hip surgery), and Ketorolac IV at skin closure; and standard postoperative order sets. This reduces the likelihood

SNF Expectations Document

Orthopaedic Surgeon Expectations (Steps 1–13 only): Joint Replacement Patients Discharged to SNF

1. Patients receive therapy on day zero after admission to SNF.
2. Patients receive therapy two times per day, seven days per week.
3. A discharge plan is created by day two, detailing expectations for recovery and estimation of discharge date.
4. Pain will be controlled and pain medications available upon admission.
5. Patients will use an incentive spirometer to prevent pneumonia.
6. Patients will wear their TED compression stockings on both legs for at least two weeks after surgery to prevent blood clots.
7. Patients are expected to do their ankle pump exercises 10 times per hour when they are awake for a minimum of one month after surgery to prevent blood clots.
8. Patients' INR will be monitored since they will be taking Coumadin for one month after surgery.
9. Patients are expected to elevate their leg (and use ice) to decrease swelling.
10. Patients will not shower or use tub until approved by physician to prevent infection.
11. Estimate for length of stay (LOS) for knee is five to 14 days and LOS for hip is five to 14 days, as clinically indicated.
12. Patients will follow total hip precautions:
 - a. No bending hip past 90 degrees.
 - b. No crossing legs (OK to cross feet at ankles, or ankle over thigh, but do not cross legs thigh over thigh).
 - c. No passive ROM unless prescribed by surgeon.
 - d. Do use a chair with armrests and a cushion to raise your seat height.
 - e. Do place operated leg forward when getting out of a chair and use an assistive device for six to eight weeks.
 - f. Do navigate stairs "up with the good" and "down with the bad."
13. For hip replacement patients, the most important rehab is gait training.

of patients requiring a Foley catheter, which is associated with increased hospital LOS.

Results

This program was successful in reducing discharges to SNFs and LOS for patients both in the hospital and at the SNF. The percent of patients discharged to a SNF after a joint replacement surgery decreased from 30% to 13% between 2013 and 2016 (see Figure 2). The average hospital LOS following a total

Collaborative Clinical Pathway for Patient Discharged from SNF

Functional Goals

1. Manage all Basic Activities of Daily Living (toileting, bathing, dressing, eating, grooming) safely with the help of adaptive equipment and/or caregiver support 100% of the time.
2. Manage indoor mobility safely with/without mobility device and/or caregiver support 100% of the time.
3. Use any assistive device safely 100% of the time, as verified by routine return demonstration.
4. Manage bed mobility/transfers 100% of the time with/without the use of specialized bed/adaptive equipment.
5. Demonstrate energy conservation techniques and use them routinely with Activities of Daily Living.

Educational Goals

1. Show a thorough understanding of the various care continuity options available following discharge from SNF.
2. Demonstrate and verbalize the safety precautions associated with their condition.

Care Transition Goals

1. Participate in home evaluation to assess the suitability of recommendations made by the therapists.
2. Demonstrate a thorough understanding of the equipment needed upon discharge by having a meeting of the patient, their physical therapist, social worker, and patient's family (if applicable) with equipment to be used.

joint replacement decreased from 3.5 to 1.5 days (see Figure 3). The 30-day readmission rate also decreased from ~7.5% in August 2015 to 0% in March 2016. Also, 94% of patients from September 2014 to July 2017 reported that they would have the surgery again at the health system.

Lessons Learned

Through this initiative, the physician group and health system learned the value of patient input and going to the gemba. It is essential to involve the staff who will be delivering care when designing an intervention; the initial roll-out of the inpatient care pathway was unsuccessful because nursing input was not initially obtained. Last, Michigan Medical learned that interventions do not need to be complex in order to be powerful and have an impact on patient care. [GRU](#)

*Adapted from Michigan Medical's Acclaim Award application, submitted by Chief Quality Officer **Steven J. Bernstein, M.D., M.P.H.***

Figure 2

Hip and Knee Replacement Patients Discharged to a Skilled Nursing Facility, 2013–2016

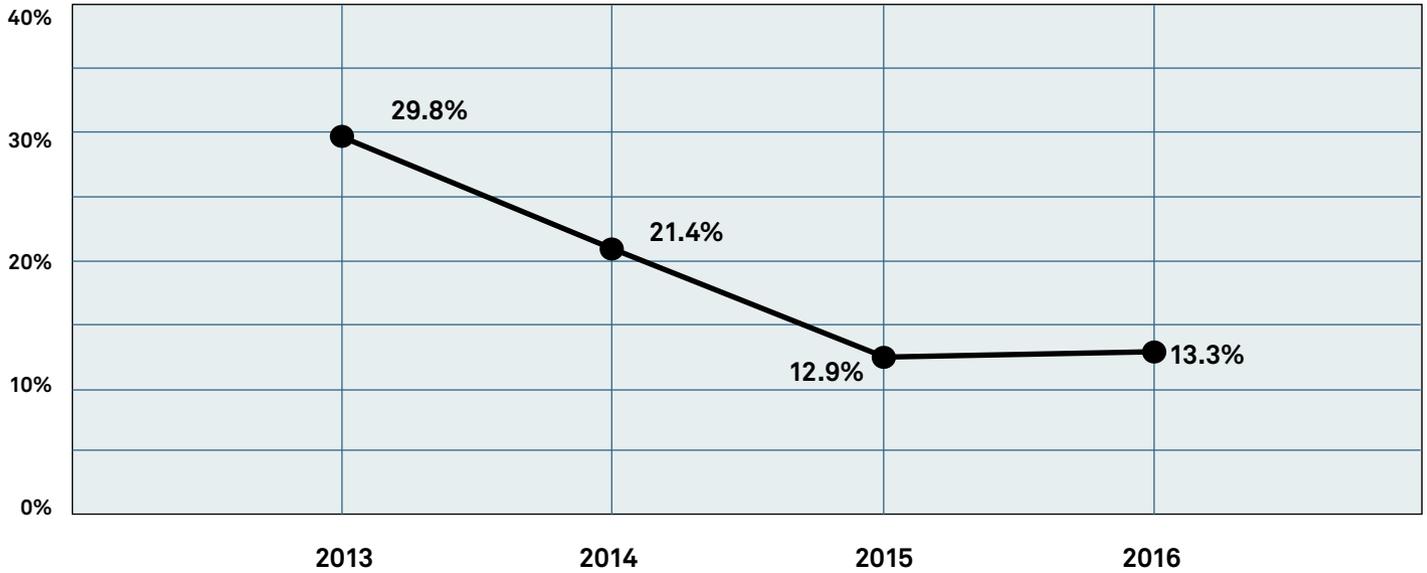


Figure 3

Average Hospital Length of Stay for Total Hip and Knee Replacements, 2012–2016

