A Message from Candace Metcalf, D.O.,

Chief of Medical Staff:

Getting to know our peers

My favorite thing about being Chief of Staff (so far) is getting to know more of the talented, hardworking Physicians here at Sparrow. I hope to introduce a few of them via this newsletter. This month, I would like you to meet Daniel (Chris) Coffey, M.D. Chris has been at Sparrow since 2005. He is with Capitol Colorectal Surgery. Chris is originally from Kentucky, holds a bachelor’s degree from Vanderbilt University in mathematics and completed his colorectal fellowship at the University of Illinois.

Chris is married to Pam Coffey, M.D., who is originally from Ohio. She is one of our amazing Pediatric ED Physicians. They have been married since 2002 and have two daughters. They spend their spare time at gymnastics meets and dance competitions.

I want to introduce you to Chris, not just because he is a REALLY nice guy, and a great surgeon, but because he recently participated in the Mayo Clinic collaboration to create a clinical pathway for Enhanced Recovery for Colorectal Surgical Patients. The work done by Chris and the other members of the taskforce was published in the Joint Commission Journal on Quality and Patient Safety in 2017. You can find it here: http://www.jointcommissionjournal.com/article/S1553-7250(17)30214-3/fulltext

In collaboration with a team representing seven organizations within the Mayo Clinic Care Network, Chris and the team here in Lansing established and implemented an ERP (Enhanced Recovery Pathway) which has decreased the length of stay for these Patients by 29%. It also contributed to a significant decrease in surgical readmission rates. At one point in the process, Sparrow reported the lowest readmission rate (3.85%) in the State of Michigan!

Key elements of the ERP include optimizing fluid management, multimodal pain management, early feeding, and early ambulation. Approximately 500 Patients at Sparrow have benefitted from this program since the first participating Patient was operated on in 2016.

Chris was very careful to point out that as many as thirty departments touch each of these Patients and he was very respectful of all the Sparrow Caregivers who have made this program a success. He gave special mention to the hard work done by the Anesthesia department (Chris knows my soft spot!).

Kudos to Chris and all the Caregivers who are making surgery safer for our Patients!

Physician in Focus
Going forward in the Medical Staff Newsletter, we would like to provide a forum for Physicians who you feel deserve to be highlighted. Maybe it is a colleague who has an interesting hobby, volunteers or helps our community in some way, or perhaps has initiated a new process or procedure here at Sparrow that has helped improve the Patient experience or Physician work-flow. Please send your submissions to myself or to sachacrowley@sparrow.org with the subject line: Medical Staff Newsletter.
Medical News

New Sparrow Internal Medicine Program receives initial ACGME accreditation
A big thank you to the Sparrow Graduate Medical Education team. With their support we successfully navigated through complex issues and started this program building upon our existing infrastructure. This is an example of Sparrow’s commitment to the community to provide excellent Patient care. The Sparrow residency program aims to provide excellent Primary Care Physicians who can improve the health of the people in our community. The program also provides a platform to expand primary care services to underserved Patients and recently discharged Patients though a resident continuity clinic and post-discharge clinic respectively.
For any questions suggestions, feedback, or comments about the program, please email Praveen Vemula, M.D., MPH, at praveen.vemula@sparrow.org.

Blue Cross and BCN limit opioids
In light of the ongoing opioid crisis, Blue Cross and BCN began limiting opioids to 30-day supply, and first fills of short-acting opioids to five days, effective Feb. 1, 2018. Harman Nagler, M.D., VP of Clinical Integration, recently sent out this helpful material, including links to information for both Patients (printable) and prescribers.
There is also information regarding the new Blue Cross prescribing rules. I am including those links here in case you missed them. Thank you, Dr. Nagler, for reminding us that our old habits of prescribing have to change to keep our Patients and our communities safer.

Publishing Physicians

Cardiac Implantable Electronic Devices.
Thakur RK; Natale A.
Cardiac electrophysiology clinics. 10(1):xiii, 2018 Mar.

Case report: atypical presentation of vancomycin induced DRESS syndrome: a case report and review of the literature.
Wilcox O; Hassanein M; Armstrong J; Kassis N.

The design and development of MyT1DHero: A mobile app for adolescents with type 1 diabetes and their parents.
Holtz BE; Murray KM; Hershey DD; Richman J; Dunneback JK; Vyas A; Wood MA.
Journal of Telemedicine & Telecare. 1357633X17745470, 2017 Jan 01.
Request from the Sparrow Health Sciences Library

Dieulafoy’s Lesion In The Oesophagus: A Rare Cause Of Upper Gastrointestinal Bleeding.
Nemakayala DR; Rai MP; Yam JL; Laird-Fick H.
BMJ Case Reports. 2018, 2018 Feb 07.
Request from the Sparrow Health Sciences Library

Endometrial Adenocarcinoma with Pulmonary Recurrence.
Rai MP; Randhawa MS; Nemakayala DR; Marinas EB.
Request from the Sparrow Health Sciences Library
Evaluation of Nucleic Acid Isothermal Amplification Methods for Human Clinical Microbial Infection Detection. Etchebarne BE; Li Z; Stedtfeld RD; Nicholas MC; Williams MR; Johnson TA; Stedtfeld TM; Kostic T; Khalife WT; Tiedje JM; Hashsham SA; Hughes MJ. Frontiers in Microbiology. 8:2211, 2017.

Habitable Worlds: Delivering on the Promises of Online Education. Horodyskj LB; Mead C; Belinson Z; Buxner S; Semken S; Anbar AD. Astrobiology. 18(1):86-99, 2018 Jan. Request from the Sparrow Health Sciences Library

Hepatotoxicity Associated With Vismodegib. Bedi PS; Rai MP; Tageja N; Laird-Fick H. BMJ Case Reports. 2018, 2018 Feb 08. Request from the Sparrow Health Sciences Library


Mycobacterium Chelonae Developing Multidrug Resistance. Mannelli VK; Rai MP; Nemakayala DR; Kadiri NP. BMJ Case Reports. 2018, 2018 Feb 22 Request from the Sparrow Health Sciences Library

Opportunities to improve clinical summaries for patients at hospital discharge. Sarzynski E; Hashmi H; Subramanian J; Fitzpatrick L; Polverento M; Simmons; M; Brooks K; Given C. BMJ Quality & Safety. 26(5):372-380, 2017 May. Request from the Sparrow Health Sciences Library

Sarcomatoid carcinoma of the duodenum. Yam JL; Rai MP; Nemakayala DR; Atti V. BMJ Case Reports. 2018, 2018 Jan 17. Request from the Sparrow Health Sciences Library

Trophoblast Glycoprotein (TPGB/5T4) in Human Placenta: Expression, Regulation, and Presence in Extracellular Microvesicles and Exosomes. Alam SMK; Jasti S; Kshirsagar SK; Tannetta DS; Dragovic RA; Redman CW; Sargent IL; Hodes HC; Nauser TL; Fortes T; Filler AM; Behan K; Martin DR; Fields TA; Petroff BK; Petroff MG. Reproductive Sciences. 25(2):185-197, 2018 Feb. Request from the Sparrow Health Sciences Library

Urinary Bladder Mass Due to Chronic Lymphocytic Leukaemia. Rai MP; Bedi PS; Marinas EB; Rayamajhi S. BMJ Case Reports. 2018, 2018 Jan 17. Request from the Sparrow Health Sciences Library
US Federal Policies Should Better Support the Primary Care Physician Workforce.
Phillips J; Edwards-Johnson J; Wendling A.

Using Facebook in a Healthy Lifestyle Intervention: Feasibility and Preliminary Efficacy.
Ling J; Robbins LB; Zhang N; Kerver JM; Lyons H; Wieber N; Zhang M.
Western Journal of Nursing Research. 193945918756870, 2018 Feb 01.
Request from the Sparrow Health Sciences Library

Wondering why you see your colleagues’ citations, but not seeing your publications listed?
It may be that you are not including Sparrow Health System as an affiliated institution when you submit your manuscripts. Since 2014, the National Library of Medicine PubMed database allows for multiple institutional affiliations. The opportunity exists for you to include those multiple affiliations and provide recognition for the support that Sparrow Health System provides.

Include Sparrow Health System as an affiliated institution when Sparrow is your primary employment, your data is derived from EPIC, your case studies or research is derived from Sparrow Patient interactions, you have used Sparrow resources/services, or when funding originates from Sparrow. The literature indicates a “strong, positive causal effect of research funding on knowledge production.” * Your publications will inspire others!

Michael Simmons, Medical Librarian, Sparrow Health System
*(PloS One. 2015; 10(9)e0138176)

Full-text of the articles are available through title links above (please note: a connection to the Sparrow Network may be required to access the full-text), or by request from the Sparrow Medical Library. You may also reach them via medical.library@sparrow.org or 364.5660 (option 1). If you have been recently published and do not see your article listed, please contact Michael Simmons at michael.simmons@sparrow.org or 364.5656.

Physician News

Dr. Brzezinski, D.O., welcomes new baby boy
Megan Brzezinski, D.O., a Physician at Sparrow Medical Group West, welcomed a new baby boy, Hudson, on Thursday, Oct. 5. He joins older brother Cameron who is 2 ½ years old.

Hudson Thomas Brzezinski
Oct. 5, 2017
9 lbs. 6 oz.
21.75 inches long

In Memoriam - Ralph Otten, D.O., FACOI
We are saddened to note the passing of Ralph Otten, D.O., FACOI, on Feb. 23, 2018. An MSU Department of Osteopathic Medical Specialties professor emeritus, Otten devoted 44 years to teaching at MSUCOM and he received numerous awards for teaching excellence. He retired in May 2017.
John Dery, D.O., recognized by NBOME
Dr. Dery was recently recognized by the National Board of Osteopathic Medical Examiners for his contributions to the development of the COMAT program and his tireless work in the sphere of public protection. Please join me in congratulating him for his accomplishments and service to our community. - Nabil Elie Khoury, M.D.

Did you get married? Have a baby? Plan to retire? Have we lost a current or former colleague? Please send your submissions to sacha.crowley@sparrow.org with the subject line: Medical Staff Newsletter.

Mayo Clinic Care Network

As a Sparrow Doctor, how can I access Mayo Clinic Network resources for my Patient’s care?

- **eConsults.** Doctors can connect electronically with Mayo Clinic specialists and subspecialists to ask questions about a Patient's care. To begin an eConsult, go to the eConsult ambulatory order in EPIC or page the eConsult Coordinator at 517.360.8232.

- **Consults for Inpatients.** NEW! A Physician to Physician conversation regarding a Patient’s care and treatment recommendations is available to you. Page eConsult Coordinator at 517.360.8232. This consult service for inpatients is a pilot program, and is very unique to Sparrow, and we are very interested in feedback around its utility. Please discuss your satisfaction with the consult with the eConsult Coordinator at 517.360.8232.

- **AskMayoExpert.** This point-of-care tool gives providers access to Mayo-vetted information, including disease management protocols, care guidelines, treatment recommendations and reference materials. The information is available on desktop computers or mobile devices 24/7 (askmayoexpert.mayoclinic.org). These materials are designed to show you and your Patient what care pathway the particular problem would receive at Mayo.

For any questions please page Sparrow eConsult Coordinator at 517.360.8232.

For the practicing Sparrow Physician, there are also a number of educational resources, as well as access to multidisciplinary consultations such as tumor boards for various conditions that you may be treating. For a complete review of these resources, please access the Mayo Clinic Network Link on Sparrow.org/MCCNTools.

Dates to Know

**Save the Date – Thirteenth Annual Physician Recognition Reception & Dinner**
Saturday, April 28, 2018
University Club of Michigan State University

**Upcoming Quarterly Medical Staff Meetings**
5:30 p.m. hors d’oeuvres | 6:00 p.m. dinner | 6:30 p.m. meeting
University Club of MSU, Heritage Room

Tuesday, June 5, 2018
Tuesday, Sept. 4, 2018
Wednesday, Dec. 5, 2018

Welcome New Physicians

**New Medical Staff**
Jeremy Adler, M.D., Pediatrics
Adam Asarch, M.D., Internal Medicine/Dermatology
Stephen Bachmeyer, M.D., Family Medicine
Kyle Bishop, M.D., Emergency Medicine
Sanket Jani, M.D., Pediatrics/Neonatology
Sanja Kaluza, M.D., Internal Medicine/Hem-Onc
Jane Kapral, M.D., Pediatrics
John Moore, D.O., Emergency Medicine
Aaron Scholer, M.D., Pediatrics
Alan Sielaff, M.D., Emergency Medicine
Angela Smolarz, M.D., Internal Medicine/Critical Care
Suresh Thakker, M.D., Pediatrics

Sparrow New Physicians Network on Facebook
The Sparrow New Physicians Network (SNPN), a group for new Physicians (and their spouses) at Sparrow Health System to facilitate communication, professional networking, share experiences, and coordinate fun events, has a group page on Facebook. This group is intended for Physicians who have been on the Sparrow Medical staff for less than five years or who have completed training within the past 10 years. Founded in 2016, SNPN is organized by the Sparrow Guiding Coalition of Physicians and is generously supported by the Sparrow Foundation.

Past editions of the Sparrow Med Staff Newsletters
This edition of the Sparrow Medical Staff Newsletter and past editions are available online through the Intranet here (when you are on the Sparrow Network), or on our website here.

David W. Larson, MD, MB; Jenna K. Lovely, PharmD, RPh, BCPS; Jesse Welsh, BA; Sho Annaberdyev, MD; Chris Coffey, MD; Cybil Corning, MD; Bret Murray, MD; Douglas Rose, MD; Lawrence Prabhakar, MD; Marcus Torgenson, MD; Eugene Dankbar, MS, MB; Mark V. Larson, MD on behalf of the Mayo Clinic Care Network Colon Rectal Surgery Enhanced Recovery Collaborative Group

**Background:** In 2015 the Mayo Clinic Care Network (MCCN), in an effort to extend medical knowledge and share these best practices, embarked on an education mission to diffuse the clinical practice redesign involving the practice of colon and rectal surgery at Mayo Clinic (Rochester, Minnesota) to members of the MCCN. They elected to use a collaborative framework in an attempt to transfer knowledge to multiple teams in an efficient and supportive manner.

**Methods:** Eight MCCN members assembled a multidisciplinary team, which participated in both a didactic learning session delivered by frontline experts, as well as follow-up remote sessions regarding Mayo Clinic’s enhanced recovery pathway for colon and rectal surgery. Teams departed the group session with established immediate next steps, communication plans, and an awareness of potential barriers and strategies for mitigation. Monthly coaching calls followed in an effort to help all teams meet their time line and overall goals. Finally, all participants met again after six months to report their clinical outcomes, as well their unique individual organization’s successes and barriers encountered.

**Results:** Participating teams felt overwhelmingly that the collaborative program exceeded their expectations and equipped them with the tools to be successful. They also felt that the extended support provided by the Mayo Clinic team was essential, and the collaboration with other members markedly enhanced their experience. Importantly, all teams were able to successfully reduce length of stay, which was the desired main clinical outcome.

**Discussion:** The collaborative format was instrumental in the rapid diffusion and successful implementation of a transformative practice redesign involving colorectal surgical care of patients.

The Mayo Clinic Care Network (MCCN; Rochester, Minnesota) is composed of health care organizations that share a common philosophy, commitment, and mission to improve the delivery of health care through high-quality, data-driven, evidence-based medical care. MCCN, through formal collaboration, knowledge extension, and resource sharing, attempts to build strong, clinically meaningful relationships, so as to benefit patients at member health care organizations.

Membership in the MCCN requires a prospective organization to undergo a thorough due diligence process, including an assessment of governance structures, clinical and business practices, quality/safety/service efforts, and brand/image/reputation management. Members sign an annual subscription agreement with Mayo Clinic and pay an annual fee providing them access to an array of predefined services. Nothing in the agreement requires network members to use Mayo Clinic for clinical or referral services. One of the predefined services provided is health care consulting (HCC). Every member receives an annual allocation of HCC hours that can be used as the currency for individual consulting projects and educational programs. Since the inception of the MCCN in 2011, knowledge transfer has been largely conducted between Mayo Clinic frontline clinicians (subject matter experts [SMEs]) and one member organization. As the network grew, there were an increasing number of members requesting access to the same best practices. In 2015, in an effort to extend medical knowledge and share these best practices, the MCCN embarked on a pilot education initiative to translate the clinical practice redesign work accomplished at Mayo Clinic to members of the network using a collaborative framework.

The collaborative framework was first described by the Institute for Healthcare Improvement (IHI) in the mid-1990s. Since the creation of the IHI Breakthrough Series Collaborative Model, dozens of examples of collaboratives based on the IHI original model have been described in the literature. Examples range across a wide variety of topics, including catheter-associated urinary tract infections and hospital-acquired ulcers, fall prevention practices, ambulatory...
The MCCN initiative to use this framework developed as a result of a prior discussion with clinical leaders from across the network during which a strong interest in practice redesign projects became apparent. Mayo Clinic has successfully implemented transformative practice redesign projects in many clinical, surgical, and laboratory-based practices. Mayo Clinic’s colorectal experts have written extensively on the innovations implemented and tested in the Mayo Clinic Colon and Rectal Surgery (CRS) practice. This group consists of 8 to 10 surgeons, performing up to 2,800 elective inpatient cases per year, with 40% of cases oncologic in nature; all patients are considered potential enhanced recovery patients. Consistent with previous research, the Mayo Clinic team found that length of stay (LOS) and other clinical outcomes could be improved and/or reduced through implementation of a standardized clinical pathway. With an overall goal of excellence in patient care, the Mayo Clinic team implemented the enhanced recovery pathway (ERP) in November 2009 after spending approximately nine months in development. The initial program focused on minimally invasive surgeries in two physicians’ practices. In 2010 the program was expanded to all cases for these same two colorectal surgeons. On implementation, data metrics focused on refining the pathway and patient outcomes, and LOS was considered a surrogate metric for many elements of the pathway. Postoperative complications and counterbalance measures were also investigated.

After a year of practice standardization, ongoing research, and informal internal diffusion, the ERP became standard practice for all elective Mayo Clinic colorectal surgical patients across the division (nine surgeons at the time) in 2011. Despite this, the Mayo Clinic CRS team recognized that there was still a major gap between the internally endorsed ERP and the way it was being implemented with patients across the CRS practice. Recommendations were given across the department, but individuals were required to make their own standard consensus on the basis of logistics such as anesthesia teams, formulary agents, and ordering processes. This led the team to embark on a focused quality improvement project that would involve all CRS patients in 2012, to support and reinforce active diffusion and standardized implementation, with subsequent critical analysis of the outcomes. The continuous learning that occurred as a result of these implementation steps led to a desire to accelerate practice redesign not only within CRS but to other clinical disciplines throughout the Mayo Clinic enterprise. This made the CRS ERP an ideal project to test diffusion and implementation across MCCN member sites.

To achieve this goal, the MCCN education team recruited SMEs in early 2015 from the Division of CRS, Department of Nursing, Pharmacy, and Anesthesiology, along with key personnel from health systems engineering, administration, and those specializing in curriculum development. Importantly, the majority of these individuals had worked together to establish the Mayo Clinic CRS ERP and were able to share their years of trial, error, and successes and allow participating members to learn in an efficient and transparent environment.

The objective of this educational collaborative was to provide high-value transferable content to participating teams to facilitate successful implementation of an evidence-based clinical pathway for enhanced recovery. The aims were as follows:

1. Develop and deliver a comprehensive evidence-based program to support local teams in an accelerated quality improvement process using the DMAIC (Define, Measure, Analyze, Improve, Control) framework, a Six Sigma principle.
2. Reduce burden on SMEs through delivery of content to multiple local teams at one time.
3. Leverage the support of quality improvement and education resources to drive project management and success of local clinical teams and help them accelerate the Plan–Do–Study–Act process.
4. Improve LOS and other clinical outcomes related to implementation of an enhanced recovery program at each site.

The collaborative framework for diffusion would not only enable knowledge transfer to multiple members but would also adhere to the core cooperative principle of the work initially done by the Mayo Clinic CRS enhanced recovery team. We describe this project, which was submitted to the Mayo Clinic Institutional Review Board and deemed a quality improvement project, in this article.

METHODS

Teamwork and communication across a multidisciplinary care team were key elements of adoption and diffusion of the enhanced recovery program at Mayo Clinic. To replicate and reinforce this model of success, MCCN members were asked to assemble a similar team and bring those teams together to learn collaboratively in an eight-month period.

The planning team ultimately defined the following time line for diffusion (Figure 1):

- An initial, overview webinar open to all MCCN members to learn what the Mayo Clinic CRS team had accomplished through its clinical practice redesign project and ask questions related to their potential participation
- A second webinar ("Pre-Meeting Call") for committed teams outlining program expectations, baseline data collection, and practice current state assessment
requirements and key roles necessary to implement the program

- The first two-day face-to-face meeting at Mayo Clinic, to share clinical knowledge and best practices across all organizations
- Five monthly 30-minute touch-point calls with each member to provide support through implementation and uniformed data collection
- Monthly educational webinars on additional clinical and quality improvement topics
- A second, one-day face-to-face report-out of results from each member team, to allow a forum for sharing of best practices and local innovations

At the time that this program was introduced to the MCCN, there were 38 member organizations, both nationally and internationally. The overview webinar was held in June 2015, with 18 organizations participating. Seven members committed to participating in the collaborative. One member, OSF HealthCare elected to send two teams from separate hospitals in their system. The member demographics are shown in Table 1.

**Pre-Program Preparation (Initial, Overview Webinar)**

The overview webinar for the participating teams was delivered in August 2015 by the Mayo Clinic surgical and nurse manager project leaders. During this session, teams were introduced to the DMAIC format (Figure 1) to be used throughout the collaborative. Using this structure, teams used the time between the kickoff webinar and the face-to-face meeting to collect baseline measurements (Sidebar 1). The questions came from institutional charter language and SME requests for demographic and baseline information needed to be able to assess the current state of organizations and tailor the program curriculum and resources to support the unique needs of participating teams. It was imperative for the Mayo Clinic SMEs to understand the processes at the largely nonacademic medical centers, not only to successfully translate the established ERP but also to learn from discrete characteristics of MCCN members in the true spirit of collaboration. The process of collecting these data was thought to provide the opportunity for teams to reflect on their current state and arrive at the live program with a better understanding of their own barriers and needs.

**First Face-to-Face Meeting**

In September 2015 the eight teams (from seven organizations) gathered at Mayo Clinic for a two-day meeting focusing on the Analyze section of the DMAIC format. Teams were encouraged to bring a physician leader and key stakeholders from nursing, administration, and other areas, such as anesthesiology and pharmacy, on the basis of their talent and ability to contribute to key functions. The composition of each team varied in terms of number of attendees and roles, yet collectively across teams all key roles were represented at the meeting. The event kicked off with a dinner reception to welcome teams to the Mayo Clinic and foster engagement between members of the MCCN and their Mayo
Clinic counterparts. The goals of the face-to-face program for the participants were as follows:

- Understand and demonstrate the importance of the multidisciplinary team for successful care of the colorectal surgery patient
- Understand the individual roles for effective implementation of the ERP
- Understand the principles and processes of the ERP
- Leave the collaborative with a plan to support the use of the ERP in your organization.

The didactic content, which followed the continuum of care for the patient (Sidebar 2), was delivered by the SMEs. Teams were given time to work together so that they could establish immediate next steps and communication plans, as well as gain an awareness of potential barriers with and strategies for mitigation. A six-month follow-up meeting to celebrate and share progress was scheduled for March 2016.

**Ongoing Learning (Touch-Point Calls)**

Between September 2015 and March 2016, the teams worked on implementation and continued improvement. Each team had a 30-minute monthly “coaching” call with members of the Mayo Clinic team representing quality, clinical, education, and operational expertise. In addition, four group webinars were held to allow for further didactic sharing from Mayo Clinic SMEs and learning between teams on their progress. The time line for implementation varied at each organization, as each worked on elements such as patient education, order sets, changes to electronic health record (EHR) programs, team alignment, and defining appropriate patient populations. Mayo Clinic SMEs encouraged teams to use their ERP on all elective cases because, on the basis of their own experiences, adherence to the pathway and process measures is ideal for these patients. Yet, the SMEs believed that if teams were able to implement some, but not all, of the elements (in emergent cases, for example), it would still be better than traditional care. All teams enrolled their first patient between November 2015 and May 2016. The full time line of engagement with teams throughout the collaboratives is shown in Figure 1.

**Reporting Out (Second, One-Day Face-to-Face Meeting)**

As the March 2016 meeting approached, the teams were given a template for reporting on their progress and a second data collection form to begin documenting clinical outcomes. This smaller number of elements included some prescribed data points that the SMEs believed the majority of teams were ready to report on; additional data points were optional or unique to each organization. The outcomes included were average LOS; number of patients with identified surgical site infection; readmission rate; average time to ambulation; oral morphine equivalent totals for day 0, 1, 2; number of patients without a nasogastric tube post-surgery; patient satisfaction elements (as chosen by each organization); and
adherence to other ERP elements (as chosen by each organization). Improvement in LOS was the primary clinical outcome reported by all organizations. Curriculum at the meeting focused on diffusion methods and strategies for sustain gains (the DMAIC Control phase). The teams were also evaluated following both face-to-face meetings to provide feedback on the curriculum and programmatic elements of the collaborative framework.

RESULTS

Implementation of the Enhanced Recovery Pathway

The ability to implement the ERP varied at each organization. Although the cohort of teams agreed on a number of common metrics to collect, there were unique obstacles at each site that affected the uniformity of adoption and implementation of the ERP, along with the reporting of results. Specific barriers included establishing policies and procedures for continuous pulse oxygen monitoring, defining the population of patients to use the ERP, staff training, EHR optimization, implementation of new order sets and anesthesia protocols. Across all eight teams, data collection was a challenge. This was in part due to a lack of a common EHR, but for the most part it was simply a new process that each organization had to figure out the best way to track, with limited resources at some sites. There was no requirement to implement the same ERP developed at Mayo Clinic but rather to develop the appropriate pathway in response to the needs of each surgical practice. Data were returned to the MCCN education staff at Mayo Clinic to collect and collate into a consistent format. As a result of these barriers, there was an inability to report on all metrics, with the exception of LOS, across all eight teams.

Length of Stay

Despite outcome variation, all teams were able to successfully reduce the primary outcome, LOS (measured as dismissal day minus surgery day), after implementation of their ERP (see Table 2). These data were a convenience sample from populations at each site. There was no randomization. The results generally excluded emergent surgeries, as important preoperative elements (for example, preoperative education and surgical preparation) could not be included. However, organizations were encouraged to use postoperative elements on all patients regardless of whether they were able to implement the entire pre- to postoperative pathway. While results across organizations were anecdotal and varied, the goal of the collaborative was to reduce LOS and improve on other elements of patient care/recovery. To this end, all
organizations, teams, and senior leaders reported success within their own unique systems.

**Secondary Improvement Goals and Success Stories**

A variety of secondary improvement goals contributing to the successful implementation of the ERP were identified across a number of teams (Table 3). These were prospectively selected by each organization on the basis of their unique gaps and needs. The teams were encouraged throughout the collaborative to share these stories so that the entire group, including Mayo Clinic, could collectively learn from one another and celebrate successes. For example, Billings Clinic piloted a Nurse Navigator position—which they ultimately established—during this program. The team members found that nurse navigators provided patients with clear, concise education and consistent support from pre-op through post-op, thereby empowering them and helping the nurse and patient to make a positive connection. At the second face-to-face meeting, Kootenai Health reported that 50% of its elective patients received no post-op opioids, patient-controlled analgesia use decreased to near zero from prior

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**Table 2. Length of Stay (Mean, in Days)**

<table>
<thead>
<tr>
<th>Organization</th>
<th>Baseline* (No. of Patients)</th>
<th>Postimplementation* (No. of Patients)</th>
<th>Change</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baptist Health Care</td>
<td>7.60 (85)</td>
<td>4.72 (144)</td>
<td>2.88</td>
<td>37.9</td>
</tr>
<tr>
<td>Billings Clinic</td>
<td>5.70 (118)</td>
<td>3.90 (116)</td>
<td>1.80</td>
<td>31.6</td>
</tr>
<tr>
<td>Kootenai Health</td>
<td>5.30 (61)</td>
<td>3.40 (76)</td>
<td>1.90</td>
<td>35.8</td>
</tr>
<tr>
<td>OSF—Saint Anthony</td>
<td>5.50 (54)</td>
<td>3.68 (41)</td>
<td>1.82</td>
<td>33.1</td>
</tr>
<tr>
<td>OSF—St. Joseph</td>
<td>4.20 (40)</td>
<td>3.10 (38)</td>
<td>1.10</td>
<td>26.2</td>
</tr>
<tr>
<td>Sparrow Health System</td>
<td>6.22 (20)</td>
<td>4.38 (115)</td>
<td>1.84</td>
<td>29.6</td>
</tr>
<tr>
<td>Stormont Vail Health</td>
<td>8.16 (336)</td>
<td>4.19 (83)</td>
<td>3.97</td>
<td>48.7</td>
</tr>
<tr>
<td>Tucson Medical Center</td>
<td>5.18 (38)</td>
<td>3.70 (133)</td>
<td>1.48</td>
<td>28.6</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>5.98</td>
<td>3.88</td>
<td>2.10</td>
<td>33.9</td>
</tr>
</tbody>
</table>

*Baseline and postimplementation data were taken from a sample at each organization. Postimplementation data are current through the end of 2016.*
In addition, it created a preoperative clinic specifically for enhanced recovery patients. Similarly, Sparrow Health System reported that it had the lowest surgical readmission rate—3.85%—in the state of Michigan, for which it attributed its participation in the collaborative. Stormont Vail Health, which expanded its ERP to include all major abdominal surgeries, reported that 30% of the ERP patients receive no opioid medications postoperatively, in contrast to preimplementation, when these medications were virtually routine.

**DISCUSSION**

The collaborative format for the diffusion of Mayo Clinic’s experience with enhanced recovery in colon and rectal surgery resulted in a 33.9% reduction in LOS across all eight team sites. The ability to share clinical knowledge with multiple teams at one time reduced the burden on SMEs by avoiding the necessity of conducting separate one-on-one programs at each site and supported enhanced learning and sharing across teams as they moved through the experience as a group. Using the DMAIC format and other quality improvement resources provided a structure for teams to navigate barriers to implementation.

It is important to underscore the diversity of practice environments, resources, and processes across member teams. Yet, despite variability and unique pathway elements at each organization, the collaborative format was an efficient method for disseminating an evidence-based clinical pathway to multiple teams. The teams were able to quickly and efficiently design and implement an ERP with the support of Mayo Clinic SMEs and staff, who guided the groups through the DMAIC format. Peer-to-peer learning with teams undergoing the same experience was particularly important, as the teams generally had more in common—demographically and structurally—with one another than with Mayo Clinic.

We also found that as organizations returned following the initial face-to-face meeting, their multidisciplinary teams grew to include others involved in the CRS practice. Those participating in the coaching calls and webinars varied depending on schedules and topics, and the majority of teams sent a smaller number of people to the second face-to-face meeting. Financial limitations influenced participation, and specifically physician time, but we nonetheless had representation from all organizations throughout the program. As the program progressed, members were able to learn from each other as a single cohort and share transparently, supplementing any gaps in team representation. This was a key benefit of the collaborative learning process. The pace, transparency, and support system provided by the collaborative format had a direct impact on the rapid improvement in outcomes across the teams. At the conclusion of the program, many of the teams were already extending the enhanced recovery process to other specialties and focusing on secondary improvement goals, such as efforts around reduction of opioids in the community (Billings Clinic).

A unique characteristic of this program was that the decision to participate in the collaborative came from senior leaders at each organization. This endorsement and support of efforts to undergo a practice redesign initiative was a key driver for success. This accountability played an important role in the speed and success of the program. With the expectation that they would have to report on outcomes six months after the initial face-to-face meeting, the teams shared that they were motivated to move project milestones forward. All teams reported to Mayo Clinic SMEs the ability to develop, implement, and realize a reduction in LOS more quickly (that is, in three to eight months) than the initial implementation of ERP at Mayo Clinic (nine months of development and then two years of implementation).

The pace of implementation at each program far exceeded the initial expectations of SMEs. Furthermore, the unique structure of the MCCN required senior leadership commitment to provide resources and support from the onset of the program, allowing groups to quickly operationalize the ERP with the guided support of Mayo Clinic SMEs.

**Limitations**

The major limitation of this study was lack of homogeneity across the organizations related to their pre- and postimplementation data collection. The design of the

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**Table 3. Secondary Outcomes**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Member</th>
<th>Baseline</th>
<th>Post-ERP</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to Ambulation</td>
<td>Kootenai Health</td>
<td>1,863 min</td>
<td>633.2 min</td>
<td>1,229.8 min (66.0% reduction)</td>
</tr>
<tr>
<td></td>
<td>OSF—Saint Anthony Medical Center</td>
<td>1,520 min</td>
<td>501.27</td>
<td>1,018.73 min (67.0% reduction)</td>
</tr>
<tr>
<td></td>
<td>Stormont Vail Health</td>
<td>1,044.9 min</td>
<td>266.38 min</td>
<td>778.52 min (74.5% reduction)</td>
</tr>
<tr>
<td>Oral Morphine Equivalents</td>
<td>OSF—Saint Anthony Medical Center</td>
<td>420 mg</td>
<td>89.4 mg</td>
<td>330.6 mg (78.7% reduction)</td>
</tr>
<tr>
<td></td>
<td>OSF—St. Joseph Medical Center</td>
<td>199.1 mg</td>
<td>46.39 mg</td>
<td>152.71 mg (76.7% reduction)</td>
</tr>
<tr>
<td></td>
<td>Sparrow Health System</td>
<td>755 mg</td>
<td>82.8 mg</td>
<td>672.2 mg (89.0% reduction)</td>
</tr>
<tr>
<td>Percentage of Patients Using</td>
<td>Kootenai Health</td>
<td>0%</td>
<td>82.5%</td>
<td>82.5% (increase)</td>
</tr>
<tr>
<td>Intrathecal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ERP, enhanced recovery pathway.
program did involve the prescription of uniform date ranges or selection criteria (population or sample) from all groups. This is a significant limitation, but we believe that the anecdotal evidence and feedback from the teams still represent a significant contribution in that it confirms a methodology for making meaningful improvements in health care. While we were able to see significant improvements to the core metric—LOS—across all sites, we attribute the variability in data collection to differences in individual team resources, discrete preferences for each institutional pathway, staff transitions, diversity of data collections systems/methods, and pace of implementation. Although our study reflects the implementation of a unique pathway within eight surgical practices, thus limiting the generalizability, it does provide a framework for an evidence-based program that can be replicated in other specialties and sites, both at MCCN and elsewhere. In addition, the MCCN sites that participated in the collaborative are best categorized as community hospitals with limited residency training programs (Table 1). While this differs from the academic setting of Mayo Clinic, the collaboration through the MCCN allowed participating organizations to foster an environment supportive of change and quality improvement.

At the conclusion of the nine-month collaborative, it became clear that the learning was multidirectional. The teams learned from Mayo Clinic initially but went on to learn from one another and teach Mayo Clinic new ideas through their own experiences. In future collaboratives, consistent data collection methods will be refined to produce more consistent measurement across participating organizations to better track outcomes.

Acknowledgments. The authors thank the many clinical and administrative experts from across Mayo Clinic and the MCCN who were integral in making the collaborative successful.

Conflicts of Interest. All authors report no conflicts of interest.

REFERENCES


December 11, 2017

Blue Cross and BCN will limit opioids to 30-day supply and first fills of short-acting opioids to five days, starting Feb. 1, 2018.

Dear Provider,

Blue Cross Blue Shield of Michigan and Blue Care Network are changing the way we cover opioid medications in support of the Food and Drug Administration’s efforts to educate members and providers about balancing the serious risk of opioids with the drugs’ pain management benefits. One or more of your patients will be affected by these changes.

**Short-acting opioid prescriptions limited to five days for first fill**

Starting Feb. 1, 2018, patients new to opioid therapy and receiving a short-acting opioid will be limited to a five-day supply for their first fill. Subsequent prescriptions and refills will be limited to a 30-day supply.

**Opioids limited to 30-day supplies**

Blue Cross and BCN will limit supplies of opioids to a 30-day fill, starting Feb. 1, 2018. This includes new prescriptions and any refills your patient may have left on a current prescription.

These changes won’t apply to oncology patients or those who are receiving end-of-life care.

**WHAT YOU NEED TO DO**

We’ve written to affected patients and asked them to talk to you about their medication options. If the opioid medication is a Schedule II controlled substance, your patient will need new 30-day prescriptions, starting Feb. 1, 2018, as the State of Michigan prohibits refills.

*If you have questions about our pharmacy programs, call the Pharmacy Services Clinical help desk at 1-800-437-3803.*

Sincerely,

Your Pharmacy Team

Blue Cross and BCN Pharmacy Services
Michigan Quality Improvement Consortium Guideline

Opioid Prescribing in Adults Excluding Palliative and End-of-Life Care

This guideline is intended to apply to patients aged ≥ 18 years with acute or chronic pain outside of palliative and end-of-life care.

Recommendation and Level of Evidence

<table>
<thead>
<tr>
<th>Key Components</th>
<th>Recommendation</th>
<th>Level of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid starting opioids</td>
<td>Initial opioid exposure is associated with a substantial risk of chronic use in some patients. Opioid dependency often begins with treatment of acute pain. Treat pain with non-drug therapy (e.g., physical/behavioral modalities), and non-opioid medications (e.g., NSAIDS), if possible. Opioids are rarely useful in chronic pain. Consider opioid therapy only if expected realistic benefits for both pain and function are anticipated to outweigh risks to the patient.</td>
<td>A4</td>
</tr>
<tr>
<td>Before starting opioids, assess risk of dependence</td>
<td>Review patient's history of controlled substance use. Obtain a Prescription Drug Monitoring Program report, e.g. MAPS. Screen for risk of dependence using an instrument such as SOAPP-R or ORT. There is no safe lower limit of dose or duration for opioid use. After seven days of use, the risk of chronic use rises 3-4 fold. Discuss with patient the risks including dependency, overdose and death, and lack of evidence of superiority to NSAIDS. [B4] Risk of death from overdose increases with daily dosage. Relative risk is almost 3x higher for high-dose vs. low-dose use.</td>
<td>B4</td>
</tr>
<tr>
<td>When starting opioids</td>
<td>Prescribe the lowest effective dose of immediate-release opioids and no greater quantity than needed for the expected duration of pain severe enough to require opioids; three days or fewer for acute pain; more than seven days will rarely be needed. [A4] Use opioids as part of a pain management plan, that includes non-opioid medications and non-drug therapy, as appropriate. Discuss realistic goals for pain and function, and how opioid therapy will be discontinued if benefits do not outweigh risks. Avoid prescribing opioids with benzodiazepines, muscle relaxants or hypnotics [A3], due to the high risk of death. Obtain a urine or serum drug screen at the time of starting therapy if concerned about concurrent substance use. [B4] Consider offering patient and family naloxone when risk factors for overdose are present; e.g., history of overdose or substance use disorder, higher opioid dosages (≥ 50 MME/day), or concurrent benzodiazepine use. [A4] Naloxone duration is less than an hour. Following any naloxone use, patient should be seen immediately in a hospital Emergency Department.</td>
<td>A4</td>
</tr>
<tr>
<td>If continuing opioids, or adjusting dose</td>
<td>Periodically re-evaluate pain and function (consider using an assessment tool such as PEG-3); consider re-checking MAPS and urine drug screen. [A4] Continue opioid therapy only if there is clinically meaningful improvement in pain and function that outweighs risks to patient safety. [A4] Reassess known risks and realistic benefits throughout opioid therapy, including patient and clinician responsibilities for managing therapy. [A3] If benefits of therapy do not outweigh potential harms, optimize other therapies and work with patient to taper opioids to lower doses or to discontinue. [A4] Consider a formalized treatment plan¹ including informed consent and/or an opioid treatment agreement (controlled substance agreement). [B4] Use urine drug testing to assess for prescribed medications as well as other controlled or illegal substances. [B4] Absence of prescription medication may indicate diversion. Perform testing at least annually, more frequently (every 3-6 months) if warranted. When considering increasing dosage to ≥ 50 MME/day, reassess evidence of individual benefits and risks. Avoid increasing dosage to ≥ 90 MME/day, carefully justify and document the decision. [A3] Consider referral to a pain specialist. Avoid renewal without clinical reassessment. [B4]</td>
<td>A4</td>
</tr>
<tr>
<td>Identify Substance Use Disorder</td>
<td>Manage or refer based on: physician comfort treating substance use disorder, patient willingness to be referred, availability and coverage. Use evidence-based treatment, usually medication, plus behavioral therapy. [B4] See MQIC Screening, Diagnosis and Referral for Substance Use Disorder guideline</td>
<td>B4</td>
</tr>
</tbody>
</table>

¹NIH National Institute on Drug Abuse Sample Patient Agreement Forms

Recommendation categories: A = Applies to all persons; most patients should receive the recommended course of action; B = Individual decision making needed; different choices will be appropriate for different patients. Clinicians help patients arrive at a decision consistent with patient values and preferences and specific clinical situations.

Evidence type: 1-Randomized clinical trials or overwhelming evidence from observational studies; 2-Randomized clinical trials with important limitations, or exceptionally strong evidence from observational studies; 3-Observational studies or randomized clinical trials with notable limitations; 4-Clinical experience and observations, observational studies with important limitations, or randomized clinical trials with several major limitations.

This guideline lists core management steps. It is based on Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016. MMWR Recomm Rep 2016;65(No. RR-1):1–49. Individual patient considerations and advances in medical science may supersede or modify these recommendations.

Approved by MQIC Medical Directors Nov. 2017

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