Testing a Provider-Level Feedback Intervention to Optimize Postoperative Prescribing

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A. Objective

The objective of this project is to leverage the Michigan Surgical Quality Collaborative's (MSQC) existing network and surgeon performance feedback platform to improve opioid prescribing practices for surgeons within the network found to be prescribing in a manner discordant with published guidelines. This work will test how effective this intervention and mechanism are for changing surgeon prescribing behavior and will inform best practices for future surgical quality improvement initiatives.

B. Specific Aim/Hypothesis

To test the effectiveness of a provider-level feedback intervention in optimizing postoperative opioid prescribing. Further, we will assess the acceptability, appropriateness, and adoption of this intervention through survey and qualitative interview mechanisms. We hypothesize that provider-level feedback will allow clinicians to tailor postoperative prescribing more closely to patient consumption and reduce excess postoperative prescribing.

C. Background Information*C1 Project Rationale*

Opioid use in the United States is a national public health crisis, with 130 Americans dying each day from opioid overdose[1]. The state of Michigan has been particularly impacted by the opioid epidemic. In 2017, Michigan ranked number 11 in highest rate of opioid involved deaths in the country[2]. While prescription opioids are routinely used to treat pain following surgery, over-prescription of these same medications increases the risk of new persistent use for the patient and for diversion of excess pills into the community. Decreasing opioid prescribing following surgery presents an opportunity to reduce the amount of risk to the patient and to the community.

Provider-facing feedback interventions - such as the "push reports" utilized in this project - are a promising tool for decreasing post-surgical overprescribing. There is evidence of the success and effectiveness of similar interventions among other aspects of care, such as perioperative antibiotic prophylaxis and electronic health record utilization [3,4,5]. Creating tools that integrate opioid prescribing and procedure-specific recommendations could allow clinicians to tailor opioid prescriptions to pain requirements and prevent new opioid dependence.

C2 OPEN and the Michigan Surgical Quality Collaborative

This project is a collaborative effort between the Opioid Prescribing Engagement Network (Michigan OPEN) and the Michigan Surgical Quality Collaborative (MSQC).

OPEN

The Opioid Prescribing Engagement Network works to steward safe opioid prescribing Michigan by developing evidence-based pain management recommendations for providers, educating patients about safe use and disposal of opioids, and reducing excess opioid pills within the community. OPEN has developed procedure specific prescribing recommendations to curb over-prescribing of postoperative opioids. These recommendations for patients with no preoperative opioid use, were informed by patient-reported data, published studies, and expert opinion. As of February 2020, Michigan OPEN has developed recommendations for 27 procedures for surgical procedures including abdominal, breast, and orthopedic procedures.

MSQC

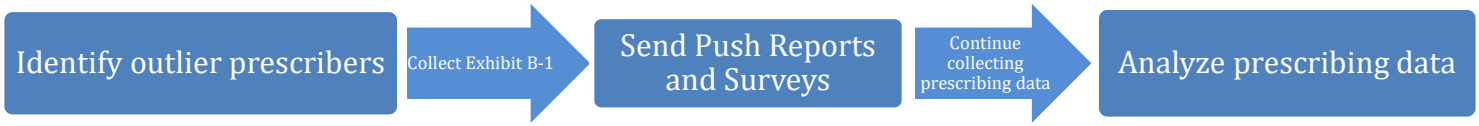
The Michigan Surgical Quality Collaborative (MSQC) is one of the largest surgical collaborative quality improvement programs in the U.S. and captures more than 90% of all general and vascular surgical procedures in Michigan. The MSQC includes surgeons and hospitals statewide that collect and analyze data to improve the quality of care for patients undergoing surgery in Michigan. They are also designated at a Patient Safety Organization designated by the Agency for Healthcare Research and Quality Clinical nurse abstractors (Surgical Clinical Quality Reviewers (SCQRs)) from over 70 hospitals across the state enter procedure and outcomes data – including opioid prescribing information and patient reported outcomes – into the MSQC platform at regular intervals. This data is used for quality improvement and to provide surgeons with regular surgeon specific reports on MSQC's secure web-based platform. These reports contain real-time, risk adjusted, personalized feedback on both surgeon and hospital levels. Providers can also use this platform to easily view their performance in comparison with other de-identified member institutions, drill down into specific cases, and export their own data for further analysis. Each MSQC site also has a surgeon champion who is designated to oversee the implementation and administration of the MSQC program at their institution including supporting the SCQR, promoting and participating in activities directed at improving surgical quality improvement and sharing best practices, and regularly attending the MSQC Quarterly Meetings, Annual Conference, and Surgeon Champion Conference Calls. The role of the MSQC and the Surgeon Champion is not punitive toward individual sites or surgeons.

C3 Project Innovation and Impact

Currently, MSQC provides a robust platform for quality improvement through tailored and modifiable feedback reports regarding important aspects of perioperative and postoperative care, including complications, mortality, and healthcare utilization. Each quarter, MSQC hospitals receive dashboards regarding benchmarks of surgical care in which hospital performance is displayed against blinded peer data. In this study, we will harness this robust infrastructure to identify surgeons who are outliers in surgical opioid prescribing and deliver specific feedback to them through an email push reporting mechanism.

D. Methodology

Figure 1 Overview of Study Methodology



D1 Identification of Surgeon Outliers

Using existing MSQC data from 1/1/2019 – 2/28/2021, 217 surgeons have been identified as outliers by the MSQC team. Only cases that had valid prescribing data and surgeon National Provider Identifier (NPI) were considered. Prescribing data for the following surgeries were included: Laparoscopic Cholecystectomy, Open Cholecystectomy, Laparoscopic Appendectomy, Open Appendectomy, Minor Hernia, Abdominal Hernia, Laparoscopic Colectomy, Open Colectomy, Vaginal

Hysterectomy, Laparoscopic Hysterectomy, Total Abdominal Hysterectomy, Thyroidectomy, Carotid Endarterectomy, Laparoscopic Anti-Reflux and Hiatal Hernia Surgery, Creation, Re-siting, or Closure of Ileostomy or Colostomy, Open Small Bowel Resection or Enterolysis. These procedures were then grouped into categories based on the number of pills (5 mg oxycodone equivalents) recommended by opioid prescribing guidelines. We will use 2019 guidelines for 2019 data and 2020 guidelines for 2020 and 2021 data

Table 1: Prescribing Guidelines by Procedure Group

Procedure category	**Procedures**
0-5 pills	Thyroidectomy
0-10 pills	Laparoscopic Anti-Reflux and Hiatal Hernia Surgery, Laparoscopic Appendectomy, Open Appendectomy, Minor Hernia, Abdominal Hernia, Laparoscopic Cholecystectomy, Carotid Endarterectomy
0-15 pills	Open Cholecystectomy, Laparoscopic Colectomy, Open Colectomy, Vaginal Hysterectomy, Laparoscopic Hysterectomy, Total Abdominal Hysterectomy, and Creation, Re-siting, or Closure of Ileostomy or Colostomy
0-20 pills	Open Small Bowel Resection or Enterolysis

Median prescribing was calculated using all cases in a specific procedure category at a specific site for which there is a prescribing guideline. If median prescribing of the surgeon was >1 pill (7.5 MME) above current guidelines, they were considered outliers.

D2 Site Enrollment and Protections

Prior to initiation of the research described in this protocol, the study team will contact hospitals with surgeons identified as outliers. Sites that agree to participate in the research by allowing the team to access their identifiable data and send push reports will be required to sign an Exhibit B-1 authorizing the release of the Patient Safety Work Product (PSWP) pursuant to the purpose of Opioid Prescribing Engagement Network Research Activities. This Exhibit B-1 will outline how the site's data will be used in research but will not include information that would bias the study. Exhibit B-1 language will have appropriate approval from legal reviewers at the University of Michigan. The study team will work with the Surgeon Champion and the Surgical Clinical Quality Reviewer at each selected site to identify the appropriate signatory for such a document and to get the document signed and returned to the study team (either through directing the team to the appropriate individual or routing the paperwork to the appropriate individual and returning the paperwork to the study team depending on the preference of the site and the Surgeon Champion/SCQR). The individual administrator who signs the Exhibit B-1 for the site will not be alerted as to which surgeon(s) at their site may be receiving the intervention push report.

For sites who do not complete this paperwork we will look only at de-identified data at the site level to examine prescribing changes. This control arm will not receive the push report intervention.

D3 Control Arm

The study team will enroll sites that did not sign the Exhibit B-1 and surgeons at sites who signed the Exhibit B-1 but for whom no contact was available into a control arm. The study team will not have access to identifiable data for sites that did not sign the Exhibit B-w and will obtain and analyze only de-identified site level data.. Those who are moved back to the control arm will be de-identified before re-inclusion in the data file. The study team will use this data to examine prescribing changes.

D4 Individual Level Push Report Intervention

All surgeons belonging to sites that signed the Exhibit B-1 document and identified as outliers will be eligible to receive the push-report intervention The template for provider-level push-report emails has been developed by the study team and informed by surgeon specific reports already available through MSQC and previous quality improvement work led by the OPEN team. During this study, the template will be populated with the individual surgeon data and sent as emailed push reports to surgeons eligible to receive the intervention.

D4A Description of the Push Report

Surgeons receiving provider-level push report notifications will receive an email displaying their personal prescribing performance compared to OPEN prescribing guidelines and their de-identified peers. Because no case information except opioid prescribing will be included in the push report, the push report will also include a link to the existing, secure MSQC data platform that displays more information about the case so the surgeon can further investigate their prescribing if desired. The email will also contain contact information for the study team so as to help any surgeons troubleshoot, learn more, request to stop receiving reports, etc.

D4B Sending the Push Reports

The push reports will be sent to surgeons at sites who have signed the Exhibit B-1 over the course of four weeks. This will include all surgeons at sites who have signed Exhibit B-1s before the initiation of the push report launch for whom the study team has contact information. Sites who did not sign the Exhibit B-1 and/or surgeons for whom the team was unable to gather updated email addresses for push reporting and/or for whom the email address was no longer valid will be excluded from the intervention arm and moved to the control arm.

The push report will be sent via using a secure email client. The email will be sent to the email the surgeon has provided to MSQC as their official email. In the case of multiple email addresses, the study team will send the email to the most secure account available (e.g. .edu, .gov, .org rather than Yahoo, Gmail, etc).

All surgeons who practice at hospitals and for whom we have a current email address who have signed the Exhibit B-1 will receive a push report email from the study team. Read receipts will be embedded in each push report email to see if surgeons have opened the push report. If they have not, the study team will follow-up with the same email on a weekly basis for a total of 4 weeks or until they open the email, whichever comes first. Emails will be sent to prescribers in this fashion unless they directly contact the study team to request otherwise and/or their hospital/health system revokes permission.

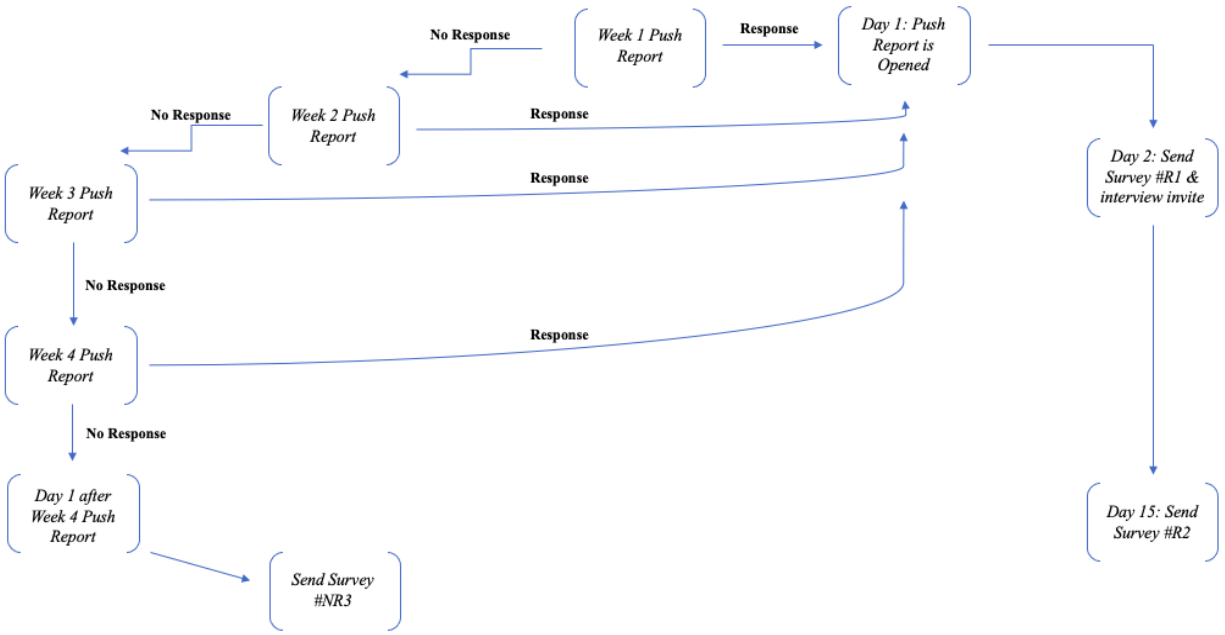
D4C Push Report Data Collection

We will collect prescribing data reported through the existing MSQC mechanism for five months from the date of the first push report In addition to the standard variables reported to MSQC, the study team will collect data on surgeon interaction with the email push report. We will collect information such as who opens the email, who logs into the MSQC platform after receiving the email, and who directly contacts the study team and why. This information will be used to inform who needs to continue receiving push reports, be used in research analyses, and inform quality improvement opportunities based on this methodology.

D5 Feedback Surveys

Following receipt of the push report(s), the study team will send up to two surveys to all prescribers who received the push report to collect information about usability and acceptability of the email push reports. Surgeons who open the push report will be sent a survey invitation the following day and another two weeks later. The first survey will ask about their reactions to the push report and ask surgeons for permission to contacted again regarding a qualitative interview whereas the second will ask about any actions taken after receiving the push report. Surgeons who do not open any of the push reports will be sent a different survey invitation. These surgeons will be asked a single question regarding what could be improved. Each invitation will contain a link to the appropriate survey programmed in University of Michigan secure Qualtrics and will be preceded by the approved consent form.

Figure 2: Push Report Feedback Timeline



D7 Qualitative Interview

In addition to receiving up to two surveys, surgeons who indicate in the first survey that they are interested in scheduling or learning more about scheduling a qualitative interview will be emailed by the study team with the appropriate information. The purpose of this fifteen minute interview is to examine the preferences and experiences of surgeons who have received this feedback. The study

team will reach out to the surgeon individually and work with them to schedule a time to conduct the interview.

The interview will take place via Zoom or on the phone at the mutually agreeable time. A trained member of the study team will obtain consent from the participant prior to the interview. The participant must consent to having audio from the interview recorded in order to participate and language indicating this will be included in the consent. The interview will be recorded on an encrypted recorder or directly in the Zoom platform and then saved directly to an encrypted study drive. Once the audio recording is obtained and saved a study team member or third party who have an agreement with the University of Michigan will transcribe the interview. The transcription will also be saved to an encrypted study drive with the participant's study ID.

E. Statistical Design

E1 Primary Outcome

The primary outcome will be the average opioid prescribed (measured in oral morphine equivalents [OMEs] adjusted for the surgery type following the intervention. Only cases with valid prescribing data and surgeon NPI will be included for analysis. Prescribing data will be collected for five months following the first push report.

E2 Exploratory Outcomes

Exploratory outcomes will be the rate of prescribing within the MSQC guidelines over the same year following the intervention. We will also evaluate the survey and interview items collected on acceptability, ease of use, relevance, utility, and appearance.

References:

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