St. Paul's Hospital Opioid Stewardship Program:

1 Year Program Report
January - December 2020

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EXECUTIVE SUMMARY

In the midst of the overdose crisis within British Columbia (BC), and in response to the longstanding prescription opioid crisis, the St. Paul's Hospital (SPH) Opioid Stewardship Program (OSP) was established in January 2020. The goal of the OSP is to improve opioid prescribing at SPH to reduce adverse events and long-term dependence and avoid future opioid misuse, while maintaining or improving pain management for individuals receiving opioids during their acute admission. This is the first OSP within Providence Health Care and the Vancouver Coastal Health geographical area, and the third within BC.

In the first year of the program, we have established a clinical program including both audit and feedback and consultation services, conducted a number of educational sessions in a variety of clinical areas, initiated a number of new quality improvement and research projects, and established an Opioid Stewardship Advisory Committee (OSAC) to bring together representatives from almost every Department and Division at St. Paul's Hospital to review systemic opportunities for improvements in opioid prescribing, use, and monitoring.

Through our audit and feedback approach, we have offered a total of 1599 recommendations for improving opioid prescribing among 576 patient encounters. Examples of the most common recommendations include: stopping as needed (PRN) opioids when no longer clinical indicated (28%), optimizing non-opioid analgesic medications (18%), educating patients about opioid medications and their potential for future harm (15%), and adjusting the dosage of a prescribed opioid (11%). In total, the program has demonstrated tremendous success with 93% of recommendations offered being accepted and integrated into clinical practice.

In addition to the program's clinical activities, a number of educational initiatives have been undertaken to improve opioid prescribing. More specifically, we have presented to different clinical groups within the hospital and provided clinical rotations for a total of 9 educational events (e.g. obstetrics and gynecology regional rounds, medicine resident teach, orthopedic surgery fellow training, general surgery nursing rounds). We have also presented at 2 regional meetings and 2 international conferences to help disseminate information about our experience with the SPH OSP.

Furthermore, we have participated collaboratively in a quality improvement project with obstetrics and gynecology, and initiated 2 new quality improvement projects including the development of educational resources in internal medicine and evaluation of opioid use following discharge from general surgery. We have also continued our overarching research project evaluating the impact of the OSP on high-risk opioid prescribing, and initiated a new research project reviewing the impact of Cerner implementation on opioid prescribing at SPH.

Finally, an interdisciplinary group of leaders at SPH (consisting of physicians, nurses, and pharmacists) has been convened to form the inaugural SPH Opioid Stewardship Advisory Committee. This committee includes 19 members representing various departments (e.g. pharmacy, internal medicine, addiction medicine, acute and complex pain services, anesthesiology, orthopedic surgery, obstetrics and gynecology) and has convened 5 times in the first year. They have helped inform opportunities for improvement and collaboration for the OSP, reviewed and provided feedback on OSP activities, disseminated information from the OSP to various departments and divisions across SPH, and reviewed important issues that affect overall opioid prescribing and use at SPH and regionally.

Despite a year marked with significant challenges (e.g., the implementation of a new electronic health system, a global pandemic which has significantly changed the way we work and communicate) the OSP has demonstrated success at improving patient care and safety with regards to opioid prescribing. This could not have happened without the incredible support of all of the staff at SPH and their commitment to improving patient care. We have seen the tremendous impact that opioid prescribing and use in the past twenty years has had on the current overdose crisis, and we are committed to ensuring that the changes we make today have an equally substantial, positive impact on the next twenty years.

This report describes key indicators for the first year of the St. Paul's Hospital Opioid Stewardship Program.

St Paul's Hospital
OPIOID STEWARDSHIP PROGRAM

January 2020 – December 2020

Objective: to improve opioid prescribing practices to reduce adverse events and long-term dependence and avoid future misuse, while maintaining or improving pain management for individuals receiving opioids during their acute admission.

Program Activities

Clinical Activities
- Consultations
- Audit & Feedback

Education
- Presentations
- Guideline Development

Quality Improvement, Research & Evaluation
- Research Projects
- Quality Improvement Initiatives

In the first 12 months...

10,246 patient encounters identified to be potentially prescribed opioid inappropriately

3,059 identified patient encounters that were screened

1,084 screened patient encounters that were reviewed

576 reviewed patient encounters that were offered an intervention

93% recommendations accepted

67% opioid naïve

51% > 60 years

5 most common recommendations

- **28%** stop as-needed opioid
- **18%** add/increase non-opioid pain medication
- **15%** patient education
- **11%** adjust opioid dosage
- **6%** stop/taper other sedating medications

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BACKGROUND

Prescription opioid misuse and illicit use has become an increasing problem globally and is linked to an array of negative consequences including addiction, overdose and mortality.[1–3] Canada, the second highest opioid consumer in the world after the United States, demonstrated rates of prescription opioid use tripling over the past decade alone.[1,4,5] As rates of opioid prescribing increase, so too has the development of opioid misuse, addiction and prescription opioid related overdose deaths, as well as other related morbidities.[6–9]

Hospitals are a major contributor to the prescription opioid epidemic and related harms. Hospitals that use opioids most frequently have been shown to have increased rates of adverse drug events (ADEs) which can also have a negative impact on length of stay and related costs.[10-12] Past research has also documented inappropriate opioid prescribing practices in hospitals that can continue to various harms in the community, such as the development of opioid dependence and opioid use disorder, overdose, or opioid-induced hyperalgesia.[9, 13-15]

Despite this evidence, there have been relatively few initiatives put in place to target opioid prescribing within hospitals. Prescribing stewardship programs in the past have broadly focused on other medications, notably antimicrobial prescribing which has resulted in reduced antimicrobial use, reduced c. difficile infections, and significant cost savings.[16,17] From the small number of hospital-based opioid stewardship programs in North America, preliminary results show cost-savings, a reduction in opioid-associated rapid response calls and code blues, and successful interventions and consultations related to pain medication reconciliation.[18,19]

Opioid Stewardship at St. Paul's Hospital

The SPH OSP was implemented in January 2020. The clinical team consists of a clinical pharmacy specialist and an addiction medicine physician. The SPH OSP is the second OSP within acute care in the Lower Mainland and in Canada. Other programs within Canada are focused on community prescribing. Furthermore, the SPH OSP is the only acute care program that includes both a physician and pharmacist, and that has a significant research program running concurrently along with the clinical program.

SPH is an optimal location for an inpatient opioid stewardship program as it is an acute care, teaching, and research hospital servicing the heart of downtown Vancouver. Every day, hundreds of patients are admitted for care at SPH and at least half of these patients are prescribed an opioid medication. SPH has a number of world class surgical programs (e.g. cardiac, colorectal, vascular, and orthopedic surgery) which often involve the prescribing of opioid medications. It is also a centre for internal medicine, urban health, and mental health services for downtown Vancouver which provide care for structurally vulnerable patients who may be more likely to have opioid addiction. With Vancouver being at the epicentre of North America's overdose crisis, SPH has an important opportunity to lead clinical practice locally and beyond by demonstrating a commitment to improve opioid prescribing to reduce adverse events and long-term dependence.[20]

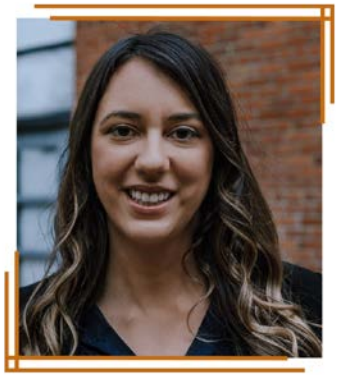
The goal of the OSP is to improve opioid prescribing, utilization, and monitoring at SPH in order to prevent or reduce adverse events, risk of inappropriate long-term use and dependence, and improve or maintain adequate pain control.

This is accomplished through: (1) clinical activities including implementation of a prospective audit and feedback intervention as well as clinical consults; (2) quality improvement and research initiatives including evaluation of the program and outcomes as well as collaborative projects around opioid use in various departments; and (3) education including development of clinical tools, presentations to various departments and health disciplines.

OSP Team Members

Clinical Team

The clinical team consists of the Opioid Stewardship Clinical Pharmacy Specialist (Dr. Tamara Mihic) and the Opioid Stewardship Physician Lead (Dr. Seonaid Nolan). Together, they work on the front line providing audit and feedback and clinical consultations, as well as education to SPH staff, review/development of clinical guidelines and protocols, and dissemination of program data. Dr. Nolan also collaborates with Dr. Lianping Ti as part of the Research Team (see below).



Tamara Mihic, PharmD

Seonaid Nolan, MD

Operational Team

The operational team consists of Dr. Michael Legal (Pharmacy Manager) and Dr. Steven Shalansky (SPH Pharmacy Clinical Coordinator). They support the program by providing overall direction, logistics, and pharmacy management.

Michael Legal, PharmD

Steven Shalansky, PharmD

Research Team

The research component of the OSP is led by Drs. Lianping Ti (Research Scientist at the BC Centre on Substance Use [BCCSU]) and Seonaid Nolan (Clinician Scientist at the BCCSU and holder of UBC's Steven Diamond Professorship in Addiction Care Innovation). They work to conduct research and evaluation initiatives related to review of the OSP, as well as research related to opioid prescribing in hospital settings.

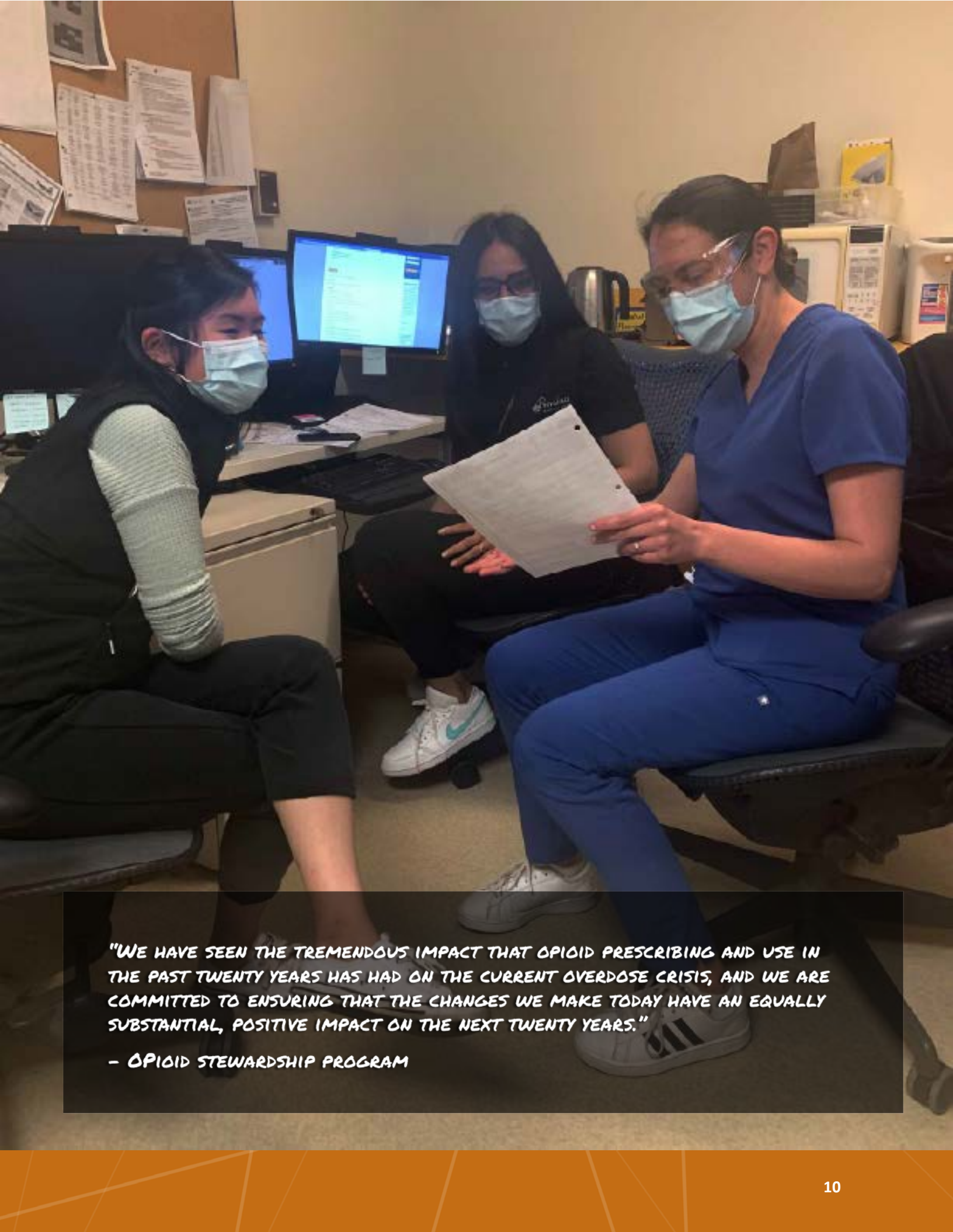
Lianping Ti, PhD

Seonaid Nolan, MD

Opioid Stewardship Advisory Committee (OSAC)

The OSAC was developed by the OSP in order to bring together representatives form major stakeholder groups to provide advisory support, as well as to disseminate information from the OSP to their respective practice areas. Current OSAC members include:

- Dr. Keith Ahamad (Regional Addiction Program)
- Dr. Geoffrey Cundiff (Obstetrics and Gynecology)
- Stephanie Chan (Medication Safety, Pharmacy)
- Isabel Diogo (Medication Safety, Nursing)
- Dr. Andrew Kestler (Emergency Department)
- Elizabeth Dogherty (Addictions Medicine, Nursing)
- Dr. Renee Janssen (Internal Medicine)
- Dr. Michael Legal (Pharmacy)
- PJ Matras (Acute Pain Service)
- Leslie McBain (Patient and Family Engagement)
- Dr. Tamara Mihic (Opioid Stewardship)
- Dr. Seonaid Nolan (Opioid Stewardship)
- Dr. Christopher Robertson (Complex Pain Service)
- Dr. Nadia Fairbairn (Addictions Medicine)
- Dr. Steve Shalansky (Pharmacy)
- Dr. Ainsley Sutherland (Acute Pain Service)
- Courtney Symes (Nursing)
- Dr. Lianping Ti (BC Centre on Substance Use)
- Dr. Tamim Umran (Orthopedic Surgery)



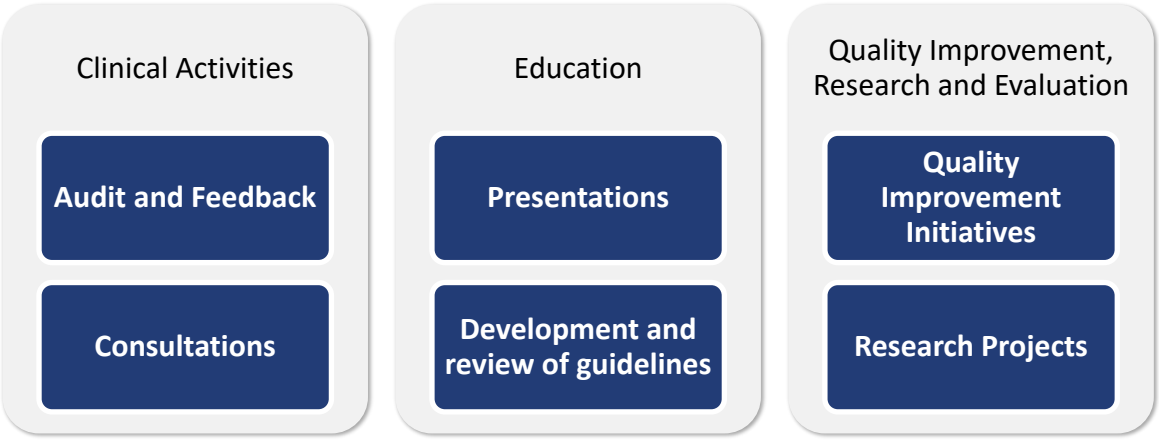
"We have seen the tremendous impact that opioid prescribing and use in the past twenty years has had on the current overdose crisis, and we are committed to ensuring that the changes we make today have an equally substantial, positive impact on the next twenty years."

– Opioid stewardship program

PROGRAM ACTIVITIES

Overview

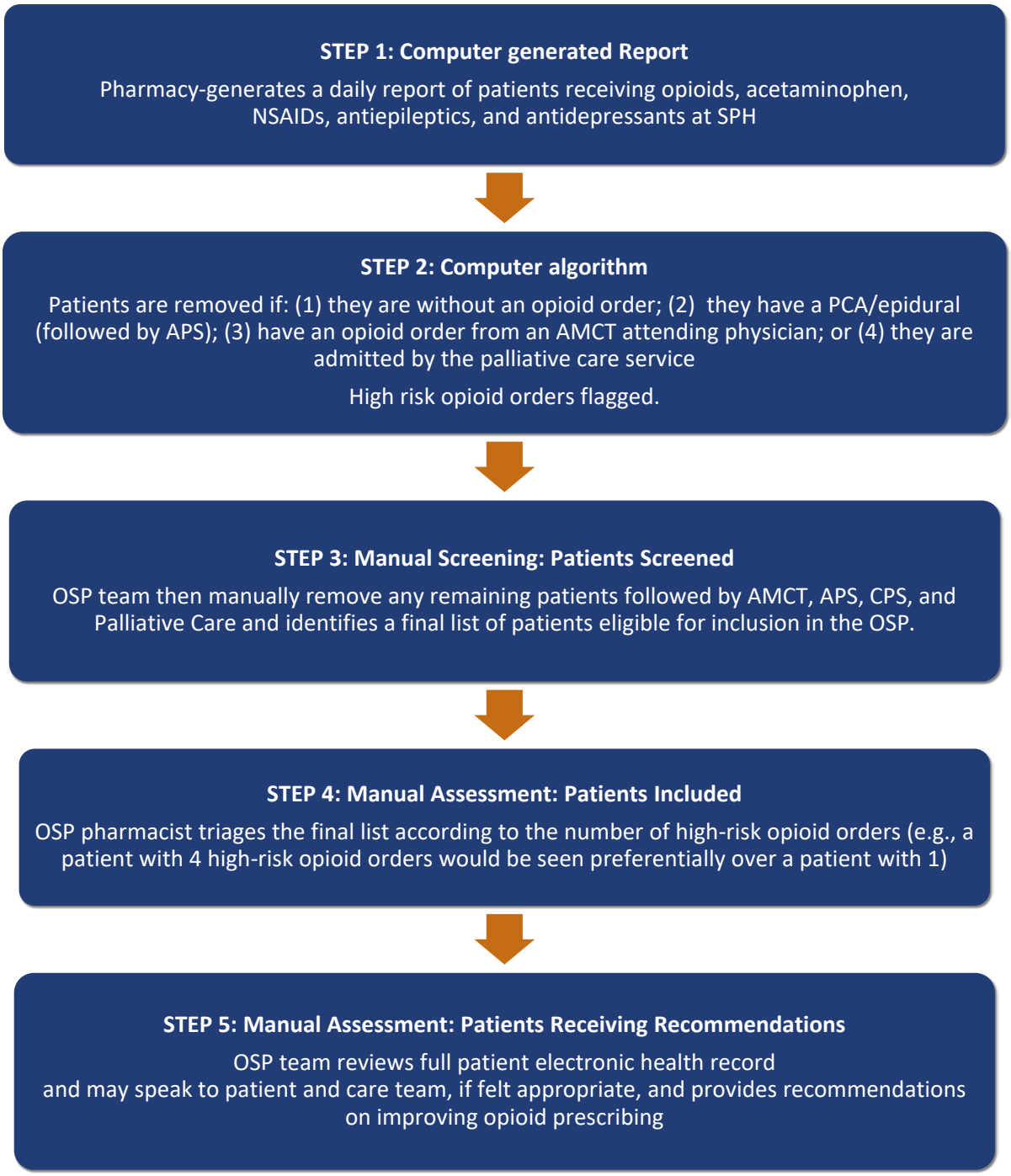
The program activities of the OSP can be divided into three sections: 1) clinical activities, 2) education, and 3) research and quality improvement. Below, activities and preliminary findings from each of the sections are described in detail.



Audit and Feedback Program

Audit and feedback is an evidence-based strategy to improve professional practice. It involves the review of specific professional performance (in this case opioid prescribing) and then feedback to the healthcare provider on opportunities to improve prescribing based on available guidelines and literature. The SPH OSP utilizes a screening list of patients on opioids (as described below) to identify those who would most benefit from re-assessment and intervention. Audit and feedback in opioid stewardship is often more time-intensive compared to other audit and feedback strategies (e.g. antimicrobial stewardship) as pain is multi-factorial and subjective, and requires a more in depth assessment with the patient to determine the most optimal areas for adjustment and improvement.

As an initial screening, the OSP clinical team extracts daily reports from pharmacy of patients who have been admitted to SPH (excluding emergency department, critical care areas, and palliative care unit) and have an active opioid order. Patients are then further assessed if they are not followed by another consulting service specializing in opioid prescribing (e.g. acute pain service [APS], complex pain service [CPS], addiction medicine consult team [AMCT], palliative care team). Full details regarding the screening process are included below.



**Abbreviations: NSAID – non-steroidal anti-inflammatory, SPH – St. Paul's Hospital, PCA – patient-controlled analgesia, APS – acute pain service, AMCT – addictions medicine consult team, CPS – complex pain service*

The steps listed above are reviewed in more detail:

STEP 1: Computer Generated Report

An initial screening list is compiled by the OSP Clinical Pharmacy Specialist using the Cerner electronic health record and includes all patients that are prescribed opioids or other target medications (e.g. antidepressants, anticonvulsants, benzodiazepines, zopiclone, acetaminophen, NSAIDs) who reside on an inpatient ward at SPH (excluding critical care and palliative care units).

STEP 2: Computer Algorithm

A separate screening algorithm then removes any patients without an opioid order, those with patient-controlled analgesia (PCA) or epidural order (as a marker of APS involvement), orders written by an attending physician from the addiction medicine consult team (AMCT).

Following this, the screening algorithm then identifies the number and type of high-risk opioid orders for each patient. The 13 criteria used to identify a high-risk opioid order were developed based on a comprehensive literature review and consultation with physicians with expertise in chronic pain and addiction management and include:

Patient-related Risk Factors:

1. Use of opioid medication in a patient who is opioid naive
2. Use of opioid medication in a patient with personal history of depressive disorder, anxiety disorder, and/or post-traumatic stress disorder
3. Use of opioid medication in a patient aged greater than 60 years

Prescription-related Risk Factors:

4. Use of parenteral opioids when orders suggest the patient is receiving a normal diet and taking nutrition orally[40]
5. High frequency opioid prescribing (< 4 hours)
6. Multiple different concomitant opioids prescribed for regular and as needed (PRN) use
7. Regular dosing of an opioid prescribed for PRN use
8. Long-acting opioid prescriptions within the first 5 days of a patient's hospital stay
9. High daily dose of an opioid, defined as a prescribed daily dose of 90 MME or greater
10. Long duration of opioid prescribing, defined as a patient on opioids on or beyond hospital day 5
11. Concurrent opioid and sedative (e.g., benzodiazepine) prescription
12. No adjunctive order for non-opioid analgesics including acetaminophen, NSAIDs, and/or medication for neuropathic pain (where appropriate)
13. Use of an opioid medication where naloxone administration was required in the last 24 hours

Of note, there are other, evidence-based criteria that increase the risk of opioid-related adverse events (e.g. renal and hepatic impairment, history of or active substance use disorder) that we were unable to include due to limitations with our screening list. However, these are assessed during STEP 4 by the Opioid Stewardship Clinical Team.

STEP 3: Manual Screening: Patients Screened

OSP Team manually screens through the list and patient charts to manually remove additional patients followed by AMCT, APS, CPS, and palliative care.

STEP 4: Manual Assesment: Patients Included

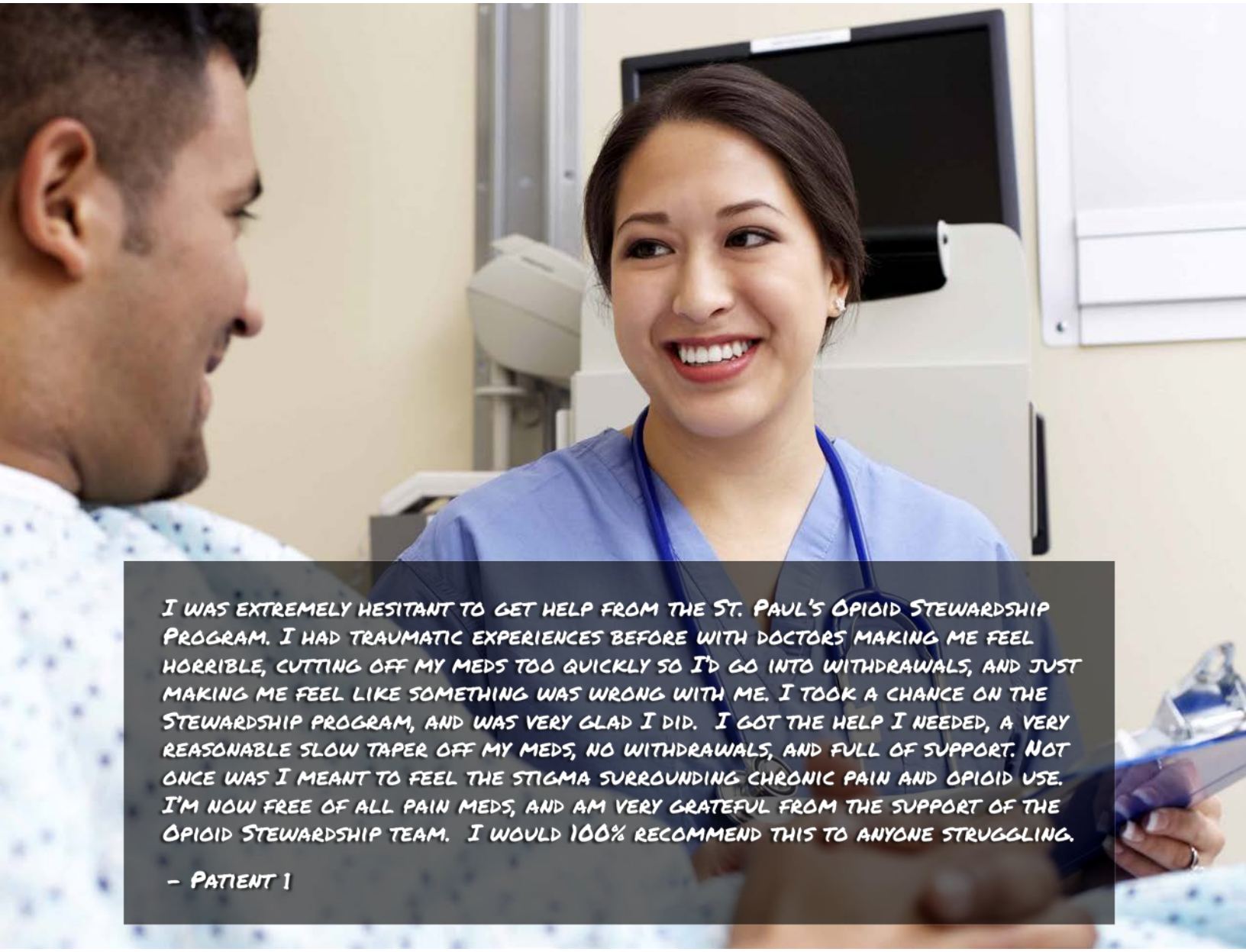
OSP pharmacist triages the final list of patients according to the number of high risk opioid orders (i.e., a patient with 4 high-risk opioid orders would be seen preferentially over a patient with 1).

Based on a preliminary review of the electronic health record, patients are identified who may benefit from an intervention to optimize opioid prescribing.

STEP 5: Manual Assesment: Patients Receiving Recommendations

Patients identified in STEP 4 then receive a full clinical assessment from the opioid stewardship pharmacist (including full review of electronic health record and often times discussion with the patient and clinical team) to determine how analgesic therapy can be optimized to improve or maintain pain management while improving opioid safety.

For patients who would benefit from an intervention, recommendations are delivered in any combination of the following four ways: (1) documenting a note in the patient's electronic medical record; (2) speaking to the patient; (3) speaking to the attending physician; and/or (4) speaking to the ward pharmacist. Multiple actions may be done for the same assessment (i.e. speaking to physician and documenting in note).



Review of Audit and Feedback Statistics

This section summarizes the baseline demographics, risk factors, and opioids ordered for patients exposed to opioids at SPH from January 13, 2020 to December 29, 2020. The patients included in this analysis are from "STEP 2: Computer Algorithm" of the screening process listed on page 10.

Furthermore, this section will also provide details regarding all patients screened for and assessed by the OSP as well as the number and type of recommendations and acceptance rate of these recommendations between January 13, 2020 and December 29, 2020.

Patient Baseline Demographics

Below, we have described patient characteristics, patient's admitting clinical service, and patient's history of opioid use prior to hospital admission among a total of 5931 unique patients who were exposed to opioids between January 13, 2020 to December 29, 2020. Of note, there were breaks in our data sets from March 17-May 1, 2020 due to the COVID 19 pandemic, and December 12-29, 2020. These patients were identified by pharmacy's daily generated report (and prior to manual screening by the OSP team). Many patients appeared on multiple daily reports during their hospital stay, but only the data from the first day is included in this review of patient baseline demographics.

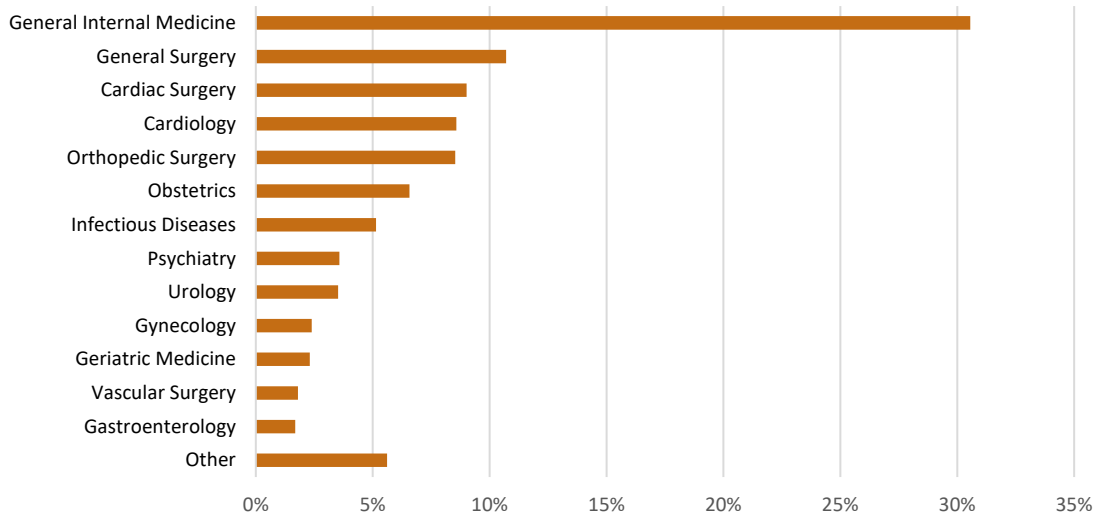
Age and Sex

Of the 5931 unique patients exposed to opioids from January 13, 2020 to December 29, 2020: 44% were female, 55% male, and 1% were unknown. The mean age was 55 years for females, 60 years for males, and 41 years for those with unknown sex.

Admitting Clinical Service

Patients prescribed opioids (n=5931) were under the care of a variety of clinical services at SPH. The largest proportion of patients were admitted to General Internal Medicine (31%) General Surgery (11%), and Cardiac Surgery (9%). It is important to note that some of these patients may be prescribed opioid agonist therapy for opioid use disorder and would have been excluded from further assessment by the OSP during the next step of the screening process. Also, the distribution of patients prescribed opioids by various services does not necessarily reflect suboptimal prescribing practices on these services, rather it may relate to the volume of patients admitted under these services.

Figure 1. Admitting Clinical Service of Patients Prescribed Opioids at SPH (n=5931)



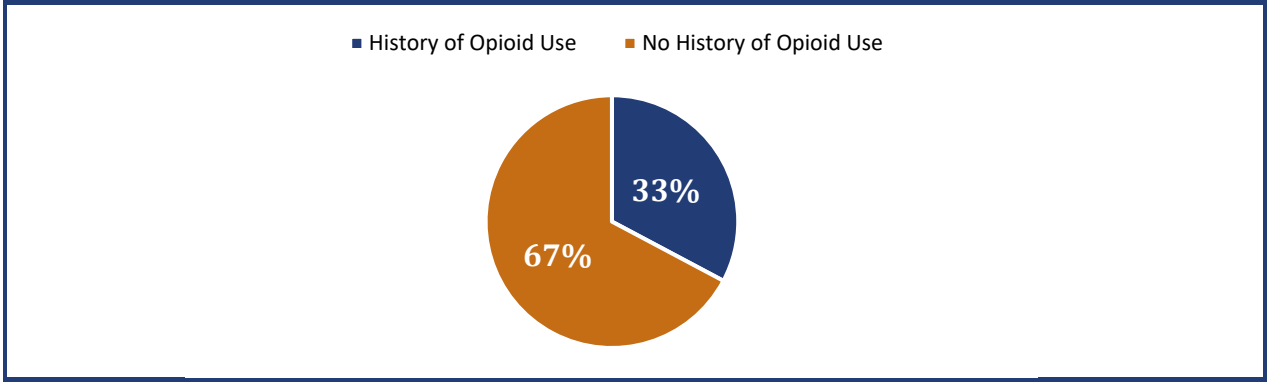
**Other includes: Plastic Surgery, Pain Medicine, Thoracic Surgery, Physical Medicine and Rehabilitation, Nephrology, Transplant Medicine, Respirology, Hematology, Otolaryngology, Plastic Surgery, , Neurology, Neurosurgery, and Opthalmology .*

Opioid Use Prior to Admission

History of opioid prescription on Pharmanet within 30 days prior to hospital admission was collected as a marker of whether the patient was opioid naïve or not. This information was added to the screening algorithm on January 20, 2020 (n=5359). The majority of patients (67.2%) were opioid naïve at the time of opioid prescribing.

Patients prescribed opioids who are previously opioid naïve are at higher risk of adverse events from opioids due to lack of tolerance. This provides an opportunity for the OSP to provide recommendations to encourage safer use of opioids. For patients that have a history of opioid use, often times these patients may have a complex pain history, escalated doses of opioids in community, and may also be more at risk for poorly managed acute pain in hospital. There is an opportunity for the OSP to intervene and provide recommendations to improve acute pain management (including liaising with our pain teams) and reduce inappropriate, long-term use of opioids.

Figure 2. 30-day Opioid Use History of Patients Receiving Opioids at SPH (n = 5359)



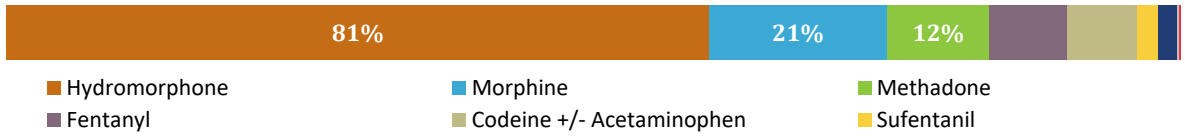
Review of Opioid Orders

Below, we have reported on active opioid orders among unique patients exposed to opioids from January 13, 2020 to December 29, 2020 that were included in the OSP screening list. Key indicators included: type of opioid(s) prescribed, whether opioids were prescribed regularly or as needed, and route(s) of administration.

Frequency of Opioid Prescribing

Numerous formulations of opioids were prescribed for patients at SPH. Hydromorphone was the most common opioid prescription and the majority of patients received hydromorphone during their hospital stay (81%). Patients could have multiple opioids prescribed; thus, the sum is greater than 100%.

Figure 3. Type of Opioid Prescribed (n=5931)



**Other category includes: Mepereidine, Opium- Belladonna, and Tapentadol*

Pattern of Opioid Prescribing

The majority of patients (67%) were exclusively prescribed as needed (PRN) opioids, 30% received a mixture of both PRN opioids and regularly prescribed opioids, and 3% were prescribed only regularly scheduled opioids.

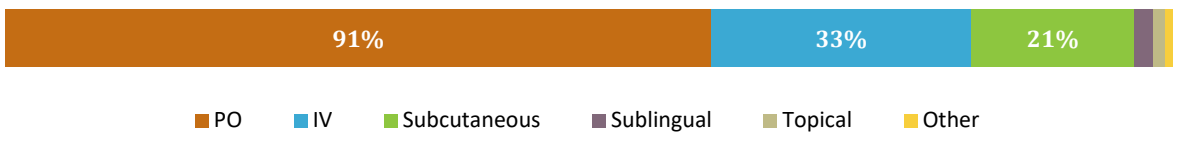
As the majority of opioids are prescribed as needed, this presents an opportunity to reduce or discontinue opioids that are no longer required (to avoid inappropriate long-term use) or to optimize pain control by recommending a change to a regularly scheduled regimen for those patients that require it.

Route(s) of Administration for Opioid Prescribing

For patients exposed to opioids, the majority of patients were prescribed at least one opioid with an oral administration route (91%). 33% of patients were prescribed an intravenous opioid and 21% had a subcutaneous opioid order. Patients could have multiple treatment routes; thus, the sum is greater than 100%.

Although the most common route used is oral, a number of patients are still receiving parenteral opioids and in a number of cases this may be inappropriate use when they are able to take oral. This presents an opportunity for the OSP to intervene and reduce the unnecessary use of parenteral opioids which have been associated with increased risk of adverse events and medication errors.

Figure 4. Opioid Routes of Administration (n=5391)



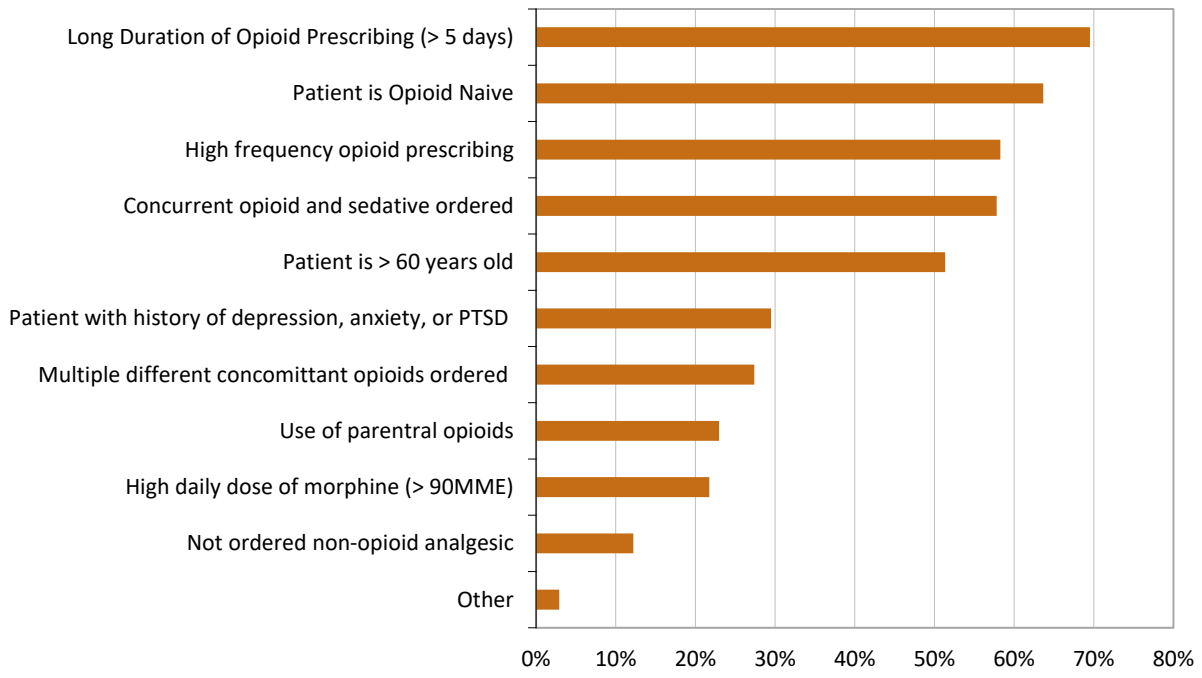
**Other category includes: Intramuscular, NG-tube, PEG-tube, G-tube, JG-tube, OG-tube, epidural, uretheral, rectal, and buccal*

Identified Risk Factors

The screening algorithm which identifies risk factors which can increase risk of opioid-related adverse events was implemented after the start of the Opioid Stewardship Program. There were a number of days within the time period of January 13 to December 29, 2020 where risk factor data was not available due to being prior to the implementation date (January 13 – February 27) or due to an issue with the data set exported from the electronic health record (July 15-28, September 15 and 23, October 28, and November 23).

The screening algorithm identified risk factors for 10,246 unique patient encounters among 4,482 unique patients exposed to opioids between January 13, 2020 and December 29, 2020 (with the above date exlusions noted). The most common included:, long duration of opioid prescribing (70%; risk factor #7 above), use of opioids for patiets who are opioid naïve (64%; risk factor #10 above), and high frequency opioid prescribing (58%; risk factor #2 above).

Figure 5. Identified Risk Factors for Patients Receiving Opioids at SPH (n=10,246)

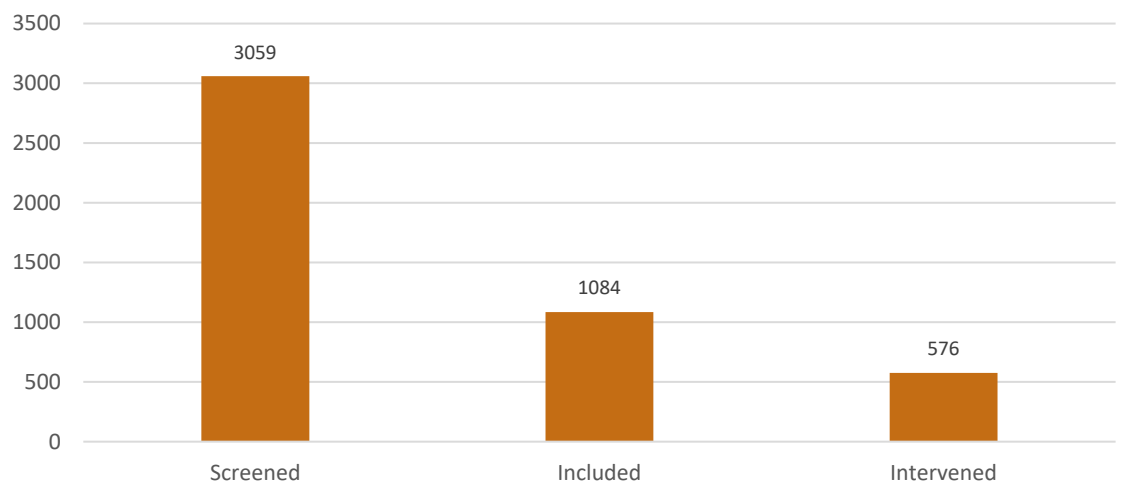


A number of the top risk factors are modifiable and can be interevened on to reduce the risk of adverse events (e.g. long duration of opioid orders, high frequency opioid prescribing, concurrent opioid and sedative ordered). Additional risk factors such as patient being opioid naïve or age > 60 years further increase risk of adverse events and allow for opporutnities for the OSP to provide interventions to those who would benefit most. The top risk factor of long duration of opioid prescribing is also associated with increased risk of long-term dependence and provides a major opportunity for interevention that could have a long-term impact beyond acute care.

Patient Screening and OSP inclusion

In the first 12 months of the program, the OSP clinical team screened 3,059 patient encounters from 1,605 unique patients exposed to opioids (STEP 3: Manual Screening: Patients Screened). The number of "patient encounters" reflects that some patients were assessed multiple times during the course of their admission or over repeat admissions. Of these, 1084 patient encounters from 696 unique patients met the criteria for inclusion (i.e. admitted to a non-critical care unit and not followed by addiction medicine, acute pain, complex pain, or palliative care services) and received further assessment to determine if intervention to improve opioid prescribing was required (STEP 4: Manual Assessment: Patients Included). A subset of 576 patient encounters for 402 unique patients resulted in recommendations for interventions being offered (STEP 5: Manual Assessment: Patients Receiving Recommendations).

Figure 6. Patient Encounters Screened, Included, and Interventions Offered by OSP (n=1605 unique patients)



We note that significantly more interventions were recommended in the second half of the first year (1010) compared to the first half (585) likely owing to the 1.5 month break due to COVID 19 in the first 6 months and due to increase in efficiency of the program with time. However, there there was also a trend towards increase number of interventions per patient over the year which points towards review of more complex patients where multiple interventions were required.

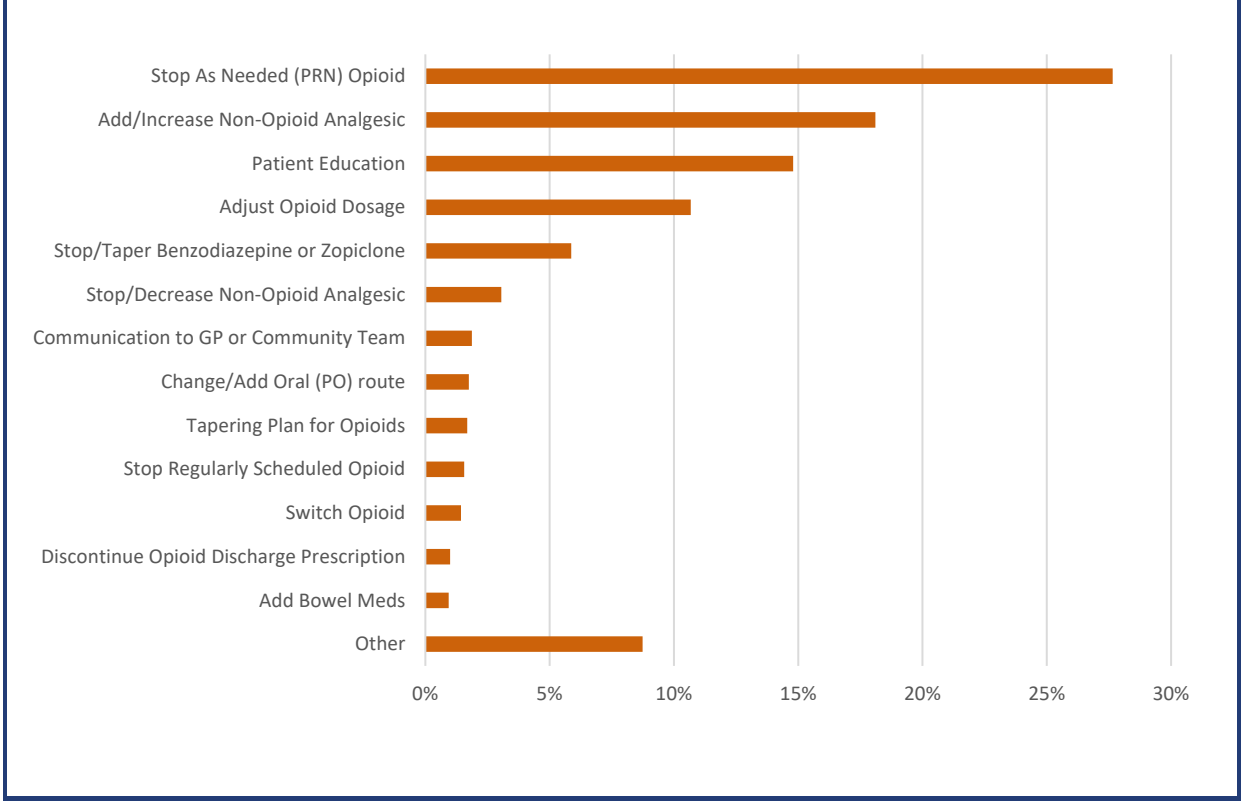
Recommended Interventions and Acceptance Rate

Below, we have reported on the different intervention recommendations, acceptance rate of these recommendations, and number of consultations received.

Type of Recommended Intervention

Of the 576 patient encounters from 402 unique patients that the OSP clinical team assessed, a total of 1599 interventions were recommended. The four most common were: stopping as needed (PRN) opioids (28%), adding or increasing a non-opioid analgesic (18%), patient education (15%), and adjusting the dosage of the prescribed opioid (11%).

Figure 7. Types of Interventions Provide by the OSP (N=1599)



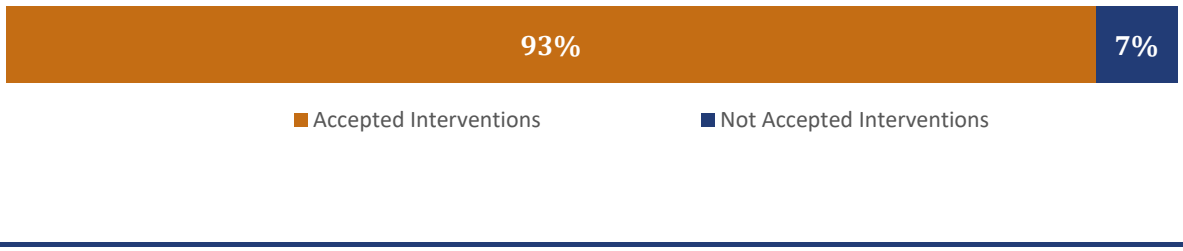
**Other category includes: Ordering inpatient naloxone or a naloxone kit on discharge, referral to acute or chronic pain service, addiction medicine consult team, or palliative care service, change quantity and/or formulation of opioid on discharge prescription , and non-drug interventions.*

The top recommendations are indicative of the general overall approach to optimizing opioid prescribing through optimizing non-opioid analgesia, educating patients on the use of opioid medications and associated adverse effects, and reducing or discontinuing opioids where appropriate. These are also reflective of the top risk factors that are noted (i.e. long-duration of opioid prescribing may lead to discontinuation of PRN opioid, use of opioid in opioid naïve patient or patient > 60 years of age may lead to adjustment in dose).

Acceptance Rate of Recommended Interventions

In the first 12 months of the OSP, we offered a total of 1599 recommended interventions. The overall acceptance rate for the first 12 months of the OSP was 93%. Of the 7% of recommended interventions that were not accepted (n=122), 19% were not accepted by the patient, and 81% were not accepted by the prescribing physician (or their team). The majority of recommendations "not accepted" by the prescriber were those that were only made through a note in the chart (not verbal discussion) and may have been due to the prescriber not seeing the note.

Figure 8. Overall Acceptance Rate of Recommended Interventions (n=1599)



Consultations

The total number of consultations the OSP received over the 12 months was 49. The number of consultations steadily increased over time, from a low of 1 in January to a high of 9 in June 2020, averaging at about 4 consultations per month. This not only indicates increased awareness about the OSP, but also increased appetite among clinicians to involve the program in patient management. These consultations are generally more complex and help the OSP identify patients who are at higher need of an assessment in a manner that is more timely than through general screening. It is our hope to further increase awareness of the program, increase consultations, and increase impact of the OSP on providing recommendations for patients who would most benefit from it. As the OSP is one of a number of consult services available at SPH in regards to opioid prescribing (in addition to the Acute and Complex Pain Services, Addiction Medicine Consult Team, and Palliative Care Service) we also anticipate that we may continue to act as a bridge to facilitate appropriate consultations to other services for more comprehensive, targeted interventions and longitudinal follow-up.

The idea of getting off of hydromorphone seemed impossible. I went from a place of taking oral hydromorphone and experiencing micro-withdrawal multiple times a day, and spending more than 60% of my day staring at the clock to see when my next dose was, to now having a medication that I take once a day and don't have any issues with pain or withdrawal. It was like day and night. It was so important to me and my family. I wasn't even able to engage with my children before because of the withdrawal and my children didn't understand why. We are so grateful for this program, it is truly invaluable for me and so many other people who are struggling. It was only with the expertise of the Opioid Stewardship pharmacist and the Addiction doctors, and taking the time to review all of the options and make a decision together that I was able to make this big change. If someone asked me if this program should continue, I would say that it is a no brainer and that this one small program can make a big difference.

– Patient 2

Education and Presentations

The OSP has been involved in a number of educational activities to improve the prescribing and use of opioids at SPH in a number of clinical areas including:

Date	Area	Presentation	Approximate number of attendees
March 12, 2020	Internal Medicine	Introduction to OSP for internal medicine trainees (residents, medical students, etc.)	15
July 2 and 7, 2020	General and Orthopedic Surgery	Nursing rounds on general surgery and orthopedic surgery wards	40
August 5, 2020	Orthopedic Surgery	Orientation for new orthopedic surgery fellows and nurse practitioner	10
June 8 – July 3, 2020	Pharmacy	Clinical rotation for Lower Mainland Pharmacy Services Year 2 Resident	1
August 20, 2020	Pharmacy	Presentation for SPH pharmacists opioid stewardship principles	15
October 26 – November 27, 2020	Pharmacy	Clinical rotation for University of Toronto PharmD student	1
November 26, 2020	Pharmacy	PharmD Student Presentation: NSAIDs and Bleeding Risk	20
January 8, 2021	Regional Department of Obstetrics and Gynecology Rounds	Opioid Stewardship Program	20 + posted online

The OSP has also presented at regional meetings and international conferences to educate others on the importance of opioid stewardship and share lessons we have learned from the SPH OSP.

Date	Area	Presentation	Approximate number of attendees
February 11, 2020	Regional Pain Council	Overview of Opioid Stewardship Program	20
February 24, 2020	BCCSU Provincial Clinical Addiction Leads Meeting	Overview of Opioid Stewardship Program	40
October 7, 2020	Interdisciplinary Leaders in Substance Use Education, Research, Care, and Policy (AMERSA) conference	Poster presentation of opioid stewardship program and outcomes of audit and feedback for first 6 months	> 500
October 23, 2020	Pain BC and Providence Health Care: Interdisciplinary Pain Education Conference	Opioid Stewardship Panel Presentation	> 400

Quality Improvement and Research

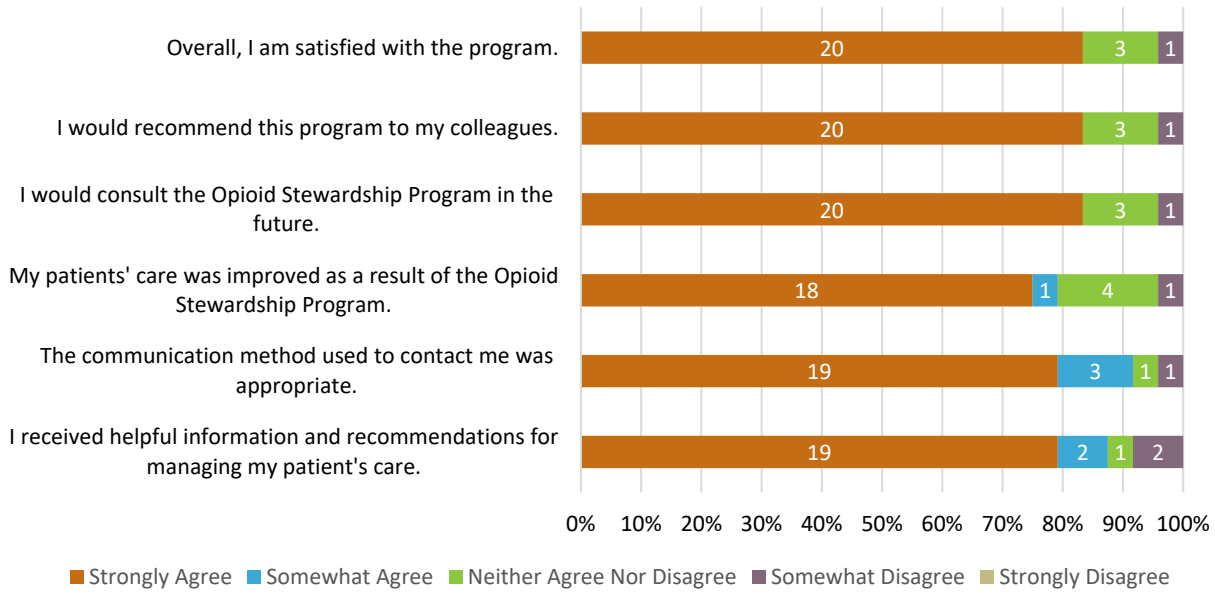
The OSP has been involved in a number of initiatives and quality improvement projects around opioid prescribing at SPH.

Provider Satisfaction Survey

The SPH OSP also undertook a quality improvement study to assess the impact of the program with respect to patient care, adequacy of communication and overall satisfaction by evaluating prescribers' perspectives on the utility and accessibility of the program.

In total, there were twenty four completed responses from individuals who interacted with the OSP at least once: 46% were physician, 42% were pharmacists, and 12% were nurse practitioners. Shown in Figure 11, approximately 80% of respondents were satisfied with the program, would consult the OSP again in the future and would recommend it to their colleagues. Qualitative responses also noted that the OSP was helpful for supporting advocacy, patient care, and liaising with different healthcare workers, including transitioning patients into the community. Few respondents suggested that there was a need to expand the program to other patients who may require the support of this service, including outpatients and addiction medicine inpatients.

Figure 11. OSP Provider Satisfaction Survey Results



While this study is limited by the small sample size, its findings demonstrate the value of the OSP in an acute care setting and signal potential for similar programs to be implemented in other hospital settings.

Guideline and Order Set Review – Department of Obstetrics and Gynecology

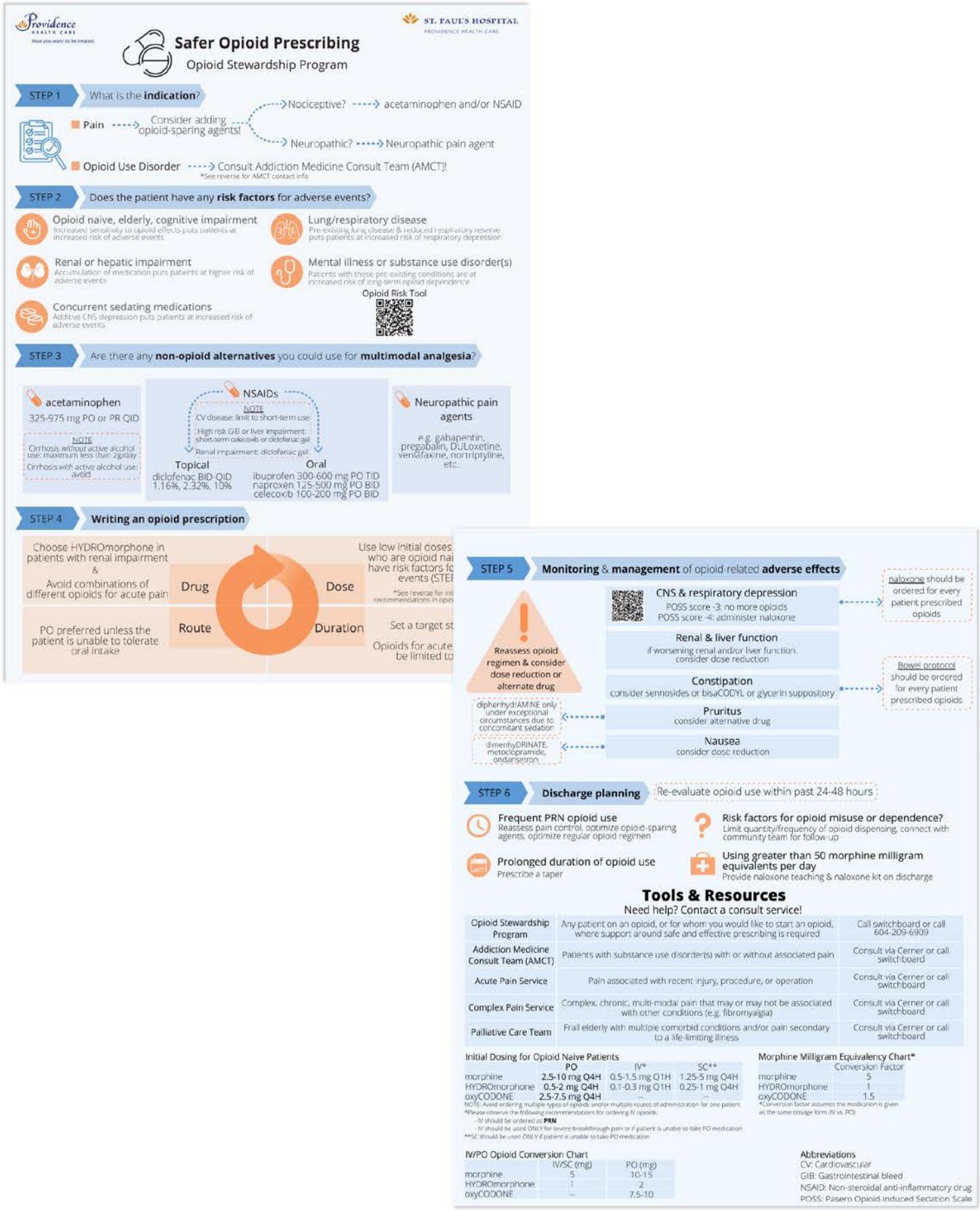
The SPH OSP has been involved in reviewing and providing feedback for "Regional Department of Obstetrics and Gynaecology Opioid Stewardship Program" guidelines and updated regional obstetrics and gynecology Cerner powerplans . This is a regional initiative led by Dr. Geoffrey Cundiff that will impact multiple sites in the Lower Mainland. This collaboration aims to improve opioid prescribing within the Department of Obstetrics and Gynecology.

In addition to the guideline review and development of order sets, education was done at the Regional Department of Obstetrics and Gynecology Rounds around opioid stewardship and development of these new guidelines. Future education is planned specifically for Obstetrics and Gynecology residents, as well as nursing staff.

Finally, the OSP will be involved in supporting evaluation of the impact of this initiative. Outcomes of this project will help inform similar opportunities in other clinical areas.

Internal Medicine Quality Improvement Project

The OSP was involved in supervising an internal medicine Year 2 Pharmacy resident quality improvement project. This project involved development of a handout to inform safer opioid prescribing, as well as educational sessions for internal medicine residents and medical students. This resource will be made readily available through PHC Connect as a resource for prescribers and learners.


Providence HEALTH CARE
How you want to be treated.
ST. PAUL'S HOSPITAL
PROVIDENCE HEALTH CARE
Safer Opioid Prescribing
Opioid Stewardship Program
STEP 1
What is the indication?
Pain
Consider adding opioid-sparing agents!
Nociceptive?
acetaminophen and/or NSAID
Neuropathic?
Neuropathic pain agent
Opioid Use Disorder
Consult Addiction Medicine Consult Team (AMCT)!
*See reverse for AMCT contact info
STEP 2
Does the patient have any risk factors for adverse events?
Opioid naive, elderly, cognitive impairment
Increased sensitivity to opioid effects puts patients at increased risk of adverse events
Lung/respiratory disease
Pre-existing lung disease & reduced respiratory reserve puts patients at increased risk of respiratory depression
Renal or hepatic impairment
Accumulation of medication puts patients at higher risk of adverse events
Mental illness or substance use disorder(s)
Patients with these pre-existing conditions are at increased risk of long-term opioid dependence
Concurrent sedating medications
Additive CNS depression puts patients at increased risk of adverse events
Opioid Risk Tool
STEP 3
Are there any non-opioid alternatives you could use for multimodal analgesia?
acetaminophen
325-975 mg PO or PR QID
NOTE
Cirrhosis without active alcohol use: maximum less than 2g/day
Cirrhosis with active alcohol use: avoid
NSAIDs
NOTE
CV disease: limit to short-term use
High risk GIB or liver impairment: short-term celecoxib or diclofenac gel
Renal impairment: diclofenac gel
Topical
diclofenac BID-QID 1.16%, 2.32%, 10%
Oral
ibuprofen 300-600 mg PO TID
naproxen 125-500 mg PO BID
celecoxib 100-200 mg PO BID
Neuropathic pain agents
e.g. gabapentin, pregabalin, DULoxetine, venlafaxine, nortriptyline, etc.
STEP 4
Writing an opioid prescription
Choose HYDROmorphone in patients with renal impairment
&
Avoid combinations of different opioids for acute pain
Drug
Dose
Route
Duration
PO preferred unless the patient is unable to tolerate oral intake
Use low initial doses
who are opioid nai
have risk factors fc
events (STEF
*See reverse for in
recommendations in opio
Set a target st
Opioids for acute
be limited to
STEP 5
Monitoring & management of opioid-related adverse effects
CNS & respiratory depression
POSS score -3: no more opioids
POSS score -4: administer naloxone
naloxone should be ordered for every patient prescribed opioids
Renal & liver function
if worsening renal and/or liver function: consider dose reduction
Reassess opioid regimen & consider dose reduction or alternate drug
Constipation
consider sennosides or bisaCODYL or glycerin suppository
Bowel protocol should be ordered for every patient prescribed opioids
diphenhydrAMINE only under exceptional circumstances due to concomitant sedation
Pruritus
consider alternative drug
dimenhyDRINATE, metoclopramide, ondansetron
Nausea
consider dose reduction
STEP 6
Discharge planning
Re-evaluate opioid use within past 24-48 hours
Frequent PRN opioid use
Reassess pain control, optimize opioid-sparing agents, optimize regular opioid regimen
Risk factors for opioid misuse or dependence?
Limit quantity/frequency of opioid dispensing, connect with community team for follow-up
Prolonged duration of opioid use
Prescribe a taper
Using greater than 50 morphine milligram equivalents per day
Provide naloxone teaching & naloxone kit on discharge
Tools & Resources
Need help? Contact a consult service!
Opioid Stewardship Program | Any patient on an opioid, or for whom you would like to start an opioid, where support around safe and effective prescribing is required | Call switchboard or call 604-209-6909
Addiction Medicine Consult Team (AMCT) | Patients with substance use disorder(s) with or without associated pain | Consult via Cerner or call switchboard
Acute Pain Service | Pain associated with recent injury, procedure, or operation | Consult via Cerner or call switchboard
Complex Pain Service | Complex, chronic, multi-modal pain that may or may not be associated with other conditions (e.g. fibromyalgia) | Consult via Cerner or call switchboard
Palliative Care Team | Frail elderly with multiple comorbid conditions and/or pain secondary to a life-limiting illness | Consult via Cerner or call switchboard
Initial Dosing for Opioid Naive Patients
PO | IV* | SC**
morphine: 2.5-10 mg Q4H | 0.5-1.5 mg Q1H | 1.25-5 mg Q4H
HYDROmorphone: 0.5-2 mg Q4H | 0.1-0.3 mg Q1H | 0.25-1 mg Q4H
oxyCODONE: 2.5-7.5 mg Q4H | – | –
NOTE: Avoid ordering multiple types of opioids and/or multiple routes of administration for one patient
*Please observe the following recommendations for ordering IV opioids:
- IV should be ordered as PRN
- IV should be used ONLY for severe breakthrough pain or if patient is unable to take PO medication
**SC should be used ONLY if patient is unable to take PO medication
Morphine Milligram Equivalency Chart*
Conversion Factor
morphine: 5
HYDROmorphone: 1
oxyCODONE: 1.5
*Conversion factor assumes the medication is given as the same dosage form (IV vs. PO)
IV/PO Opioid Conversion Chart
IV/SC (mg) | PO (mg)
morphine: 5 | 10-15
HYDROmorphone: 1 | 2
oxyCODONE: – | 7.5-10
Abbreviations
CV: Cardiovascular
GIB: Gastrointestinal bleed
NSAID: Non-steroidal anti-inflammatory drug
POSS: Pasero Opioid-induced Sedation Scale

Buprenorphine Long-Acting Injection Formulary Submission

The OSP worked in partnership with the SPH Addiction Medicine Consult Team to complete a review of literature and submit a formulary request to add extended-release injectable buprenorphine to the provincial hospital formulary.

Extended-release injectable buprenorphine is a new alternative opioid agonist therapy that has been shown to improve retention in treatment and increase abstinence rate for patients with an opioid use disorder. It is the first long-acting, injectable, opioid agonist therapy available in Canada and its availability on our formulary may help many patients at risk of opioid overdose admitted to SPH as well as other hospitals throughout the province.

Opioid Post-Operative Discharge Prescriptions

This study is a collaborative effort between the OSP and the Department of General Surgery. Previous studies have shown that a large proportion of patients discharged from surgical units receive more opioids than they require and typically do not dispose properly of these leftover opioids after acute pain resolves. The objective of this study is to assess the appropriateness of discharge opioid prescriptions within the SPH general surgery department. These will be assessed in 2 ways:

1) To compare the discharge prescription to opioid use and requirements in hospital prior to discharge.
2) To contact patients after discharge to determine the amount of their opioid prescription utilized, how effective it was for pain management, any adverse effects they experienced, and how they stored and disposed of their remaining opioids.

This project will help inform future opioid prescribing within the Department of General Surgery, determine if there are any target areas for improvement and/or establishment of standardized protocols, and provide baseline data for any future comparison. Data collection is underway and the estimated date of completion is Summer 2021.

Impact of Cerner on Opioid Prescribing

This retrospective point-prevalence study aims to look at the impact of the implementation of an electronic health record, Cerner, on opioid prescribing at SPH, with a focus on two key features that were introduced in Cerner in November 2019:

1) Removal of 7-day automatic stop dates on all opioid orders
2) Availability of multiple order sets with opioid orders

A review of opioid orders for patients admitted prior to Cerner implementation and post-Cerner implementation will be compared.

The results of this study will inform how to optimize opioid prescribing utilizing Cerner's electronic health record. Data collection for this study will begin in Summer 2021 and the expected date of completion is Fall 2021.

Opioid Stewardship Program Beyond 1 year

The first year of the OSP demonstrates a number of important successes. More specifically, the clinical program was launched (and includes audit and feedback and consultation services), 10 educational presentations (locally and at international conferences) were completed (to a combined estimated audience of greater than 1000 individuals), 2 clinical rotations were hosted for pharmacy residents and students, 5 quality improvement and research projects were undertaken, and a robust interdisciplinary opioid stewardship advisory committee was convened with representation from almost every Department and Division within the hospital.

In the second year of the program, it is hoped the program's clinical services will expand as awareness of the program increases, efficiency of the OSP is improved (through optimization of our screening algorithm and clinical workflow), and enhanced communication with prescribers to ensure important recommendations are communicated appropriately for implementation into clinical practice.

The OSP will also continue to identify more targeted areas for education and quality improvement through continuing to follow trends in opioid prescribing and engaging with more departments. Working in partnership with various departments (e.g. obstetrics and gynecology, general surgery) has led to more impactful initiatives that address the needs of those areas and will hopefully lead to greater improvement in opioid prescribing and utilization. to the OSP will continue to actively look for other areas of partnership and continue to be a resource to all SPH departments and divisions wanting to improve opioid prescribing and use in all clinical areas.

Furthermore, we are grateful for the support and commitment from PHC's senior leadership team for approving sustainable funding for this program beginning in 2021 (and for the many advocates who helped secure this favourable outcome).

Finally, we hope to continue to promote SPH as a leader in the response to the opioid crisis through dissemination of our learning with other sites both locally and internationally.

ACKNOWLEDGEMENTS

The OSP would like to offer thanks to the participants of its program.

Providence Health Care and St. Paul's Hospital

Additionally, we would like to acknowledge and thank senior leadership at SPH for its support of the OSP as well as the amazing staff and healthcare teams at SPH and their willingness to work with the OSP team. We would also like to acknoweledge that the funding was provided by PHC's Physician and Surgeons Society and PHC's Department of Medicine for the completion of this one-year report.

BC Centre on Substance Use

We would like to thank the BCCSU for their financial and resource contributions including research expertise, administrative and analytical support.

SPH Pharmacy

We would like to thank the SPH Pharmacy Department for management and resource contributions including administration support.

Opioid Stewardship Advisory Committee

We would like to express our gratitude to all the members of the OSAC for generously donating their time to tackle issues related to opioid prescribing.

Clinical Systems Transformation group

We would also like to thank the CST group for their support of the OSP and working with us to develop a screening report to increase efficiency of our audit and feedback program.

Vancouver Foundation

The OSP was made possible by a grant from the Vancouver Foundation.

Fraser Health Opioid Stewardship Programs

We would like to thank the OSPs at Royal Columbian Hospital and Surrey Memorial Hospital for sharing their experience and expertise, and for the work that they do to improve opioid prescribing in the Fraser Region.

SPH Antimicrobial Stewardship Program

We would like to thank the Antimicrobial Stewardship Program (AMS) for sharing their support and guidance as we worked to establish the OSP modelled around the success of AMS.

Providence Health Care Communications

We would like to thank PHC Communications for their support in preparing this 1 year report.

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