Implementation of an Opioid Stewardship Program to Promote Safer Opioid Prescribing

Lianping Ti, Tamara Mihic, Hannah James, Stephen Shalansky, Michael Legal, and Seonaid Nolan

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INTRODUCTION

Prescription opioid misuse and illicit use have become an increasing public health challenge, with deaths from illicit drug toxicity now exceeding deaths from suicide and motor vehicle incidents combined.[1-4] Though often overlooked, hospitals can be a major contributor to the overdose epidemic and related adverse events.[5-8] Given that acute pain is common among hospital inpatients, initial exposure to opioids and their continued use, sometimes at unnecessarily high doses, is frequent in the hospital setting.[7,9] Previous studies have shown a high prevalence of inappropriate prescribing practices in these settings, including prescription of high-dose opioids, at levels above those recommended in Canadian guidelines (i.e., greater than 90 morphine milligram equivalents), prescription of multiple as-needed opioids, and concurrent prescription of opioids with benzodiazepines.[10-12] Concerningly, in at least one study, hospitals that used opioids were those most frequently associated with increased risk of severe opioid-related adverse events.[7] Past research has also documented inappropriate opioid prescribing practices in hospitals leading to continued use after discharge, which in turn can result in increased risk of various harms in the community, such as development of an opioid use disorder, overdose, or opioid-induced hyperalgesia.[10,13,14] Despite these associations, hospitals are typically not considered as a prime setting for harm production and an area for fruitful intervention.

There is a dearth of research to rigorously explore systems-level interventions to improve the safety and appropriateness of opioid prescribing in these settings. On the basis of experiences from other clinical areas (e.g., hospital-based antimicrobial stewardship programs),[15,16] opioid stewardship is one emerging model that hospitals can use to promote safer opioid prescribing and reduce adverse health outcomes.[17,18] Although a range of models have been implemented globally, the concept of opioid stewardship is loosely described as a set of coordinated interventions designed to monitor and improve the prescribing of opioids in clinical settings.[19] Despite these potential benefits, a recent global review of opioid stewardship programs (based mainly on data from US hospitals) indicated that just 23% of the 133 hospitals included in the study reported having an opioid stewardship program, and only 14% reported having a prospective audit-and-feedback screening process.[19]

In an effort to optimize opioid prescribing in hospital settings, the British Columbia Centre on Substance Use, in collaboration with St Paul's Hospital, implemented a hospital-based opioid stewardship program focused on improving the prescribing, utilization, and monitoring of opioids, with the ultimate aim of improving or maintaining pain control and preventing adverse events.

METHODS

Setting

The opioid stewardship program was implemented at St Paul's Hospital, an acute care teaching hospital located in downtown Vancouver, British Columbia, in January 2020. Given the hospital's close proximity to the city's Downtown Eastside neighbourhood (an area rife with homelessness, poverty, addiction, and mental illness), the hospital provides care to a significant number of individuals with structural vulnerabilities. With more than 400 beds, the hospital is also the provincial referral centre for specialty surgical services, including general surgery, cardiac surgery, and orthopedic surgery. Several consult services operate within the hospital to address issues related to pain and addiction, including an interdisciplinary addiction medicine consult team, as well as acute and complex pain services.

Multidisciplinary Expertise

The opioid stewardship team comprises a diverse group, including physicians, pharmacists, and researchers with formal training and expertise in hospital and addiction medicine, as well as pain management. The opioid stewardship program's clinical team comprises a clinical pharmacy specialist and an addiction medicine physician, who conduct the audit-and-feedback, consultation, and education components of the program. Operational oversight of the opioid stewardship program is provided through the pharmacy department, which helps to ensure that day-to-day

operations of the program run smoothly and effectively (e.g., staff recruitment, integration into hospital operations, and workflow). Involvement of researchers with expertise in health services and clinical evaluation during the planning and implementation phase has also been valuable for conducting rigorous scientific evaluation of the program and assessing its effectiveness.

An opioid stewardship advisory committee was also formed, bringing together representatives from major stakeholder groups to provide advisory support and direction, as well as to disseminate information from the program. Committee members include individuals representing a range of practice and community areas, such as addiction medicine, nursing, internal medicine, pharmacy, patient and family engagement, obstetrics and gynecology, acute pain, and surgery. Importantly, patients are essential stakeholders and decision-makers within the program: because pain is often multifactorial and subjective, in-depth assessment in collaboration with the patient is required to determine the most appropriate areas for adjustment and improvement.

Audit and Feedback

As an initial screening approach, the opioid stewardship program's clinical pharmacy specialist extracts data and reviews daily reports of patients who have been admitted to hospital and exposed to prescription opioids, to identify those who would most benefit from reassessment and intervention. All patients who are admitted to an inpatient unit at St Paul's Hospital and for whom an opioid is prescribed are included in the program. Those admitted under the hospital's critical care units or emergency department are excluded, given their unique requirements for opioids and differing risks compared with the general population. Patients followed by the addiction medicine, palliative care, and acute and complex pain services are also excluded, given that these patients are already being followed by an opioid prescribing specialist.

An automated screening algorithm was developed to assist the opioid stewardship program's clinical team in identifying specific indicators that can be used to guide further assessment and recommendations for changes to treatment. We adapted 13 outcome indicators from national and international clinical guidelines, research articles,[10,19,20] and those developed by health care providers with pain-related expertise to create a comprehensive a priori definition of inappropriate opioid prescribing that could increase the likelihood of an opioid-related adverse event and long-term dependence (Box 1).

Patients with the highest number of indicators (Box 1) are prioritized for review by the opioid stewardship program's clinical team. Although there may be variability among the patients who are assessed daily (in terms of their characteristics and diagnoses), there is little evidence as to whether there would be any benefit to weighting these indicators; as such, the 13 indicators are treated as having equal weight. Once identified, these selected patients receive a full clinical assessment by the opioid stewardship program's clinical team (i.e., the clinical pharmacy specialist and the addiction medicine physician) to determine how analgesic therapy can be optimized to improve or maintain pain management while also improving opioid safety. The team's recommendations are conveyed to the patient and the patient's primary care team in the following ways: documenting a note in the patient's electronic medical record, speaking to the patient and family members, and/or speaking to the attending physician or ward pharmacist. A follow-up assessment is conducted by the opioid stewardship program's clinical pharmacy specialist within 24–72 hours to determine whether the provider has accepted the recommendations proposed by the opioid stewardship program's clinical team.

At hospital discharge, the opioid stewardship program's clinical team connects with the patient's outpatient provider to ensure that any interventions performed during the hospital stay are transitioned to community care and that any plans that require ongoing management are communicated appropriately.

BOX 1. Indicators for Opioid Stewardship Program

Use of parenteral opioids when orders suggest the patient is receiving a normal diet and taking nutrition orally
High-frequency opioid prescribing (< 4 hours between doses)
Multiple different concomitant opioids prescribed for regular and PRN use
Regular use of an opioid that is prescribed for PRN use
Prescription of long-acting opioids within the first 5 days of a patient's hospital stay
High daily dose of an opioid, defined as a prescribed daily dose of 90 MME or greater
Long duration of opioid prescribing, defined as a patient receiving opioids on or beyond hospital day 5
Concurrent prescription of an opioid and a sedative (e.g., benzodiazepine)
No adjunctive order for non-opioid analgesics, such as acetaminophen, NSAIDs, and/or medication for neuropathic pain (where appropriate)
Use of opioid medication in a patient who is opioid naïve
Use of opioid medication in a patient with history of depressive disorder, anxiety disorder, and/or post-traumatic stress disorder
Use of opioid medication in a patient older than 60 years of age
Use of opioid medication in a patient for whom naloxone administration was required in the past 24 hours

MME = morphine milligram equivalent, NSAID = nonsteroidal anti-inflammatory drug, PRN = as needed.

Consultation Service

In addition to conducting audit and feedback for identified cases, the opioid stewardship program's clinical team responds to spontaneous requests for consultation throughout the hospital. These consultations mostly involve complex cases in which patients have greater need for time-sensitive assessment and opioid prescribing recommendations. The consultation service allows clinical teams to request care for patients who may require substantial support but who may not be reached through the automated screening algorithm; these may include patients followed by services that were originally excluded from the audit-and-feedback system.

Education and Development/Review of Guidelines and Order Sets

The opioid stewardship program is involved in a number of educational initiatives, including presentations to various departments and health care professionals, development of new guidelines, and review of new order sets within the electronic records system to increase safe and effective opioid prescribing. For example, new evidence-based guidelines were developed in collaboration with the obstetrics and gynecology department, and multiple electronic order sets were revised to include opioid stewardship principles. Moreover, guidelines and education sessions relating to safer opioid prescribing were developed in consultation with the internal medicine department.

RESULTS

Within the first year of the opioid stewardship program (excluding a 1.5-month interruption in service provision due to the COVID-19 pandemic), a total of 3059 patient encounters, involving 1605 unique patients, were screened (i.e., an active opioid had been prescribed during the encounter; Figure 1). Of those screened, 1084 encounters involving 696 unique patients met the criteria for inclusion (i.e., an active opioid had been prescribed, and the patient had been admitted to a non–critical care unit and was not being followed by the addiction medicine, acute or complex pain, or palliative care service). Among those included, intervention was deemed necessary and recommendations were provided for 576 encounters involving 402 unique patients.

As shown in Figure 2, a total of 1599 interventions were recommended for the 576 patient encounters. The 4 most common interventions were stopping as-needed opioids (28%), adding or increasing a non-opioid analgesic (18%), educating patients about opioid use and providing educational materials (15%), and adjusting (by either decreasing or increasing) the dosage of the prescribed opioid (11%). Other interventions included ordering inpatient naloxone or a naloxone kit upon discharge; referring the patient to the acute or complex pain, addiction medicine, or palliative care service; and changing the quantity and/or formulation of opioid on the discharge prescription. The overall intervention acceptance rate among providers was 93%. While almost all recommendations were fully accepted, a few were partially accepted (e.g., the provider reduced the dose of opioid but not to the specific dose recommended by the opioid stewardship program's clinical team).

In total, the opioid stewardship program received 49 requests for consultations during the 1-year period. The number of consultations steadily increased over time, from a low of 1 in January 2020 to a high of 9 in June 2020, averaging approximately 4 consultations per month. Within the year, a total of 2 guidelines and 4 order sets were developed, and these are in process of being implemented in clinical practice.

DISCUSSION

A systems-level opioid stewardship program at St Paul's Hospital was established in January 2020, with the overall aim of optimizing opioid prescribing practices by monitoring opioid prescribing and utilization within this acute care

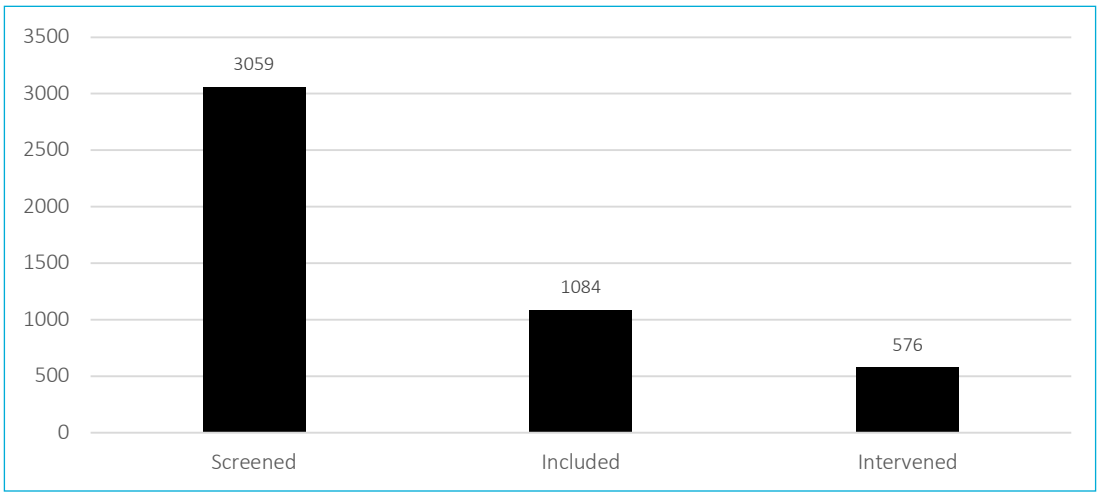

FIGURE 1. Patient encounters screened and included in the opioid stewardship program, and interventions offered.

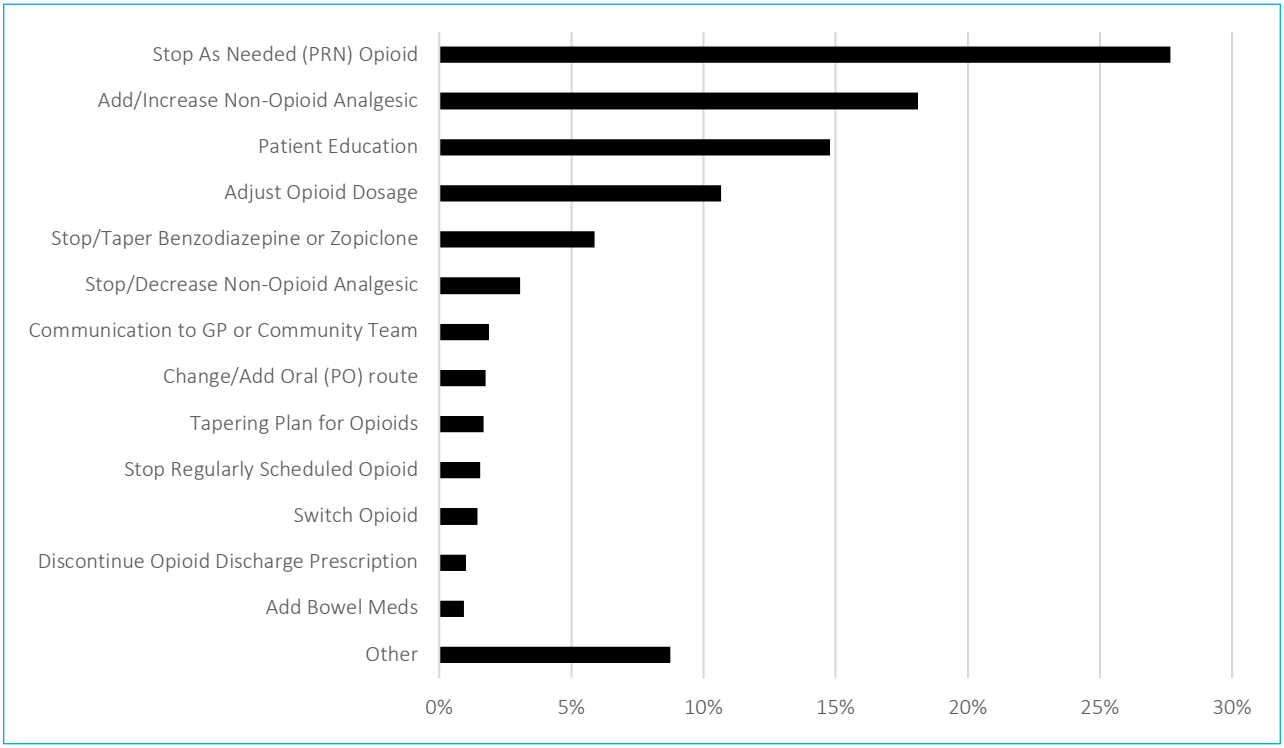

FIGURE 2. Types of interventions provided by the opioid stewardship program (n = 1599 interventions). Each patient could receive multiple interventions. GP = general practitioner.

setting. During the first year of the program, we provided recommendations for more than 400 unique patients with prescriptions for opioids that could increase their risk of harm, and we observed a high rate of acceptance of the recommended interventions among providers. We were also able to show an increasing awareness of the opioid stewardship program through the number of consultations provided and the education presentations given. Our findings shed light on the potential for an innovative systems-level opioid stewardship program to promote safe and effective use of opioid medications in hospital settings.

One key implementation challenge was establishing the role of the opioid stewardship program within other clinical units and consultation services (i.e., addiction medicine and acute and complex pain services), given the overlapping scope of opioid prescribing. We sought to streamline this process by including department heads and key representatives from each of the units as members on the opioid stewardship advisory committee. Doing so yielded buy-in from many of the stakeholders, which helped to ensure that the program would achieve sustainability.

An evaluation plan to assess the impact of the opioid stewardship program is currently underway, with the primary outcome being the change in the proportion of patients with an indicator of inappropriate opioid prescribing (before versus during implementation of the opioid stewardship program). Key secondary outcomes will include the impact on high-dose opioid prescribing, opioid-related adverse drug events, and hospital length of stay. In parallel, we are conducting patient and provider satisfaction surveys as a quality improvement initiative to support the opioid stewardship program. Evaluation of this novel multidisciplinary opioid stewardship program will provide crucial data to inform evidence-based health system changes related to opioid prescribing practices in hospital settings.

Several limitations to this program should be noted. First, St Paul's Hospital provides care to a unique population, including a disproportionate number of patients who have substance use and psychiatric comorbidities; therefore, the generalizability of these findings to other hospitals may be limited. Similarly, the extent to which an opioid stewardship program could be implemented in remote, rural, and/or resource-limited settings has not been explored.

CONCLUSION

We found that the opioid stewardship program provided an innovative way to improve opioid prescribing in our acute care setting and that it was well received by health care providers. A collaborative approach involving a multidisciplinary group of providers, researchers, and other key stakeholders was essential for the program's success. Findings from an in-depth evaluation of the program will give health care providers and policy-makers evidence that will position them to improve health systems and policies in hospital settings.

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Lianping Ti, PhD, is with the British Columbia Centre on Substance Use and the Department of Medicine, The University of British Columbia, Vancouver, British Columbia.

Tamara Mihic, PharmD, is with the Pharmacy Department, Providence Health Care, and the Faculty of Pharmaceutical Sciences, The University of British Columbia, Vancouver, British Columbia.

Hannah James, BKI, is with the British Columbia Centre on Substance Use, Vancouver, British Columbia.

Stephen Shalansky, PharmD, is with the Pharmacy Department, Providence Health Care, and the Faculty of Pharmaceutical Sciences, The University of British Columbia, Vancouver, British Columbia.

Michael Legal, PharmD, is with the Pharmacy Department, Providence Health Care, and the Faculty of Pharmaceutical Sciences, The University of British Columbia, Vancouver, British Columbia.

Seonaid Nolan, MD, is with the British Columbia Centre on Substance Use and the Department of Medicine, The University of British Columbia, Vancouver, British Columbia.

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Address correspondence to:
Dr Lianping Ti
British Columbia Centre on Substance Use
400-1045 Howe Street
Vancouver BC V6Z 2A9

email: bccsu-lt@bccsu.ubc.ca

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