Pharmaceutical opioid monitoring and surveillance in British Columbia: Current state and future directions

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Preface

Background

This report is partly based on work performed by the authors for the BC Ministry of Health. All inferences, opinions, and conclusions drawn in this report are those of the authors, and do not reflect the opinions or policies of the Ministry or Population Data BC.

Dr. Smolina is a Banting Postdoctoral Fellow currently leading a research project related to prescription opioid use in British Columbia. Ms. Gladstone is a staff researcher at the Centre for Health Services and Policy Research. Dr. Morgan is Principle Investigator on a CIHR-funded program of research on prescription drug use and outcomes in British Columbia and member of the CIHR’s advisory committee on appropriate prescribing in Canada.

Sources of BC data


Definitions

Pharmaceutical opioid (PO) includes any opioid drug that is eligible to be prescribed in British Columbia. Heroin is excluded.

Opioid-related death includes any death in Vital Statistics data that has opioid listed as contributing cause of death. Heroin is excluded.

Monitoring individual-level real-time tracking and intervention

Surveillance population-level retrospective data analysis and interpretation
Chapter 1: The use of pharmaceutical opioids and associated harms in Canada and BC

The problem

In Canada, the burden of harms associated with pharmaceutical opioids (POs) is substantial and surpasses that of illicit drugs.¹ The 2012 data from the Canadian Alcohol and Other Drug Use Monitoring Survey show that 5% of Canadians aged 15 years and older who use opioid analgesics reported using them for reasons other than pain relief in the past year (or almost 1% of the general Canadian population).² Surveys of Canadian students aged 12 to 19 years identified that 5-6% of students reported using opioid analgesics for a non-pain related purpose during the past year.³,⁴ PO consumption in Canada quadrupled since 2002, as measured by annual total morphine equivalents (ME) purchased per capita (Figure 1).⁵

![Figure 1. Opioid consumption in morphine equivalence (ME), mg per person. Data source: Pain and Policy Studies Group, University of Wisconsin-Madison.](image)

Although there is some inter-provincial variation in the prevalence of chronic pain among Canadian adults (range 15.7% in Quebec to 21.8% in BC),⁶ there is a lot more regional variation in the patterns of opioid prescribing, including volume of prescriptions written, the types of opioids prescribed, and the strength of prescriptions (Figure 2).⁷,⁹
There is also significant provincial variation in the opioids of choice (Figure 3), which may drive some of the differences in PO trends across provinces that can be seen in Figure 2. Total opioid purchases increased in all provinces over the last decade, primarily driven by increases in prescribing of strong opioids.

In a study evaluating the rate of high dose prescriptions (>200 mg ME daily), the BC rate was stable whereas there were increases in other provinces between 2006 and 2011 (Figure 4). The difference in prescribing rates between Ontario and Quebec was six fold. In Ontario, the increase in prescription rates was largely driven by a big surge in prescribing of oxycodone, while rates for all other opioids either decreased or remained flat. Our analysis of BC data indicates that both oxycodone and hydromorphone were
prescribed more commonly in 2013 than in 2004, while codeine was prescribed less commonly [forthcoming data]. However, while dispensing rates for hydromorphone steadily increased, those for oxycodone peaked in 2011 and then declined.

![Figure 4. High-dose dispensing rate, by province and year, 2006-11. Source: Gomes et al. (2014)⁹](image)

The National Survey on Drug Use and Health in the US shows that of all persons 12 years and older who used a PO without a prescription or inconsistently with the prescribed guidelines, the majority obtained the drug for free from a friend or relative for the most recent use (Figure 5).¹¹ Ontario data corroborate these findings, with over 70% of opioids obtained by students in grades 7 to 12 coming from home.³

![Figure 5. Source where pain relievers were obtained for most recent nonmedical use among past year users aged 12 or older: 2012/13. Source: US Substance Abuse and Mental Health Services Administration.](image)
The diversion of POs gives rise to a considerable illegal market for these pharmaceutical medicines, as a single pharmaceutical for a PO can have a street value of over $4,000 in Vancouver.

Table 1. Comparison of street and pharmacy prices of select pharmaceutical opioids.

<table>
<thead>
<tr>
<th></th>
<th>Mean price/mg</th>
<th>Example Rx</th>
<th>Price per Rx</th>
<th>Potential profit per Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Street</td>
<td>Pharmacy</td>
<td>Dose (mg)</td>
<td>No. tabs</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>$1.00</td>
<td>$0.04</td>
<td>80</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>$1.00</td>
<td>$0.04</td>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>$1.00</td>
<td>$0.04</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Dilaudid (hydromorphone)</td>
<td>$1.25</td>
<td>$0.06</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>Morphine</td>
<td>$0.10</td>
<td>$0.01</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Tylenol 3 (codeine)</td>
<td>$0.03</td>
<td>&lt;$0.01</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

Source: Personal Communication

Opioid-related harms

Mortality rates have been the most reported and the most cited statistics concerning PO-related harms. While helpful in understanding the ultimate risk associated with PO use, mortality information alone is not enough. Unfortunately, we have limited information on other important harms, even though they occur more frequently than deaths. The US Centers for Disease Control\(^{12}\) estimate that:

![Figure 6. Estimated levels of pharmaceutical-opioid related harm per pharmaceutical-opioid related deaths. Source: US Centers for Disease Control\(^{12}\)](image)
Dependence and addiction are relatively common consequences of opioid therapy. Moreover, overdoses and drug interactions are not rare. Use of long-acting opioids has been found to be strongly associated with emergency department visits and other alcohol- and/or drug-related encounters with the medical system. Other safety risks for patients taking high doses of opioids include fractures and road trauma. Though studies have also identified a strong dose-response relationship between prescribed daily dose of POs and risk of death, patients using POs even at lower doses face risks.

Unfortunately, little is known about the nature of PO-related harms (including mortality) on a national level in Canada as opioid-related indicators of harm are not systematically reported and are highly fragmented. There are no opioid-specific indicator data to compare trends across and within provinces. Much of the published information comes from Ontario, where data limitations require many studies to be carried out on a sub-set of the population: people with public drug coverage.

Research from Ontario indicates rates of pharmaceutical opioid-related death in Canada’s largest province parallel upward trends in the United States and Australia: opioid-related mortality increased by 242% between 1991 and 2010 (from 12.2 per 1 million to 41.6 per 1 million). Most of the increase was driven by oxycodone and fentanyl and was concentrated among the younger ages, particularly 25-34 years.

However, just as there is wide regional variation in opioid death rates in the United States, there is variation in Canada as well. Data from Ontario may not be generalizable to other Canadian provinces.

Our research using vital statistics for BC shows that PO-related death rate did not change between 2004 and 2013, being stable at around 38 deaths per 1 million population (Figure 7). This is not to suggest that pharmaceutical opioid-related deaths are not at crisis levels in BC – while relatively stable, they are still high overall. But it does suggest that the recent pharmaceutical opioid crisis in Ontario is very different in nature from that in BC.

Figure 7. Opioid-related deaths in BC by sex and opioid type, 2004-13.
The demographic paradox

BC data show an interesting demographic paradox related to opioid use and harms. Chronic long-term users of opioids for non-cancer pain tend to be older women, while the majority of those deceased from PO-related death are younger men [forthcoming data]. This suggests that many of the individuals who experience a PO-related death are not necessarily the ones who are prescribed opioids. Similar findings were also reported in the US.23

By examining the presence and timing of PO dispensations in the year prior to death for those who suffered a PO-related death in BC, we found that many individuals with PO-related deaths do not have an active prescription for opioids in the months prior to their death [forthcoming data]. Men are more likely than women to have obtained pharmaceutical opioids that were not prescribed to them.

BC Coroners Service also found important demographic differences (Figure 8).25 Among cases who died from an overdose of the opioid that was prescribed to them (based on Coroner’s judgement), 60% were accidental and 35% were suicides; there was equal distribution between men and women; individuals were generally older; codeine and morphine key contributor opioids. Conversely, those who died from taking pharmaceutical opioids that were not prescribed to them directly, the majority were male; almost all were accidental; individuals were younger; and deaths were mostly related to morphine.

![Figure 8. Pharmaceutical-opioid related deaths in BC 2005-09. Source: BC Coroner’s Office.](image)

Given the substantial regional variation in PO-related mortality and its determinants, generalizations of findings from different jurisdictions or to a national level should be made with caution and policy makers should seek data for their specific jurisdiction.26

Ecological-level analyses from Ontario and British Columbia have demonstrated that opioid-related harms (mortality and morbidity) are strongly correlated with opioid dispensations.22,27,28 We have found significant variation in rates of opioid dispensations and pharmaceutical opioid-related death across Local Health Authorities in BC for the period of 2004 to 2013 [forthcoming data]. In analyzing these small-area variations,
we identified a significant positive association between opioid dispensations and unintentional PO deaths. In other words, high rate of opioid prescribing leads to higher availability of opioids among the general population, thus increasing opportunities for harms, diversion and problematic use.

**What we don’t know**

There are numerous knowledge gaps around the nature of problematic use of pharmaceutical opioids. To start, we do not have sufficient data to adequately describe the problem across and within provinces. There are no national-level Canadian estimates of PO-related harms, including morbidity and mortality, and therefore we do not know to what extent the PO crisis is the same or different across the country and how it is changing over time.

In BC, even though PO-related mortality has been stable, we do not know if, over the past decade, emergency department visits or hospitalizations for PO poisonings have risen, if there have been any changes in PO-related ambulance attendances, or how the demand for opioid substitution treatment is influenced by PO use.

More broadly, we do not have a comprehensive understanding of the physiological, biological, psychological, and other pathways that lead from opioid use for pain to problematic use. We also do not know all the routes involved in sourcing opioids for non-medical use. The extent of diversion is difficult to characterize: sources of POs vary and include family/friends, pharmaceutical fraud, street markets, and pharmacy thefts. The numerous routes make it very difficult to measure, track, and intervene.

Perhaps surprisingly, many don’t realize that we don’t know if long-term opioid therapy works – a recent systematic review has demonstrated that there is insufficient evidence to determine the effectiveness of long-term opioid therapy in improving chronic pain, while there is accumulating evidence of harm.\(^{29}\) In addition, there is very limited evidence on the overall safety of long-term opioid therapy as well as the relative safety and effectiveness of different opioids. An exploratory study of Medicare beneficiaries in the US found that the safety profiles of different opioids may differ significantly.\(^{30}\)

Finally, it is unclear what is the best treatment for those with opioid dependence. Many are initiated on methadone maintenance programs, which were originally developed for heroin-dependent patients, who may differ significantly from those dependent on pharmaceutical opioids. It is not uncommon nowadays for the individuals to be problematically using multiple medications, including pharmaceutical opioids in addition to illicit drugs. A number of studies that looked at toxicological findings for those deceased from an opioid-related death find other substances in the bloodstream (other medications, illicit drugs, alcohol).\(^{26}\) Yet we don’t fully understand the patterns of polydrug use and thus the established profiles of single-drug users and the associated programs targeted to decrease its use may not be applicable in the setting of multi-drug use. There hasn’t been a systematic evaluation of other potential treatment models.
Chapter 2: Solutions: a multi-faceted approach

Curbing opioid-related mortality rates and other associated harms will require a multisectoral public health approach that addresses multiple determinants of problematic opioid use. Below is a summary of relevant documents already produced by or for the federal or provincial governments on this topic.

Overview of published documents

**National Anti-Drug Strategy**

In October 2007, the Government of Canada announced a new “National Anti-Drug Strategy.” The strategy was structured as three action plans: prevention, treatment, and enforcement. However, a detailed analysis of base funding allocations between the three streams revealed that law enforcement initiatives receive 70% of the funding, with 17% going to treatment and only 4% to prevention.\(^{31}\) Notably, the initial version of the strategy drew a lot of criticism as it only focused on illicit drugs and did not include any initiatives on improving harm reduction.

As part of the Economic Action Plan 2014 budget, additional funding of $44.9 million over the next five years was announced, aimed to expand the focus of the Strategy to address pharmaceutical drug abuse. The funding is meant to support public awareness; prevention and treatment in First Nations Communities; increased inspections to minimize diversion; and building surveillance data network. However, no details were provided on the relative distribution of funds nor the timeline for implementation.

Recently, the Federal Government announced $4.3 million over 5 years in funding towards development of a national approach for monitoring and surveillance of prescription drugs and $3.6 million over 3 years towards improvement of prescriber education (projects were identified ahead of announcement).

**Avoiding Abuse, Achieving a Balance report**

The College of Physicians and Surgeons of Ontario (CPSO) facilitated a forum in May 2009 to identify issues and potential solutions to Ontario’s opioid public health crisis. Subsequent to the forum, four working groups worked for eight months on developing solutions. In 2010, CPSO released a report\(^{32}\) summarizing major findings and recommendations. The following five key themes were identified:

- Significantly enhance the training and ongoing education of healthcare providers
- Improve education and awareness of the public with a particular emphasis on high-risk groups
- Create a coordinated, accessible system for the treatment of pain and addiction that is based on interprofessional model of care and includes an expanded network of specialized and regulated pain choices
- Make greater use of technology to improve outcomes for patients and reduce diversion by:
  - Making complete opioid prescription history available to all prescribers and dispensers
  - Establishing a Drug Information System (including a Drug Monitoring System) that allows all prescribers and dispensers to access complete medication profiles
- Empower health-care professionals and relevant institutions to better deal with diversion, including facilitating information-sharing and other approaches

**First Do No Harm Strategy**

In 2013, the Canadian Centre on Substance Abuse (CCSA) released a national ten-year strategy “First Do No Harm: Responding to Canada’s Pharmaceutical Drug Crisis.” Focusing on pharmaceutical opioids, sedative-hypnotics, and stimulants, it sets out a plan to prevent harm and to treat addiction. Five streams of action are identified, each with an overall aim and a number of recommendations: prevention, education, treatment, monitoring and surveillance, and enforcement.

Volunteer implementation teams were set up to advance the action items mentioned in the strategy. The CCSA publishes an annual report on the progress made to date. As part of activities mentioned in the Strategy, a report will be released in April 2015, titled “Pharmaceutical Monitoring Programs in Canada: Best Practice and Program Review.”

It is important to note however that the federal government did not officially endorse the strategy.

**Ministers Symposium on Pharmaceutical Drug Abuse**

The Symposium on Pharmaceutical Drug Abuse took place in Toronto in January 2014. It was co-hosted by the Honourable Rona Ambrose, Minister of Health and Michel Perron, then head of CCSA. The participants came from a range of backgrounds and a number of different organizations were represented. CCSA’s summary report of the event identified the following common themes from the discussion:

- The need for a prescription monitoring program in every province that allows for information sharing between prescribers, dispensers, and enforcement agencies.
- A national surveillance system is key to enable tracking of pharmaceutical drug misuse and harms at the national level to evaluate impact of interventions. It was envisioned that such a system would include data from provincial prescription monitoring programs in addition to other information.
- Improved prescriber education to ensure safe and appropriate medical practice.
- Improved access to addiction and pain treatment services.
- The need for a collaborative approach with many key stakeholders at the table.

**House of Commons Report**

The House of Commons Standing Committee on Health released a report in April 2014 on the federal government’s role in addressing pharmaceutical drug abuse in Canada. The report included 20 recommendations based on witness testimony. The following key priority areas were identified, along with opportunities for improvement:

- Prevention
  - Raising awareness about the benefits, harms, storage of pharmaceutical drugs
  - Improving prescribing practices among healthcare practitioners and supporting ongoing education and training
  - Harm reduction programs, including opioid overdose fatality prevention with naloxone
Monitoring and Surveillance
- Investing in pan-Canadian comprehensive real-time monitoring and surveillance system
- Developing common standards in reporting across the country

Treatment
- Improving access to multi-disciplinary pain management services
- Expanding the availability of addiction treatment services (opioid substitution therapy)

Enforcement
- No additional improvements were identified, given the substantial investment into enforcement already underway as part of the National Anti-Drug Strategy

Combatting the stigma of addiction
- Increasing knowledge and awareness of addiction as a chronic brain disease among the general public, health care professionals, and law enforcement officials
- Removing access barrier to treatment

**Senate Committee Report**

The Standing Senate Committee on Social Affairs, Science and Technology released a series of reports in on pharmaceutical prescriptions use in Canada. The last report, entitled *Unintended Consequences,*[^37] was released in October 2014 and included a number of recommendations that are relevant to the pharmaceutical opioids. In particular, the recommendations included:

- Optimizing electronic health and prescription drug databases;
- Resolving cross-jurisdictional data-sharing agreements;
- Addressing pharmaceutical drug abuse through public awareness campaigns and physician education; and
- Re-evaluating the safety and efficacy profiles and changing market approval criteria for pharmaceutical drugs with high potential for problematic use.

**Canadian Medical Association position**

The CMA’s submission[^38] to the Senate Committee identified the following key issues related to pharmaceutical opioids:

- Addressing the abuse and misuse
  - Awareness campaigns and social marketing to prevent misuse
  - Measures to reduce the risk of overdose
  - Access to treatment services
  - A pan-Canadian pharmaceutical monitoring program
- Improving post-market surveillance and reporting
  - Gathering drug safety and effectiveness data
  - Capacity for rigorous and timely data analysis
  - Communication of useful information to healthcare professionals and the public
- Supporting optimal prescribing
  - Provision of relevant, objective information
  - Support of e-prescribing

[^37]: "Unintended Consequences"
[^38]: "Committee's submission"
**CADTH Environmental Scan**

Another important document released in October 2014 was an environmental scan by the Canadian Agency for Drugs and Technologies in Health (CADTH) of policies, initiatives, and practices in place across Canada to address the abuse, misuse, or diversion of pharmaceutical narcotics, benzodiazepines, stimulants, and gabapentin. The authors identified the following opportunities to enhance efforts to address pharmaceutical drug abuse in Canada:

- Establishing province-wide monitoring and surveillance systems that track prescriptions for all citizens, not just for clients of publicly funded drug programs.
- Addressing inter-jurisdictional communication through mechanisms such as EMR systems.
  - Continuing ongoing support for the “First Do No Harm” strategy being led by the CCSA.
  - Continuing to support initiatives to promote awareness and use of the Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain.
- Establishing methods to identify and educate high-prescribers in jurisdictions that currently lack such a system.
- Establishing dose and quantity limits for narcotics, benzodiazepines, stimulants, and gabapentin in jurisdictions that currently do not set limits, based on the best available evidence.
- Increasing community collaboration to support appropriate prescribing among special populations such as seniors, and to support law enforcement initiatives.
- Evaluating the effectiveness and impact of existing international initiatives and best practices.

**BC Strategy for addressing harms associated with pharmaceutical opioids**

In light of the key issues and priorities identified above, it is clear that addressing problematic use of pharmaceutical opioids in BC will require a multi-faceted, multi-stakeholder approach. Integration with already existing programs and strategies is key for success. For example, reduction of substance-related harms is already part of the Government’s plan to address mental health and substance used in BC. Policy makers have a number of mechanisms with which to address problematic use of pharmaceutical drugs (Table 1). A recent literature review of state- and system-level interventions in the US and Canada found that promising strategies are the ones that reduce inappropriate prescribing and use of multiple providers, and focus on overdose response. Such strategies include prescription drug monitoring programs, education of patients and providers, insurer strategies, pain clinic legislation, clinical guidelines, and naloxone distribution programs. Unfortunately, there has been limited high-quality research on the extent of the impact of these strategies. This is not surprising because system-level interventions are difficult to evaluate: randomization is next to impossible, comparison groups are not obvious, pre-intervention data does not always exist, and other system-level events occur in parallel.

However, one example stands out. A recent report on the approaches used to address the pharmaceutical opioid epidemic in Washington State highlighted key elements of the State-wide strategy that helped to reduce PO-related morbidity and mortality. These elements, along with key lessons learned, are listed on the next page.
“IT IS CRITICALLY IMPORTANT THAT THE OPIOID EPIDEMIC IS UNDERSTOOD AS MUCH GREATER THAN AN EPIDEMIC OF MORTALITY — IT IS ALSO AN EPIDEMIC OF DEPENDENCE, ADDICTION, DISABILITY, AND OTHER SEVERE ADVERSE EVENTS AFFECTING MILLIONS OF PEOPLE.”

Franklin et al. (2015)

WASHINGTON STATE: A SUCCESS STORY

Key elements:
- Collaboration among state agencies
- A number of legislative changes to regulate opioid prescribing
- Dosing and best-practice guidelines and rules related to opioid use for non-cancer pain
- Effective prescription monitoring program informing real-time decision making
- Robust surveillance tracking prescribing, use, and health outcomes
- Incentives for use of best practices
- Overdose education programs to mitigate risk
- Access to medication-assisted treatment
- Evaluation of impact of interventions

Results:
- PO-related overdose deaths declined by 27% from 2008 to 2012
- First decline in overdose hospitalization rates in 2012
- Students users of prescription pain relievers to “get high” down from 10% in 2006 to 6% in 2012
- Non-medical use of prescription pain medication down from 6.2% in 2009-10 to 5.1% in 2011-12
- Among workers’ compensation patients:
  - New opioid users who became chronic users among down from 26% in 2004 to 11% in 2010
  - Average daily ME dose declined by 27%
  - Those on 120 ME mg/day down from 6.3% to 4.7%
  - Rate of opioid poisonings and opioid adverse effects did not change despite increases nationally
- Among Medicaid patients:
  - Average opioid doses declined
  - PO-related deaths declined

Lessons learned:
- Collaboration among agencies at the highest level of government has been critical
- Legislative changes to create strong pain management laws was a significant step
- Most critical element of the Washington prescribing guideline: inclusion of 120 ME mg/day threshold
- Robust surveillance enabled information-driven decision making and tracking of progress
- Real-time prescription drug monitoring program enabled intervention to prevent harm and manage risk
Aside from the Washington State experience, the most evidence exists for prescription monitoring programs, clinical guidelines, and naloxone distribution programs. Policy makers are therefore advised to prioritize investment into strategies that show potential for helping to tackle the pharmaceutical opioid crisis – based on published studies, expert consensus, or other available information.

This report will focus on opportunities for development of a comprehensive and effective monitoring and surveillance system in BC. Surveillance information is a cornerstone of public health because it provides health knowledge. This knowledge can then be used to guide policy and decision making for both population-level and individual level interventions. A surveillance system for prescription opioids would form a foundation that will support development and implementation of the other key pillars of a BC Strategy, as illustrated below:

Examples of actionable components for each pillar include:

**Education & Prevention**

- Education and ongoing support for health professionals
  - Development of deeper knowledge in chronic pain, pain management and opioid addiction among prescribers
- Public education on the harms of opioids and safe use, storage, and disposal of medication
  - Specifically focusing on groups at risk: youth; First Nations; seniors; prisoners
- School-based education programs on risks of non-medical use of pharmaceuticals

**Treatment & Harm Reduction**

- Addiction treatment programs
- Pain management clinics
- Prevention of overdose fatalities through better access to naloxone
- Consultation services available to primary care providers with pain specialists

**Regulation & Enforcement**

- Investigations of potentially inappropriate prescribing or dispensing practices
- Market approvals for drugs with potential for inappropriate use and addiction
- Collaboration with law enforcement officials
- Updates or changes to relevant legislation
### Table 2. Provincial policy toolbox in addressing pharmaceutical drug crisis. [Adapted from Haegerich et al. 41]

<table>
<thead>
<tr>
<th>INTERVENTION</th>
<th>GOVERNMENT ROLE</th>
<th>DESCRIPTION OF TYPICAL KEY ELEMENTS</th>
<th>STATUS IN BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmaceutical drug monitoring</td>
<td>Operated by health departments; law enforcement agencies; boards of pharmacy</td>
<td>Programs that require pharmacies to submit all information on prescriptions filled for controlled substances electronically to a central office, such as the health department or board of pharmacy; information is provided to prescribers about patients using multiple prescribers or pharmacies, and in some cases to law enforcement about aberrant prescribing.</td>
<td>Partially exists – PharmaNet CPSBC Pharmaceutical Review Program</td>
</tr>
<tr>
<td>program</td>
<td></td>
<td></td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Insurer policies</td>
<td>Implemented by pharmaceutical benefits programs</td>
<td>Patient review and restriction programs that require patients suspected of problematically using controlled substances to use a single prescriber/pharmacy; drug utilization review programs that review claims data to identify problematic use and notify prescribers; prior authorization and medication quantity limits.</td>
<td>Controlled Pharmaceutical Program PharmaCare’s policies on Special Authorization; Maximum Days Supply; Early Refill; Same Day; Special Services Fee</td>
</tr>
<tr>
<td>Legislation</td>
<td>Developed by the provincial legislature with education and information supplied by health departments and law enforcement, among others</td>
<td>Pain clinic regulation that limits clinic ownership, prescribing, and dispensing combined with mandated registration and inspection; good Samaritan laws that provide immunity from prosecution for possessing a controlled substance while seeking help for oneself or another person experiencing an overdose; doctor shopping laws that prohibit patients from withholding information from providers about receipt of controlled substances from other providers.</td>
<td>Pharmacy Operations and Drug Scheduling Act Medical Practitioners Act Workers Compensation Act</td>
</tr>
<tr>
<td>Clinical guidelines</td>
<td>Developed by provincial or national health departments in collaboration with other stakeholders for providers and health systems</td>
<td>Guidance documents that provide recommendations to providers about clinical practice; focus on opioid prescribing; typically include dose limits, medications and formulations, initiation and titration of dose, drug switching, drug interactions, screening tools, written treatment agreements, and urine drug testing.</td>
<td>Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain CPSBC Prescribing Principles for Chronic Non-Cancer Pain CPSBC Methadone Maintenance Program: Clinical Practice Guideline</td>
</tr>
<tr>
<td>Safe storage and disposal</td>
<td>Supported by provincial health departments and law enforcement agencies</td>
<td>Programs that inform the general public about safe storage and disposal of pharmaceutical drugs; collection of unused or surplus drugs by officials at permanent return programs or one-day events.</td>
<td>Medication Return Program through BC Pharmacy Association</td>
</tr>
<tr>
<td>Education: patients and providers</td>
<td>Supported by provincial health departments, in collaboration with community organizations, and schools</td>
<td>Programs that educate patients and providers about pharmaceutical opioid use and misuse; patient education ranges from informational materials to intensive family and school-based prevention; provider education focuses on opioid prescribing and includes tools, workshops, lectures, case discussions, consultant support, and continuing education credit.</td>
<td>Provincial Academic Detailing Service CPSBC annual educational courses St. Paul’s Hospital Goldcorp Fellowship in addiction medicine</td>
</tr>
<tr>
<td>Prevention and Treatment</td>
<td>Supported by provincial health departments and distributed by funded community organizations</td>
<td>Programs that provide opioid substitution therapy; safe injection sites; other opioid overdose prevention services to individuals who use drugs; include education about overdose risk factors, signs of overdose, appropriate response, and administration of naloxone.</td>
<td>Supervised Injection Services Opioid Substitution Treatment Take Home Naloxone program Overdose Prevention &amp; Response Program</td>
</tr>
</tbody>
</table>
Chapter 3: Review of Monitoring and Surveillance in Other Jurisdictions

Surveillance of Pharmaceutical Opioid-Related Harms in the US

In the United States there is extensive public health surveillance of PO-related harms. These comprehensive information systems serve to alert stakeholders of changes in patterns of opioid sales, consumption, and related harms. Information from these sources may also be leveraged to evaluate interventions to reduce PO-related harms. Information about nation-wide pharmaceutical opioid surveillance systems in the United States is provided in Table 3.

Table 3: Surveillance of pharmaceutical opioid distribution and related harms in the US.

<table>
<thead>
<tr>
<th>Name</th>
<th>Administrator</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researched Abuse, Diversion and Addiction-Related Surveillance</td>
<td>Rocky Mountain Poison and Drug Center</td>
<td>• Aggregates data from multiple sources to create a nation-wide picture of PO-related harms.</td>
</tr>
<tr>
<td>(RADARS)</td>
<td></td>
<td>• Data sources include: 1) reports of drug diversion from law-enforcement agencies, 2) calls to poison centers in 49 states, 3) questionnaires and key informant interviews of individuals entering substance abuse treatment, 4) ongoing survey of college students about non-medical use of pharmaceutical drugs.</td>
</tr>
<tr>
<td>Drug Abuse Warning Network (DAWN)</td>
<td>Substance Abuse and Mental Health Services Administration</td>
<td>• Continuous monitoring of drug-related visits to emergency rooms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nationally representative sample of emergency rooms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reports on pharmaceutical opioids as well as other pharmaceutical and illicit drugs.</td>
</tr>
<tr>
<td>National Vital Statistics System (NVSS)</td>
<td>National Center for Health Statistics</td>
<td>• Detailed mortality data (ICD-10 codes) available up to 2013.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Including information on age, sex, state, county, underlying cause of death and multiple cause of death, place of death, and autopsy status.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Available online via CDC Wonder.</td>
</tr>
<tr>
<td>Automation of Reports and Consolidated Orders Systems (ARCOS)</td>
<td>Drug Enforcement Administration</td>
<td>• Surveillance system of all controlled substance shipments.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• All manufacturers and distributors are required to report information.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Uses a secure internet portal system for electronic data exchange for participants to submit monthly or quarterly reports.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Information can be summarized into reports for Federal and State investigations of diversion of controlled substances.</td>
</tr>
<tr>
<td>Treatment Episode Data Sets (TEDS)</td>
<td>Substance Abuse and Mental Health Services Administration</td>
<td>• All drug admissions into publicly funded drug rehabilitation facilities.</td>
</tr>
</tbody>
</table>
Prescription Drug Monitoring Programs in the US

Implementing programs to limit inappropriate use of POs while continuing to provide safe access for those who might appropriately use POs presents a significant challenge. Interventions to monitor and limit inappropriate opioid prescriptions may be effective in reducing PO-related harms. Thus, in response to the wide availability of POs through both medical and non-medical sources, the US Department of Justice and The Bureau of Justice Assistance provided grants to many US States to implement prescription drug monitoring programs (PDMPs).

PDMPs are interventions that are designed to reduce inappropriate prescriptions for controlled substances. As of December 2014, 49 states had an operational PDMP and the 1 remaining state (Missouri) has passed legislation authorizing a PDMP. Although the goals, mandates, and activities of these programs vary widely by state, most require that retail pharmacists record information about prescriptions for controlled substances in a centralized electronic database. Typically, pharmacists must enter information about the prescriber, dispenser, and patient, as well as the drug dose and quantity dispensed into a state monitored database.

Both physicians and pharmacists can use PDMPs to help address inappropriate PO use. Upon examining a patient’s prescription history, a physician may alter her or his prescribing behavior if the patient had a recent dispensation for the same drug, or a similar prescription from another doctor. At the point of sale, a pharmacist may also review data in the PDMP to identify multi-doctoring and other forms of inappropriate use. Information from PDMPs may also be used by law enforcement agencies in some states to assist in the identification of physicians and pharmacists who inappropriately prescribe or dispense controlled substances. Additionally, researchers may use information from PDMPs to measure the impact of other interventions and policies targeting pharmaceutical dispensing.

There is, however, wide variation in the implementation, function, and quality of PDMPs across US states. States differ in 1) the drugs monitored by the PDMP, 2) the organizational bodies that manage their PDMP, 3) regulations as to who may access information in the PDMP and in what circumstances they are permitted to access the PDMP, 4) the mechanisms to request information from the PDMP, 5) the time allowed between prescription dispensing and entering prescription information into the database, and 6) the extent to which the systems are used proactively for monitoring or for research purposes.

For example, some PDMPs are administered via state law enforcement agencies while others are managed by the state department of health or via professional organizations such as the board of pharmacists. In most states, physicians and pharmacists are able to access a patient’s prescribing history. However, the mechanisms for requesting information from the PDMP differs by state; in many states, health care professionals can access an individual’s prescription history within minutes via a secure web portal, while others must request reports via telephone, email, or fax. There are 22 states that have mandates that require physicians to review a patient’s pharmaceutical history before prescribing a controlled substance. The extent to which these regulations are enforced may also differ by state.
There are 48 states that allow law enforcement officers to access information in PDMPs, however, there are limitations on the use of PDMP information by law enforcement professions in many states. For example, in Washington and Kentucky, law enforcement officers may only access this information if the individual is part of an active investigation; information from PDMPs may not be used to initiate legal action against an individual who is not already under investigation. Other individuals who may be allowed to access the PDMP include the staff at the department of health or the commissioner of public safety, coroners, medical examiners, state toxicologists, or health insurance payers.

Evaluations of PDMPs in the United States show variation in the efficacy of state programs as not all programs are of equal quality. Descriptions of five US PDMPs are available in Table 4.

Finally, the National Association of Boards of Pharmacy (NABP) operates a system called InterConnect that facilitates the transmission of data from PDMPs across state lines to authorized users while adhering to each state’s data access rules. InterConnect works with state PDMPs to build an interface between the existing PDMP system and the InterConnect exchange. The exchange does not store any data but allows authorized users to access PDMP information from other states via their existing PDMP system. InterConnect is governed by a steering committee comprised of one representative from each of the PDMPs in the 31 member states. NAPB has assumed all operational costs for InterConnect for the next five years and does not currently charge member fees to participating states. The cost of implementation/interface development in a single state is approximately $40,000 with additional funds required for ongoing support, maintenance, and training.

**Prescription Monitoring Programs and Information Systems in Canada**

Many Canadian provinces are better positioned than US states to implement PDMPs. Drug Information Systems (DISs) that track all prescriptions dispensed in a province provide existing infrastructure for PDMPs in many provinces. Currently, six provinces have DISs that track prescription drugs dispensed to all residents; others have DISs for select population groups. A current goal of Canada Health Infoway is to have drug information systems for all jurisdictions (provinces, territories, and the federal government) that make prescription dispensation histories for all Canadians readily available to authorized clinicians.

A number of provinces have existing strategies for PDMPs, most leveraging existing DISs. These strategies range from triplicate prescription programs to comprehensive review systems that generate unsolicited reports in response to inappropriate prescribing. Table 5 outlines existing pharmaceutical monitoring and surveillance efforts in Canada by province. This table summarizes information from three previous reports/environmental scans on PDMPs in Canada and includes information on any evaluations.

Similar to US PDMPs, prescription drug monitoring in Canada varies widely by province. In terms of best practices, Nova Scotia and Alberta stand out. Nova Scotia has the most comprehensive, legislation-backed PMP of all jurisdictions, with service initiatives including patient profiles, monitoring agreements, electronic access to patient’s medication history to prescribers and pharmacists, and routine scanning of data to identify potentially problematic prescriptions based on developed algorithms. Data analysis is a key part of the PMP and includes annual reports.
Table 4. Overview of select pharmaceutical drug monitoring programs in the US.

<table>
<thead>
<tr>
<th>Location</th>
<th>Name</th>
<th>Administrative Body</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>Electronic Drug Monitoring Program Annual Report (E-FORSE)</td>
<td>Florida Department of Health</td>
<td>Physicians not required to access E-FORCSE but have voluntary access.</td>
<td>PDMP implementation reduced deaths from oxycodone-alprazolam and from benzodiazepines but not deaths from other pharmaceutical opioids. 49</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Law enforcement agencies can access E-FORCSE during active investigations.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>There is concern about a subsequent rise in heroin-related deaths following declines in PO-related deaths. 49</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Kentucky All Schedule Pharmaceutical Electronic Reporting (KASPER)</td>
<td>Cabinet for Health and Family Services</td>
<td>Mandatory enrolment in PDMP for physicians and pharmacists.</td>
<td>Interviews with stakeholder groups resulted in overwhelmingly positive reviews of the system. System has adapted in response to significant user feedback.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Physicians and pharmacists are required to review patient’s prescription history before issuing a prescription or dispensing for a controlled substance.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Data required to be submitted within 1 business day.</td>
<td>Distribution of oxycodone lower in KY in 2006 compared to nearby states without PDMPs. 50</td>
</tr>
<tr>
<td>Washington</td>
<td>Pharmaceutical Monitoring Program</td>
<td>Washington State Department of Health</td>
<td>Enrolment and review not mandatory.</td>
<td>2000+ individuals who filled duplicate prescriptions on the same day were identified. 50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provides data to Medicaid and workers’ compensation programs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Authority to monitor non-controlled substances.</td>
<td>Data from PDMP were used to identify clients who were at risk and subsequently limit them to one prescriber and one pharmacy for controlled substances. 50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unsolicited reports to prescribers, pharmacists, and licensing boards.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reporting required within 7 days of dispensing.</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Name</td>
<td>Administrative Body</td>
<td>Key Features</td>
<td>Evaluation</td>
</tr>
<tr>
<td>-----------</td>
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<td>------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>California</td>
<td>Controlled Substance Utilization Review and Evaluation System</td>
<td>State of California Department of Justice</td>
<td>Non-resident pharmacies (e.g. mail in pharmacies) are not required to report prescription information.</td>
<td>74% of physicians report changes in prescribing practices as a result of using PSMP patient activity reports.50</td>
</tr>
<tr>
<td>Virginia</td>
<td>Virginia Pharmaceutical Monitoring Program</td>
<td>Department of Health Professions</td>
<td>Participates in National Association of Boards of Pharmacy PDMP</td>
<td>The number of individuals that meet criteria for doctor shopping decreased by 44% following a period of high PDMP data use in 2010.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Interconnect to share prescription information between states. Reports accessible online via a web portal.</td>
<td>The number of individuals receiving prescriptions for controlled substances did not decline.52</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Generates unsolicited reports to prescribers and law enforcement.</td>
<td>A private health insurance provider in Virginia used data from PDMPs to identify and restrict payments to clients who received narcotics from 5+ sources in 90 days. Estimated savings in drug costs were $33,418.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Authority to monitor non-controlled substances.</td>
<td>Use of PDMP data also helped to reduce investigation times.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reporting required within 7 days of dispensing.</td>
<td></td>
</tr>
</tbody>
</table>
Table 5. Overview of pharmaceutical drug monitoring programs and information systems in Canada.

<table>
<thead>
<tr>
<th>British Columbia</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| PharmaNet                 | • All prescriptions dispensed outside of acute care hospitals in BC are captured.   | Six months after PharmaNet implementation, there was a 32.8% reduction in inappropriate opioid prescriptions and a 48.6% reduction in inappropriate benzodiazepine prescriptions among patients receiving social assistance. Among seniors, there was a 40.1% reduction in inappropriate opioid prescriptions and a 42.4% reduction in inappropriate benzodiazepine prescriptions. | 53  
| BC Ministry of Health     | • Access available to physicians and pharmacists. Provider access optional. Pharmacist access mandatory. | Note—this evaluation was conducted before medical practice access to PharmaNet.                                                                                                                                                                                                                                                              | 53  |
|                           | • Automatic flags alert pharmacist of duplicate prescriptions and potential drug interactions at point of sale. |                                                                                                                                                                                                                                                                                                                                              | 53  |
|                           | • Review of prescription history required in all walk-in clinics and methadone clinics. |                                                                                                                                                                                                                                                                                                                                              | 53  |
|                           | • Data are available in real-time as system is integrated into administrative records required for billing and pharmacy payment. |                                                                                                                                                                                                                                                                                                                                              | 53  |
| Pharmaceutical Review Program | • Investigate physician’s prescribing behavior using data from PharmaNet.     |                                                                                                                                                                                                                                                                                                                                              | 53  |
| College of Physicians and Surgeons of British Columbia | • Periodic reviews for certain drugs. |                                                                                                                                                                                                                                                                                                                                              | 53  |
| Controlled Pharmaceutical Program | • Duplicate prescription pads for monitored substances, including pharmaceutical opioids. |                                                                                                                                                                                                                                                                                                                                              | 53  |
| College of Pharmacists of BC | • | |

<table>
<thead>
<tr>
<th>Alberta and Yukon</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmaceutical Information Network (PIN)</td>
<td>• All active and previous medications for each patient are captured.</td>
<td>Some indication that the number of high risk patients (&gt;200 Oral Morphine Equivalents per day and &gt;2 pharmacies and &gt;2 prescribers) has declined.</td>
</tr>
<tr>
<td>Alberta Health</td>
<td>• Optional access available to physicians and pharmacists. Physicians can access information via integrated EMR or online portal.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dispensing information entered by pharmacies by the end of the day (or in real-time in many cases). Currently, separate from other administrative records.</td>
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<tr>
<td></td>
<td>• System generates unsolicited reports for prescribers and regulatory bodies.</td>
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</tr>
<tr>
<td></td>
<td>• Health practitioners can request their own prescribing profile.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identifies questionable activity; including multi-doctoring and inappropriate prescribing.</td>
<td></td>
</tr>
</tbody>
</table>
**Triplicate Prescription Program**  
*College of Physicians and Surgeons of Alberta*  
- Requires use of duplicate pharmaceutical pads.  
- Monitors strong opioids but not benzodiazepines or codeine.  
- Integrated with Netcare Drug Information System.

### Saskatchewan

<table>
<thead>
<tr>
<th>Name and Administrator</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Pharmaceutical Information Program (PIP)  
*Saskatchewan Ministry of Health*  |  
- All active and previous medications for each patient are captured.  
- Accessible to pharmacists and physicians.  
- All pharmacists are required to submit dispensions.  
- Individuals can opt out of the system.  |  
| Pharmaceutical Review Program  
*College of Physicians and Surgeons of Saskatchewan*  |  
- Opioids and benzodiazepines monitored using PIP data.  
- Generates unsolicited reports for prescribers, dispensers, and licensure boards.  
- Identifies questionable activity; including multi-doctoring, inappropriate prescribing, long-term benzodiazepine use, inappropriate co-prescribing with methadone, and BEERs criteria for elderly.  |  

<table>
<thead>
<tr>
<th>Name and Administrator</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| *Manitoba Prescribing Practices Program (M3P)*  
*Manitoba Pharmaceutical Association*  |  
- Requires use of triplicate prescription pads.  
- Data are not monitored.  |  
| *Drug Program Information Network (DPIN)*  
*Manitoba Health, Healthy Living and Seniors*  |  
- Records all prescriptions dispensed in pharmacies.  
- Access for pharmacists only. No linkage for physicians—but planning in progress.  
- Checks for multi-doctoring.  
- Real-time review for pharmacists.  |  
| *Improving Medication Prescribing and Outcomes via Medical Education (IMPRxOVE)*  
*Manitoba Health, Healthy Living and Seniors*  |  
- Audit and feedback-based program that identifies non evidence-based prescribing practices.  
- Collects monthly pharmacy data and provides feedback to prescriber on prescribing practices if evidence of inappropriate use.  
- Uses data from DPIN.  
- Participation in the program is optional.  |  

Benzodiazepine use has declined 63% since implementation. Referrals to methadone treatment have increased. Decreases in select opioids (28% decrease meperidine, 53% decrease in pentazocine. Shift to sustained-release drugs. Opioid prescribing has only increased by 4% from 2012 to 2014.  

Significant change in benzodiazepine prescribing for adults and sleeping medication for adults. Opioids not monitored.
<table>
<thead>
<tr>
<th>Ontario</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Narcotics Safety and Awareness Act  
*Ontario Ministry of Health and Long Term Care* | • Requires dispensers to record information about prescriptions for controlled substances.  
• Enables the ministry to collect and use prescription and personal health information and disclose information to health providers and pharmacies.  
• Requires the individual who picks up the prescription to show identification. | Prevalence of inappropriate opioid prescriptions declined 12.5% within 6 months of implementation and continued to decline after this 6 month period. Inappropriate prescriptions for benzodiazepines decreased 50% within 6 months of implementation. No change in prevalence of inappropriate stimulant prescriptions.  
[57](#) |
| Narcotics Monitoring System  
*Ontario Ministry of Health and Long Term Care* | • Monitors all controlled substances.  
• Physicians do not have access to patient’s prescription history.  
• Real-time alerts are sent to pharmacist about previous claims at the point of sale.  
• Alerts include multi-doctoring, visiting multiple pharmacies, early and late refills, and duplicate prescriptions. | No further decrease in trends in inappropriate opioid prescriptions after the introduction of the narcotics monitoring system. After system implementation, inappropriate prescribing of benzodiazepines declined modestly and for stimulant prescriptions, it fell by 57.1%.  
[57](#) |
| The Opioid Agonist Maintenance Program (OAMP)  
*Ontario Addiction Treatment Centres* | • Collects incident and prevalent cases receiving treatment for addiction in an OAMP.  
• Uses physician billing codes. | Not applicable |
| The Acute Enhanced Surveillance (ACES)  
*Ontario Ministry of Health and Long Term Care* | • Reports the number of emergency department visits and hospital admissions related to opioid use.  
• Cases are identified using key word search. | Not applicable |
| The Office of the Chief Coroner of Ontario  
*Ontario Ministry of Health and Long Term Care* | • Reports the number of deaths due to POs by age and month of death. | Not applicable |
| The Drug and Alcohol Treatment System (DATIS)  
*Public Health Ontario* | • Reports counts of admissions to treatment agencies where clients specified pharmaceutical opioids a problem substance | Not applicable |

<table>
<thead>
<tr>
<th>New Brunswick</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Pharmaceutical Monitoring Program  
*Provincial Government* | Under development | |
### Nova Scotia

<table>
<thead>
<tr>
<th>Name and Administrator</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| Pharmaceutical Monitoring Program | • Monitors all controlled substances except benzodiazepines.  
• Requires use of duplicate prescription pads with electronic submission.  
• Physicians and pharmacists and dentists can access the system.  
• Providers can request profile from program via fax and registered providers can login online to access a patient’s prescription history.  
• Real-time data collection.  
• Weekly reports to monitor methadone patients.  
• Monthly data analysis to identify high does and multi-doctoring.  
• Notification letters to providers of patients who engaged in multi-doctoring or inappropriate prescribing. | The number of requests for patient profiles has increased since year of implementation. In the 3 month period following a multi-doctoring notification letter to a provider, there is a substantial decline (54%) in the number of prescribers for these individuals.\(^{58}\) |

### Newfoundland and Labrador

<table>
<thead>
<tr>
<th>Name and Administrator</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| The Pharmacy Network Tamper Resistant, Pharmaceutical Drug Pad Program (TRPP) | • Under development  
• Requires use of triplicate prescription pads.  
• Has no monitoring capacity or data collection. |  |

### Prince Edward Island

<table>
<thead>
<tr>
<th>Name and Administrator</th>
<th>Key Features</th>
<th>Evaluation</th>
</tr>
</thead>
</table>
| PDMP under development Provincial Government Drug Information System | • Under development  
• Records all prescriptions dispensed in pharmacies.  
• Providers can access the DIS electronically. Pharmacist access mandatory.  
• Checks for multi-doctoring.  
• Patients can add a password to their account to control access to drug information but must provide it to the pharmacist or physician at each visit. | Monitoring of multi-doctoring improved. On average, each patient had 2.06 providers. Data not available pre-implementation.\(^{59}\) |
Chapter 4: Current practices and opportunities for opioid monitoring and surveillance in BC

Public health surveillance includes ongoing data collection, analysis, and dissemination of findings. In this report, we will use the term “monitoring” when referring to individual-level real-time tracking and intervention for the purposes of immediate clinical management at the point of care. We will use the term “surveillance” when referring to population-level retrospective data analysis and interpretation for the purposes of program and policy development with the ultimate goal of improving population health. We will use the term “surveillance system” when referring to a broader set of all data sources and activities involved in both monitoring and surveillance.

Available Data Sources for pharmaceutical opioid surveillance in BC

There are number of high-quality existing data sources in BC that can be used for monitoring and surveillance of pharmaceutical opioid-related use and harms. Specifically, data from BC Coroners service, PharmaNet, and the Drug and Poison and Information Center are of high-quality and may be particularly useful if leveraged for pharmaceutical opioid monitoring and surveillance. Additionally, data from the Public Health Surveillance Unit at Vancouver Coastal Health is also of substantial value.

Figure 9 provides a visual summary of available data sources for pharmaceutical opioid monitoring and surveillance and their relationship to indicators of harm across levels of the health care system. General summaries of key data sources are provided below. A more detailed description of the available data and data quality are available in Table 6.

![Diagram showing available data sources for pharmaceutical opioid surveillance in BC by type of information.](image-url)
**BC Coroners Service**

BC Coroners service investigates all unexpected deaths to determine the cause and intent of death. This process often involves detailed toxicological testing when drug overdose is a suspected cause of death. These data capture information about drugs involved in the death, the intent of death (unintentional, suicide) as well as information about the source of the drug (obtained illicitly or via a prescription). There are frequent delays in determining the cause of death as many investigations are lengthy and complex, and very recent data from BC Coroners service should be interpreted with caution because they may underestimate PO-related deaths. Coroner’s data are, nevertheless, considered a gold standard for mortality data as they are more detailed and more accurate that mortality data from Vital Statistics.

**PharmaNet**

BC PharmaNet records information about all prescriptions dispensed outside of acute care hospitals in BC for all patients, regardless of age, income, or prescription drug insurance status. PharmaNet stores information about the drug dispensed, drug dose, quantity of drug dispensed, and the number of days the prescription is expected to last. It also records information about drug costs, sources of payment, the prescribing physician, and the dispensing pharmacy. The date and time of the dispensation is recorded and the database is updated in real-time as prescriptions are dispensed.

Although the PharmaNet system is designed for administrative purposes, the system can be used as a PDMP. Currently, PharmaNet performs some PDMP functions.

At the point of sale, PharmaNet performs five Drug Use Evaluation (DUE) checks using the most recent 14 months of data for the patient. The prescription being dispensed is compared to the active prescriptions to investigate: 1) drug interactions, 2) prior adverse drug reactions, 3) duplicate therapy/ingredients, 4) dose, and 5) timing of the refill. Methadone is not included in the DUE checks because it causes an excessive number of duplicate ingredient messages. Prescribers with registered to access PharmaNet may also review a patient’s prescription history to inform his or her prescribing decisions.

PharmaNet databases can also be used to identify patients who engage in doctor shopping, physicians who write large volumes of prescriptions, and pharmacies that dispense high quantities of drugs. These data might be used to produce unsolicited reports to professional organizations (e.g. BC College of Physicians and Surgeons) or to give providers feedback about their prescribing behavior relative to their peers.

**BC Drug and Information and Poison Control Center (DPIC)**

Records of phone calls to the poison control center are recorded in the DPIC database. The health professional who answers the call records detailed information about the substance(s) involved, the amount ingested, the patients disposition, as well as demographic information about the person who has ingested the medication. This information is recorded at the time of the call and is available in real-time. The data generated could be linked to other information databases (e.g. PharmaNet, hospital discharge databases) to monitor outcomes associated with use of POs or other potentially harmful medicines.
Public Health Surveillance Unit (Vancouver Coastal Health)

The VCH Public Health Surveillance Unit captures substance overdose-related visits to emergency departments as well as drug overdoses at InSite, Vancouver’s supervised injection facility. Emergency department visit information is available for 9 of 13 hospitals in the Vancouver Coastal Health Region (all urban hospitals are included). Aggregated reports of drug overdoses are distributed weekly to the Local/Provincial Harm Reduction Committee and the Drug Overdose Alert Partnership.

Similar systems for capturing emergency department visits, which can then be used for reporting substance overdoses, are needed in other health authorities. The lack of complete provincial-level emergency department data is particularly problematic in the context of opioid surveillance because most opioid overdoses are treated in emergency departments and individuals are discharged directly back into the community. Since these cases are not admitted to the hospital, they are not present in the discharge abstract database that documents hospital admissions.

Table 6: Available data sources for monitoring and surveillance of pharmaceutical opioid-related harms in BC.

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Available Information</th>
<th>Data Quality</th>
<th>Time to data capture and reporting</th>
<th>Classification System</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vital Statistics Deaths</strong></td>
<td>- Cause of death information abstracted from death certificates</td>
<td>- Underestimates levels of PO-related deaths</td>
<td>Delayed reporting from Coroner’s Office and unresolved investigations mean that recent data are not complete</td>
<td>International Classification of Disease (ICD)</td>
</tr>
<tr>
<td></td>
<td>- Can examine poisonings; including pharmaceutical opioids and benzodiazepines.</td>
<td>- Cannot identify type of pharmaceutical opioid by name</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Intent of death (suicide, homicide, unintentional, unknown)</td>
<td>- No information about context of death (i.e. if opioids are prescribed or obtained via non-medical sources)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BC Coroners Service (BCCS)</strong></td>
<td>- The number of unnatural, sudden and unexpected, unexplained, or unattended deaths related to opioids (pharmaceutical and illicit)</td>
<td></td>
<td>Reporting cannot occur until full investigation is complete, including final results of toxicology testing, autopsy reports, etc. Monthly reports to DOAP on illicit drug overdose deaths</td>
<td>BCCS Coding System</td>
</tr>
<tr>
<td><strong>PharmaNet</strong></td>
<td>- All prescriptions dispensed outside of acute care hospitals except specialty drugs (e.g. cancer, HIV)</td>
<td>- Complete, high-quality data</td>
<td>Real-time</td>
<td>Anatomical Therapeutic Chemical classification system (ATC)</td>
</tr>
<tr>
<td>Data Source</td>
<td>Available Information</td>
<td>Data Quality</td>
<td>Time to data capture and reporting</td>
<td>Classification System</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
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<td>------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td><strong>BC Drug Information and Poison Control Centre</strong></td>
<td>• Calls to poison control centers</td>
<td>• Complete, high-quality data</td>
<td>Real-time</td>
<td>American Association of Poison Control Centers</td>
</tr>
<tr>
<td></td>
<td>• Detailed drug information about brand name, quantity, and context</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Information on geographic region available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Discharge Abstract Database (Hospital Data)</strong></td>
<td>• All primary and secondary diagnoses in hospital</td>
<td>• Excludes information about patients admitted to the emergency room and discharged directly to the community</td>
<td>Delayed reporting as data are coded</td>
<td>International Classification of Disease (ICD) v10</td>
</tr>
<tr>
<td><strong>Medical Services Plan (Physician services)</strong></td>
<td>• Reason for the visit</td>
<td>• Does not include billing codes for physicians paid under alternative payment structures. (Fee for service billings only.)</td>
<td>Delayed reporting as data are coded</td>
<td>International Classification of Disease (ICD) v9</td>
</tr>
<tr>
<td><strong>BC Ambulance Service</strong></td>
<td>• Phone calls to ambulance dispatch coded as ingestion poisoning and counts of naloxone administrations by paramedics</td>
<td>• Some concerns about data quality and accuracy</td>
<td>Real-time</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>• Cases are not confirmed poisonings at time of call. Data on suspected drug use reported by lay callers. Type of drug involved often unknown.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vancouver Coastal Health Public Health Surveillance Unit</strong></td>
<td>• Emergency department visits in 9 of 13 VCH hospitals (includes all urban hospitals)</td>
<td>• In emergency department visit data, drug type is self-reported by the patient or by family (toxicological testing often not conducted)</td>
<td>Weekly reports to DOAP on overdoses</td>
<td>Varies by hospital (a mix of ICD codes, free text, and standardized complaint forms)</td>
</tr>
<tr>
<td></td>
<td>• Records presenting complaint and discharge diagnosis associated with emergency department visit (where available)</td>
<td>• There is variation in data capture across hospital information systems Information on InSite overdoses often includes drug type</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Overdoses at InSite are also captured</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Work Safe BC</strong></td>
<td>• Claims for injured workers who are prescribed opioids</td>
<td>• Complete, high-quality data</td>
<td>Ongoing but mostly internal reporting</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Addiction Information Management System (AIMS)</strong></td>
<td>• Addiction treatment utilization rates</td>
<td>• Concerns about data quality</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td></td>
<td>• Information not currently used for internal or external analysis</td>
<td>• Information not currently used for internal or external analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Urban Health Research Initiative</strong></td>
<td>• Information from three prospective cohorts: 1) street youth (n=800+), 2) HIV negative intravenous drug users (n=1,000+), and 3) HIV</td>
<td>• Data are linked to external administrative health (i.e. hospitalizations and mortality data)</td>
<td>Retrospective</td>
<td>n/a</td>
</tr>
<tr>
<td>Data Source</td>
<td>Available Information</td>
<td>Data Quality</td>
<td>Time to data capture and reporting</td>
<td>Classification System</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------</td>
<td>-------------</td>
<td>------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Center for Addictions Research of BC (CARBC)</td>
<td>• Information about drug use in Victoria available from the High Risk Population Surveys</td>
<td>• Limited to residents of Victoria</td>
<td>Retrospective Ongoing</td>
<td>n/a</td>
</tr>
<tr>
<td>McCreary Adolescent Health Survey</td>
<td>• Substance use for adolescents in BC, including age at first use, frequency of use, consequences of substance use, and needing help. Also reports use of prescription pills without a doctor’s consent.</td>
<td>• Cluster-stratified random sample of public school classrooms in BC (grades 7-12). Over 29,000 adolescents participated in 2013. • 56/59 school districts participated in 2013.</td>
<td>Longitudinal data set starting in 1992. Data collected 5 times since 1992.</td>
<td>n/a</td>
</tr>
</tbody>
</table>

DOAP = Drug Overdose Alert Partnership (see below for details)

Current practices for opioid surveillance in BC

Although there is active surveillance of harms associated with illicit opioid use in Vancouver, there is comparably little routine monitoring of PO-related harms.

**The Drug Overdose Alert Partnership (DOAP)**

The Drug Overdose Alert Partnership aggregates data from multiple sources, including data from the Coroners service, the Drug Information and Poison Control Center, Ambulance Service, VCH Public Health Surveillance Unit, and Insite supervised injection site, among others, to monitor and respond to changes in substance use in BC and the associated adverse consequences. DOAP’s annual report includes statistics on use, morbidity, mortality, harm reduction, and enforcement for tobacco, alcohol, and a range of illicit drugs. However, this comprehensive surveillance practice does very limited reporting of information on pharmaceutical opioids (for both medical and non-medical uses). There is potential to expand the scope of monitoring by many of these data channels to collect more data on PO-related use and harms in BC. However, current analytic capacity of the Partnership is limited and would need to be expanded if PO-related harms were to be added to the monitoring work done by this group of health professionals.

**The BC College of Physicians and Surgeons Pharmaceutical Review Program**

The College performs largely a regulatory role, reviewing prescription profiles of select physicians. Files to review are identified through a variety of means, including top ten prescribers for a specific substance of
interest; reports from pharmacists, police officers, or other members of the professional workforce, including physician colleagues; complaints from patients or family members; and physicians requesting methadone exemption. As of 2015, there is a formal multi-step process in place to address potentially inappropriate prescribing by a physician in question. Legal action may be taken against physicians who do not modify their prescribing behavior in response to recommendations from the College. The College does not actively analyze PharmaNet data to identify prescribers who demonstrate inappropriate prescribing behavior. Analytic capacity at the College to identify potentially problematic prescribers is limited. The College of Physicians is also involved in processing duplicate prescription forms under the Controlled Prescription Program (see below).

**The BC College of Pharmacists Controlled Prescription Program**

Under the Pharmacy Operations and Drug Scheduling Act (Bylaw 4(6) and 4(8)), the College runs a duplicate prescription program, which mandates two-part serialized written paper prescriptions, with one copy retained by the prescriber and another by the pharmacist. The program only applies to specific monitored drugs, which include but are not limited to pharmaceutical opioids. Prescriptions for the monitored drugs not written on a Controlled Prescription Program duplicate form cannot be accepted by the pharmacist. The College reviews dispensing practices of pharmacists in response to complaints. No official interventions are in place for potentially problematic dispensers.

**Conclusions**

There is substantial existing infrastructure for monitoring and surveillance of PO-related use and harms in BC. Unfortunately, none of the various data sources are currently linked or integrated in a systematic and ongoing way to enable routine gathering of comprehensive information. The PharmaNet database is greatly underutilized. Existing partnerships such as the DOAP and the Pharmaceutical Review Program could be more effective if analytic capacity was increased. In the next chapter, we describe how these components can be integrated together as part of a robust pharmaceutical opioid surveillance system.
Chapter 5: Opportunities for pharmaceutical opioid monitoring and surveillance in BC

A great start

Ongoing monitoring and surveillance are important to measure changes in pharmaceutical opioid use and related harms in British Columbia. A comprehensive surveillance system can guide the public health priorities and serve as an information source to evaluate the effect of interventions.

BC is well positioned to have a state-of-the-art surveillance system for POs and other pharmaceutical drugs. Many key components are already in place and policy development can build on work done to date by policy makers, public health officials, researchers, and health professionals working to address harms associated with illicit drug use.

As a starting point, BC Coroner’s Office data can be indispensable in tracking PO-related deaths. However, this information is currently difficult to access and is not reported in a standard manner on an ongoing basis. Improvements may include: standardization of criteria to identify an opioid-related death; digitalization of all death certificates; and linkage with other data sources that may be used for surveillance.

Regarding drug use, BC PharmaNet is one the best pharmaceutical drug information systems in Canada. It captures virtually all community-based pharmaceutical dispensations in British Columbia and is accessible to all authorized prescribers in the province. Furthermore, with planned advances to its electronic prescribing functions, PharmaNet also holds the promise of being eventually able to capture all prescriptions written but not (yet) filled.

PharmaNet’s ability to monitor and track all prescriptions and all dispensations for the whole population is invaluable. The data infrastructure could enable real-time monitoring and mitigation of risky prescribing patterns, such as identification of problematic prescribers or pharmacies and patients on high doses or risky drug combinations. Finally, when linked to other systems tracking relevant patient outcomes and health services utilization, it enables pharmaco-epidemiological research on drug use and related harms.

However, a number of improvements are required to fully realize the potential of PharmaNet and other BC data sources. Key action items include improving their usability in clinical contexts, coordinating policy and regulatory efforts, combining sources of information for drug monitoring and surveillance, and making efforts sustainable by integrating them into everyday functions.
A new system

In its Guiding Framework for Public Health, the BC Ministry of Health defines health surveillance as the “ongoing collection, analysis, interpretation, and dissemination of health-related data and information to support planning, implementation, evaluation, and improvement of public health practices.” In the context of pharmaceutical drugs, surveillance data is foundational in defining the extent of the problem, tracking changes over time, and informing decision making. Therefore, the a-priori overarching purpose of an opioid surveillance system in BC would be to monitor trends in pharmaceutical opioid (and potentially other drugs) use to inform public health, clinical, regulatory, and legislative actions to decrease the associated burden of harm. It would include two key elements: real-time monitoring to improve clinical management and retrospective surveillance to improve population health. We illustrate a suggested framework for the system below:

*Figure 10. Proposed framework for a pharmaceutical opioid monitoring and surveillance system in BC.*

The specific goals of the surveillance system could include the following:

- To proactively collect and synthesize relevant information about changes in prescribing and dispensation of POs to support timely interventions and prevent harm
- To characterize the extent of pharmaceutical opioid use in BC
- To identify new emerging patterns of pharmaceutical opioid use
- To monitor the effect of public health programs, new guidelines, legislation changes, or any other related interventions
- To support research

Anticipated outcomes of a well-functioning system would be:

- Improved patient care through more appropriate prescribing
- Reduction in harms associated with problematic use of pharmaceutical medications
- Reduction in diversion
Below we list potential considerations related to development of a pharmaceutical opioid surveillance system, organized in line with the framework illustrated in Figure 10.

**Data Collection**

For monitoring purposes, PharmaNet is the key data source. For surveillance purposes, data can be collected from only PharmaNet and BC Coroner’s Office or from some/all sources described in Chapter 4.

**Consideration:** Transform PharmaNet into a true prescription drug monitoring program, making it an important tool for informing regulators and decision makers. Existing reviews of PDMPs are limited both by study design and context – most studies are based on US settings that lack the universal health care and drug information systems that already exist in British Columbia. Nevertheless, we were able to identify common elements and emerging key themes with reasonable evidence base to support them. Table 7 lists key characteristics of an effective prescription monitoring program and compare BC’s PharmaNet database in terms of what is already in place and what could be improved.

**Consideration:** Nova Scotia has developed a comprehensive Prescription Monitoring Program – one of the best in Canada. It may be helpful to consult with Nova Scotia colleagues for lessons learned.

**Consideration:** Enable easier access to BC Coroner’s Data to public health officials and researchers.

**Consideration:** Explore linkage and/or integration opportunities between BC Drug and Poison Information Centres, BC Injuries Unit, BC Coroners Service, addiction treatment system (public and private), CARBC surveys, WorkSafe BC, and others.

**Consideration:** Include capacity to perform monitoring and surveillance of all drugs with potential for abuse (not just opioids) as well as drugs sold in illicit markets.

**Analysis**

Data cleaning and analysis can take place either at the organizations that hold the relevant data sources or in a centralized agency who will be responsible for all analyses related to monitoring and surveillance.

**Consideration:** Make an institutional focal point where data analysis (and potentially data storage) occurs (e.g. BC CDC; PHSA; or one of BC Universities). The chosen institution should have epidemiologists with experience in surveillance activities and the capacity to perform these functions.

**Consideration:** Automate as many functions as possible in order to reduce the cost of human resources.

**Interpretation**

Interpretation of analyses does not need to necessarily be confined to the group of individuals performing the analyses. In fact, the model used by DOAP, with regular meetings by an expert advisory group with different areas of expertise, would likely lead to more balanced discussions and more insight.

**Consideration:** Set up an advisory group that would meet regularly to review surveillance output and make decisions on any necessary action items.
**Reporting**

Dissemination of health information produced by the surveillance system to all relevant stakeholders in a timely and clear manner is a key step in the process of data-informed decision making. Reporting of information can take a number of different routes and can be integrated as part of any ongoing reporting activities that are already taking place.

**Consideration:** Identify a set of standard metrics for each data source that will be used to measure PO use and associated harms.

**Consideration:** Generate regular (weekly or monthly) reports to be disseminated to all relevant stakeholders. Reports could differ based on the purpose (clinical management vs population health) and the audience (health professionals vs policy makers).

**Evaluation**

Implementing and maintaining a high-functioning surveillance system will require ongoing evaluation. Both process evaluation and outcomes evaluations are important.

**Consideration:** Track specific measures of performance, for example: data flow, quality, and representativeness to ensure data from multiple sources is transferred rapidly and accurately from all relevant data holders; acceptability of the system to key stakeholders; simplicity of use; and automation of data collection and reporting.

**Consideration:** Include outcomes evaluation to measure the impact of the system. For example, outcomes measures could focus on changes in inappropriate prescribing (high-dose and high-volume), doctor shopping, diversion of pharmaceutical opioids, and PO-related fatalities.

As with any intervention, there are possibilities for unintended harms. The evaluation of a surveillance system should measure the extent to which possible declines in inappropriate PO use may be associated with increased rates of illicit drug use or inappropriate use of other pharmaceuticals. For example, a reduction in PO-related deaths may lead to an increase in heroin-related deaths as a result of users switching drugs. Importantly, a surveillance system should not create barriers to the appropriate use of prescription opioids. The extent to which the individuals who need POs and use them safely are still able to access them should also be evaluated.

**Consideration:** Measure unintended consequences of interventions.

Cost-effectiveness is also an important component of an evaluation. This report recommends the use multiple data sources to create a complete picture of opioid-related harms. However, cost-effectiveness analysis may reveal that only a select few data sources are useful in measuring prescription opioid use and related-harms. Subsequent streamlining of the system may be required.

**Consideration:** Regularly perform a cost benefit assessment of having each included data source as part of a surveillance system.
Next steps

As BC begins developing its own monitoring and surveillance system, all the surveillance-level activities would ideally be coordinated by an office of a lead “champion” within a designated organization. In BC, this coordinating organization could be the Ministry of Health, the Provincial Health Services Authority, or the BC Centre for Disease Control.

We recommend that relevant individuals connect with the Monitoring and Surveillance team of the First Do No Harm strategy, coordinated by the Canadian Centre on Substance Abuse, and the FPT Working Group on Pharmaceutical Drug Abuse. Both groups have been active in working towards laying the ground for a national surveillance system in Canada. As was recently announced by the Federal Government, the Canadian Institute for Health Information (CIHI) was charged with developing a coordinated national approach for monitoring and surveillance of prescription drugs. Therefore, a close working relationship with CIHI from the beginning may result in an easier integration of a BC system with the national system.

It cannot be overstated that to maximize the effectiveness and impact of a new system, it must be integrated with other programs and systems as much as possible. It is also vital to work with other provinces, territories, and the Federal Government to develop a national pharmaceutical drug monitoring and surveillance system, including national standards for data collection.

Finally, we recommend the following guiding principles:

- Surveillance data should be seen as an information resource to be used for insight and support and not as a prohibition/punitive system;
- The system should be patient- and problem-centered, recognizing all the complexities involved in needing drugs as well as in prescribing/dispensing drugs; and
- Patient privacy is paramount and should not be compromised; however, privacy concerns should not stand in the way of patient safety and public health goals – the objective is to have both.

Conclusions

A robust monitoring and surveillance system can only ever be just a part of a coordinated response to pharmaceutical opioid crisis. It needs to be implemented along with other measures, including education and prescribing support for healthcare professionals, public awareness campaigns on safe use of opioids, access to harm reduction facilities, addiction treatment centres and pain management clinics, law enforcement strategies to control diversion, and research to better understand the nature of the crisis. Ideally, other drugs with potential for problematic use would be included. A comprehensive approach will require close collaboration between the government and a number of professional groups, non-government groups, and the general public.
**Table 7. Key characteristics of an effective pharmaceutical drug monitoring program and how BC’s PharmaNet system compares.**

<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>WHAT IS ALREADY DONE</th>
<th>WHAT CAN BE IMPROVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy access to all those who need it to perform their duties (prescribers,</td>
<td>Access is patchy. All pharmacists have access but many pharmacists don’t even know</td>
<td>A number of elements need to be changed/introduced to improve access to relevant parties. See Recommendation set A.</td>
</tr>
<tr>
<td>pharmacists, regulators)</td>
<td>they can have access. Some regulators don’t have access to the electronic medical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>records system.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Work with other jurisdictions to identify common set of criteria to be collected by all (e.g. high doses, risky combinations) [note: national efforts in progress]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Send proactive, unsolicited reports to all stakeholders. Include practice support tools for prescribers – see Recommendation set B for more details.</td>
</tr>
<tr>
<td>Standard content</td>
<td>Some criteria for identifying questionable prescriber behavior has been set by the</td>
<td>Information is not easy to interpret or to search, which makes the profile less helpful. See Recommendation set C for more details.</td>
</tr>
<tr>
<td></td>
<td>College.</td>
<td></td>
</tr>
<tr>
<td>Incorporating support for clinical decision making to initiate and taper</td>
<td>PharmaNet is currently operating completely outside of electronic medical records.</td>
<td>Prioritize all pharmaceutical drugs that might be associated with problematic use for routine monitoring and surveillance. Consider including gabapentin.</td>
</tr>
<tr>
<td>therapy and to detect problematic use by patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real-time, easy to interpret information available to prescribers and</td>
<td>Clinicians and pharmacists who have access to PharmaNet can view up-to-date real-time</td>
<td>Information is not easy to interpret or to search, which makes the profile less helpful. See Recommendation set C for more details.</td>
</tr>
<tr>
<td>dispenser at the point of contact with the patient</td>
<td>patient profiles.</td>
<td></td>
</tr>
<tr>
<td>Comprehensively data on all drugs with a potential for problematic use</td>
<td>PharmaNet contains information on all dispensed medications and therefore has potential</td>
<td>Prioritize all pharmaceutical drugs that might be associated with problematic use for routine monitoring and surveillance. Consider including gabapentin.</td>
</tr>
<tr>
<td></td>
<td>to monitor any drugs.</td>
<td></td>
</tr>
<tr>
<td>Mandatory pharmacy reporting</td>
<td>All retail pharmacies in BC are required to enter all dispensed medications to</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>PharmaNet.</td>
<td></td>
</tr>
<tr>
<td>Data can be shared with other jurisdictions</td>
<td>BC currently does not share its data with other jurisdictions.</td>
<td>Work closely with CIHI and the Alberta government to enable cross-border information sharing.</td>
</tr>
<tr>
<td>Confidential and secure protection of patient privacy</td>
<td>Access to PharmaNet data is through a secure online system.</td>
<td>Introduce capacity to monitor who is accessing the system and how often. Encrypt transmitted data.</td>
</tr>
<tr>
<td>Support for research</td>
<td>Extracts of PharmaNet data are available for researchers but they are often outdated.</td>
<td>Have a copy of PharmaNet data be part of Population Data BC data hold to enable easy and timely access.</td>
</tr>
<tr>
<td>Part of a broader effort to reduce problematic pharmaceutical drug use and</td>
<td>No comprehensive strategy currently exists for BC to address pharmaceutical opioid</td>
<td>See Chapter 2</td>
</tr>
<tr>
<td>associated harms</td>
<td>crisis.</td>
<td></td>
</tr>
<tr>
<td>Be subject to review</td>
<td>N/A</td>
<td>Introduce evaluation as a key element of the drug monitoring system.</td>
</tr>
</tbody>
</table>
**Recommendation set A: PharmaNet access**

The overall goal of easy access is to increase the rate of consultation of PharmaNet by healthcare providers prior to prescribing opioids and other monitored substances. Current access can be improved through the following steps:

- Ensure that physicians have access to PharmaNet in their offices (NB: some of these elements are already in progress)
  - Provide PharmaNet access free of charge
  - Eliminate the need for third-party involvement, and mimic the current set up of PharmaNet in pharmacies
  - Drop the requirement for patient consent for PharmaNet access – may require a change to the privacy legislation (this is not a requirement in other jurisdictions)
  - Enable healthcare providers to request their own prescriber profile and/or peer comparison report

- Work towards integrating PharmaNet into EMRs
  - Physicians tend not to use applications that are not part of their EMR

- Research shows that even if access is available, physicians will not necessarily use the data because of time restraints, a feeling that it would not change practice for that patient, or difficult navigation.\(^{61,63}\) Therefore, policy makers need to mandate physicians to consult PharmaNet before prescribing a drug with potential for problematic use or a drug with potential for high-risk drug interactions. The College of Physicians and Surgeons is already in the process of considering this action item.

**Recommendation set B: Prescribing support**

The overall goal of prescribing support is to increase appropriate prescribing by making it easy to follow good practice guidelines through point-of-care practice tools. Such tools may include:

- Clear standards against which healthcare professionals are being judged – make the Canadian guidelines\(^6^4\) a prominent support tool (NB: new guidelines under development, release likely in 2016)

- Develop online decision support mechanisms which would identify if a prescriber goes above identified thresholds (based on guidelines and questionable criteria metrics), such as:
  - Above a maximum amount per single dispensation (e.g. >200 pills)
  - Drug interactions (e.g. co-medication of opioids and benzodiazepines)
  - Quick dose escalation
  - High daily dose (e.g. >100 mg of morphine equivalents)

- Introduce easy-to-use protocols for tapering patients down or off opioids
- Work with EMR vendors to have Opioid Manager\(^1\) and/or Opioid Risk Tool\(^2\) incorporated into all EMRs in use by BC physicians

- Encourage the use of e-Practice Tools developed by the National Pain Centre\(^3\)

- Expedite the roll out e-prescribing through PharmaNet

- Create flags visible to a prescribing healthcare professional that indicate potential problematic use of medications (potentially questionable criteria), for example: multiple prescribers (e.g. 3 or more prescribers in a defined period); early refills of prescriptions (e.g. >7 days prior to anticipated run out date); high daily dose; risky combinations. NB: There is currently work occurring at the national level to come up with a list of standard criteria to be used across Canada (contact CCSA or Professor Beth Sproule at CAMH for more info).

However, it is very important to be careful to limit the automated warnings to prescribers and dispensers to avoid warning fatigue and ignorance of flags. It is also crucial to put mechanisms in place to avoid unintended consequences of reducing prescribing of opioids to those for whom the benefits clearly outweigh the risks and/or substitution to other non-monitored drugs.

**Recommendation set C: PharmaNet use**

- Make it easier and more efficient to use PharmaNet for physicians
  
  o Change the display of patient profile information, to allow the user to:
    
    ▪ Develop the capacity to select dispensation for only certain drugs
    ▪ See filled pharmaceutical patterns over time
    ▪ Collapse prescriptions that are filled often (e.g. daily methadone dispensations make it difficult to quickly identify other drugs that were dispensed)

- Generate unsolicited, customized reports depending on the end user, suppressing and highlighting certain fields as necessary

- Set up capacity to monitor trends in prescribing to guide targeted interventions
  
  o Enable easy comparison by region, type of clinic, and specialty

- Develop a way to quickly identify and track high volume prescribers for timely and targeted educational interventions

- Enable tracking of lost and stolen prescriptions

- Consider working with Alberta to enable linkage with NetCare, thus enabling information sharing and better monitoring of interprovincial doctor shopping and diversion

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\(^1\) The Opioid Manager is designed to be a point-of-care tool which distils onto one double-sided page, essential information and advice from the *Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain*. It is available as an App for Apple devices and also can be integrated into platforms of select EMRs. [http://nationalpaincentre.mcmaster.ca/opioidmanager/](http://nationalpaincentre.mcmaster.ca/opioidmanager/)

\(^2\) The Opioid Risk Tool is a short questionnaire designed to predict which patients may develop aberrant, drug-related behaviour. [http://nationalpaincentre.mcmaster.ca/opioid/cgop_b_app_b02.html](http://nationalpaincentre.mcmaster.ca/opioid/cgop_b_app_b02.html)

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34. Sproule B. Prescription Monitoring Programs in Canada: Best Practice and Program Review. Ottawa: Canadian Centre on Substance Abuse, 2015.