Exploring the Role of Clinical Pharmacists in the Correctional Health Care Setting: A Narrative Review

Sarah C Masson, Sonali Rishi, and Rince Wong

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ABSTRACT

Background: The role of the clinical pharmacist in a correctional health care setting is not well described in the literature. Pharmacists have a unique opportunity to enhance access to and quality of health care for a large population of incarcerated persons with unmet health needs.

Objectives: To summarize the relevant literature and to propose future directions for the role of clinical pharmacists in the correctional health care setting.

Data Sources, Study Selection, and Data Extraction: A literature search was conducted using MEDLINE, and 38 articles were selected and reviewed. Additional resources were found through screening of reference lists and online searches using the Google search engine. The literature was categorized thematically by medical condition or clinical practice area, and the results are formatted as a narrative review.

Data Synthesis: The presence of pharmacists within correctional health care facilities improves the quality of health of incarcerated individuals and increases the efficiency of health care services provided. The studies supporting this concept, as reviewed here, focused largely on specific programs, such as pharmacist-led diabetes clinics, anticoagulation clinics, and substance use disorder collaborations. Although the day-to-day activities performed by clinical pharmacists in prisons are not well documented, the information presented here should serve as a catalyst for expanding clinical pharmacy services across correctional health care settings.

Conclusions: The literature supports expanding the role of pharmacists in correctional facilities to include direct patient care, medication management, and disease-specific clinics. Those pioneering practice in this area have an opportunity to add to the small body of evidence by bringing their practice successes into the literature.

Keywords: clinical pharmacy services, pharmacist, correctional facilities, prison, incarceration

RÉSUMÉ

Contexte : Le rôle du pharmacien clinicien en milieu correctionnel n'est pas bien décrit dans la littérature. Les pharmaciens ont une occasion unique d'améliorer l'accès aux soins et la qualité des services de santé offerts à une large population de personnes incarcérées ayant des besoins de santé non comblés.

Objectifs : Résumer la littérature pertinente et proposer des voies futures pour le rôle des pharmaciens cliniciens dans le contexte de soins de santé en milieu correctionnel.

Sources des données, sélection des études et extraction des données : Une recherche de la littérature a été menée à l'aide de MEDLINE et 38 articles ont été sélectionnés et passés en revue. Des ressources supplémentaires ont été découvertes en examinant des listes de référence et en menant des recherches en ligne avec le moteur de recherche Google. La littérature a été classée de manière thématique selon le problème médical ou le domaine de pratique clinique, et les résultats sont formatés sous forme de revue narrative.

Synthèse de données : La présence de pharmaciens au sein des établissements de santé en milieu correctionnel améliore la qualité de santé des personnes incarcérées et augmente l'efficacité des services de santé offerts. Les études soutenant ce concept, comme présenté ici, se sont principalement intéressées à des programmes particuliers, tels que les cliniques de diabète dirigées par des pharmaciens, les cliniques d'anticoagulation et les collaborations pour les troubles liés à l'usage de substances. Bien que les activités quotidiennes des pharmaciens cliniciens en milieu correctionnel ne soient pas bien documentées, les informations présentées ici devraient servir de catalyseur pour étendre les services de pharmacie clinique dans les contextes correctionnels.

Conclusions : La littérature soutient l'élargissement du rôle du pharmacien dans les établissements correctionnels pour inclure les soins directs aux patients, la gestion de la médication et les cliniques spécifiques à une maladie. Les personnes jouant un rôle de pionnier dans ce domaine de pratique ont une occasion d'étoffer ce petit ensemble de données probantes en intégrant les réussites de leur pratique dans la littérature.

Mots-clés : services de pharmacie clinique, pharmacien, établissements correctionnels, prison, incarcération

INTRODUCTION

For the reference year 2022/23, more than 12 000 incarcerated individuals were housed in Canadian provincial correctional facilities, an incarceration rate of 40.07 persons per 100 000 adults.[1] Of these, more than 1700 were in British Columbia, an incarceration rate of 38.64 persons per 100 000 adults.[1] Although 75% of offenders are released within a month,[2] high-quality and efficient correctional health care is essential. Many of these individuals are marginalized, facing high degrees of loss to follow-up with medical services when they return to the community. They often face barriers when attempting to access primary care services, experience higher than average hospitalization rates, and are disproportionately affected by many health conditions.[3] British Columbia's Correctional Health Services has estimated that up to 70% of its patients experience mental illness, a substance use disorder, or both of these concurrently.[4] Furthermore, infectious diseases, such as tuberculosis, HIV infection, hepatitis C virus infection, chlamydia, and gonorrhea, disproportionately affect incarcerated individuals in Canada.[3] Differences in the rates of chronic diseases, such as diabetes mellitus, chronic obstructive pulmonary disease, chronic pain, and cardiovascular disease, between the correctional setting and the general population are not well described; however, the importance of managing these chronic diseases may become more pronounced as the population ages.[3,5]

The addition of clinical pharmacists to correctional health care teams aligns with the goals of the World Health Organization (WHO) prisons and health initiative, which include unrestricted access to health care services for incarcerated people.[6] In community and hospital settings, expansion of pharmacists' scope of practice to include undertaking a greater clinical role (e.g. through independent prescribing, patient screening, point-of-care testing, medication reviews, and consultations) has been well documented[7-10] and has yielded positive health outcomes, including reduced blood pressure, reduced hemoglobin A_{1c} (HbA_{1c}), diagnosis and optimized treatment of chronic kidney disease and hepatitis C virus infections, enhanced antimicrobial stewardship, and reduced opioid doses.[11-16] Additionally, numerous studies have demonstrated that cost savings can be achieved by employing pharmacists.[17-22] A US study published in 2000 estimated that drug-use evaluation, monitoring of adverse drug reactions, provision of drug information, drug protocol management, participation in medical rounds, and collection of admission drug histories were associated with average yearly savings of approximately $1.1 million, $1.6 million, $5.2 million, $1.7 million, $8 million, and $7 million, respectively (all amounts in year 2000 US dollars).[17]

The purpose of this narrative review was to explore, and to propose future directions for, the role of clinical pharmacists within correctional health care settings.

METHODS

Search Strategy

A preliminary internet search with Google Scholar was done in March 2021 to identify and retrieve articles related to health care in correctional facilities for the purpose of writing a research proposal, as this work was completed as part of a supervised project undertaken by a pharmacy student (R.S.). This initial search, using the combined term "pharmaceutical care and correctional settings", was rather broad and produced 21 700 results. Consequently, a more focused literature search using the MEDLINE database was completed in May 2021. The following fully exploded Medical Subject Headings (MeSH terms) were used in the search: correctional facilities, prisoners, prisons, jails, pharmacists, pharmaceutical research, pharmacy students, pharmacy residencies, evidence-based pharmacy practice, pharmaceutical services, and drug therapy. Additional synonyms were added as keywords. Terms were combined with the operators "and" and "or". After application of a language criterion, to limit the search results to papers written in English, the number of studies was reduced to 2510, of which 38 were selected as suitable for review, based on screening of titles and abstracts. Additional resources were found by screening reference lists and searching the internet with the Google search engine. The findings were broadly themed by medical condition or clinical practice area and are presented here as a narrative review.

DESCRIPTION OF THE PRACTICE

Literature from the Canadian correctional health context is limited, although compelling examples exist. One study, conducted at the Edmonton Remand Centre, assessed the number of patients seen by pharmacists and described pharmacist-led interventions done within 48 hours of admission to the centre.[23] After triage by a nurse or a paramedic, patients with medication-related needs were referred to a pharmacist, who assessed them for drug therapy problems, implemented timely treatment plans, and/or provided referrals to other health care professionals.[23] Pharmacists also ensured continuity of care by liaising with community providers to ensure that medications initiated at the facility were continued after a patient's release.[23] In total, 1500 patients were seen by a pharmacist over a 2-month period, with intervention by a pharmacist occurring for at least one-third (511) of them.[23] The most common interventions were facilitating interactions with other health care providers and modifying drug therapy (89% and 76.1% of total pharmacist–patient interactions, respectively).[23] The most frequently reported provider interactions were referrals to psychiatrists and physicians, followed by seamless care activities (medication continuity for out-of-province transfers, documentation between the correctional pharmacist and community health

care providers, and reinforcement of a patient's appointment dates).[23] Moreover, significant medication interventions included continuing previous medications (52.3%), prescribing new pharmacologic therapies (25.4%), and holding or discontinuing medication (47%).[23]

A Practice Spotlight article in this Journal presented anecdotal support for these findings, showing that a pharmacist practising in the Toronto Jail worked to optimize the health outcomes of their patients by reducing drug interactions, suggesting modifications to therapy, and recommending laboratory tests.[24] By its own account, the Canadian federal correctional system continues to review its primary care model, emphasizing an expanded role for clinical pharmacists.[25] An article on the agency's website notes that pharmacists working in Canadian federal correctional facilities are involved with reducing polypharmacy for older patients through collaboration with physicians, but the specifics of this process are unclear.[25]

Much of the literature with respect to the role of pharmacists in the correctional health care setting originates in the United States, the United Kingdom, and France, although this literature too remains sparse. The expanding clinical role of the pharmacist was documented as early as 1982, with literature from the United States indicating that clinical pharmacists working in prisons were participating in consultations on complex cases involving patients with polymorbidity; providing injections; and identifying and troubleshooting drug therapy problems, polypharmacy, and diversion.[26,27] Nevertheless, at the time, there remained a greater emphasis on dispensing activities, product purchase and distribution, medication administration, and management of personnel.[26,28] As medication dispensing became more automated, an opportunity for clinical pharmacists in correctional facilities was evidenced by early clinical training programs and the increasing number of studies focusing on clinical services in the late 1990s[29] and beyond, as presented here by medical condition or clinical practice area.

Diabetes Mellitus

Lin and others[30] described the impact of a pharmacist-led diabetes clinic (PLDC) within an inner-city jail in Los Angeles. The average HbA_{1c} was 8.3% at baseline and decreased to 7.6% after PLDC management, a statistically significant change ($p < 0.001$).[30] In addition, when indicated, advanced practice pharmacists initiated statin therapy for 71 (50.4%) of the 141 patients who were not receiving a statin at baseline.[30] Other interventions included medication management to reduce polypharmacy or duplicate therapy, optimization of medications for effectiveness, ordering and monitoring of laboratory tests, improvement of medication adherence, and patient education on health outcomes related to uncontrolled diabetes.[30] In summary, the PLDC services enhanced control of blood glucose level, improved screening for cardiovascular risk, initiated appropriate drug therapy, and enhanced patient education.[30]

Similarly, the US Federal Bureau of Prisons (BOP) has shown that its own PLDCs reduced HbA_{1c} by 2.3 percentage points on average, where the baseline HbA_{1c} was 10.6%.[31] The clinical activities performed by the agency's pharmacists were similar to the ones described by Lin and others[30] and included ordering relevant laboratory tests, prescribing and deprescribing medications, and performing physical assessments.[31] The study highlighted that collaboration agreements between pharmacists and physicians made the implementation of PLDCs possible.[31]

Pharmacist-led diabetes education workshops within correctional facilities in Marseille, France, have also yielded positive health impacts.[32] These workshops aimed to improve patients' knowledge of diabetes, including safe medication use and decision-making for disease-related complications (e.g., hypoglycemia).[32] Importantly, the workshops attempted to increase engagement by asking patients to create summary sheets and participate in games to facilitate case study reviews.[32] Three months after the workshops, HbA_{1c} had declined by an average of 1.18 percentage points among patients who attended but had increased by 0.26 percentage points among non-attendees ($p < 0.001$).[32] In addition, postworkshop questionnaires showed improvement in diabetes knowledge among workshop attendees.[32]

HIV and AIDS

In addition to the diabetes clinics described above, the US Federal BOP created an HIV consulting program in 2004, through which pharmacists could complete a specialized HIV training program at Johns Hopkins University.[33] Pharmacists who underwent this training were then responsible for assessing each patient's antiretroviral therapy (ART), responding to consultation requests, and screening adherence data and laboratory results to find complicated cases that would benefit from further evaluation and intervention.[33] Five years after the program's initiation, the percentage of patients with undetectable viral loads increased by 34 percentage points (from 32% to 66%).[33] The program also met its goals for CD4 cell count and adherence. More specifically, the proportion of patients with a CD4 cell count over 200 cells/μL was 76%, and the proportion of patients taking 90% or more of their ART doses was 73%.[33] The study's author noted that a pharmacist–physician collaborative agreement would help to expand the role of pharmacists, allowing them to modify ART regimens as needed.[33]

In a related study, Dong and others[34] explained how BOP pharmacists specializing in HIV periodically collaborated with experts from a clinical consultation centre through teleconference. These meetings provided a space for pharmacists to discuss specific concerns about complex HIV cases in which viral loads remained detectable and

gave pharmacists authority to implement expert recommendations for these patients.[34] Over the 2-year study period, 28 of the 32 cases reviewed saw 87.5% of recommendations implemented, with 89% (25/28) of patients achieving optimal virologic or clinical outcomes.[34] Additionally, 64% (18/28) of the patients achieved complete virologic suppression.[34]

Young and others[35] showed that pharmacists outside the correctional setting can also have a positive impact for incarcerated individuals living with HIV through participation in telemedicine clinics. The clinics, supporting the Illinois Department of Corrections, involved physicians and pharmacists trained in infectious diseases, as well as case managers, correctional facility nurses, and patients, who discussed and optimized HIV management in a patient-centric manner.[35] After implementation of the telemedicine clinics, the percentage of patients with undetectable viral load increased from 59.3% to 91.1% ($p < 0.001$) within the first 6 visits.[35] Average CD4 counts also increased, from 491.6 cells/μL at baseline to 527.9 cells/μL following telemedicine implementation ($p = 0.032$).[35]

Antibiotic Stewardship

Pharmacists have been heavily involved with the US Federal BOP's antibiotic stewardship program since 2010.[36] Through this program, pharmacists and clinical directors present clinical updates and guidelines to the health care staff.[36] Additionally, clinical pharmacists are responsible for reviewing all antibiotic prescriptions to ensure adherence to national guidelines on antibiotic stewardship, and collaborative efforts are made to correct prescriptions that stray from the guidelines.[36] Over a 5-year period, filled antibiotic prescriptions declined steadily, from 829 per 1000 patients to 625 per 1000 patients.[36] Pharmacists also provided counselling to patients who were appropriately refused antibiotic treatments, to guard against loss of trust between incarcerated patients and the health care staff.[36] In their report describing this program, Long and others[36] suggested that future studies should assess the patient-specific impacts of reduced antibiotic prescribing and optimal antibiotic selection based on probable pathogens and resistance patterns.

Anticoagulation

Barriers to optimal control of international normalized ratio (INR) in correctional facilities include variable access to meals with a consistent level of vitamin K; lockdowns resulting in patients missing their warfarin dose, blood sample collection, or meals; and a lack of point-of-care testing, which leads to a delay in adjusting warfarin doses in real time.[37] Despite these noted limitations, Tran and others[37] demonstrated the positive impact of implementing a pharmacist-led anticoagulation clinic in a Los Angeles county jail. In that study, the anticoagulation clinic followed 116 patients who were receiving warfarin therapy for a period of 8 months.[37] The collection and analysis of 1165 INR values showed that 68% were within the therapeutic range, 20% were subtherapeutic, and 12% were supratherapeutic.[37] The average time in the therapeutic range of patients in that study was 67%; as such, the requirement for enhancement of INR control was met.[37] The average percentage of INR readings within the therapeutic range was 80.2% for the 8-month period of the study.[37]

Mathis and others[38] detailed how a Maryland correctional facility employed a clinical pharmacist to conduct point-of-care INR tests to assist in the timely adjustment of warfarin dosing. Through a collaborative agreement, the pharmacist also had the authority to initiate warfarin and, when a patient's INR was out of range, to review adherence and drug interactions.[38] Although the study had a small sample size ($n = 12$ incarcerated individuals), the program achieved several benefits within a 12-week period, including increasing the proportion of patients with therapeutic INR from 6 out of 12 (at baseline) to 8 out of 12 patients, identification and resolution of several severe drug interactions, and improvements to temporary cessation of warfarin before dental procedures.[38]

Substance and Alcohol Use Disorders

As recommended by the WHO,[39] the Correctional Service Canada (Canada's federal prison system)[40] and BC Correctional Health Services[4] provide methadone and buprenorphine–naloxone to incarcerated individuals who have an opioid use disorder (OUD). Since 2016, access to opioid agonist therapy (OAT) has been increasing within the Correctional Service Canada.[40] However, Bozinoff and others,[41] who conducted their study in Vancouver, found that only 26% of incarcerated individuals who had OUD reported using OAT while incarcerated. This low percentage was attributed to barriers in health care access within correctional facilities, as well as restrictive prescribing criteria, which may include factors such as age and length of incarceration. Critically, individuals must continue OAT treatment after release to manage opioid use and reduce the risk of overdose. However, there are challenges in transitioning individuals from the corrections setting to the public health care system, as health records are not always shared or readily accessible, and individuals may be unable to find a prescriber quickly enough after their release to secure a timely OAT prescription.[40]

In a study conducted in 2016, Macmadu and others[42] estimated that screening for OUD and treatment with OAT might lower the number of opioid-related overdose deaths among individuals released from US prisons and jails. Their results showed that 4400 lives would have been saved if treatment had been continued after release, compared with 1840 lives saved if medication was provided only during incarceration, which further reinforces the importance of screening and treating patients with OUD and ensuring that

treatment is continued after release. This situation presents an opportunity for pharmacist involvement in correctional health care. By using the Screening, Brief Intervention, and Referral to Treatment (SBIRT) tool to identify and treat individuals with substance use disorders, pharmacists can identify the severity of an individual's substance use.[43] This brief intervention uses motivational methods to elicit a behavioural change to reduce or eliminate the person's substance use. Pharmacy-based SBIRT programs are being used in several US states to reduce overdose and OUD rates in the community.[43]

A report from a Los Angeles jail detoxification unit described the benefits of instituting a pharmacist–physician collaborative agreement in the context of alcohol use disorder.[44] Following completion of training, which was provided by an addiction medicine specialist, pharmacists were responsible for conducting chart reviews on all individuals undergoing alcohol detoxification to identify high-risk patients, defined as those with prior history of withdrawal seizure, hospitalization, or delirium tremens; any Clinical Institute Withdrawal Assessment (CIWA-Ar) score of 15 or higher; or simultaneous benzodiazepine and/or opioid withdrawal.[44] Once high-risk patients were identified, the pharmacist attended CIWA-Ar assessments conducted by nurses and were then responsible for independently initiating or modifying medications, as well as initiating referrals to substance use disorder counsellors.[44] A total of 282 of the total 1263 admissions to the unit were determined to be high risk (22% of all patients), with the pharmacist initiating, modifying, or discontinuing medications for 148 patients (52% of the high-risk patients).[44] Examples of interventions included initiating a benzodiazepine taper and starting medications for symptoms of opioid withdrawal, as well as adjustment of other medications for 78 patients.[44] Of the 1263 patients admitted during the study period, only 48 (4%) required transfer to an acute care facility for management, and no deaths were reported.[44]

The rate of chronic use of benzodiazepines and opioids in correctional facility populations is disproportionately high and carries a risk of dependence and respiratory depression.[45] The Prison de Lyon in Lyon, France, initiated a collaboration between pharmacists and physicians to reduce benzodiazepine doses in 2000.[45] They held monthly meetings to create guidelines for benzodiazepine prescribing in a collaborative practice context, which included pharmacists notifying physicians when a prescribed dose deviated from the guidelines.[45] Four years after the collaboration started, the average daily diazepam equivalent dose for each patient had dropped from 46 mg to 34 mg ($p < 0.05$).[45] A secondary analysis completed in 2016 demonstrated a sustained reduction in the dose of prescribed benzodiazepines.[46] Additionally, the percentage of male prisoners with chronic use of benzodiazepines dropped from 41% in 2000 to 30% in 2016 ($p < 0.001$), illustrating the success of a collaborative, interdisciplinary approach to guideline development in the correctional setting.[46]

IMPLICATIONS FOR PRACTICE

The literature exploring pharmacist-led interventions in correctional settings should serve as a guide for the implementation of clinical pharmacy services across correctional health care in Canada. Given the noted gap in clinical pharmacist involvement on correctional health care teams in Canada, the BC Correctional Health Services has a unique opportunity to become a leader in this arena. Pharmacist-led clinics, collaborative prescribing, advanced training, and expanded scope of practice, as well as the ability to order laboratory tests, should be explored in the management of diabetes, HIV infection, antimicrobial stewardship, anticoagulation, and substance use disorder, as these activities have all been shown to positively affect the health outcomes of patients (as described above). In addition, expanding the role of pharmacists can help to reduce the strain on the correctional health care system by supporting efforts to curb misuse of prescription medications[47]; by providing education to patients, prescribers, and staff[48]; and, more recently, by supporting facilities during the COVID-19 pandemic.[49] Incorporating pharmacists into the triage of patients not only improves patients' medical conditions, but also increases their understanding of those medical conditions.[48] While the day-to-day activities performed by clinical pharmacists in prisons are not well documented, this too presents an opportunity for those doing this pioneering work to bring their practice successes into the literature.

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Sarah C Masson, BSc, BScPharm, ACPR, AC, is the Clinical Supervisor with Ridge Meadows Hospital Pharmacy, Fraser Health Authority, Maple Ridge, British Columbia.

Sonali Rishi, BSc, PharmD, was, at the time of this study, a pharmacy student at The University of British Columbia, Vancouver, British Columbia. She has since graduated and is now a student in the Doctor of Dental Medicine program at The University of British Columbia.

Rince Wong, BSc, BScPharm, ACPR, is a Clinical Pharmacist with Primary Care Networks, Fraser Health Authority, Fraser Northwest Region, British Columbia.

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Address correspondence to:
Sarah C Masson
Ridge Meadows Hospital Pharmacy
Fraser Health Authority
11666 Laity Street
Maple Ridge BC V2X 7G5

email: sarah.masson@fraserhealth.ca

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