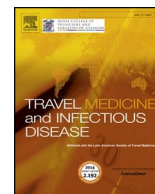




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## Clinical outcomes and satisfaction with a pharmacist-managed travel clinic in Alberta, Canada

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## ABSTRACT

**Background:** In Alberta, Canada, authorized pharmacists may prescribe medications and vaccines and administer injections. Some have implemented travel clinics to meet the growing demand for pre-travel consultations. As a new service, the outcomes of independent pharmacist-performed pre-travel consultations is unknown.

**Methods:** Chart review and post-travel surveys were performed among a convenience sample of patients presenting to a pharmacist-managed travel clinic for consultation. Data collected included patients' travel plans, recommendations for vaccines and other prescription and non-prescription drugs and adherence to these recommendations, satisfaction with the service, and health issues experienced during travel.

**Results:** 103 patients participated in the study. The overwhelming majority (79%) of recommended vaccinations were administered in clinic. The post-travel questionnaire was completed by 76% of patients, with 94% of these reporting being satisfied or very satisfied with the care received. Health issues during travel were infrequent, with gastrointestinal illness most common. Of those patients who experienced any health issue during their trip, 93% felt adequately prepared to manage the condition.

**Conclusions:** This study reports positive patient satisfaction and health status while travelling following a pharmacist-performed pre-travel consultation including authorization to prescribe and to administer vaccines. These results support the continued expansion of pharmacists' scope in this area.

### 1. Introduction

An estimated 1.2 billion worldwide travelers crossed international boundaries in 2016, and it is predicted that the rate of international travel will continue to increase at a rate of 3.3% per year through 2030. Canada has the 6th highest expenditures on international tourism, with Canadians making 31.3 million overnight departures abroad in 2016 [1]. As a consequence, there is also high patient demand for pre-travel care in Canada. In a recent study, 1 in 4 Alberta community pharmacists reported counseling patients on travel health at least once weekly [2]. While the World Health Organization [3] and Centres for Disease Control [4] recommend pre-travel consultations including comprehensive risk assessments – considering patient-specific risks as well as destination- and itinerary-specific risks [5], there is evidence that Canadian travelers, including immigrants to Canada returning to their country of origin to visit friends and family [6], receive suboptimal pre-travel health care. For example, some evidence suggests that patients are being prescribed inappropriate vaccines and oral antimicrobials, as well as receiving inadequate non-pharmacologic advice [7].

The availability, accessibility, and public trust of pharmacists places the profession in a unique position to offer pre-travel consultations for patients. Interest in an expanded pharmacist role in this area exists amongst both Canadian pharmacists and patients. A recent survey of over 200 Quebec community pharmacists found that 92% of respondents wished to prescribe and administer travel vaccines to patients [8], and a 2012 Ipsos-Reid poll of the Canadian public found that 88% support an expansion of pharmacist-administered vaccinations [9]. Canadian pharmacists are experiencing a rapid and broad expansion in scope of practice, including the ability to adapt and renew prescriptions, to order and interpret lab tests, to administer vaccines, and to prescribe drugs [10]. This expanding scope, coupled with pharmacists' expertise in patient counseling, pharmacologic and non-pharmacologic therapy, and antimicrobial resistance [11], makes pharmacists well suited to take on a greater role in travel health.

However, the evidence supporting a greater pharmacist role as a travel health provider under an expanded scope of practice is limited. Three U.S. studies of community pharmacist-provided travel consultations have been published. A 2010 study of a pharmacist working under

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a collaborative practice protocol in California found an overall patient acceptance rate of pharmacist recommendations of 85%, with 96% reporting satisfaction with their visit [12]. It is important to note that in this study the extent of pharmacist prescribing authorized under this protocol was unclear and patient acceptance rates were only calculated for recommended vaccinations and not oral pharmacotherapy. A telephone survey of 103 patients following a community pharmacy consultation in Virginia also found high patient satisfaction; however, despite certificate-level training in travel medicine by the pharmacist in this study, they required physician orders for a number of vaccines and prescription drugs [13]. A third U.S. study of a telephone-provided travel consultation service also reported high patient satisfaction, but did not report clinical outcomes or acceptance rates of recommendations provided [14].

In Alberta, Canada, pharmacists who complete training in injection administration and have current first aid and cardiopulmonary resuscitation certification can receive authorization to administer drugs and vaccines by injection. There are no restrictions on the drugs or vaccines that can be administered by a pharmacist, provided that a valid order exists for prescription products, the patient consents to receiving the injection from the pharmacist, and the patient is age 5 years or older. Pharmacists licensed in Alberta may also apply for Additional Prescribing Authorization – allowing them to prescribe medications to patients in their area(s) of clinical competence, excluding prescribing narcotics or controlled substances. Prescribing can be performed independently in the absence of a protocol or medical directive, and the prescribing pharmacist assumes full legal responsibility for their prescribing decisions [15]. It is hypothesized that the ability of the pharmacist to both independently prescribe and administer vaccinations on-site will help address barriers related to accessing the product as well as reduce the delay between recommendation and vaccination that may occur if a prescription order from another clinician were required.

Pharmacies can also apply to the Public Health Agency of Canada for designation as a Yellow Fever Vaccination Centre (YFVC). To be granted this designation, they must meet the same requirements as all other healthcare settings, and must also identify a nominated health care practitioner who is responsible for ensuring that all site requirements are maintained. This practitioner must be able to both order and administer the vaccine without the direction of another healthcare provider. Pharmacists with Additional Prescribing Authority and authorization to administer injections therefore meet this requirement; however, pharmacies that do not have a pharmacist with prescribing authorization must identify another healthcare professional to serve as their site's nominated practitioner [16]. As of January 2018, 235 designated YFVC exist in Alberta, with approximately three-quarters of these being pharmacies [17]. While a study in England, Wales, and Northern Ireland estimated a mean travel distance of 2.4 km for individuals to access a YFVC there [18], a similar mapping study has not been completed in Canada. However, Canada has been reported to have 3.2 YFVC per 100,000 trips abroad, placing it fourth in density following the United States, England/Wales/Northern Ireland, and the Netherlands [18].

The objective of this study was to examine the effectiveness of a pharmacist-managed travel health clinic in Alberta, Canada, under this expanded scope of practice. In addition to collecting information on the demographics and travel plans of travellers presenting to the clinic, outcomes of interest included vaccine and drug therapy recommendations provided and subsequent self-reported patient adherence to these, health issues encountered during travel and their management, and overall patient satisfaction with the care provided.

## 2. Methods

Patients were enrolled via a pharmacist-managed travel clinic in Alberta, Canada. This clinic provides pre-travel consultations, vaccinations, and prescribing of oral drug therapies for travelers. Services are

performed by a pharmacist with both diploma- and certificate-level training in travel medicine, Certificate in Travel Health designation from the International Society of Travel Medicine, and the authorization to independently prescribe drugs and vaccines and administer injections. The clinic is a Designated Yellow Fever Vaccination Centre, and stocks a complete range of travel vaccines, allowing for the prescribing and administration of all necessary vaccinations on-site. While vaccinations are provided on-site, patients are provided with prescriptions for oral therapies (e.g., anti-malarials, antibiotics for travelers' diarrhea) that are then dispensed by their usual community pharmacy. Consultations are generally 20–30 minutes in length and include recommendations on vaccines, prescription and non-prescription medications, and behaviours to reduce risk of illness such as water and food precautions, traffic safety, and sexually transmitted disease prevention.

A convenience sample of patients, who consecutively presented themselves to the clinic, was invited to participate. No restrictions were applied related to patient factors, destinations, or travel itineraries. Families or groups presenting to the clinic for a consultation related to the same itinerary were asked to identify one individual to participate on behalf of the group, in order to mitigate effects on the external validity of the study. As an uncontrolled descriptive study, a sample size calculation has not been performed; however, a sample of 100 patients was deemed feasible, and was expected to result in a representative sample of patients and travel destinations among the overall population of consultations performed at the clinic.

Upon providing informed consent to both the chart review and survey components of the study (including telephone contact for a follow-up interview, if required), patients' charts were flagged as belonging to a study participant. Each participant was assigned a study ID number by a research assistant to ensure blinding of the results at the data analysis stage. Patient care and documentation were performed as per established clinic procedures. Following the consultation, chart review was performed by a research assistant to extract the following data:

- Patient demographics (age, sex, allergies, prior reactions to vaccines)
- Patient medical conditions affecting vaccine and oral pharmacotherapy recommendations (e.g., immune suppressing drugs)
- Travel destination(s)
- Travel itinerary items affecting care recommendations (e.g., travel at altitude, or in specific regions requiring additional vaccinations or drug therapy)
- Date of departure and return date
- Recommended vaccines and their schedules, and the proportion of initial doses administered during the consultation visit
- Oral pharmacotherapy prescribed by the pharmacist
- Recommendations for non-prescription drugs

Within 1 week following return home post-travel, study participants were asked to complete an online survey to collect information on:

- Patient recall of the length of the pre-travel consultation
- Patient recall of the health profession of the individual performing their consultation
- Overall satisfaction with the consultation, including information and recommendations provided
- Self-reported adherence to vaccinations, prescription, and non-prescription drug recommendations
- Reason(s) for declining any vaccinations or not receiving prescription or non-prescription drugs recommended
- The occurrence and management of any health issues over the course of travel

Follow-up survey responses were managed by a different individual than the one performing chart review (SH), and patients were contacted

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