

‘I just never wanted them to feel uncomfortable’: Barriers to pharmacy-based identification and treatment of hepatitis C in Victoria, Canada

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ABSTRACT

BACKGROUND: Canada is currently on target to reach the 2030 WHO goal of HCV elimination. Continued high rates of treatment are required to meet this goal. Novel models such as Tayside, Scotland pharmacy-based HCV screening and treatment have proven successful to engage people who use drugs (PWUD) in HCV therapy with a simplified, task-shifted cascade of care. This study seeks to determine whether these successes can be replicated at community pharmacies in Victoria BC. **METHODS:** Four pharmacies who work with PWUD and provide opioid agonist therapy were trained to provide consent and perform point-of-care HCV antibody screening. They were supported by study nurse to link to HCV RNA testing when antibody positive patients were identified, with HCV treatment offered to RNA positive participants. Qualitative interviews were conducted with five pharmacy staff to explore experiences and feasibility of pharmacists in HCV care cascade. **RESULTS:** Pharmacy staff completed 200 HCV OraQuick tests between October 2020 and June 2022: 65 HCV antibody positive, 29 HCV RNA negative (25 previously treated and 4 self-cleared). Of the 26 RNA positive participants, one is awaiting treatment, 25 people have started treatment, 22 achieving SVR. Although the onset of the COVID-19 pandemic was a fundamental barrier incorporating HCV testing at pharmacies, stigma related to HCV and illicit drug use continues to impact this process. **CONCLUSIONS:** This innovative pharmacy-based approach found people with limited connection to primary health care to test and treat HCV but requires more training and support to be more widely feasible.

KEYWORDS: DAA; drug use; hepatitis C; micro-elimination; people who inject drugs; pharmacy; PWID; task shifting; treatment

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Lay summary: Canada is currently on target to reach the goal of eliminating hepatitis C by 2030 set by the World Health Organization. In order to achieve this, we must continue to have high rates of treatment. Novel models such as Tayside, Scotland pharmacy-based HCV screening and treatment have proven successful to engage people who use drugs (PWUD) in hep C treatment with a simplified, task-shifted cascade of care. This study seeks to determine whether similar successes can be seen at community pharmacies in Victoria BC.

Four pharmacies who work with PWUD were trained to provide consent and perform point-of-care hep C antibody screening. They were supported by study nurse to link to hep C RNA testing when antibody positive patients were identified, with hep treatment offered to RNA positive participants. Qualitative interviews were conducted with five pharmacy staff to explore experiences and feasibility of pharmacists in hep C care cascade.

Pharmacy staff completed 200 hep C OraQuick tests between October 2020 and June 2022: 65 hep C antibody positive, 29 hep C RNA negative (25 previously treated and 4 self-cleared). Of the 26 RNA positive participants (living with hep C), 1 is awaiting treatment, 25 people have started treatment, and 22 have been cured of hep C. Although the onset of the COVID-19 pandemic was a fundamental barrier incorporating hep C testing at pharmacies, stigma related to hep C and illicit drug use continues to impact this process. Pharmacists described feeling hesitant about approaching participants, especially after receiving negative responses from clients about hep C testing. Some worried their relationship would change with clients as asking about hep C implied risky drug use.

This innovative pharmacy-based approach found people with limited connection to primary health care to test and treat hep C but requires more training and support to be more widely feasible.

INTRODUCTION

Hepatitis C (HCV) is a global public health concern that affects more than 56.8 million people around the world, accounting for at least 399,000 deaths globally (1). People who inject drugs (PWID) continue to make up the majority of new and existing infections (2–4). To achieve the World Health Organization (WHO)'s goal of eliminating HCV as a major global public health threat (90% of people living with HCV diagnosed and 80% cured) by

2030 (5), enhanced HCV testing and treatment is needed among this population (6,7). While there are data demonstrating that responses to direct acting agents (DAA) are comparable among people with and without ongoing injecting drug use (8), there are significant inefficiencies in the HCV care cascade, from screening to diagnosis to treatment for PWID (9). Following diagnosis of HCV, PWID populations experience a drop-off before they are linked to care, as they have experienced many barriers to access off-site referral for HCV treatment (10,11). Integrating and simplifying HCV services is recommended by WHO guidelines in order to pragmatically respond to the needs of PWID (5,6,9).

Significant improvements in HCV testing outcomes are demonstrated when screening is simplified by providing options for dried blood spot, point-of-care antibody, and reflex RNA testing, as well as opt-out screening (12). Point-of-care HCV antibody testing can reduce barriers to care and allow for rapid initiation of HCV treatment using pan-genotypic therapy (13). It has been effective in engaging PWID in HCV treatment in screening clinics in community settings (14,15) and is simple enough to be done by non-clinical staff.

Task shifting has already shown to shorten the cascade of care in HCV treatment to primary care settings with opioid agonist therapy (OAT) (16), outpatient drug treatment centres (17), or OAT and harm reduction services (18), which may reduce the risk of HCV infection and reinfection (19). In recent meta-analysis, community and primary care-based testing and treatment has been shown to be feasible, increase uptake of treatment, and demonstrate sustained virological response (SVR) rates comparable to published studies and clinics in secondary care (20). Pharmacies also offer a strategic community setting: patients visit pharmacies more frequently than clinics, and may be located nearer to low-income areas, have longer opening hours, and can be accessed without an appointment (21). Several studies have shown that task shifting to community-level or pharmacy-based care has also been beneficial for patient access to contraceptives (22), hypertension service delivery (23), increased immunization rates (24), and scaling up of antiretroviral therapy for HIV (25).

Engaging people who access OAT, who may not have a primary care physician but regularly attend a community pharmacy are excellent candidates for community pharmacy-based testing and

treatment in Canada and internationally. In British Columbia, currently accessing OAT was associated with higher likelihood of HCV treatment initiation for PWID living with HCV (26). In Saskatchewan, a nurse-pharmacist micro-elimination model used among an OAT patient population was able to successfully initiate over half of patients living with HCV on DAA therapy ($n = 23/42$) with no adverse events and 73% SVR rate (27). In Tayside, Scotland, the use of OAT pharmacies for testing and engaging clients in care has been effective in treating people for HCV with excellent outcomes (21,28,29). In a cluster randomized study of 55 participating pharmacies with 2,718 patients receiving OAT, twice as many patients achieved SVR in the pharmacy-led care group than in the conventional care group. Pharmacy-led care also demonstrated higher rates of dried blood spot testing, treatment initiation, and completion (21).

The opportunity to provide all HCV diagnostic and treatment services from community pharmacies may create a much more convenient and potentially less intimidating route to HCV treatment for current PWID and or others taking OAT (21) as clients have a regular and familiar point of contact and the incentive to attend for consistent OAT dispensing (20,30). Three key factors for success identified in these settings include high OAT adherence, a positive patient/pharmacist relationship, and a pharmacy space that is comfortable for PWID (31). Vital to this relationship is being treated with dignity and respect (32), a positive staff attitude, and privacy (33).

The evaluation of pharmacy-based identification and treatment of HCV (EPIC) study looked to determine whether pharmacy-based testing and treatment successes can be replicated at community pharmacies in Victoria, BC, working with populations who use drugs (PWUD) and/or access OAT. This task shifting approach represents a new local innovation in HCV elimination efforts.

The primary aim of this study was to evaluate the initiation of DAA therapy for HCV infection, measuring the proportion of participants tested shown to have HCV antibodies, detectable HCV RNA, treatment starts, and SVR (12 weeks) rates among people who access community pharmacies in Victoria, British Columbia. The secondary aim was to determine the local readiness, interest, and effectiveness of community-based pharmacies as a location for HCV screening and treatment support.

METHODS

Study design and participants

This study was a prospective, longitudinal interventional cohort design. Participants included people who access community-based pharmacies and consented to be tested using the OraQuick® HCV Rapid Antibody Test. Four community pharmacies near or in the downtown core of Victoria, known to work with PWUD and provide OAT services were approached regarding study participation. Participating pharmacies were provided study funds and 3-hour training sessions with follow up check-ins to equip staff with necessary skills and knowledge for HCV testing and treatment follow-up. In fall 2020, pharmacy staff were trained to provide verbal informed consent and perform point-of-care HCV antibody screening. Pharmacy staff opportunistically discussed HCV infection with clients, including those taking OAT who attended the pharmacy, and offered HCV Oraquick™ point-of-care testing. They discussed the possibility of receiving DAA treatment in the pharmacy to clients who tested positive for HCV. Participants were either directed to a local lab (phlebotomist) or clinic (nurse) for assessment blood tests required for universal treatment coverage, including confirmatory RNA+ results. The study nurse met with participants who completed HCV RNA and required pre-treatment bloodwork to obtain written consent for continued involvement in the study. The nurse reviewed their medical and HCV treatment history and organized HCV treatment. All clients who were identified through pharmacy-based testing who initiated DAA therapy from October 2020 to June 2022 were eligible for inclusion in this study; those receiving one or more doses of therapy were included. Participants were treated with 12 weeks of oral Sofosbuvir/Velpatasvir unless otherwise chosen at the discretion of the treating physician.

Participants who started treatment were either provided DAA by daily witnessed ingestion alongside OAT or blister packs, including a few delivered weekly by nurses directly to the client. Weekly monitoring by pharmacy staff was done at the pharmacy, including recording of any side-effects or adverse events. Cash incentives of \$5 were provided for weekly pharmacy check-ins and \$20 for HCV end of treatment (EOT) bloodwork and HCV SVR bloodwork. Extra support required for participants, beyond the scope of pharmacy care by nursing staff, was documented by a nurse.

In addition, pharmacy staff involved in the HCV testing process were invited to participate in qualitative interviews that took place between October 2021 and January 2022. Five pharmacy staff from three pharmacies consented to be interviewed. These included two pharmacists, two managers, and a pharmacy assistant. Interviews were audio recorded and lasted 60–90 minutes. Participants were provided a \$20 gift card for the interview. The interviews explored their experiences with testing and monitoring HCV treatment and their recommendations of the future role of pharmacists in the HCV care cascade to gain more insight into the feasibility of pharmacy-led HCV testing and treatment support. Interviews were audio recorded, transcribed verbatim, using pseudonyms to protect anonymity, imported into NVivo (Version 12) to facilitate coding, and stored on a secured server. The initial set of transcripts were reviewed to identify initial codes. Codes were compared and contrasted in order to develop key themes using Braun and Clark's approach to thematic analysis (34,35).

Study oversight

The research protocol was approved by Advarra (Pro00043574) and was conducted according to the Declaration of Helsinki and International Conference on Harmonization Good Clinical Practice (ICH/GCP) guidelines. This study is registered as NCT05412017 with ClinicalTrials.gov.

Study setting

The Cool Aid Community Health Centre is an inner-city, interdisciplinary primary health care centre serving over 6,700 clients in Victoria, British Columbia. The nurse-led HCV treatment program strives to provide culturally safe, competent, flexible, low barrier access to HCV screening, treatment, and follow-up. The program is integrated in primary care services within an equity-based, harm reduction framework (36,37). After successful HCV treatments within the clinic, the HCV treatment team identified that a series of micro-elimination projects for HCV testing and treatment of clients could potentially decrease the community HCV viral load (38). After outreach testing to local shelters and supportive housing sites, the next step to explore the feasibility of pharmacy-based testing and treatment in collaboration with the clinic. The four pharmacies recruited for this study were deemed eligible as they were community-based,

located either within or close to the downtown core and were known to have many clients who were receiving OAT. While one was a major corporate chain, the others were either smaller 'ma and pop' style, independent or locally owned organizations.

RESULTS

In total, pharmacy staff completed 200 HCV point-of-care antibody tests: 65 tested positive for HCV antibodies: 29 people were HCV RNA negative, 25 previously treated, and 4 self-cleared. Of the 26 RNA positive participants, 1 is pending treatment start while 25 people started treatment. Detailed information is only available for clients who consented to have data collected when they reviewed bloodwork. Of the 26 clients with positive RNA, the mean age was 50 years, 31% were female, 8% were co-infected with HIV, 50% had genotype 1, and 4% had cirrhosis (Table 1). Most clients had a history of injection drug use (96%), 81% of clients had recently injected drugs (previous 1 month), and 73% were receiving OAT. Just 16% had previously received HCV treatment. To date, of those who started treatment, 88% (22/25) achieved SVR. Reasons for not achieving an SVR included poor treatment adherence ($n = 1$), lost to follow-up ($n = 1$), and deceased before SVR ($n = 1$) (Figure 1).

All pharmacy staff found the point-of-care hep C test easy to do and the model within pharmacies seemed like a good idea: *'I'd say it's as easy as I would imagine it to be to test something like this, in a community setting I think it's pretty ideal, if you're gonna offer a service like this to be able to give some results and some guidance as to what the next step would be.'* (Pharmacy staff C).

While treating identified people has been successful, only half of 400 projected OraQuick tests were completed by end of study: pharmacy 1 ($n = 30$, 15%), pharmacy 2 ($n = 33$, 16.5%), pharmacy 3 ($n = 7$, 3.5%), pharmacy 4 ($n = 130$, 65%). Pharmacy staff identified several barriers to HCV point-of-care testing in pharmacies. These included the impact of COVID-19, including staff turnover and shortages, no time in the day, and stigma around drug use.

Impact of COVID-19: 'COVID has made life stressful for everybody'

The most impactful barrier was the onset of the COVID-19 pandemic with subsequent disruption

Table 1: Demographic and behavioural characteristics

Variables	Total HCVAb tested (n = 200) n (%)	Total HCVAb+ (n = 65) n (%)	Total HCV RNA+ (n = 26) n (%)
Mean age	50	50	
Sex			
Male	na	47 (72)	18 (69)
Female	na	18 (28)	8 (31)
HIV	na	7 (11)	2 (8)
History of injection drug use*	na	58 (89)	25 (96)
Recent injection drug use	na	40 (62)	21 (81)
Opioid agonist therapy†	98 (49)	44 (70)	19 (73)
Methadone	44 (22)	29 (45)	15 (58)
Slow-release morphine (Kadian)	16 (8)	14 (22)	3 (12)
Suboxone	6 (3)	1 (2)	1 (4)
HCV genotype‡			
1	na	na	13 (50)
2	na	na	2 (8)
3	na	na	4 (15)
Histological stage			
F0/1	na	na	18 (69)
F2/3	na	na	7 (27)
F4	na	na	1 (4)

* Reported by patient or chart review

† Prescribed but inconsistent adherence

‡ Genotypes missing due to COVID restrictions

to standard in-person community-based pharmacy services and staffing challenges. Several pharmacies had turnovers of up to 80% of staff, and much to teach to train new staff. For some pharmacies, remaining staff were feeling overworked and overwhelmed in already stressful environments: 'It's always been stressful, but this has honestly...yeah, broke some of us, let's put it that way' (Pharmacy staff A).

Pharmacy staff identified several changes to their regular working routine because of COVID. First, many added staff to enable daily delivery of medications, using nurses and other outreach staff, to multiple locations. Second, many pharmacies were now dispensing extra medications as prescribed alternatives to the illicit drug supply (ie, hydromorphone tablets) or 'safer supply' to mitigate overdose risk, which added to the burden of their workload.

I'd say even half of them are now getting safe supply... our corporate head office was happy to see all our increase but they don't magically get counted and put in bottles and checked and handled out appropriately, and then when they run out of scripts...we've gotta call the doctor, and we've gotta make sure they get them, and then the doctor's all of a sudden, no, they need urine, so then I'm like, ok, I'm not collecting their urine. (Pharmacy staff A)

Social distancing measures put in place to mitigate COVID-19 transmission limited the number of people in pharmacies and people were trying to leave pharmacies quickly.

People's interactions are a lot quicker so they can just leave, which is also been another challenging thing, saying, "hey can I talk to you for a sec and

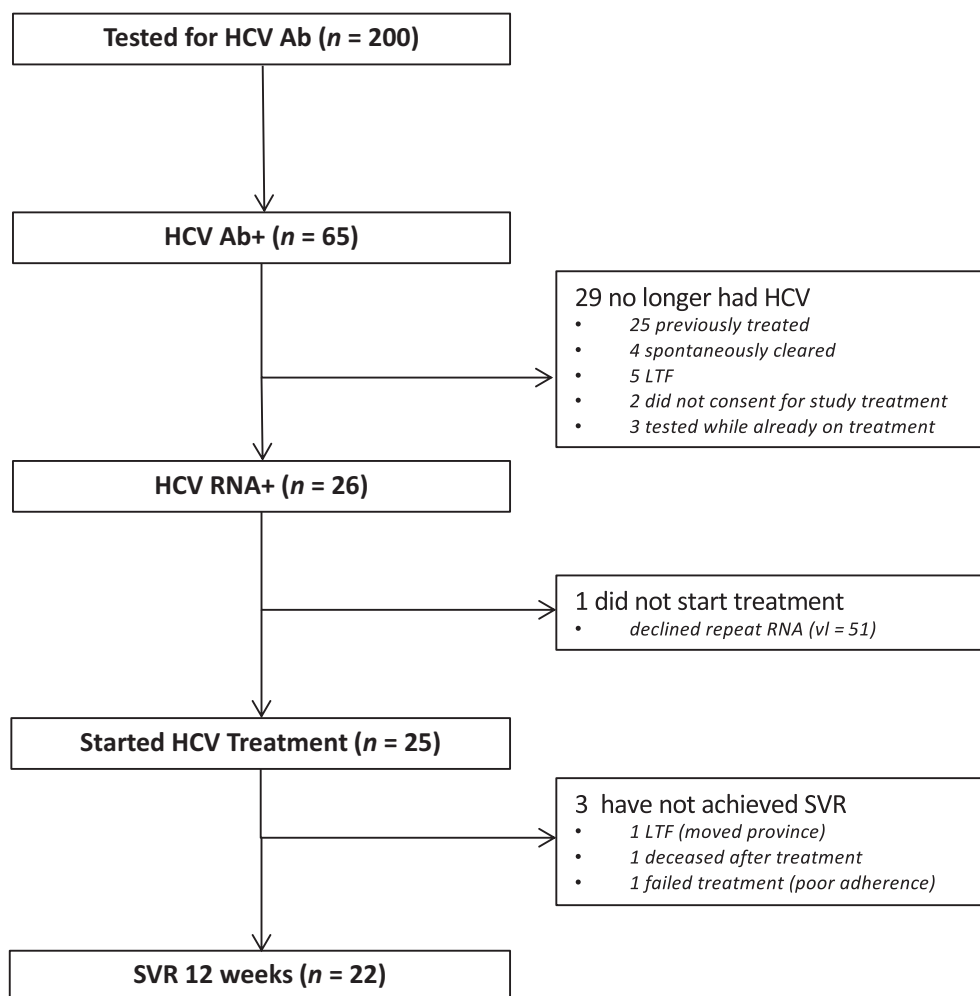


Figure 1: Flow diagram outlining SVR in pharmacy-based HCV testing and treatment

talk to you about getting this test done?" because we encourage people to get their stuff and leave. (Pharmacy staff B)

Staff were also challenged by trying to provide care to clients who didn't understand or refused to wear masks. These extra efforts in policing the stores to reduce COVID risks took away from energy and time towards extra efforts outside of providing prescriptions.

COVID impacted many aspects of the community pharmacies so that hep C testing was not prioritized at all. Instead, as this pharmacy staff described, just 'getting through the day' was the goal.

COVID has made life stressful for everybody overall, too, because you're anxious about your own health, your family's health, and [hep C testing] is an extra thing ...I'm not gonna say your project was the best, but with COVID it has become the least priority on my mind. (Pharmacy staff E)

No time in the day: 'you have a lot of things on the go'

Several pharmacy staff spoke about the fast-paced nature of pharmacy work, with an expectation to swiftly provide daily dispensing to OAT clients on top of other work. They spoke about the immediate nature of clients coming in to get prescriptions rather than at scheduled appointments and their constant multi-tasking to get the work done.

Probably just being too busy to ask the question if you have multiple people there. In general, the pharmacy can be a very multitasking environment where you have a lot of things on the go and not fully completing one thing at any given time. (Pharmacy staff C)

Hep C testing was something that added to this multi-tasking and decreased efficiency and increased wait times. They also noted that clients, especially those who used drugs, were very busy themselves, involved in income generation and

securing drugs and often refused, even when told the test would be just 5 minutes to do.

I feel like our patients are like the busiest patients ... it's crazy to me just because I don't live that lifestyle...trying to think where they're gonna get their next...I'll be like ok, it won't take long, you don't have to wait for the results, I would tell them tomorrow, no, no...just put it off. (Pharmacy staff A)

Teamwork that supports staff to shift roles was needed in order to take up the testing when clients did agree to spend the time.

If you ask that question and they say yes, well now you have to allocate that 10 or 15-minute segment, which I assume is gonna happen now, which was not planned for two-minutes ago. Can you now fit that in there and can everyone else adjust to replace you in that short period of time because it's a very fluid environment in that way and nobody's tied to any specific task. (Pharmacy staff C)

'Like what, you think I have that?': Stigma hesitancy in approaching clients

A significant barrier to hep C testing identified was stigma related to drug use and hep C. Pharmacy staff described feeling hesitant about approaching participants and experiencing negative responses from clients when asked about HCV testing: 'I asked a couple of people and they got offended...because I was assuming they have it...that's also learning on my part. It's very hard because I think there's a stigma a bit with it' (Pharmacy staff B).

Staff realized quickly that this was a delicate topic that implicated clients as people who use or used drugs if they were asked about hep C. 'I feel people always connect hep C to drug use only, there could be other reasons too, so if I get tested and I'm not even using, people will start judging me that I used in the past. Like it will become a stigma' (Pharmacy staff E).

They strategized about how to ask the question about testing privately and appreciated when they had extra space away from front counter to conduct the tests. Some pharmacy staff were worried their relationship would change with clients with hep C testing as asking about hep C implied risky drug use.

We were always like, 'you go ask, you go ask,' you know? Because I just never want them to feel uncomfortable to come there and think, 'oh now

is she gonna ask me, you know?'...one of them I asked and he was just so like insulted that I would even think... 'like what, you think I have that?' (Pharmacy staff A)

They saw how knowledge of clients' drug use has implications for their health care, including being penalized or restricted in their OAT prescribing:

Sometimes people feel that if I open up, I could convey this message to the physician that he's still using, and it's going to act as a punitive in his [OAT] treatment...They kind of try to hide it...if I see them as hep C positive, I might start treating them differently. (Pharmacy staff E)

Pharmacists highlighted that maintaining a positive relationship is key to their work: 'It's not that I'm running a very technical process here, it's basically a relationship' (Pharmacy staff E). Pharmacies that serve many OAT clients had very close connections: 'most of our patients we see them every single day, sometimes two, three times a day, hey, just came to say hi, what's going on?' (Pharmacy staff A). Part of that relationship is finding ways to have open, thoughtful conversations in order to make people feel at ease and comfortable in sharing private information: 'You certainly have to approach it in kind of an open way, and feel it out, and see what they're comfortable discussing' (Pharmacy staff C). In order to create this openness some pharmacy staff thought they needed better training to ask questions that might be perceived as stigmatizing: 'I think it's sometimes we're not equipped or trained enough to delicately approach it' (Pharmacy staff E). Although training and discussion of testing was provided to staff, more opportunities to workshop or get feedback may have helped staff feel more comfortable.

I think you guys were very supportive in that way. I probably would have liked a little bit more training in how to approach it...I know you guys gave those tools, but they were really just like, oh read this... I wasn't very comfortable in approaching people...I'd go into it being all hyped and then I'd be like, uhhhhh. (Pharmacy staff A)

Training for de-escalating conflict, trauma-informed care, mental health, and substance use, including naloxone training, were also suggested as ways to bolster success and create better relationships with PWUD.

Make sure that the pharmacy is well trained with mental health, addictions ...I do naloxone training

for the staff every couple of months...I think de-escalating situations...as you know because you deal with this clientele, there's a lot of situations where it just [makes a blowing up noise]. (Pharmacy staff B)

Training may not be enough for some pharmacists who hold negative views about PWUD or other folks who are unhoused.

There was a [pharmacist] shortage...Honestly, a lot of pharmacists do not want to just deal with addiction...especially with what's happened in front of our store recently, just like people hanging out and camping...We even have one of our pharmacists, he comes from one of our other locations and he complains and complains every time when he has to walk by that. (Pharmacy staff A)

As this staff member concludes, staff shortages mean pharmacies may have to manage working with staff who have a stigmatizing perspective of mental health and substance use challenges.

Supporting the hep c care cascade

Nursing interventions were required for a majority of clients during their path to treatment and cure. Only nine (17%) clients had bloodwork completed at the local lab, as pharmacy staff regularly directed clients to nursing phlebotomy at the study clinic or on outreach to pharmacies by the study nurse. Pharmacy staff were clear that COVID-19 had made the system to access bloodwork at local labs more formalized by having to book an appointment, often weeks in advance, which was challenging for clients without phones or stable routines. They were also concerned that their clients would be treated poorly at local labs:

Especially if they're suffering with poverty on the side, you have visible skin problems, hygiene problems, so when you go to [local lab] sometimes you have a bad memory that you could be treated really bad, and I don't think of sending them to [local lab] will work. It will work for some people, at regular pharmacies, if you're trying to test baby boomers it might work. (Pharmacy staff E)

Weekly check-ins were not viewed as burdensome to pharmacists and they appreciated the role they played in encouraging treatment completion.

Every time he came, Friday we had a chat, 'how's that going, you feeling anything?'... it's just an assurance...once a week or once a month, that you

tell them, you're on the right path. (Pharmacy staff E)

They saw how these check-ins could encourage people to stay focused and decrease potential losses.

I would say the frequent encounters probably help, at least in terms of weekly check-ups, I think just for cost of product, potential for loss, potential for side effects, accessibility for just like encouragement of getting through it. (Pharmacy staff C)

While pharmacy staff were able to support clients during HCV testing and treatment, the majority of clients needed extra nursing care and case management to be successful. Just two clients required limited support beyond pharmacy weekly check-ins. Others required nursing intervention for extensions for provincially paid HCV treatment access ($n = 12$, 48%), organizing payment of deductible ($n = 3$, 12%), support for adherence and side effect queries ($n = 4$, 16%), case management, and reminders for SVR phlebotomy ($n = 9$, 36%).

Clients treated were identified as having complex health and mental health issues leading up to and during treatment. Three people with limited primary care were identified by the study nurse and treated for life threatening illnesses, including thyroiditis, acute renal failure, and lung cancer, while another was supported through COVID-19, and two clients were hospitalized for psychosis and one for stroke. The clients hospitalized during treatment required case management to continue HCV treatment. Six (24%) clients attempted to change pharmacies during treatment, requiring extra case management and follow-up, while two (8%) clients were provided extensive support during HCV treatment delivery through the mobile outreach van. Finally, clients were strategic to have other primary care needs met at nursing EOT and/or SVR phlebotomy ($n = 14$, 56%). Connection to primary care through the clinic during treatment provided opportunities to improve health outcomes.

Making hep C testing and treatment work

Although pharmacy staff identified many barriers to pharmacy-based testing, they also thought hep C testing and treatment could bring job satisfaction, seeing the positive effects of enhanced care.

Does this increased client engagement and interaction actually...provide you a good feeling at the

end of the day...I enjoy having those interactions and providing those services that are a step outside of what a pharmacy can usually provide. (Pharmacy staff C)

They strategized about how they could manage to provide these services within their busy days. Instead of testing in the busy time of picking up prescriptions, they thought testing days with a booth set up for testing and information may work better:

I feel like it was more hard to just, 'do you want to get hep C tested?' when they're picking up medication, they might feel stereotyped, or it might kind of put them on edge a little bit...whereas when you have the booth and they're freely approaching you it's something that they're genuinely interested in, or that people see the flyers. (Pharmacy staff D)

One pharmacy was successful in providing testing days, designating a staff member for 2-hour blocks to offer tests, rather than trying to manage asking clients during the busy times of multi-tasking.

I think the main thing is just having someone dedicated to that task and be able to focus on it, and to understand that they're there for that reason, for that period of time, to do that and to be open and able to have those conversations without being restricted. (Pharmacy staff C)

Although these pharmacies had years of experience dispensing hep C medication, they were thoughtful that other pharmacies may not have much incentive for treating hep C as low dispensing fees are weighed against the cost of medication.

I feel like this medication is very, very costly... it's like for our pharmacy and other pharmacies that they have a large clientele on it, it's not a big deal, we constantly have people on it, but every time a pharmacy calls to get it transferred they're like 'well I don't want to take the Hep medication,' because if it's only one patient and they're doing half the therapy, they're stuck with the bottle and that's ten, fifteen thousand dollars. (Pharmacy staff B)

If pharmacies are not aware of insurance to cover clients not completing the treatment, the cost may seem prohibitive.

We can lose people to follow-up, to lack of interest, just to not taking their medications. So ultimately if you are left with an open bottle, or part of a bottle

of product, so that would be sitting on your shelf for perhaps a year and a half, you might return it and get maybe 89% of it, if you can, but it only really takes one bottle or one person to kind of put you in the hole. (Pharmacy staff C)

Pharmacy staff talked about the role of incentives, both for clients and pharmacies. Although participants did not receive any funds for testing, the stipends offered for weekly check-ins (\$5) and blood work (\$20) did encourage some people to consider getting tested and supported clients to pick up blister packs and continue treatment.

Even though it was \$5, it was just nice. I think it honestly really helped...like, 'if you go get that blood work, really, I'll get that money?'...unfortunately money does move people. (Pharmacy staff A)

Providing money to participants for point-of-care tests was assumed to increase testing results, but they were not sure if they would be overwhelmed by people looking for money: *'I feel like that would actually help quite a bit but at the same time would you get pure intentions from that or just people wanting to come make money off of it right?'* (Pharmacy staff D).

They thought incentives to continue treatment did not have to be money, but, for some, as simple as a supplement drink. *'If you guy's offer an Ensure, or Boost, every time they take that medication...sometimes it's not about money, it's just about saying, here's something, I know this is tough on you, this might help.'* (Pharmacy staff B).

Providing a provincially funded fee per hep C test for pharmacy, similar to medication review or flu vaccine, was thought to have some merit to increase testing at pharmacies, but several staff worried it would overburden already overworked pharmacy staff, especially in more corporate environments.

Well, the problem is it goes to the company... I'm gonna be really honest with you—is that head office will be on their ass to be like you need a quota...pharmacists have so much pressure on them and then you have head office saying have you done five hep tests?...then it won't be about the pharmacist, it will be about more money for the big guy up there. (Pharmacy staff B)

Although there had been several barriers to implementing hep C testing and treatment follow-up at pharmacies, all staff thought there was potential in

offering these services through pharmacies. They saw their role as important players in public health initiatives and providing a key role in ensuring people had access to health care.

I think in general clinical services should be done more by pharmacies. I think we've seen that with how our health care model has evolved, and in terms of trying to branch out the workflow to other professions other than just the physician model... like there's flu vaccines, testing, warfarin testing, and then we have diabetes educators... Unfortunately, from a pharmacy mindset you probably don't use 80% of what you've learned once you get to a community pharmacy... The model is strictly reimbursed on a dispensing fee model, not on a clinical basis model. (Pharmacy staff C)

DISCUSSION

This study evaluated the micro-elimination efforts of a pharmacy-based testing and treatment in Victoria, Canada. Of the 200 clients tested for HCV antibodies, 25 of the 26 that tested RNA positive were treated, with an SVR rate of 88%. Missing SVR tests from loss to follow-up presents a challenge for establishing the true efficacy of community-based treatment of PWUD, as life circumstances or undetectable results at EOT may mean people do not return for SVR testing (39). However, efficacy rates in those tested are similar to those in clinical trials, indicating that the lack of a SVR assessment should not imply treatment failure and continued outreach can help recover LTF results for both treatment starts and SVR. This micro-elimination model of testing and treating demonstrates that pharmacies can be effective environments for decentralization of HCV services, finding and supporting populations missing from primary HCV standard of care. Shifting this care into pharmacies that clients are already attending has the potential to reduce medical resources, as well as the burden on clients, reducing barriers to care (21).

Pharmacy staff spoke about the importance of relationship-building and the care they take to create trust with their clients in these community-based pharmacies, where they see many people daily for OAT. In British Columbia, many PWUD with HCV currently receiving OAT have yet to receive HCV treatment; enhanced integration between substance use care and HCV treatment has been identified in order to improve the overall health of PWUD (26). OAT-dispensing pharmacists

may be viewed as a reliable and trusted source of health information (31). Proximity to pharmacies and these trusting relationships formed between the pharmacists and people attending for OAT have been demonstrated to encourage HCV treatment participation, making service attendance easier, and removing the challenges of navigating the health system (28,32,40,21). Strong leadership from pharmacy staff is needed, as well as an enthusiasm to explore new roles and continue to build positive relationships with clients (41).

In the USA, pharmacists can provide DAA drugs if operating under a collaborative care agreement with a physician; this prescribing results in cure rates that are similar to those in specialist care (42,43). Koren et al. remind us that pharmacists have been a valuable resource as members of HCV care teams from the interferon to the current DAA era as they can determine appropriate HCV regimens, facilitate treatment access, provide client education throughout treatment, assess safety and efficacy, and offer strategies to mitigate side effects to assist with treatment continuation (43).

The opportunity to engage in pharmacy-led research for HCV testing and treatment research was expected to prompt pharmacists to more actively participate in these efforts as seen in Scotland (21). However, the impact of COVID-19 has made it difficult to assess if local pharmacists would have the interest or capacity to take responsibility for HCV testing and treatment with the current level of burden in their workload in British Columbia. It is clear that HCV testing initiatives will only be adopted by specific pharmacies with the right conditions. Although all four pharmacies completed testing, just one did 65% of point-of-care testing. In Buchanan et al.'s research across the UK, although 20 pharmacies were involved, conducting at least one test, just two accounted for 55% of testing activity (44). They identified concerns about compensation for pharmacies, the local prevalence of hep C, confidentiality, and balancing the workload for pharmacists as important considerations to address to make this work (44). Although pharmacy staff received compensation for participating, including per test funding, it did not seem to be a key factor in encouraging point-of-care testing. Financial incentivization from NHS for community pharmacies' participation may have been important in the successes in Tayside, Scotland (21), but locally, pharmacy staff were concerned that adding HCV testing as a billable activity

would simply create more pressure from corporate leadership to multi-task in an already overwhelming environment. Current plans to expand pharmacists' role, including issuing prescriptions for less acute ailments like allergies, indigestion, urinary tract infections, contraception and acne in the spring of 2023 (45), as well as all COVID vaccinations (46), will also impact their ability to provide extra services such as HCV testing.

It is clear that from the amount of extra care required for clients to ensure treatment success in this study, pharmacy staff require support by a visiting phlebotomist and connections to teams familiar with HCV treatment to make pharmacy-led testing and treatment pathways both safe and effective (21). This also provides other opportunities for clients to engage in primary care.

Stigma

The WHO has identified the implementation of HCV treatment pathways in community and primary care environments through integration and decentralization of services as a key step in the elimination of HCV (9). They expect that these changes will reduce stigma and increase uptake of treatment (9). However, even in these changes in HCV implementation that shifts tasks to pharmacists, stigma remains. Pharmacy staff in this study identified stigma as a key barrier to people taking up hep C testing and the responses from offended clients discouraged staff from asking others. The stigma associated with both injecting drug use and HCV infection has been identified as a key factor in barriers to many HCV testing and treatment initiatives (40,41,47,48) as hep c is still stigmatized 'as a "dirty disease" caught from sharing needles' (28 p224).

Stigma and discrimination from health care workers, police, and the general population are perpetuated by criminalization (5,40) as well as moral views on drug use (49). Drug use stigma from medical providers can have an impact on testing and treatment for PWUD. Stigmatizing actions or perceptions from medical providers negatively impacted their ability to navigate and receive HCV care they needed (48,49), with some feeling that their status as active drug users was used to control and sometimes coerce their access to services (48). Similar issues that have been identified in impacting access to OAT include stigma and prejudice, social and structural constraints that reduce people's agency, and homelessness (50). Previous

experiences of stigma and discrimination when seeking pharmacy care led to caution and suspicion when they were offered testing (28). Privacy in asking about hep C is vital (28) as services in pharmacies may be organized to make confidentiality difficult (40).

Training harm reduction

Pharmacy staff were clear that continued training and check-in supports are required to improve encounters between pharmacy staff and their clients and increase comfort and uptake of HCV testing and treatment. Other relevant studies included training at the start of the initiative and then at 6-month intervals (44). Training could include teaching about the risk factors for HCV transmission, conducting and explaining point-of-care tests, and pre- and post-test counselling (28,44). Perhaps even more important is the need for training that supports harm reduction and person-centred approaches to care delivery (48). These approaches need to reflect an understanding of and commitment to addressing the historical, socio-cultural, and political forces that shape responses to mental health and substance use, including harm reduction and OAT (50). Beyond treating people with dignity and respect (40), and using inclusive person-first language, anti-stigma interventions that include displaying posters and resources about HCV and illicit drug harm reduction (31) may help reduce stigma and create a more welcome environment for HCV testing.

Options for testing

One option is to reduce the burden of stigma is to attempt to test everyone who arrives at the pharmacy, making no assessment of history or current drug use as a risk factor for HCV. Pharmacy-based HCV point-of-care testing that offered DBS testing to anyone with a known risk factor for HCV living on the Isle of Wight (United Kingdom) was found to be more cost effective when not targeting PWID, demonstrating treatment success with both current PWID and others with little connection to harm reduction services (44). Time slots designated to testing may help with concerns for overwhelmed workload (41). Community pharmacies are shown to be productive sites for HCV testing in this research, but it may be appropriate for nursing or other outreach including peer-navigators to conduct the tests, reducing the burden on pharmacy staff (5,51–54). This has been effective

in other point-of-care HCV PCR testing by outreach study nurses in pharmacies where DAAs are delivered to viremic clients via their pharmacist in line with their OAT schedule (30). Pharmacies are just one option for more flexible HCV testing. Our expanded peer-based support services and outreach education, including HCV point-of-care testing events (55,56), incorporating our mobile van, facilitates access to care for those who are unstably housed or have limited access to primary care.

Strengths and Limitations

A strength of this study was that pharmacy staff had direct experience of HCV point-of-care testing and could give more insight into success of the project and insights into feasibility of future pharmacy-based testing. Although only five interviews were conducted with three pharmacies, there was a diversity across roles and insights from participants. While interviews with clients accessing testing would also provide other insights, this was not feasible within this project.

CONCLUSION

This study demonstrated that a pharmacy-based model of care can effectively target 'hard to reach' populations such as PWUD, to find, treat and eliminate HCV. Transferring primary responsibility for HCV diagnosis and treatment of PWUD to community pharmacies follows the WHO guidance of decentralization of services and task shifting (21). However, COVID-19 greatly impacted the ability of pharmacy staff to take on this role, on top of the many other responsibilities they currently have. In this setting, pharmacy staff require extra training and support to be better prepared to ask clients to test for HCV and continued guidance from specialist teams in order to increase HCV treatment uptake and cure rates. Other testing models utilizing peers in a pharmacy setting may work more effectively than pharmacists alone.

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