Community pharmacist engagement in HIV and HCV prevention: Current practices and potential for service uptake

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ABSTRACT

Background: The central Appalachian region is at an elevated risk for HIV/HCV outbreaks, primarily due to injection drug use. Regional risk assessments highlight gaps in the evidence-based continuum of primary, secondary, and tertiary prevention strategies to minimize HIV/HCV transmission. One potential strategy for increasing the reach of HIV/HCV prevention efforts in rural areas is through provision of services at community pharmacies.

Objective: To qualitatively describe community pharmacists' HIV/HCV-related prevention behaviors, attitudes, and beliefs in a 3-state central Appalachian region.

Methods: Key informant interviews were conducted with 15 practicing community pharmacists. Theory of Planned Behavior-based questions probed for perceptions about the role of pharmacies in preventing and reducing HIV/HCV outbreaks in rural areas through activities such as syringe services, screening for HIV/HCV, and linking people to treatment when appropriate. Investigators applied thematic analysis to deductively and inductively generate themes from the interview transcripts.

Results: Two overarching themes regarding pharmacist engagement in HIV/HCV-related prevention services were generated: 1) current approaches to primary prevention through nonprescription syringe sales (e.g., gatekeeping behaviors) and 2) potential for uptake of the continuum of HIV/HCV-related prevention services in community pharmacies. Future engagement of community pharmacists in the continuum of HIV/HCV-related prevention services comprised 2 subthemes as possible underlying factors: general and specific willingness to provide services and perceived fit within the pharmacy profession.

Conclusions: Central Appalachian community pharmacists express a general willingness to help patients who may benefit from HIV/HCV-related prevention services, but current engagement, willingness, and perceived fit for offering specific prevention services in the community pharmacy setting is variable. This has potential immediate implications, such as prioritizing the introduction of more widely accepted services (e.g., provision of HIV/HCV-related prevention education) to community pharmacy practice, and longer-term implications, such as the integration and framing of HIV/HCV-related prevention services as helping behavior within the pharmacist professional identity.

1. Introduction

Detection and treatment strategies for human immunodeficiency virus (HIV) and hepatitis C virus (HCV) have advanced remarkably in the past several decades.\(^1\,^2\) Despite these advances, nearly 40,000 new HIV diagnoses\(^3\) and an estimated 50,000 acute HCV cases\(^4\) occur annually in the United States (U.S.), placing significant clinical and economic burdens on public health and health systems.\(^5\,^6\) Regional risk of HIV and HCV transmission is not uniform. Recent increases in acute HCV infections are largely attributable to increased injection of prescription and illicit opioids, mainly in rural areas such as Appalachia—the 13-state region spanning southern New York to northern Mississippi—\(^7\,^8\)—and particularly in the highly rural and economically distressed central Appalachian subregion.\(^9\) Of the 220 counties identified by the Centers for Disease Control and Prevention (CDC) as most vulnerable to HIV/HCV outbreaks, 147 (67%) are located within the central Appalachian states of Kentucky, North Carolina, Ohio, Tennessee, Virginia, and West Virginia.\(^10\) High national incidence rates and regional risk assessments highlight gaps in the evidence-based continuum of primary, secondary, and tertiary prevention strategies to minimize HIV/HCV transmission.\(^1,^11\)

The World Health Organization (WHO) has established ambitious goals to end the HIV/AIDS epidemic and eliminate viral hepatitis as a public health threat by 2030.\(^12,^13\) Primary prevention measures, or interventions that reduce risk factors for the onset of a disease,\(^14\) can be targeted to individuals at risk for HIV/HCV exposure and are a cornerstone of the WHO strategies.\(^12,^13\) Of particular concern in the U.S. is injection drug use, a...
risk behavior present in the majority of acute HCV cases, and a growing proportion of new HIV diagnoses. One primary prevention approach that has been studied extensively is the provision and/or exchange of needles and syringes for people who inject drugs (PWID). Syringe services programs (SSPs), which often provide services beyond syringe distribution (e.g., HIV/HCV screening), can reduce risky behavior and HIV/HCV transmission among PWID. While studies of SSPs have largely been in urban areas where they tend to cluster, their effectiveness in rural regions remains inadequately explored.

Mathematical models demonstrate that primary prevention efforts are necessary, but insufficient alone, to reach the WHO 2030 goals. Approximately 15% of individuals living with HIV are unaware of their seropositive status; this group accounts for nearly 40% of all HIV transmissions in the U.S. Approximately 50% of patients who develop chronic HCV are similarly unaware of their diagnosis, largely due to the asymptomatic nature of acute infection. Secondary prevention measures, designed to facilitate early identification of a disease through screening, must be implemented to identify individuals with existing infections and connect them to appropriate treatment. Despite CDC recommendations for universal screening of high-risk individuals at regular intervals, participation in HIV/HCV screening is generally suboptimal, including among PWID. Studies on the provision of HIV/HCV screening services for PWID in rural America are likewise very limited.

Screening for HIV/HCV is effective only if it results in linkage to tertiary prevention—methods aimed at preventing disease progression and adverse outcomes after diagnosis—in the form of antiviral medication therapy. HIV requires lifelong viral suppression to prevent transmission. Current preferred regimens for HIV are curative in 8 to 24 weeks, although patients remain susceptible to reinfection as long as risk factors are still present. Pharmacologic management approaches for HIV and HCV are divergent, but the tertiary prevention principles are the same: high levels of antiviral adherence are necessary to achieve an ideal therapeutic response, and adequate viral suppression minimizes transmission. Similar to primary and secondary prevention efforts, research on HIV/HCV treatment delivery in rural regions is lacking.

Numerous gaps in the continuum of care for HIV and HCV have been identified in the United States and particularly in rural care settings. To reduce HIV/HCV-related morbidity and mortality in the Appalachian region, a comprehensive approach of accessible prevention, detection, and treatment strategies is needed. One potential strategy for increasing the reach of HIV/HCV prevention efforts in rural areas is through provision of services at community pharmacies. With more than 60,000 community pharmacies in the U.S. and approximately 90% of Americans living within 5 miles of a pharmacy, pharmacists may be designed to facilitate early identification of a disease through screening.

Research is needed to understand the feasibility of pharmacy-based HIV/HCV prevention services in rural areas. To our knowledge, no published studies have qualitatively evaluated pharmacists’ perceptions of and engagement in HIV/HCV-related prevention in more than one state and across levels of prevention. The objective of this qualitative study was to describe community pharmacists’ HIV/HCV-related prevention behaviors, attitudes, and beliefs in a 3-state central Appalachian region.

2. Methods

2.1. Study setting and participants

A qualitative study consisting of key informant interviews with 15 practicing community pharmacists in select counties across 3 states—North Carolina (N.C.), Tennessee (T.N.), and Virginia (V.A.)—was conducted. Specifically, the study area was defined as counties in the rural, primarily Appalachian health department regions in close proximity to the study center [institution redacted for review]. The regions included Health Department Regions 1 and 2 in North Carolina; the East, Northeast, and Sullivan Health Department Regions of Tennessee; and the Allegheny, Central Shenandoah, Cumberland, Mount Rogers, New River, Lenowisco, and West Piedmont Health Districts of Virginia (non-Appalachian counties excluded) (Fig. 1). In August 2017, a sampling frame was constructed using the directories of all operating pharmacies in each state. The directories were obtained from the state boards of pharmacy, manually reduced to the target counties and pharmacy practice types (i.e., outpatient community pharmacies operating independently, in chains, or in grocery stores), and randomized. Using the sampling frame, trained graduate students affiliated with the [redacted] contacted pharmacists by telephone until 5 pharmacists from each state agreed to participate. While reasons for non-participation were not collected, a total of 21 pharmacists from NC, 11 from T.N., and 15 from V.A. were contacted to achieve the target sample size.

2.2. Data collection

Face-to-face interviews were conducted using a semi-structured key informant interview guide from November 2017 to February 2018. The instrument, based on the study aims and Theory of Planned Behavior, was pilot tested with 2 pharmacy and 2 public health faculty from the researchers’ institution and subsequently revised (Appendix A). Questions probed for current engagement in nonprescription syringe sales and thoughts on the role of pharmacies in preventing and reducing HIV/HCV outbreaks in rural areas through activities such as syringe services, screening for HIV/HCV, and linking people to treatment when appropriate. The interviews took place in a public location of the pharmacist’s choice within their geographic area of practice (e.g., fast food restaurant or coffee shop). On average, the interviews lasted 25 min, with a range of 17 to 46 min. Two researchers (KD, NH) agreed that the twelfth interview achieved saturation, but interviews continued as planned to maintain equal representation across states. The interviews were audio-recorded, with unstructured field notes taken by the interviewer at their discretion. The associated audio files were securely uploaded to a professional transcription service following each interview, and the resulting transcripts were de-identified.

Two researchers primarily conducted the interviews, one of whom was a female pharmacy research fellow (KD; PharmD) and one of whom was a male graduate student in sociology (J.B.; M.A. candidate). Each researcher completed a practice interview (real or simulated) under the observation of an experienced researcher before conducting interviews independently. The first researcher (KD) conducted 12 interviews in 3 states (5-VA; 4-TN; 3-NC) and supervised an additional interview in one state (T.N.). The second researcher (JB) conducted 3 interviews in 2 states (1-TN; 2-NC). Graduate students observed a subset of interviews for training purposes. The researchers did not have pre-existing relationships with any pharmacists, and limited information about their personal characteristics was provided. Pharmacists were briefly informed about the topic and principal investigator (NH) of the study during recruitment. At the onset of the interview,
additional information about the study was briefly provided, including the purpose and that participation was voluntary and confidential. Written informed consent was obtained from participants. A cash payment (99 USD) was used to incentivize participation. This incentive was deemed reasonably comparable to U.S. pharmacists’ average hourly wage of approximately 60 USD for the time spent arranging, traveling to, and completing the interview. The [redacted] Institutional Review Board approved the study.

2.3. Data analysis

Two researchers (KD, S.M.) applied thematic analysis to deductively and inductively generate themes. One researcher (SM) derived a collection of codes from the study aims, interview guide, and independent reading of all transcripts. A coding frame inclusive of code descriptions and illustrative quotes was constructed. After refining the coding frame through open discussion, the researchers independently coded 2 randomly selected transcripts using it. They discussed and resolved coding discrepancies by consensus, contributing to the additional refinement of the coding frame to reduce ambiguity and enhance coding consistency. The revisions yielded a total of 13 parent nodes, most of which included 2 or more child nodes and, for select child nodes, sub-child nodes. Using the revised coding frame, the researchers independently coded all transcripts. After coding approximately 2 transcripts, they resolved coding discrepancies by consensus. One researcher (SM) also applied consensus-driven coding to a “master” set of transcripts. Using the “master” set, the researchers independently reviewed the coded data. They met regularly over a period of roughly one year to discuss the coded data and generate themes by consensus. The themes were reviewed in comparison to the data, with recoding performed when warranted. The researchers further refined the themes and developed consensus-driven definitions and titles for each. As an additional layer of quality assurance, a third researcher (NH) with qualitative research experience reviewed the theme definitions and was available to resolve discrepancies throughout the data analysis, though consensus was consistently achieved. QSR International’s NVivo 10 Software supported data analysis, while reporting was guided by the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist.

3. Results

Two overarching themes were generated regarding pharmacist engagement in HIV/HCV-related prevention services: current approaches to primary prevention through nonprescription syringe sales and potential for uptake of HIV/HCV-related primary, secondary, and tertiary prevention services in community pharmacies (Table 1). Below, participants are identified by interview number, state, and community pharmacy type. The demographic characteristics of participants are also presented in Table 2.

3.1. Theme 1. Existing practices: Gradations of gatekeeping

A behavioral status quo emerged in pharmacists’ engagement in nonprescription syringe sales as primary prevention of HIV/HCV. Pharmacists frequently described behaviors that functioned as gatekeeping mechanisms to restrict or prohibit sales of nonprescription syringes to individuals known or suspected to be people who inject drugs (PWID).

“...I typically do is request some type of verification that they have a prescription that requires a needle. Where I work is a tourist area, it’s not uncommon for people to say, “I left my needles at home. I have my insulin, what can I do?” In that case, if they don’t get it filled in my chain pharmacy where I’m able to see a record, then I request to see the bottle with the label, or I usually call their pharmacy if they’re able to share that information.” (Pharmacist 3, T.N., Grocery).

Although the degree of engagement in specific gatekeeping behaviors varied across pharmacists, gatekeeping in general enforced specific criteria that were to be met by the person requesting syringes, such as “we have to have a prescription, you have to have an I.D.” (Pharmacist 8, V.A., Chain), or imposed limitations on the potential purchase. As one pharmacist stated, “I don’t sell them cheaply. It’s the break I’ve used in my brain to keep me from being a place that everybody comes to for them” (Pharmacist 11, N.C., Independent).

Pharmacists’ descriptions of gatekeeping behaviors were not only self-reflective. Observations extended to other pharmacists’ engagement in nonprescription syringe sales, often with normative undertones, as one pharmacist said of her coworkers: “We have a very similar stance on it. That is very positive” (Pharmacist 10, N.C, Independent). To some extent, pharmacists discussed gatekeeping behaviors among pharmacists at other pharmacies or generalized to the profession at large. “I think a lot of pharmacists either will only dispense them with prescriptions, or they want proof, quote-unquote, ‘That the person uses insulin’” (Pharmacist 12, VA, Independent).

Gatekeeping behaviors were conveyed as a mechanism exhibited not only directly by pharmacists but also indirectly through pharmacist influence on support staff. The behavioral status quo of support staff when engaging in nonprescription syringe sales commonly revolved around the pharmacist, such that support staff would reportedly “follow the lead”
3.2. Theme 2. Potential for prevention service uptake

In addition to current nonprescription syringe sale behaviors, pharmacists discussed the potential for the engagement of pharmacists and pharmacies in the continuum of HIV/HCV-related prevention services. Two subthemes emerged as factors that may underlie the provision of these services in community pharmacies: willingness and perceived fit.

3.2.1. Subtheme 2a. Willingness

In general, pharmacists expressed willingness to help patients who may benefit from HIV/HCV-related prevention services, as indicated by one pharmacist: “Something needs to be done across the board. Pharmacists are in a good position to identify patients that need help. I’m supportive of anything that we can do to help because it seems to be an out of control issue” (Pharmacist 4, VA, Chain).

Beyond broad expressions of willingness, the actual degree of willingness varied at times by type of service. Generally, cognitive services (e.g., provision of education, informational handouts, and referrals for services) were described favorably by pharmacists: “Pharmacies, we can provide education” (Pharmacist 1, T.N., Independent). Less willingness was expressed for hands-on clinical services: “It would be hard for us to screen for the HIV and Hep” (Pharmacist 7, V.A., Independent).

Direct provision of syringes was supported by approximately half of the pharmacists. As one pharmacist explained, “I’m personally good with selling syringes. I think everybody should” (Pharmacist 11, NC, Independent). However, the level of willingness for direct syringe provision potentially hinged on minimal contact with the person requesting the syringes. As another stated, “I don’t want to spend a lot of time with those interactions” (Pharmacist 15, NC, Independent). Multiple pharmacists further described a preference for syringe distribution methods that involved no direct interaction, such as a “vending machine” (Pharmacist 1, T.N., Independent), or required only a brief, targeted interaction, such as “some sort of protocol [that] could be set up where there’s… no questions asked like a drug disposal” (Pharmacist 8, VA, Chain). Despite a desire for minimal interpersonal contact, pharmacists who supported direct syringe provision generally viewed this prevention service as beneficial: “But if we can help one person, or if any one person knows that they can do this and they come to us and we can help, then isn’t that still worth it?” (Pharmacist 15, N.C., Independent).

3.2.2. Subtheme 2b. Perceived fit

A separate but complementary factor to pharmacists' willingness was the extent to which they considered the provision of HIV/HCV-related prevention services to be a fit for the pharmacy profession. Fit was generally gauged at 2 levels—fit with the organizational properties of a pharmacy and fit with the professional identity of a pharmacist.

Statements of organizational fit were particularly prominent, with pharmacists frequently citing the public accessibility of community pharmacies and describing pharmacists as “the most accessible healthcare providers” (Pharmacist 14, N.C., Chain) who “may be the only people that see some of these drug users” (Pharmacist 9, T.N., Independent). Community pharmacy type (i.e., chain or independent) also figured into pharmacists’ descriptions of organizational fit: “Again, your independents are going to have a better chance of doing that, or your small retail chains like your [grocery store] that are a regional chain you might be able to do more with than your national chains that are resistant from a legal standpoint” (Pharmacist 6, VA, Chain). While pharmacy organizational fit was generally cast in a

### Table 1

| Theme 1. Existing practices: Graduation of gatekeeping. The behavioral status quo of pharmacists when engaging with non-prescription syringe sales. |
|---|
| Example Quote |
| (Pharmacist 5, T.N., Grocery) of a pharmacist or refer the nonprescription syringe request to a pharmacist. |

### Table 2

| Characteristic | Category | Number (%) |
|---|---|---|
| State | North Carolina | 5 (33) |
| | Tennessee | 5 (33) |
| | Virginia | 5 (33) |
| Pharmacy Practice Type | Chain | 4 (27) |
| | Grocery store | 3 (20) |
| | Independent | 7 (47) |
| | Outpatient clinic-based | 1 (7) |
| Gender | Female | 9 (60) |
| | Male | 6 (40) |

(Pharmacist 5, T.N., Grocery) of a pharmacist or refer the nonprescription syringe request to a pharmacist.

“They know the questions that I would normally ask, so the first thing they do is if the patient's unknown to them they look on our medication profile to see if they've filled an insulin and have a legitimate need. If they can't see one, then they ask them where that insulin supposedly came from. They would normally at that point come and contact me to see if we wanted to follow that lead further, try and call the other pharmacist or try and investigate it more.” (Pharmacist 2, T.N., Grocery).
positive light, statements of pharmacist professional identity fit were more varied. Expressions of professional identity fit ranged from enthusiasm (e.g., “I would love to do that in my pharmacy. The thing is we don’t get used enough for our clinical knowledge.” [Pharmacist 10, NC, Independent]) to resistance: “It seems like a larger fix should be taken before it comes to me being the gatekeeper, I guess, where it’s me solving the problem of somebody’s drug addiction. There are many other places where their drug addiction could be either treated or prevented before it gets to me at a local community pharmacy” (Pharmacist 2, TN, Grocery).

4. Discussion

This manuscript describes a thematic analysis of key informant interviews that explored community pharmacists’ HIV/HCV-related prevention service perceptions and behaviors in the central Appalachian regions of N.C., TN, and V.A. To our knowledge, this is the first study to qualitatively examine pharmacists’ engagement in HIV/HCV services across the prevention continuum in more than one state. Notably, the study was conducted in a rural region with multiple counties considered vulnerable to HIV/HCV outbreaks.10 The Theory of Planned Behavior-based interview guide elicited pharmacists’ attitudes, subjective norms, perceived behavioral control, behavioral intent, and actual behaviors regarding HIV/HCV-related prevention services. Themes included the behavioral status quo of pharmacists when engaging in nonprescription syringe sales for the primary prevention of HIV/HCV and pharmacist perceptions that potentially underlie the uptake of the continuum of HIV/HCV-related primary, secondary, and tertiary prevention services in community pharmacies.

In health care, gatekeeping behavior is observed when health professionals regulate resources for medical, legal, fiscal, or moral reasons. Their scope of practice grants them exclusive discretion over a good or service.63 In the context of this study, gatekeeping was a frequently described method to restrict or prohibit sales of nonprescription syringes to individuals known or suspected to be PWID. While syringe gatekeeping was enforced at various degrees and with a variety of methods, it appeared to be perceived as a norm within the practice of community pharmacy at large, even if those norms were not directly reflected in the pharmacist’s approach to nonprescription syringe sales. Furthermore, the specific approach to nonprescription syringe sales, hence gatekeeping behaviors, may be normative among pharmacists and staff within a single pharmacy. Pharmacists frequently described a hierarchical influence on support staff, who “follow the lead” of the pharmacist or refer nonprescription syringe requests to them, indicating support staff potentially serve as an extension of the pharmacist’s gatekeeper role. These findings suggest that interventions to reduce gatekeeping and improve nonprescription syringe access for PWID should target pharmacists for pharmacy-level normative changes and include support staff, who may serve as the first or only line of interaction with PWID at the pharmacy counter.

Pharmacists generally expressed willingness to help patients who may benefit from HIV/HCV-related prevention services, but what they supported within the prevention continuum was variable, suggesting that what pharmacists frame as helping behavior in the HIV/HCV prevention domain may differ substantially. Therefore, when promoting the uptake of HIV/HCV-related prevention services in community pharmacies, it may be advisable to start with the most universally accepted services first, such as the provision of educational materials and referral to external services, rather than services pharmacists expressed less outright willingness to perform, such as HIV/HCV point-of-care testing and nonprescription syringe provision. Interestingly, the provision of educational materials on HIV/HCV prevention was not explicitly probed for yet frequently emerged as a point of discussion, potentially offering additional support for its acceptability as a pharmacy service.

Approximately half of the pharmacists supported the direct provision of syringes through pharmacies. This is potentially at odds with the gatekeeping behaviors described in pharmacists’ current approaches to nonprescription syringe sales. However, the preference toward minimal-contact distribution may indicate that pharmacists who are not opposed to providing nonprescription syringes to PWID aim to avoid potential discomfort or inconvenience accompanying sales of sterile injection equipment through a typical pharmacy counter transaction. Therefore, pharmacists may be more amenable to nonprescription syringe distribution methods that are streamlined to remove requirements for proof of need and other gatekeeping methods that lengthen the interaction with the patient.

Statements of perceived fit revealed both modifiable and nonmodifiable factors underlying potential uptake of HIV/HCV-related prevention services. Pharmacy organizational fit (e.g., pharmacy type) may guide the prioritization of settings for promotional campaigns, demonstration projects, or other efforts to increase community pharmacy uptake of HIV/HCV-related prevention services. Fit of HIV/HCV-related prevention services with pharmacist professional identity is potentially modifiable, but also potentially a slower, longer-term undertaking that may be rooted in the early formation of professional identity during pharmacy education.84 Even so, there is precedent for widespread adoption of services previously considered outside the traditional scope of community pharmacy practice. Pharmacy-based immunization, for example, accelerated from the first national training programs offered in 1996 to adoption in all states’ pharmacy practice acts by 2009.85

This thematic analysis intended to assess to what extent community pharmacies and pharmacists in central Appalachia are primed to uptake HIV/HCV-related prevention services. The intent was not to address factors that may influence the degree of participation in current and future prevention practices, including state-specific policies, pharmacy resources, pharmacist training, and personal knowledge, attitudes, and beliefs about HIV/HCV and injection drug use, nor was the study designed to detect differences in pharmacists’ priming for HIV/HCV-related prevention service uptake by geographic location, pharmacy setting, or personal characteristics. Further investigation into barriers and facilitators to pharmacist participation in HIV/HCV-related prevention services is warranted to inform interventions that aim to improve service delivery in the community pharmacy setting and reduce HIV/HCV-related morbidity and mortality, particularly in rural areas.

This research has several limitations. First, while the focus on central Appalachia was intentional due to the highly rural population and the elevated regional risk for HIV/HCV outbreaks, the findings may not be generalizable to other subregions of Appalachia (e.g., northern or southern Appalachia) and rural communities outside of Appalachia (e.g., the rural Midwest). Additionally, while efforts were undertaken to make participants comfortable (e.g., informed consent regarding confidentiality, interviewing at a location of the pharmacist’s choosing), the possibility of social desirability bias in the self-reported answers cannot be ruled out given the public interview settings and the potentially uncomfortable nature of discussing nonprescription syringe dispensing to PWID. Furthermore, even though the monetary incentive was designed to be reasonably comparable to average hourly earnings for pharmacists in the U.S., the value of 99 USD may have disproportionately influenced desire to participate, particularly in a region where some of the lowest and highest median hourly wages for pharmacists working in nonmetropolitan areas are reported (2018 median estimates: 40.60 USD to 67.28 USD per hour).83 Thus, the findings may over- or underrepresent perspectives from various subregions of the study area. Finally, in focusing on the primary, secondary, and tertiary prevention measures that are common between HIV and HCV, additional HIV prevention measures such as pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) are important components of the complete HIV prevention and care continuum and warrant further investigation in the community pharmacy setting.86,87

5. Conclusions

Central Appalachian community pharmacists’ engagement in HIV/HCV-related prevention services is variable, as is their willingness and perceived fit for offering HIV/HCV-related prevention services in the community pharmacy setting in the future. The frequently described, potentially
normative practice of nonprescription syringe gatekeeping is concerning given the regional risk for HIV/HCV and the urgent need for accessible prevention services across the continent. However, it is promising that pharmacists express a general willingness to help patients who may benefit from HIV/HCV-related prevention services. In the short term, this willingness might best be capitalized on by introducing more widely accepted services—such as the provision of HIV/HCV-related prevention education—to community pharmacy practice. In the long-term, the framing of helping behavior specific to HIV/HCV prevention and the integration of HIV/HCV-related prevention services within the pharmacist professional identity may be potential targets for interventions to reduce HIV/HCV-related morbidity and mortality in the Appalachian region.

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Declaration of Competing Interest

None.

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Appendix A. Supplementary data

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