Original Research

Community-Based HIV and Viral Hepatitis Fellowship Evaluation: Results from a Qualitative Study

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Abstract

Purpose: The UMass Chan Medical School/New England AIDS Education and Training Center Community-Based HIV and Viral Hepatitis Fellowship was launched in 2014 to train physicians and nurse practitioners to become experts in outpatient management of HIV, hepatitis B and C, and latent tuberculosis. The purpose of this study was to identify areas of strength and improvement and understand fellows’ perceptions of the program and its impact on their current positions and career trajectories. Methods: Qualitative study utilizing a semi-structured interview guide with (11) fellowship graduates (8 MDs; 3 NPs). 45 to 60 min interviews were conducted in April and May 2021, recorded and transcribed. Transcripts were analyzed for representative themes and general patterns in the data. Results: Results indicate high satisfaction with the fellowship, which left a positive and indelible impact on their careers and patient care. Fellows highlighted the program’s commitment to health equity, its role in transforming them into leaders and advocates for HIV in primary care, and their ability to balance their work and training demands with their personal lives and needs. The fellowship motivated them to become more involved in public health initiatives, serve marginalized communities and reduce their health disparities. They expressed confidence in their ability to independently manage outpatient HIV, viral hepatitis B and C, and latent tuberculosis, and found areas of overlap with their work in primary care. Conclusion: As the care of people with HIV becomes more commonplace in primary care clinics, it is imperative that primary care providers receive the necessary training and education to meet this need. Our study of 11 former fellows shows that the Community-Based HIV and Viral Hepatitis Fellowship offers such training, spreads it to other institutions, and can be a model for other programs nationwide.

Keywords

prevention, primary care, qualitative methods, underserved communities, community health

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Introduction

The prospect of an HIV workforce shortage was first identified through a 2008 survey from the American Academy of HIV Medicine which found that one-third of HIV specialists planned to retire by 2023,¹ while HIV incidence remained unchanged, and prevalence continued to rise.² The 2010 National HIV/AIDS Strategy (NHAS) highlighted the need to develop a well-trained HIV workforce, particularly to address healthcare disparities in underserved communities.³ When the New England AIDS Education and Training Center/University of Massachusetts Chan Medical School HIV and Viral Hepatitis Fellowship (HVHF) began in 2014 at the Family Health Center of Worcester, MA, less than half of Infectious Disease fellowship programs were filling in or outside of the match⁴ (a process which balances the preferences of fellowship applicants and programs regarding the placement of fellows

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in such programs using a rank-ordered algorithm), there were only 3 other HIV fellowships in the United States and no published data on HIV residency pathways in the country. Meanwhile, HIV was evolving into a manageable chronic disease, with people with HIV (PWH) facing an increasing burden of age-related and other comorbid conditions. The UMass HVHF was launched as a direct response to the growing HIV workforce shortage, the call to action by the NHAS, and the increasing importance of primary care for PWH. Its goal was to create clinicians, educators and leaders who can promote comprehensive, integrated primary and HIV specialty care in community-based medical homes serving patients disproportionately impacted by HIV care disparities.

8 years into the fellowship, the situation is only slightly better. CDC data show rising prevalence and very modest decreases in HIV incidence since 2014, with nearly 37,000 new diagnoses and 1.2 million PWH in the US in 2019, only 58% of whom are retained in care. Multiple sources have since reported on the worsening HIV workforce shortage, yet 30% of Infectious Disease fellowship programs remained unfilled in the 2022 match and only 25 of 1300 Internal and Family Medicine programs have HIV training tracks. The number of HIV fellowships, however, has grown to 7. Another national initiative which followed the NHAS in 2019 with similar pillars of action—diagnose, treat, prevent, and respond—and the updated NHAS of 2021 remain closely aligned with the mission of the UMass HVH fellowship.

In order to learn more about and document the impact of the UMass HVH fellowship, graduates were interviewed to gain their perspectives on the fellowship, identify areas of strength and potential improvement and ascertain the impact of the fellowship on their career trajectories and current practice.

Methods

Participants

In-depth interviews were conducted with all 11 fellows who graduated from the fellowship from 2014 through 2020. Fellows were contacted to notify them of the study, its purpose, and their eligibility to participate. Of the participants, 8 were practicing physicians and 3 were practicing nurse practitioners.

Semi-Structured Interviews

A semi-structured interview guide was created after reviewing the fellowship mission, academic plan, and curriculum and discussing the structure and goals of the program with the Fellowship Director. The guide was designed to yield insights into the fellows’ experiences by covering the following domains: motivation for enrolling in the fellowship; experience with the fellowship; impact of the fellowship on current role; impact of the fellowship on career trajectory; and overall perceptions of the fellowship. The 45 to 60-min interviews were conducted by a member of the study team (MK) with no prior interactions with HVHF graduates in April and May 2021 via Zoom or telephone, recorded and transcribed utilizing the transcription software Otter (Otter.ai, Los Altos, California) and imported to Atlas.ti version 9 (ATLAS.ti Scientific Software Development GmbH, Berlin, Germany) for qualitative analysis.

Interview transcripts were manually coded in a line-by-line fashion and verified by 2 authors/interviewers (MK and BB). These 2 authors are not directly affiliated with the HVHF (they are employed by a separate entity within the institution) and had no supervisory role vis-à-vis study participants. General themes related to the interview guide domains were developed and shared with the entire study team. A thematic analysis approach was adopted in order to identify patterns within the data and across the interviews. Thematic analysis is a foundational qualitative analytical method for identifying, analyzing, and reporting themes and is not tied to any theoretical or philosophical underpinning. This flexibility allows for wide adoption and applicability and is well-suited to exploring individual experiences and performing an in-depth analysis of qualitative data.

Results

Participants

Of the 11 study participants, 10 are practicing in Federally Qualified Health Centers and Ryan White HIV/AIDS Program (RWHAP) clinics across the country in Spokane WA, Portland OR, Phoenix AZ, Midland MI, Durham NC, Washington DC, New Bedford MA, and Worcester MA. The 11th is an HIV educator and leader at the University of Pennsylvania Department of Family Medicine, where he sponsored a HIV Medicine Association HIV Fellow and trains Family Medicine residents in HIV care. In terms of professional practice, 8 are physicians (7 MDs, 1 DO) and 3 are nurse practitioners.

Motivations for Enrolling

In order to understand why fellows applied to the program, they were first queried about their pre-fellowship background, their understanding of the goals of the fellowship and their motivation to pursue these goals. While a few of the fellows had prior experience in public health, the majority joined immediately after or within a year of completing residency. Fellows learned of the program through an existing connection to the University of Massachusetts Chan Medical School, through the community health center where the fellowship director provides care, or through listings on the HIV Medicine Association or American Academy of
HIV Medicine websites. The most commonly cited reasons for enrolling were related to a desire to provide holistic and integrated HIV and primary care, especially for the marginalized populations that experience higher rates of HIV infection and HIV-related health disparities. For example:

Fellow 6: *I passionately believe that a co-located care model that taps into primary care...is what (HIV) patients need to thrive and do well.*

Fellow 7: *The population that I was going to serve...was an African American population, which was truly affected by HIV. So that was one of the ways to give back to the community.*

Participants also expressed an interest in community-based HIV care as a motivating factor for applying to the fellowship. For example:

Fellow 8: *I knew I wanted to do community-based health and work with underserved populations...that's really where my heart was, what I enjoyed the most and wanted to pursue.*

The goals of the fellowship were interwoven with the fellows’ desire to join the program and aligned with the health equity goals reflected in the above quotes. Increasing access to care was the goal that resonated with most fellows, especially for patients who lack specialist care or face barriers to managing their HIV.

Fellow 9: *A lot of the patients we had were on MassHealth [public insurance] and it was difficult for them to navigate through the resources...Limiting some of those barriers was really important to me.*

Many of the interviewees reflected positively that, with the fellowship training, they would be in a prime position to reduce new HIV infections through upstream interventions like provision of pre-exposure prophylaxis (PrEP), treatment as prevention, and primary care screening of at-risk populations:

Fellow 3: *As opposed to an infectious disease trained HIV provider; when you’re in the primary care setting, you’re seeing [the patients] before they get HIV.*

Experiences During Fellowship

Participants were then asked to discuss the strengths of the fellowship, specifically regarding its structure and curriculum. The participants noted strong mentoring with affiliated interprofessional faculty, a balanced mixture of education and patient care, and the curricular focus on primary care HIV management and HIV comorbidities.

All of the fellows highlighted the direct mentorship and teaching from the faculty in the fellowship, as illustrated by the following:

Fellow 6: *Time with [the fellowship director]...one-on-one to do case reviews and teaching collaboratively was probably the single most useful part of the whole fellowship.*

The participants also found the balance within the fellowship to be a strength of the program, as it combined academic teaching, collaborative patient care, and time for self-care. The latter is especially important, as burnout continues to pervade medical training and practice, and fellows nationally, regardless of specialty or program, average close to 70 h of work weekly. For example:

Fellow 11: *I think it was a good balance where I could actually read and learn, but also do direct patient care.*

Fellow 7: *You can meet your clinical normal duty hours, make sure you’re learning the information, and also make sure you’re still taking care of yourself.*

Participants noted that the fellowship strengthened their abilities to provide HIV prevention, primary and specialty care and diagnose and manage hepatitis B and C. One fellow remarked:

Fellow 11: *I wanted to feel like I could independently manage a patient panel with HIV and provide good quality care. I came out of that [fellowship] feeling like I could.*

Regarding the curriculum of hepatitis B in the fellowship, another fellow stated:

Fellow 1: *One thing the fellowship does that I don’t think a lot of other places nationally do is really train about hepatitis B...It’s very focused on immigrants...and [hepatitis B] is the second leading cause of cancer death worldwide.*

Given the growing need and demand for HIV training, the fellowship prepares its graduates to be “force multipliers” by educating other health care providers and through the development of leadership skills:

Fellow 6: *One thing is to learn the science of managing HIV, but a key component of this is learning how to teach HIV and how to mentor people caring for HIV patients.*

Fellow 1: *I think that was very specific to this fellowship – walking away with the skills to feel like a leader and in disseminating this information.*

Overall Perceptions of Fellowship

Participants were asked to speak about their perceptions of the fellowship, including professional skills they gained from it, strengths of the program and areas for improvement. Overall, they discussed how the fellowship taught them better communication, teaching, and leadership skills.
Specifically, participants oftentimes noted that the fellowship exceeded their expectations, especially in the following areas: in-depth attention to comorbidities of HIV, including hepatitis B and C; instruction in the care of transgender patients; and development of leadership skills.

Fellow 6: I didn’t think I would come out being a leader in trans health. But I was, and that was really unexpected. It was just the need that we saw.

They were also encouraged to pursue autonomous learning, complete research, and to investigate the most up-to-date patient care recommendations available:

Fellow 1: The fellowship provides a lot of time to seek education out on one’s own right. . .It sets you up to do that kind of lifelong learning.

Comprehensive care for HIV and viral hepatitis patients can be complex, so building long-term, trusting relationships are an essential part of treatment and the care continuum.16-18

Graduates indicated how the importance of patient-centered care was reinforced through their blended education and clinical care model:

Fellow 7: Once you make that connection with the patient, you actually get that trust with them, you start to have more of an impact in their overall care.

In order to gain a full understanding of their experience during and after the fellowships, the interview guide then focused on questions related to program improvement. The most frequently mentioned opportunity for improvement involved fellows’ desires to work with patients with advanced HIV or opportunistic infections. However, they also acknowledged that such exposure is limited due to the achievements of HIV treatments in recent years.

Fellow 7: There aren’t that many cases of severely advanced AIDS anymore, which is great. But when it comes to learning, how can I recall these and put them into practice if I don’t see them? That was the challenging part.

Earlier graduates also expressed a desire for a greater number and variety of mentors in the program, which has since been addressed by expanding the core fellowship faculty. More experience with tuberculosis was also sought by fellows and so biweekly rotations at the UMass Memorial Health Care tuberculosis clinic were added in 2019.

Impact of the Fellowship

All of the fellows reported that the fellowship had a positive and significant impact on their careers, including patient care, their ability to share skills and knowledge with other providers, and the overall trajectory of their work.

Reflecting on their current clinical work, interviewees discussed their ability to comprehensively meet the needs of their patients with HIV, viral hepatitis, and latent tuberculosis, including better patient education, which is crucial in the management of these chronic conditions 19:

Fellow 9: When patients come with in-depth questions, I feel better able to answer their questions and to either provide reassurance, better explanations, or better education about their health.

Alongside improved management, fellows described their successes in preventing new cases by helping their patients achieve undetectable viral loads20 and through prescription of PrEP:

Fellow 6: I will always be proud to have been on the ground floor of disseminating PrEP within primary care.

Other fellows pointed to their role in advocating for their patients by reducing bias through educating their colleagues and in their own interactions with patients:

Fellow 4: Working very closely with folks who are injecting drugs seems like such a logical tie-in to destigmatize their care. . .and hopefully, impact or reduce their barriers to care.

This peer education extends beyond bias reduction to formal teaching opportunities, including providing lectures through the New England AIDS Education and Training Center and the UMass Department of Family Medicine, giving invited talks to medical and nursing students, precepting residents, and creating longitudinal educational opportunities. As one participant recounts:

Fellow 6: [I] started a longitudinal elective within our residency. . .over the course of their three years, they basically learn HIV medicine.

Complementing these formal teaching activities were informal, but just as impactful and influential, opportunities to advocate for HIV care and influence colleagues and providers. The data illustrate just how considerable the reach of the fellowship is and how graduates can act as force multipliers to build awareness, skills, and interest in HIV care amongst non-fellowship trained providers. Participants describe being a “consultant” for their peers who have patients with HIV, using the electronic health record (EHR) as a clinical tool to educate fellow providers,21 and encouraging other providers to fold HIV prevention into their practice.

Fellow 3: Phil [the program director] plants seeds. He taught us and we’ve all gone to different places. Now we have our own little areas we’re in and we’re going to do the same thing.
When questioned about the impact of their fellowship on their careers, all participants confirmed that it enabled them to follow their professional interests, but also fostered ambitions and aspirations well into the future. One fellow remarked that their fellowship training was decisive in securing their desired position:

Fellow 9: Because [my current employer] saw my fellowship was AETC [AIDS Education and Training Center] funded, that actually prompted her to want to hire me more.

The fellowship not only set them up to provide high-quality care for HIV patients, but also positioned them to lead in their current roles by expanding their clinical population, providing comprehensive HIV and viral hepatitis care in primary care settings, and providing care to underserved and marginalized populations—the primary goals of the fellowship.

Fellow 5: I consider myself an HIV expert and I feel capable of answering questions that people have about how to manage HIV.

Fellow 6: I provide care to trans patients [and do] hormone therapy, gender affirming care and HIV care . . . Providing those helps decrease health disparities that patients with those conditions experience.

In terms of their future ambitions, the fellows recounted plans that remained closely related to their fellowship training and current work, but that expanded its scope and reach to, for example, curriculum development, pursuing grant funding and opening or running an HIV clinic themselves. They identified the excellent educational experience, but also the expertise and leadership training that would enable them to achieve these plans.

Fellow 10: To be able to provide specialty care, to teach, to be a mentor to other people who are interested in providing that care, to break down the barriers of this field, to be part of the treatment and care for these diseases – I think that’s an honor to be able to say that you’re contributing to the end of HIV, you’re contributing to the end of hepatitis.

Discussion

Data from interviews with all 11 graduates of the UMass HVHF from 2014 through 2020 indicate high satisfaction with the fellowship, which left a positive and indelible impact on their careers and continues to provide a cascading benefit not only for their own patients but also for those of their colleagues and trainees in health centers and RWHAP clinics across the country. Specifically, fellows highlighted the program’s commitment to health equity, its role in transforming them into leaders and advocates for HIV in primary care, and their ability to balance their work and training demands with their personal lives and needs.

Two of the key strengths that interviewees identified were the intentional approach to providing time for fellow self-care and the centrality of mentoring in the fellowship. Studies representing a range of fellowship concentrations/subspecialties have highlighted the risk and presence of burnout (around 60% for fellows), and have identified many of its antecedents. A national survey of critical care and pulmonology fellows (n=502) found that about half of the respondents screened positively for depression or burnout, and that the latter was significantly associated with programmatic and institutional factors such as workload burden and excessive time spent on the EHR. Additional studies of fellow burnout have highlighted the ameliorative effects of better teaching, program support for wellness time and activities, and high levels of satisfaction with their fellowship. The work-life balance identified by our study participants is especially crucial given that healthcare providers for PWH are at high risk of burnout due to the complexity of the patient care. Fellowship graduates repeatedly emphasized the importance and consistency of the mentoring provided by the program director and faculty, which is crucial to success in fellowship training and in later career advancement. For example, exposure to mentoring leads to higher likelihood of becoming a mentor, sharing professional guidance, and suggesting resources to colleagues and their own mentees. Given the significant workforce shortage in caring for PWH, the multiplicative impact of mentoring present in the fellowship is crucial to improving quality of care and access for PWH.

Another theme identified in the interviews involved HIV prevention. Much has been said in the HIV literature about the “purview paradox” wherein neither Infectious Disease nor primary care physicians may see HIV prevention via pre-exposure prophylaxis, or PrEP, to be within their practice purview: ID physicians because the majority of their patients already have HIV, and primary care physicians because PrEP involves the prescription of HIV antiretroviral medications that have traditionally been outside of their domain of practice. Fellowship graduates help resolve this paradox by training their primary care colleagues to be comfortable with both HIV primary care, which involves following patients’ treatment on ART, and HIV prevention. A heightened awareness of HIV, its management and risk factors engenders better PCP skills and confidence in HIV testing, counseling and prevention efforts, including the prescription of PrEP. The fellowship clearly signals this as a key part of its mission to the fellows, who have readily brought it forward in their clinical and teaching roles.

Graduates also emphasized how the fellowship conformed to the needs of the local community through its
emphasize on training them to manage chronic hepatitis B (CHB). A complex, deadly disease, CHB is both widely prevalent among foreign-born persons in the US and difficult for primary care clinician-educators to master and teach. It causes a staggering worldwide burden of disease, with 240 million infected persons, nearly 8 times that of HIV. Up to one-half of untreated CHB patients develop cirrhosis, end-stage liver disease, or hepatocellular carcinoma, and it is the leading cause of cancer death in high prevalence areas, causing 500,000 deaths each year worldwide.\textsuperscript{39-41} Twelve percent of African-born and 8% of Asian-born persons in the U.S. have CHB,\textsuperscript{42} and while this global burden of CHB is increasingly seen within community health centers such as the Family Health Center of Worcester (the fellowship home), few primary care physicians feel they have the skills to manage these patients. In a 2015 study at a large California teaching health system with a high hepatitis B virus (HBV) prevalence (one-third of the patients were Asian or Pacific Islanders), knowledge about the screening and management of CHB patients was quite poor, from interns through attendings.\textsuperscript{43} By learning how to screen, workup and manage CHB, HVHF graduates and the clinicians they train can achieve the triple aim of better care, better health, and lower cost for CHB patients in community-based health centers.

As with chronic viral hepatitis, developing trusting relationships is of vital importance when caring for persons with HIV. Reflecting broad social prejudices at the intersection of race, gender, socioeconomic status, and HIV, the importance of trust in caring for PWH is highlighted in fellow interviews and in other studies.\textsuperscript{44-46} The longitudinal relationships found in primary care form the foundation of this trust and allow providers to gain a better understanding of patient needs, empathize with their experiences and work to reduce systemic stigma and barriers to care.\textsuperscript{18} It is also well-established in the non-HIV literature that trust in primary care providers improves the management of chronic disease through increased medication adherence, self-care and health literacy; positive increases have also been measured in objective metrics like glycemic control.\textsuperscript{47-52} Other recent studies have also demonstrated the positive impact that trusting relationships with primary care providers has on mental and behavioral health.\textsuperscript{53} Because HIV is now one of several chronic diseases facing many PWH which span the biopsychosocial spectrum, it is vital to train clinicians in the patient-centered clinical and communication skills that will improve healthcare outcomes.

As PWH live longer and their HIV-related needs overlap with other chronic conditions, the shortages in both the primary care and HIV workforces have become more interconnected and concerning. In light of this, the greatest identified strength of the UMass HVHF is its force multiplier impact: not only do graduates improve the healthcare outcomes of their own patients, they are also training their primary care colleagues, introducing educational and clinical initiatives, advocating for PWH and taking on leadership roles in the primary care-based management of PWH and HIV prevention. This exponential increase in HIV training and expertise among PCPs is vital as the focus of HIV medicine evolves to encompass not only managing HIV and its complications, but also the primary care needs of PWH, reducing community HIV viral loads and preventing HIV transmission.

**Limitations, Conclusion, Future Directions**

Limitations of this study include the newness of the fellowship program at the time of the interviews (7 years) and the number of trainees (n = 11), as well as potential recall bias by the earliest HVHF graduates given that up to 7 years had transpired between their graduation and the study interviews. Such recall bias could have impacted the specificity and/or accuracy of responses to interview questions. However, the consistency and concordance of responses and the general nature of the interview questions add confidence to our results and conclusions. An additional source of study limitations and social desirability bias could have resulted from the authors’ relationships to the HVHF and the present study. However, the authors’ relationships to the HVHF vary and only the first author (PB) had direct involvement in the fellowship and with the fellows themselves from a supervisory and didactic perspective. This author did not contact or recruit the former fellows, nor did he conduct the interviews or initial coding. We believe that this distance was crucial to minimizing any potential influence on the parts of the study participants and/or data analysis.

By fulfilling the goals of the fellowship and promoting outstanding HIV care in community health centers and RWHAP clinics serving traditionally underserved populations, HVHF graduates create a workforce multiplying effect as caregivers, leaders, and educators in primary care settings. Their influence will increase HIV testing, education, and prevention efforts, thereby reducing new HIV infections; they will also contribute to narrowing the HIV workforce gap and diminish health care disparities for people with HIV. These have been the central goals of the fellowship, the National HIV/AIDS Strategy, and the Ending the HIV Epidemic Initiative.

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**Ethical approval**

This study was reviewed and approved by the University of Massachusetts Chan Institutional Review Board on April 16, 2021, ID: H00023024.

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