

Promoting Human Immunodeficiency Virus Syndemic Care in Health Professions Education: Linking Workforce Demands to the Aspirations of a Rising Generation

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Structural inequities contribute to the human immunodeficiency virus (HIV) syndemic that disproportionately impacts people of color and challenges the healthcare system. Advancing the concept of HIV syndemic care in health professions education provides an opportunity to attract the next generation of healthcare professionals to careers that will help grow the infectious diseases/HIV workforce to meet the demand for care and advance initiatives to end the syndemic. The intersection of HIV, viral hepatitis, sexually transmitted infections, tuberculosis, and substance use disorder, also known as the HIV syndemic, reflects historical and structural inequities that exist within the United States. HIV, infectious diseases, and primary care workforce shortages challenge the healthcare system as HIV prevalence continues to rise. Current healthcare professional education could be strengthened by placing a greater focus on the integrative and holistic approaches to addressing the social and structural determinants of health that lie at the heart of HIV syndemic care, matching incoming students' orientation toward social justice with a fulfilling and impactful career path. Health professions education should incorporate HIV syndemic care education to improve patient care and attract more clinicians to the field of HIV and infectious diseases. Five recommendations are presented for leaders in health professions education, training, regulation, licensing, and public health to promote HIV syndemic care.

Keywords. HIV infections/epidemiology; health services need and demands; workforce; policy making; social determinants of health.

As the human immunodeficiency virus (HIV) epidemic grinds on and the courageous workforce of its early era retires, there are not enough caregivers for the ever-growing numbers of people with this controllable but still-deadly disease. At the same time, in response to worsening health disparities in both rural and urban areas across the country, the incoming generation of health professional students is taking a critical look at their educational experience. Often in the forefront questioning structures that reinforce the status quo, students are calling on schools to integrate social and structural determinants of health (SDoH) principles throughout their curriculum

and clinical training [1]. In this article, we show how HIV, viral hepatitis, sexually transmitted infections, tuberculosis, and substance use disorders are interwoven into what we call the HIV syndemic. We describe the significant challenges facing the HIV syndemic workforce, and yet how the principles of this care align with what inspires many students to enter healthcare. We conclude with 5 key recommendations for leaders in health education, training, regulation, licensing, and healthcare policy to both expand the HIV syndemic workforce and promote its underlying humanistic principles throughout the various health professions.

WHAT IS THE HIV SYNDEMIC, WHO IS MOST AFFECTED AND WHY?

Syndemics, first described by anthropologist Merrill Singer, are conditions cooccurring in temporal, geographical, and socioeconomic contexts interacting to exacerbate harm [2]. These diseases cluster in time or space; have meaningful interactions that often amplify their individual effects, whether social, psychological, or biological; and social determinants often drive these interactions [3]. Despite progress in each

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realm, the overlapping epidemics of HIV, viral hepatitis, sexually transmitted diseases, tuberculosis, and substance use disorders not only persist, but continue to disproportionately affect certain populations. In the United States and globally, people most affected by the HIV syndemic are those with marginalized identities, such as people of color, sexual and gender minorities, immigrants, refugees, unhoused people, those with substance use disorder (SUD), and people living in either rural or urban communities with inadequate access to healthcare.

Various data illustrate this claim, among them are the following: in 2021, Black/African Americans and Hispanics comprised 40% and 29% of new HIV acquisitions, respectively, men having sex with men accounted for 71% of new HIV diagnoses, and an astonishing 62% of Black transgender women had HIV [4]. Rates of substance use and overdose deaths were highest among Indigenous (36.1%) and Multiracial Americans (34.6%), followed by Black Americans (24.3%) [5]. Sexual minority adults are more likely to face mental health concerns and SUD than heterosexual adults [6]. Black, Asian, and Hispanic Americans are less likely to receive mental health and SUD treatment than Whites, which is associated with higher sexually transmitted infection (STI) risk, transmission of HIV, and worse virologic control [7]. STI rates are higher in Black and lesbian, gay, bisexual, transsexual, and questioning + people [8]; STIs, viral hepatitis, and tuberculosis (TB) are more prevalent in persons who have been incarcerated; and people of color and trans communities are more likely to experience profiling and other factors leading to increased incarceration rates [9]. Immigrant and minority communities experience higher rates of TB, with other major drivers including incarceration, homelessness, and SUD [10]. Death rates from hepatitis C remain 3.2 times higher in Indigenous Americans and 1.8 times higher in Black Americans than in non-Hispanic Whites [11].

A clear thread linking these statistics is that the overlapping health burdens borne by these groups are driven by forces beyond individual choices that instead reflect powerful structural shortcomings in health systems, finance, housing, education, and urban planning [2]. The importance of SDoH in shaping individual and population-level health inequities is well-documented, as is the disproportionate impact of SDoH on populations at risk for or with HIV [12]. These health inequities worsen health and public health outcomes and are estimated to cost the United States \$320 billion annually [13]. In the United States, SDoH are estimated to account for about 80% to 90% of the modifiable contributors of health outcomes, whereas factors related directly to healthcare services account for only 10% to 20% [14].

Incorporating the principle that everyone deserves equal rights and opportunities in healthcare training is critical to ensuring that such systems are responsive to the needs of populations not benefiting from modern prevention and treatment

tools. However, integration of these concepts into the core competencies of health professional education programs has not been fully realized. Despite an increased recognition of the benefits of including non-biomedical interventions and services within healthcare, there is a disproportionate focus on individual and short-term social needs, such as referrals for urgent food, housing or other social services interventions, rather than on comprehensive management of both health conditions and the social factors that play a foundational role in creating them [15].

Finally, stigma continues to play a strong role in perpetuating the HIV syndemic. It overshadows all aspects of the HIV syndemic and contributes to vulnerability and mistrust among affected populations [16]. Coronavirus disease 2019 (COVID-19) and Mpox further added fuel to the HIV syndemic and heightened awareness of the critical role played by SDoH in adverse health outcomes. By disproportionately impacting marginalized communities and burdening the health system, COVID-19 set back improvements in mental health and SUD care as well as domestic and global efforts to eliminate HIV, viral hepatitis, STIs, and TB.

WHAT CHALLENGES FACE THE HIV SYNDEMIC WORKFORCE?

Several challenges confront the workforce caring for people affected by the HIV syndemic, first and foremost a critical and growing gap between a shrinking supply and expanding demand for their services. For years, HIV incidence in the United States has been only slowly decreasing, whereas HIV prevalence continues to rise as individuals with HIV live longer [17]. At the same time, the early generation of HIV providers is retiring and is not being replaced at the same rate. Although over the past decade the absolute number of filled infectious diseases (ID) fellowship positions increased, only 50.8% of ID fellowship programs filled in 2024 and the proportion of ID fellowship graduates providing HIV care declined, with more pursuing subspecialties such as transplant and hospital epidemiology [18].

At the same time, there is a well-known shortage of primary care providers across the country. As with ID, these specialties, family and internal medicine (IM), struggle to attract students into fields known for long hours, difficult work, and lower pay. Furthermore, many of these clinicians feel unequipped to provide HIV care; 1 study found that 70% of IM trainees felt insufficiently trained to care for people with HIV [19]. On the flip side, many ID physicians are understandably less comfortable than IM or family medicine providers with managing common primary care conditions. People with HIV are living longer and getting older: by 2030 the median age of people with HIV will be 52 years old and 23% of people on antiretroviral therapy will be ≥ 65 years old [17]. They face concerns of early aging and

comorbidities such as cardiovascular disease, diabetes, neurocognitive impairment, liver disease, renal disease, cancer, and frailty, which occur earlier and more frequently in people with HIV [20]. Providers from backgrounds in ID may not be equipped to provide primary care for people aging with HIV, while at the same time, already-stretched primary care providers often feel similarly unable to add the various aspects of HIV syndemic care to their repertoire.

As a result, the net HIV syndemic provider workforce is projected to fall well short of projected demands, especially in the US South, where the focus of the HIV epidemic has shifted [21]. There, we find that 80% of counties have no experienced HIV provider, with a significant disparity between coverage in rural versus urban counties (94% vs 65%, respectively) [22]. There is also a critical shortage of diverse providers, who are a proven means to reduce health disparities, particularly for HIV syndemic populations [23]. Some providers and trainees are reconsidering working in the growing number of states that are taking action to limit reproductive and lesbian, gay, bisexual, transsexual, and questioning+ rights within a climate of safety concerns for people with identities associated with the HIV syndemic, especially in the South, where the need is the greatest [24, 25]. Finally, in addition to the ID workforce burnout wrought by COVID-19, threats to federal HIV programs have the potential to profoundly challenge the HIV workforce for years to come. As of June 2025, hundreds of HIV-related National Institutes of Health research grants have been abruptly terminated, the President's 2026 budget proposes eliminating the AIDS Education and Training Centers and the Centers for Disease Control and Prevention's HIV prevention program, and Congress is considering dramatic cuts to the Medicaid program.

Unfortunately, HIV syndemic workforce problems do not end with HIV/ID and primary care providers, as chronic shortages are seen in other key interdisciplinary team members caring for HIV syndemic populations, such as behavioral health clinicians, nurses, pharmacists and community health workers [26]. Unmet need for mental health and substance use disorder care poses significant barriers to retention in HIV care and viral suppression for people with HIV [27]. This directly impacts the key strategies to combat HIV (ie, to prevent, diagnose, and treat HIV and rapidly respond to outbreaks), both harming existing persons with HIV and jeopardizing the federal goal of reducing new HIV infections in the United States by 90% by 2030 [28]. In the face of these challenges, caregivers trained in HIV syndemic care across multiple disciplines are desperately needed.

WHAT IS THE RELATIONSHIP BETWEEN HIV SYNDEMIC CARE AND TRENDS IN HEALTH PROFESSIONS EDUCATION?

Fortunately, the new generation of students entering health profession programs appears to be seeking just this type of

mission [1]. In the past decade, instruction in SDoH has become standard practice in healthcare education to promote health equity, create a workforce that meets the needs of diverse populations, and equip learners with the tools to advocate for patients and communities [29]. This uptake of SDoH training represents a shift from a disease- or treatment-based focus to one that also considers the contexts and conditions within which people live, a paradigm long embraced in HIV syndemic care.

Alongside the recognition that the content of healthcare education requires reorientation through a social justice lens, institutions have also increased efforts to diversify their workforce and recruit groups underrepresented in medicine (URIM). Initiatives to promote equity principles and attract URIM learners and faculty have focused on recruitment strategies, pipeline programs, faculty development, and other upstream factors [30]. More diverse healthcare teams and workplace environments have a positive impact on patient care and the functioning of care teams [31]. Since belonging to a URIM group is strongly associated with providing care to underserved populations [32], improving URIM representation in health profession training programs would help grow the HIV syndemic-serving workforce [33].

Additionally, students of any ethnic or socioeconomic background who work with underserved populations during their training are more likely to care for similar populations in practice and have an increased sense of social responsibility [34]. As an example, a study of 2 University of California, Los Angeles, schools of medicine found that student attendance at the site caring for underserved populations in South Central Los Angeles predicted, maintained, and increased their intention to practice in underserved areas [35]. HIV syndemic care is by its nature it is attuned to SDoH, stigma, and structural racism. It requires work in interdisciplinary teams, a commitment to patient advocacy and an understanding of the historical and cultural legacies, both positive and negative, that influence health outcomes [36].

HOW DOES HIV SYNDEMIC CARE SUPPORT PUBLIC HEALTH PRINCIPLES?

The goals of HIV syndemic care align well with public health principles, as the confluence of factors that produced, amplified, and maintained the HIV syndemic cannot be addressed in an isolated fashion. For example, solely focusing on reducing opioid misuse through prescription drug monitoring programs overlooks cooccurring substance use or mental health disorders and ignores structural issues such as a lack of access to harm reduction or addiction treatment services [37]. Similarly, offering HIV preexposure prophylaxis through typical clinic-based medical models frequently fails to reach the marginalized and stigmatized people most at risk of acquiring HIV who often

do not have access to or trust in traditional medical facilities [38]. HIV syndemic care requires attention to patients' unique characteristics and beliefs, but just as importantly, the environment they inhabit, naturally infusing social justice principles into medical education. Moving from awareness to advocacy and action requires coordination between healthcare education, policy and clinical practice, and HIV syndemic care exemplifies this continuum in health professions education. Even if trainees do not directly join the HIV syndemic workforce, these experiences and lessons are an invaluable asset in their future healthcare practice.

A well-known example of how HIV syndemic care models this ideal of interdisciplinary, integrated care is the Ryan White HIV/AIDS Program, which has long been an incubator of new approaches to healthcare policy, programming, administration, and direct patient care. In the Ryan White HIV/AIDS Program, multidisciplinary collaboration occurs across the spectrum of people caring for people with HIV who may also have viral hepatitis, STIs, TB, and SUD, achieving outstanding health outcomes for uninsured and underinsured people with HIV in the United States [39]. Ryan White-funded HIV specialty and primary care clinics have for decades promoted a team-based approach to medical care involving physicians, nurse practitioners, physician assistants, nurses, medical and social case managers, behavioralists, and pharmacists. A recent innovation at Ryan White clinics is the approach to HIV prevention and care referred to as a "status neutral" care, which provides a framework for comprehensive STI, hepatitis, and SUD prevention and treatment services for all people affected by or at risk of HIV, regardless of HIV status [40]. When based at Ryan White or other HIV syndemic-serving clinics, students, residents, and other trainees are thus immersed in the real-world, intersectional application of SDoH, social justice, and cutting-edge medical principles.

RECOMMENDATIONS

The HIV syndemic and ID and HIV workforce shortages now more than ever present great opportunities for schools and training programs to address major ID-related public health challenges while providing students with exposure to an area of medicine that is profoundly impactful and fulfilling. Students arrive with idealism and a natural inclination to make a difference. Introducing them early on to these concepts and providing opportunities to see them in action will impact the careers they pursue. Beyond addressing care disparities and workforce shortages, schools and training programs that expose students to the foundations of nonjudgmental, compassionate, and SDoH-informed care will see them carry these principles into whichever field they practice, making investments in HIV syndemic education a valuable asset to health training programs of all types. What follows are 5 key recommendations for leaders in health professions education,

training, regulation, licensing, policy making, and funding to promote HIV syndemic care (also see Table 1).

1. ***We recommend the creation of pathways or areas of concentration in healthcare training programs specifically designed to educate and train students in HIV syndemic care, SDoH, social justice, and advocacy, and using these pathways as a recruiting tool to attract a diverse student body.***

Effective HIV syndemic care crosses disciplines and students gravitate toward what they are inspired by early in their education. We need to draw more students and trainees to HIV syndemic care, across disciplines, and specialties, including ID, primary care, behavioral health, pharmacy, physician assistant (PA), nurse practitioner (NP), nursing, or community health worker programs, and embrace HIV syndemic care as a core competency in these training programs. For physician, NP, and PA residency training programs, the [National HIV Residency Pathway Consortium](#) assists institutions with launching new programs and provides support to existing programs.

2. ***We recommend the development of healthcare models that address the needs of communities experiencing health inequities and promote trust in health systems and professionals.***

Better HIV syndemic care requires complementing individualized patient care with interventions that extend past traditional medical settings to address broader societal needs that squarely impact health. Public health, health policy, and civic leaders must partner with academic and clinical educators to create integrated community health systems that go beyond hospitals and clinics to address the root causes of poor health outcomes. The approach to

Table 1. Policy Recommendations for Promoting HIV Syndemic Care in Health Professions Education

1. The creation of pathways or areas of concentration in healthcare training programs specifically designed to educate and train students in HIV syndemic care, SDoH, social justice, and advocacy, and using these pathways as a recruiting tool to attract a diverse student body.
2. The development of equity-focused, value-based, decentralized, and demedicalized healthcare models that address the needs of communities experiencing health inequities and promote trust in health systems and professionals.
3. Leveraging the many outstanding, and open-access resources that support healthcare profession education in HIV syndemic care (see Table 2 for resources).
4. The establishment of licensing, credentialing and continuing education competencies related to understanding SDoH, social justice, and health inequities.
5. Call for payment reform to appropriately value primary care and infectious diseases specialists, including educational loan repayment for providing ID and HIV services and increased support for community health centers, safety net hospitals and behavioral health/NP/PA/community health worker programs providing HIV syndemic education, training, and patient care.

Abbreviations: HIV, human immunodeficiency virus; ID, infectious diseases; NP, nurse practitioner; PA, physician assistant; SDoH, social and structural determinants of health.

Table 2. Syndemic-focused Educational Resources

1. The National HIV Curriculum https://www.hiv.uw.edu/
2. The American Association for the Study of Liver Diseases (ASLD)/Infectious Diseases Society of America (IDSA) Hepatitis C Guidelines https://www.aasld.org/practice-guidelines/hepatitis-c
3. The University of Washington Sexually Transmitted Infection (STI) Curriculum, Hepatitis B, and C Web Study Programs https://www.std.uw.edu/ https://www.hepatitisb.uw.edu/ https://www.hepatitisb.uw.edu/
4. The CDC STI, Pre-exposure Prophylaxis (PrEP) and Tuberculosis (TB) Guidelines https://www.cdc.gov/std/treatment-guidelines/default.htm https://stacks.cdc.gov/view/cdc/112360 https://www.cdc.gov/tb/hcp/clinical-guidance/index.html
5. Substance Abuse and Mental Health Services Administration (SAMHSA) Trainings https://www.samhsa.gov/practitioner-training
6. Comprehensive Educational Programming Offered by the Eight Regional AIDS Education and Training Centers (AETC) https://aidseduc.org/aetec-program/regional-offices
7. HIV Clinical Guidelines https://clinicalinfo.hiv.gov/en/guidelines
8. American Academy of HIV Medicine Training Opportunities https://aahivm.org/
9. National HIV PrEP Curriculum https://www.hivprep.uw.edu
10. National Clinician Consultation Center https://nccc.ucsf.edu/
11. HIVMA List of HIV Training Programs https://www.hivma.org/education-training/training-curriculum/hiv-training-programs2/
12. HIV Assist Tool—Aid for Antiretroviral Clinical Decision-Making https://www.hivassist.com

community-based, client-centered care and outreach promoted in the Ryan White Program provides an excellent starting point for such innovations.

3. ***We recommend leveraging the many outstanding, open-access resources that support healthcare profession education in HIV syndemic care.***

Creating curricula and clinical rotations takes time, energy, and money, but the barrier to accessing syndemic-focused educational content has never been lower. Leading examples of these resources are shown in Table 2.

4. ***We recommend the establishment of licensing, credentialing, and continuing education competencies related to understanding SDoH, social justice, and health inequities.***

Professional organizations and accrediting institutions play an influential role in the education, training, and professional development of their members. Licensing bodies set standards for knowledge and competencies and thereby shape the health profession schools and accreditation bodies that align their standards with such entities. These fundamental concepts are applicable across all health professions that serve HIV syndemic-affected populations, whether or not they are HIV-focused.

5. ***We call for payment reform to appropriately value primary care and infectious diseases specialists, including educational loan repayment for providing ID and HIV services and increased support for community health centers, safety net hospitals, and behavioral health/NP/PA/community health worker programs providing HIV syndemic education, training, and patient care.***

Appealing to students' idealism toward choosing careers oriented around social justice and fulfilling, impactful practice cannot always overcome the financial realities of paying off student debt. More support is required to produce the robust and diverse health professional workforce needed to fully address the HIV syndemic. One such example is the *Bio-Preparedness Workforce Pilot Program* (Consolidated Appropriations Act, 2023, H.R. 2617, 117th Cong, 2nd Sess [2022], Public Law No. 117-328; approved but not yet funded).

CONCLUSION

The rising generation entering the healthcare workforce is asking for and deserves an education wherein the social and medical realms are understood to be inextricably and deterministically intertwined. Promoting the development and success of HIV syndemic education and training across the spectrum of health professions is what our students want and what our patients need. It provides an excellent match between learners' aspirations, our modern understanding of the forces that drive epidemics and health disparities, and a critical health workforce demand. Our recommendations aim to inspire health education, training, regulation, finance, policy, and public health leaders to work together to meet the challenges of the HIV syndemic both as an end in itself and as a means to improving the larger healthcare system.

Notes

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