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The HIV Primary Care Workforce of Tomorrow: The UCSF Integrated HIV/AIDS Primary Care Capacity Nurse Practitioner Program

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Abstract

The increasing demand for primary care services and the current health care workforce shortage is predicted to cause drastic reductions in the number of clinicians who are competent to provide HIV care. For the past decade, the University of California, San Francisco (UCSF) School of Nursing has provided HIV specialty education for Advanced Practice Nursing students in the Master's curriculum. In 2013, UCSF was funded by the Health Resources Services Administration to establish a nurse practitioner (NP) HIV primary care education program to expand the number of NPs prepared to provide culturally appropriate comprehensive HIV primary care. To this end, UCSF faculty have developed and validated a set of HIV Primary Care entry-level NP competencies, integrated general HIV knowledge into the NP curriculum, and enhanced our current HIV Specialty curriculum and clinical training. Described herein is UCSF's Integrated HIV/AIDS Primary Care Capacity Nurse Practitioner Program.

Key words: advanced practice nursing/education; HIV; nursing education; nursing workforce; primary care nursing

HIV care has been largely supported by specialty clinics staffed by physicians and advanced practice nurses (APN). In the early days of the epidemic, nurses received training in HIV care on the job, but as the science evolved, nurses gained HIV knowledge and expertise by reading medical literature and by attending national conferences and local/regional workshops. HIV nursing literature appeared in the late 1980s with the first nursing HIV textbook by Flaskerud (1989), *HIV/AIDS: A Reference Guide for Nursing Professionals*. HIV nursing research and dissemination has flourished in comparison to formalized training programs for HIV APNs in the educational nursing literature.

In the mid-1980s, the University of California, San Francisco (UCSF), School of Nursing (SON), established a 10-week course on HIV as an elective for any student in the masters or doctoral programs. In 2004, the school received funding for an HIV training grant from the Human Resources and Services Administration (HRSA), which was the first in a series of four training grants (Stringari, Dawson-Rose et al., 2014, Stringari, Fox et al., 2014, Stringari-Murray et al., 2010, Stringari-Murray et al., 2005). These HRSA grants allowed the SON to create an HIV curriculum for APN students in the masters program and develop a vision for HIV education that conceptualized HIV as a chronic manageable disease. Didactic courses on HIV, such as HIV epidemiology and prevention, pathophysiology, pharmacology, and clinical management were developed. In addition to course work, students were placed in clinical residencies (120-150 hours) in HIV centers of excellence providing models of HIV primary and specialty care.

HIV has evolved into a chronic condition over the last 3 decades, and people living with HIV (PLWH) on antiretroviral therapy (ART) are surviving longer, many achieving a near-normal life expectancy (Wada et al., 2014). Yet consider these statistics in the United States: there are approximately 12 million people currently living with HIV, each year 50,000 new infections occur, and about 1 in 8 individuals are unaware of their HIV status (Centers for Disease Control and Prevention, 2015). In 2010, the White House Office of National AIDS Policy (2015) released the National HIV/AIDS Strategy (NHAS) for the United States, but few health care providers are prepared with basic HIV knowledge and information about testing and linkage-to-care strategies, or have even reflected on their own personal attitudes and beliefs about HIV.

A better-prepared health care workforce has been of the utmost national importance. The Institute of Medicine (2001) "chasm" report stressed that the health care workforce needed adequate preparation to respond to the changing needs of populations. Educating and expanding the HIV nurse practitioner (NP) workforce is critical if we hope to achieve the goals of the NHAS and create a programmatic response to those who do not know their HIV status. The NHAS policy directive to increase the number of trained clinicians who have the capacity to both impact HIV incidence and provide high-quality, equitable HIV care, coupled with the national shortage of primary care NPs, presents a challenge for nurse educators. National workforce projections have estimated that the supply of registered nurses will outpace the demand for nurses, yet state variations will continue to exist; California is 1 of 10 states in the West that will continue to experience a shortfall in the supply of registered nurses (HRSA, 2013).

New care delivery models, with a focus on managing health status and taking on new and/or expanded roles, such as preventive care and care coordination, place greater demand on nurses. With the NHAS policy initiative, the expansion of routine HIV testing (U.S. Preventive Services Task Force, 2013), and current practice guidelines that advocate immediate initiation of ART (Panel on Antiretroviral Guidelines for Adults and Adolescents, 2015), APN education and training must prepare future primary care NPs to care for newly diagnosed PLWH who may have been referred to specialty care in the past. Improving the survival rate in a diverse population of PLWH who are on ART has further resulted in an urgent need for new approaches in nursing education to build the number and the capacity of NPs prepared to provide HIV Primary Care.

Based on the need to expand the HIV NP workforce and in response to a funding opportunity announcement from HRSA, the UCSF SON was one of four schools awarded grants to develop an expanded NP curriculum. To this end, we have:

- Integrated HIV content into the adult gerontology nurse practitioner (AGNP) and family health care nurse practitioner (FNP) curricula, providing all NP students who enter practice with general knowledge and understanding of HIV competencies to test and treat a person newly infected with HIV;
- Developed a set of HIV Primary Care competencies, that are now being used to assess and develop curriculum; and
- Used the newly developed competencies to enhance HIV Specialty courses so that graduates who have specialized in HIV care are prepared to manage PLWH who have multiple chronic comorbidities in addition to HIV.

This article describes the UCSF Integrated HIV/AIDS Primary Care Capacity Nurse Practitioner Program (referred to as HIV PCC), the development of HIV competencies, the integrated curriculum and HIV Focus specialty program, general results to date, and conclusions that include lessons learned and next steps.

Development of UCSF Integrated HIV/AIDS Primary Care Capacity Nurse Practitioner Program

The SON has been teaching HIV content to graduate nursing students since the early 1980s, but over the years the scope of content changed and expanded, and evolved into three courses and clinical training hours in HIV specialty clinics. Thus, our HIV education platform was the starting point for developing the UCSF Integrated HIV/AIDS Primary Care Capacity Nurse Practitioner Program. HRSA's HIV Workforce Initiative activated us to think about what NPs needed as they entered the workforce and to “raise the bar” in preparing APNs and consider more strategic outcomes to increase the nursing workforce in HIV.

Our curricular development and adaptation process included several distinct steps. We began our curriculum development process by reviewing the literature on curricular innovation (Kern, Thomas & Hughes, 2009) and existing HIV nursing curricula (Relf et al., 2011, Swanson, 2009). As a next step, our team conducted student and faculty needs assessments using survey and focus group discussion

methods. And finally, scope and selection of curricular topics were determined and overall curriculum structure was guided by our curriculum development model and a review of our existing HIV curriculum.

A review of the literature on the process and frameworks utilized for curricular innovations identified several different models that have been used in both undergraduate and graduate medical and nursing curricula development. Models of curricular innovation and change have included domains of professional competencies and the ability to be flexible (with change) within the setting of a dynamic primary care and HIV specialty care landscape. This dynamic perspective was important to HIV curricula for APNs because HIV knowledge, novel treatments, and rapidly changing approaches to care and prevention are a norm in the HIV world, and thus in classroom and clinical training sites.

Adding to the dynamic nature of HIV care provision, current studies of the HIV workforce have indicated large fluctuations in the number and capacity of practicing clinicians who deliver the majority of HIV care (Boehler et al., 2015). One study by the American Academy of HIV Medicine and the HIV Medicine Association (2009) suggested that nearly one-third of HIV clinicians are planning to retire within the next 5 years, drastically impacting the number of clinicians who are competent to provide HIV care. During our curricula development process, we accounted for the changing landscape of how HIV care is delivered, including who provides care and where (primary care or specialty care).

We used Kern and colleagues' (2009) six-step approach to curriculum development, an iterative approach to designing health-care curricula. The steps include: (a) problem identification and general needs assessment, (b) targeted needs assessment, (c) developing goals and objectives, (d) defining education strategies, (e) implementation, and (f) evaluation and feedback. Problem identification and general needs assessments were described above. Our targeted needs assessment of students was designed to assess interest in HIV training. The results of these needs-assessment activities indicated that students wanted to gain a more in-depth understanding of HIV treatment and clinical care, including clinical experiences with both HIV-infected patients who were stable on treatment with no overt clinical problems and patients whose HIV was more complicated (e.g., failing ART and needing to change medication, kidney disease and HIV treatment).

Kern and colleagues' (2009) iterative process of curriculum development, on goals and objectives, naturally took us to the next step of developing HIV competencies. Again, we reviewed the literature on HIV core competencies in low-resource settings (Relf et al., 2011), core competencies developed by professional nursing organizations including the Association of Nurses in AIDS Care's core curriculum (Swanson, 2009), the National Organization of Nurse Practitioner Faculties (2011), the American Academy of HIV Medicine (2012) curriculum, and interprofessional core competencies (Interprofessional Education Collaborative Expert Panel, 2011). In the early phase of developing our competency domains, faculty reviewed both the American Association of Colleges of Nursing (2010) Adult-Gerontology Primary Care Nurse Practitioner competencies and the National Organization of Nurse Practitioner Faculty (2011) core competencies, with the goal of creating a set of HIV competencies that would supplement the professional competencies that were

expected of all primary care NPs at entry into practice. The process for developing and validating entry-level and specialist competencies will be presented in a future publication.

UCSF's Integrated HIV PCC and HIV Focus NP Curriculum

One objective of the HIV PCC was to provide UCSF AGNP and FNP students with an integrated HIV primary care curriculum so that all new graduate NPs exited their respective programs with an entry-level competency to provide primary care to PLWH. Because the curricula for each program were already highly impacted with content, a secondary goal of the HIV PCC was to integrate HIV curriculum without adding course units or additional time to the programs. Making room for content changes meant that we had to learn how to teach differently, such as providing and discussing case-based learning modalities, which are further described below.

The second objective was to maintain the HIV specialty curriculum for a subset of students in each NP cohort—called the HIV Focus—that UCSF has been delivering since 2004. Students in the HIV Focus, in addition to receiving the integrated HIV curriculum provided to all students, take additional coursework and participate in clinical residencies at HIV primary care or specialty care settings. Figure 1 provides a schema of the HIV PCC curriculum. The didactic coursework for HIV Focus students includes epidemiology, policy, and prevention; clinical pharmacology; and clinical management courses. The UCSF HIV Primary Care Nurse Practitioner Entry-Level Competencies are comprised of five overarching domains of HIV primary care that would be expected of any NP entering practice caring for PLWH. Within each domain are specific competencies and a description of the specific skills, knowledge, or attitudes required to meet the competency. Table 1 presents the five domains.

The HIV curriculum was integrated into the existing AGNP and FNP curricula through a process of curricular mapping of current courses and identification of curricular gaps. Faculty who were teaching in the NP curriculum were made aware of the gaps in content and were provided pedagogical strategies for integrating HIV content into their courses. Each individual course faculty was responsible for writing specific learning objectives and identifying an appropriate method to address the gaps. Table 2 provides an example of the curricular development process for a competency on HIV screening.

All UCSF NP didactic courses are hybrid courses, using both classroom teaching and the Web. Course materials, learning objectives, required readings, and assignments are posted online on individual course sites. Course design utilizes the principles of a flipped classroom with decreased use of podium lectures in class by faculty (McLaughlin et al., 2014). Students complete required readings and assignments prior to class meetings. Classroom time is used to assess understanding of material and to apply assigned content. Teaching strategies include: (a) narrated slide talks on topics of HIV, (b) small group discussion conferences, (c) online discussion for (a), (d) problem-based learning, (e) online self-paced interactive tutorials, (f) online case-based video modules, (g) small group projects, (h) role play, (i) peer-to-peer teaching, and (j) institutional conferences. Course content is provided by HIV-expert nursing, medical, and pharmacy faculty.

Clinical experiences consist of continuity residencies in general primary care sites (family practice or general medicine) where students are able to apply the HIV knowledge, skills, and attitudes that they have acquired in the curriculum. Students in the HIV PCC integrated curriculum have been prepared to offer HIV testing, provide initial health care maintenance, immunizations, and screenings for PLWH, as well as resources to link newly diagnosed clients to HIV health care.

Students in the HIV Focus specialty program are assigned residencies in clinical sites that provide care to PLWH. Clinical sites are selected based on certain criteria: they must provide models of interprofessional comprehensive HIV primary and specialty care, care for people of color with HIV, provide care for patients with hepatitis B and C, and of course, be willing to work with students to manage a panel of patients during the second year of the NP program. While clinical residency sites that are not specialty clinics are challenging to cultivate, establishing relationships with providers has been a key to developing clinical residencies for our learners. To date, we have 14 residency sites and aim to develop more sites.

Learner evaluations occur for both didactic courses and clinical residencies. Students complete course evaluations and receive quarterly preceptor evaluations. Preceptor evaluations are included in clinical course grading. Clinical faculty review all course evaluations and clinical performance evaluations. Formative and summative evaluations of HIV knowledge, skills, and attitudes are conducted throughout the program for NP students in the integrated curriculum and specialty curriculum during simulated clinical experiences with patient-actors. For example, NP students in the integrated curriculum complete a simulation with an older adult male with HIV and multiple morbidities presenting to clinic for refills of prescribed medications.

Results

The overall process for implementing the HIV PCC curriculum was initiated in Spring 2013; by Fall 2013 a set of core competencies had been developed, validated, and used to conduct curricular mapping for the integrated curriculum and HIV Focus specialty. In Fall 2014, the major rollout of the integrated HIV curriculum in the AGNP and FNP core courses began. And in June 2015, a cohort of nine students from the HIV Focus specialty program graduated. More than half of the graduates are now employed and providing care to HIV medically underserved populations, and one received a UCSF global health fellowship.

The results of our gap analysis of the NP curriculum identified several areas of HIV content that could easily be integrated into existing curricula based on current course syllabi. Specifically, content on HIV testing and testing guidelines, preexposure and postexposure prophylaxis, prevention of perinatal transmission and reproductive counseling, symptom management, and management of common chronic comorbidities was integrated into the primary care curriculum.

As planned in the grant, UCSF partnered with the Pacific AIDS Education and Training Center (PAETC) as the evaluator of all program activities. In Fall 2014, the AGNP and FNP students (n = 61) were surveyed on confidence in ability to provide services, knowledge about HIV care, attitudes toward PLWH, and understanding of

clinic policies and procedures. A class of 61 NP students (response rate = 61) was surveyed in 3 days. Scores for students entering the AGNP or FNP programs revealed that they had very low confidence in ability to provide services, such as screening a patient for HIV; low to moderate knowledge about HIV care; attitudes toward PLWH varied, such as approximately 50% thinking that PLWH required more time than other patients; and more than 50% did not know about opt-out HIV testing or federal treatment guidelines. The survey will be repeated in Fall 2015 and at graduation, which will complete the first evaluation cycle process of the integrated curriculum. At that point, we will have a better understanding about our success in achieving the goal of NP students graduating with generalist HIV knowledge.

A focus group evaluation was conducted with the cohort of nine graduates in June 2015. Responses about the HIV Focus specialty program indicated that the courses are important, effective, and meaningful. The graduates wished they had had more HIV-focused classes. One student remarked, "I think it would have been nice to have something HIV-focused every quarter, even if it's just a short seminar or 1 hour class weekly." Most of them said they liked the online modules associated with the clinical management class. Regarding clinical rotations, students said they needed more academic support during clinical rotations. Learning the HIV guidelines was reported as being beneficial in caring for HIV-infected patients and the graduates looked forward to using them in clinical practice. One said, "... I feel familiar enough with them that I could recognize the meaning of a change."

Discussion

UCSF's HIV PCC program is optimizing advanced practice education and training for AGNP and FNP graduate students who will be better prepared to care for and treat patients who are or may be infected with HIV and to provide evidence-based care. Over the years of HRSA funding support, the SON has graduated 84 APNs who received specialized training in HIV. None of these students were provided funding, as HRSA does not allocate training stipends for APNs. In June 2016, approximately 61 AGNP and FNP students will be the first group of students to graduate from the integrated HIV curriculum, using HIV competencies as our map and guide. We acknowledge that the HIV competencies that have been developed have not been validated or vetted nationally, but our hope is to support the development of a set of national HIV competencies for APNs.

Qualitative evaluation data from the graduating cohort in June 2015 revealed that the students had an altruistic commitment to underserved and stigmatized populations. Based on student data, we will be considering how to incorporate informal learning options each quarter, such as a seminar course each quarter or an HIV journal club. At the same time, because the FNP curriculum has more course units than the AGNP program, we need to work on how to achieve a better workload balance for FNP students. Most of the students elected to enroll in the HIV Specialty Focus because they were inspired by previous experiences working with underserved and stigmatized communities such as the homeless; drug users; and lesbian, gay, bisexual, transgender, and questioning populations. And, having completed the program, they felt the HIV training gave them confidence to work in primary care settings and care for PLWH as long as they had additional support. The

evaluation plan will include collecting data on HIV knowledge of first- and second-year students in the program, assessment of graduates about where they are working, and the proportion of HIV-infected patients in their panel of care, in addition to HIV functions they perform, and finally, the impact of the overall program.

A future goal is to enhance the HIV knowledge and impact on attitudes about PLWH of the faculty teaching in NP programs at UCSF and other surrounding universities. Creating HIV depth in our respective faculty who teach in NP programs will hopefully be the last cog in the wheel to increase the HIV nursing workforce. PAETC recently conducted a baseline-level assessment of faculty's knowledge, attitudes, and skills, and the results were surprisingly low. The majority of survey respondents were clinical faculty engaged in some type of clinical practice. Another next step will be to develop a faculty development workshop for primary care faculty and clinical preceptors in the upcoming academic year.

The continual, acutely felt need for nurses to integrate knowledge, technical skills, and ethical decisions in their practices has become more evident. It is only through effective pedagogical approaches that nursing faculty will be able to ensure that advanced practice graduates are better prepared to become competent NPs who can care for and treat PLWH. From our observations and experiences training advanced practice students in HIV, the program has been successful thus far because we have had nurse faculty champions in HIV, nimble faculty who were willing to learn new ways to incorporate HIV content (pedagogical strategies), clinical training sites that were willing to mentor students, practicing NPs and HIV providers who valued teaching the next generation of HIV primary care providers, and nursing faculty who understood the richness of working across specialty programs. Finally, collaborating with PAETC has been extremely valuable due to the resources they provided locally and nationally, but also due to their in-depth experiences teaching about HIV and evaluating learners.

UCSF's HIV PCC program, together with PAETC and HRSA, is accomplishing the goal of establishing NP HIV primary care education and creating a vision for the care and treatment of PLWH as a chronic, manageable disease. As more NPs in the workforce become competent in HIV care, perhaps we will see greater evidence of testing and linkage to care for persons who are at high risk for HIV infection and/or in need of care.

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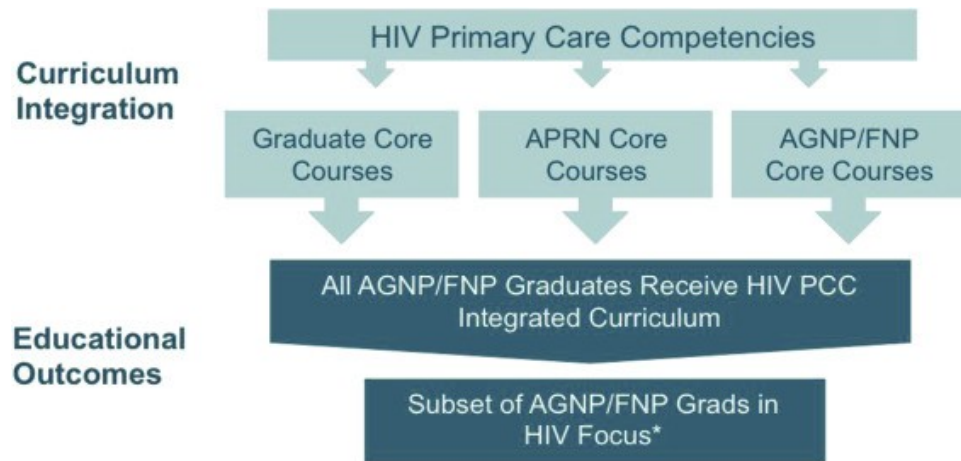
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Figure 1. HIV PCC curriculum implementation.



*HIV Focus: students have 120 hours of HIV primary care clinical residency as well as additional coursework to support the residency.

Table 1. UCSF HIV Primary Care Nurse Practitioner Entry-Level Competencies

Domain I: HIV Epidemiology, Policy, and Prevention
Domain II: Health Promotion/Disease Prevention
Domain III: HIV Clinical Knowledge and Patient Care
Subdomain IIIA: Clinical Management
Subdomain IIIB: Antiretroviral Therapy for Adolescent and Adult PLWH
Subdomain IIIC: Clinical Management of HIV/Viral Hepatitis Co-infection
Domain IV: Cultural and Spiritual Competence
Domain V: Leadership, Systems-based Practice, and Quality Improvement

Note. UCSF = University of California, San Francisco; PLWH = people living with HIV

Table 2. Integration of HIV Screening into AGNP and FNP Curricula

Domain	Competencies; Student Applies:	Core Knowledge/ Skills/Attitudes	Curriculum Mapping	Gap	Implementation/ Methods	Evaluation
HIV Epidemiology, Policy, and Prevention	Knowledge of epidemiology, demography, and federal programs and policies. Evidence-based recommendations for screening.	Knowledge HIV care continuum. Student implements CDC and USPSTF HIV testing guidelines in the clinical management of a primary care patient.	No identified curriculum for these competencies.	HIV care continuum and HIV screening need to be added to the curriculum.	20-minute online case-based video module on HIV screening as a component of the HIV care continuum added to course on population health and prevention.	Student completes a multiple-choice online quiz after completing the module.
HIV Clinical Knowledge and Patient Care	Knowledge of the interaction between HIV and common chronic conditions in managing co-morbidities.	Knowledge of the management of common chronic conditions in PLWH, including cardiovascular disease, diabetes, kidney disease, viral hepatitis, and osteoporosis.	No identified curriculum for this competency.	Knowledge of the management of common chronic conditions in PLWH needs to be added to NP curriculum.	Cases developed and added to NP clinical: older adults with HIV and multiple morbidities, drug interactions with ART medications, management of ART medications in patients with renal or hepatic impairment. Clinical exercises to find and apply federal treatment guidelines, narrated slides, student-led case-based discussions and in-class student presentations.	Quizzes; standardized patient simulation; student course evaluations.

Note. AGNP = adult gerontology nurse practitioner; FNP = family health care nurse practitioner; CDC = Centers for Disease Control and Prevention; USPSTF = United States Preventive Services Task Force; PLWH = people living with HIV; NP = nurse practitioner; ART = antiretroviral therapy

Disclosures

The authors report no real or perceived vested interests that relate to this article that could be construed as a conflict of interest.

Key Considerations

- Persons living with HIV (PLWH) require quality primary care.
- Nurse practitioners should be competent to care for newly diagnosed HIV patients and initiate an appropriate medication regimen in consultation with an HIV specialist.
- Schools of nursing training nurse practitioners can integrate HIV/AIDS content using pedagogical strategies in existing curricula.
- More nurse practitioners entering practice in coming years will need to be prepared to care for PLWH in primary care settings.

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