A typology of models for expanding access to oral health care for people living with HIV/AIDS

Serena Rajabiun, MA, MPH[1]; Sara S. Bachman, PhD[2]; Jane E. Fox, MPH[1]; Carol Tobias, MMHS[1]; Helene Bednarsh, BS, RDH[3]

1 Evaluation Center for HIV Oral Health, Boston University School of Public Health, Boston, MA
2 Boston University School of Social Work, Boston, MA
3 HIV/AIDS Dental Program, HIV/AIDS Services Division, Boston Public Health Commission, Boston, MA

Abstract

Objectives: This article describes a typology of program models for expanding access to dental services for people living with HIV/AIDS (PLWHA). These programs serve communities with limited access and high unmet need for oral health care, such as rural areas, low-income and racial/ethnic minorities.

Methods: Interviews and site visits with dental and program directors were conducted at participating sites, including AIDS service organizations, community health centers, and university-affiliated medical centers or hospitals.

Results: Despite the differences across organizational structure, similar models and approaches were developed to engage and retain PLWHA in dental care. These approaches included: using mobile dental units; expanding the type and availability of previous dental services provided; providing training opportunities for dental residents and hygienists; establishing linkages with medical providers; providing transportation and other ancillary services; using dental case managers and peer navigators to coordinate care; and patient education.

Conclusions: This typology can assist program planners, medical and dental care providers with service delivery strategies for addressing the unmet need for oral health care in their area.

Introduction

Approximately half of the people living with HIV/AIDS (PLWHA) do not receive the oral health care they need (1), thus expanding access to dental services has been identified as an essential yet unmet goal (2). Achieving this goal requires

programs to address barriers at the system, provider, and patient levels of care. System barriers include the lack of coverage for dental care and limited availability of dental providers. National studies among HIV-positive patients found that about half (52 percent) had dental insurance although only 65 percent reported having a usual source of dental care. Those without dental insurance had higher unmet need for dental services than those with dental insurance (3-5). Provider issues, such as fear or stigma associated with treating PLWHA despite low risks of HIV transmission have also limited access to dental care for PLWHA (6). Finally, personal factors such as fears and anxiety about going to the dentist, stigma related to HIV and the fear of disclosing HIV status to dental providers, perceptions of costs, and poor compliance may further affect the willingness of PLWHA to seek dental services (5,7-11). Increasing the availability of dental services for PLWHA requires eliminating barriers and creating new approaches to delivering services.

There are few published reports describing models developed to improve access to dental services for underserved populations including PLWHA. The WK Kellogg Foundation's Community Voices Initiative funded three programs to improve access to primary, behavioral, and oral health care for uninsured and underserved populations of all ages. These programs (ABCD/ABCDE/Kids Get Care, WA; Apple Tree Dental in MN; and Community Dentcare, NY) had partnerships among dental providers, community-based organizations, and primary health-care providers. Published studies from these programs found that the targeted populations such as children and underserved minority populations were more likely to receive increased dental visits (12,13). The studies described promising strategies to improve the oral health care safety net including: a) co-locating dental, behavioral, social, and medical services within one existing center; and b) using mobile units to reach underserved populations such as children and the elderly (12-14).

Other studies have described interventions for HIV-specific populations. These interventions provided services either through a dedicated dental clinic or through the use of mobile dental programs co-located within HIV-related community-based organizations (15,16). A strength of these models is that they allow for a similar range of services and treatment as those performed in any general dental practice. In addition, these models have been shown to reach underserved HIV-infected populations, including substance users, persons with mental illness, poor and racial/ethnic minorities. However, these programs faced limitations in their capacity to address the myriad of other social and health needs for PLWHA or working in communities where HIV stigma is an access barrier to services.

Few studies have examined in depth, the systemic and programmatic elements needed to address the barriers and facilitators to dental care for PLWHA. A study of the CommunityDent program in Harlem New York, a university-based dental mobile unit, found that expanding dental services to communities was linked to shared institutional goals between dental and medical centers. The study suggested that dental schools need to make community service part of their mission with staff and faculty who have shared goals and standardized procedures (17). Published studies have provided descriptive information about community-based programs, yet a comprehensive and systematic categorization of approaches to improve access does not exist.

In 2006, the HIV/AIDS Bureau of the Health Resources and Services Administration (HRSA) funded a Special Project of National Significance (SPNS) to expand access to dental services for PLWHA. The Oral Health Care Initiative funds 15 sites across the United States that serve both urban and rural populations. Goals included a) developing innovative models of comprehensive oral health care services for PLWHA; b) expanding services to new communities and populations; c) implementing models to maximize payment of services from all sources including Medicaid and other community resources and develop new financing methods to sustain dental services; d) establishing linkages and referrals with HIV medical care and support services to ensure a continuum of care; and e) providing appropriate training and support for clinical and support staff in developing the expertise to manage oral health care in PLWHA and provide on-going education in HIV care management (18). Five programs (33 percent) served rural populations, six programs (40 percent) were located in major metropolitan cities, and four programs (27 percent) served both urban and rural populations. All programs served patients living with HIV with a majority targeting low-income communities and communities of color. Table 1 provides a summary of the project sites, their location, the setting for dental services and the target population served.

This article examines the similarities and differences across the HRSA/SPNS programs, and describes a typology of strategies for expanding dental services to PLWHA. Typologies are useful tools for classifying interventions, programs, or phenomena in the social science and public health fields that can then be used to further test the efficacy of the intervention or observed phenomena or organize potential programs. In health services research, typologies have been used to develop and compare approaches for provider payment options and identifying service delivery strategies for the uninsured and other vulnerable populations (19-21). Andersen *et al.* used a conceptual framework and typology for oral health promotion strategies to demonstrate the importance of focusing resources on older ethnic groups to achieve positive health outcomes (22). Our goal in this article was to identify the key elements that may be used by organizations for designing programs to reduce barriers and expand dental services for PLWHA and other underserved or vulnerable populations.

Methods

This typology was generated from three sources of data. First, data was gathered during site visits to the 15 HRSA/SPNS programs conducted from 2007–08. Site visits included semi-structured interviews focused on general and HIV-specific services provided by the host agency, target populations, program and clinical staff, types of dental services, patient education, funding sources, and community partnerships. Interviews with 45 staff including the directors, dental providers, and evaluators were conducted. Interviews were guided by a protocol and observations of clinic space and equipment. Members of the study team collected self-reported data on the list of dental and ancillary services. Self-report dental services were collected based on the American Dental Association accepted categories of care (23).

Table 1 Sites, Location, Dental Care Setting, Target Population Served

Site	Location	Organizational setting for dental care	Target population
AIDS Care Group	Chester, PA	AIDS service organization	954 people living with HIV/AIDS in surrounding rural counties
AIDS Resources of Wisconsin	Milwaukee, WI	AIDS service organization	989 people living with HIV/AIDS in surrounding rural counties
Community Health Center, Inc	Norwalk, CT	Community health center	600 low-income people living with HIV/AIDS in surrounding counties
Harbor Health Services	Hyannis, MA	Community health center	520 people living with HIV/AIDS in surrounding area
HIV Alliance	Eugene, OR	AIDS service organization	718 people living with HIV/AIDS in the surrounding rural counties
Louisiana State University, School of Dentistry	New Orleans, LA	Mobile van unit managed by a university-affiliated dental center	Underserved people living with HIV/AIDS in New Orleans and "at risk" minorities who do not know their HIV status
Lutheran Medical Center	New York, NY	Teaching hospital	612 people living with HIV/AIDS in the US Virgin Islands
Montefiore Medical Center	New York, NY	Mobile van unit managed by university-affiliated medical center	1000 people living with HIV/AIDS who receive medical services at MMC's community health centers in the Bronx
Native American Health Center	Oakland, CA	Community health center	People living with HIV/AIDS from communities of color
Sandhills Medical Foundation	Jefferson, SC	Mobile van unit managed by a community health center	176 low-income people living with HIV/AIDS from the surrounding rural counties
Special Health Resources of East Texas	Longview, TX	Community -based organization in partnership with Texas A&M University Baylor College of Dentistry	1,181 people living with HIV/AIDS residing in 3 counties of East Texas
St. Luke's Roosevelt Hospital	New York, NY	Hospital in partnership with community-based organizations and community health and dental clinics	960 people living with HIV/AIDS in the surrounding neighborhoods primarily communities of color
Tenderloin Health Center	San Francisco, CA	Community-based organization with medical care, substance use treatment, social services and housing	1750 people living with HIV/AIDS primarily, homeless and unstably housed with co-occurring mental health and substance use disorders
University of North Carolina, School of Dentistry	Raleigh, NC	University-affiliated dental center	100 newly diagnosed HIV-infected patients
University of Miami School of Medicine	Miami, FL	Mobile van unit managed by the University- affiliated medical and dental center	Low-income adults living with HIV/AIDS who have not received dental services in the past 6 out of 12 months and are currently receiving HIV primary care

From these interviews, the authors developed an initial classification using thematic content analysis and comparing the similarities and differences across program strategies and services for expanding access to dental services (24). This classification was further refined using the second source of data via phone interviews with site staff. A final revision of the typology was made after gathering the third source of data through a focus group exercise. The exercise was conducted during a semiannual meeting with the same program and dental staff to resolve any remaining discrepancies, and verify that the proposed classification reflected each site's strategy and services provided.

Results

Each site designed a program based on contextual factors at the local level, including socio-economic, policy/financing mechanisms for dental services and needs of their target population. Although there were many variations reflecting

Table 2 Strategies for Improving Access to Care by the Number and Type of Host Agency (*n* = 15)

Strategy for Access to HIV Oral Health Care	Type of host agency		
	AIDS Service Organization (ASO)/ Community-Based Organization (CBO) (*n* = 5)	University-affiliated medical/dental center or teaching hospital (*n* = 6)	Community Health Center (CHC) (*n* = 4)
Types of dental services			
Level I		1	
Level II		3	
Level III			1
Level IV	5	2	3
Dental care coordination			
Use existing HIV case manager	2	2	1
Dental case manager/patient navigator	3	1	3
Professional training	2	2	–
Connections to HIV medical care:			
Onsite	3	3	2
Linkage/Referral	2	3	2
Ancillary services			
One-stop shopping models	2	1	2
Transportation	4	-	3
Patient education			
Clinician driven (dentist, dental hygienist, dental assistant)	2	3	3

these factors, there were also some commonalities across sites. The results below identify the key dimensions of the typology.

Type of host agency

Sites were grouped into three categories based upon the organizational structure of the host agency: *AIDS service organizations (ASOs) or community-based organizations (CBOs)*, *university-affiliated medical centers or teaching hospitals*, and *community health centers (CHCs)*. The three ASOs and two CBOs operated in rural and urban settings and described their missions as serving low income, disenfranchised populations including people living with HIV. These agencies provided multi-services: HIV counseling and testing, medical care, case management, outreach and other support services. With the exception of one agency, dental care was not a core service provided prior to the intervention. The four CHCs provided primary health care to individuals from a broad population including but not limited to HIV care and treatment. Among CHCs, dental care was either a new service or a service expansion to underserved HIV communities in other areas/counties. Finally, six programs were hosted within a university-affiliated medical/ dental center or teaching hospital.

Despite agency differences across size, geographic setting, and scope of services two main approaches were adopted: a) adding a mobile dental unit or b) expanding the type or availability of dental services at a fixed site (i.e., health center or CBO.) None of these approaches was prescribed to

a single type of host agency; however, some patterns were observed.

For example, none of the four mobile dental programs were hosted by a CBO. Three university hospitals and one CHC-incorporated mobile dental units into their existing services to reach underserved HIV populations. Two mobile programs served HIV- infected patients only and relied upon existing HIV medical/dental programs for patient referrals. The other two mobile units served both noninfected and HIV-infected patients due to HIV-related stigma in their surrounding service areas. All mobile programs gave priority appointments to HIV- infected clientele.

Alternatively, other agencies had on-site dental services, including all CBOs, about half the university settings and all but one CHC. These programs expanded the availability of services to HIV-infected patients by one of the following methods: a) establishing dedicated HIV clinic hours; b) setting up dental clinics in new communities; or c) contracting with dental providers or specialists to bring additional services to HIV-infected populations in their area.

Six main categories then emerged as key elements to deliver dental services. These elements serve as decision points and included: the types of dental services provided; dental care coordination for patients; professional training for future dental providers; transportation assistance and other ancillary services; focused patient education; and connections to medical care. We examined these elements across agencies and the results are described below and are presented in Table 2.

Level I	Preventive, Diagnostic (cleanings, x-rays, oral exams), fluoride therapies
Level II	Level I plus restorative (fillings), simple extractions, periodontal, nonsurgical care (root planar scaling, periodontal maintenance), night guards, management of common oral lesions (i.e., thrush) emergency care, chair side, denture reline/repair
Level III	Levels I & II plus removable prosthetics (dentures and partial dentures) single unit crowns, endodontic therapy, anterior premolar root canal denture repair, laboratory denture repair/reline, cast post and core
Level IV	Levels I, II, & III plus fixed bridge work (except repairs), periodontal surgery, biopsies, molar root canal, complex surgical extractions, implants, apicoectomy, and specialty care that is referred out.

Type of dental services

Dental services ranged from preventive, diagnostic procedures to complex surgical extractions. The level of dental services was often determined by the type of model (mobile versus fixed site) and the type of collaboration/partnership with other dental providers in the community. Table 3 describes the different levels of dental services provided by the sites. All sites provided level I preventive and screening services. Ten sites offered all levels of dental services (level IV). Services were either provided on-site and integrated into the existing system of dental care or referred to a contracted dental specialist to provide specialized dental treatment.

In general, mobile van programs provided lower level services, and across all sites, higher level services were provided through collaborative relationships with other providers in the community. For example, two mobile van programs affiliated with university medical centers provided level I and level II services, and basic prevention and diagnostic services to both HIV-infected and non-HIV–infected populations. Patients with a greater burden of oral disease or problems were referred to the university's dental clinic for further treatment.

Community health centers and ASOs/CBOs generally provided higher level of dental services. One program at a federally funded community health center with satellite clinics, established dedicated HIV dental clinics at four sites and offered up to Level III services. Higher level (IV) of dental services such as oral surgery biopsies, and molar root canal were referred to dental specialists.

Dental care coordination

Six programs provided some form of dental care coordination for patients. None of these programs were restricted by type of host agency. Dental care coordination is defined as the activities that support the patient with accessing, attending and following up all dental services. These activities included contacting the patient about dental appointments through reminders or re-scheduling missed appointments; accompanying patients to the dental clinic; helping patients understand benefits and insurance about dental care; and providing assistance with referrals to dental specialists. Some dental care coordination activities also involved patient education for appropriate oral hygiene and healthy behaviors.

Dental care coordination was provided through two approaches. One approach used the patients' existing HIV case manager to help coordinate and follow up with dental care. For example, the dental staff (usually the hygienist) at one university's dental clinic contacted the patient's HIV case manager to provide referrals to specialty care and work with the patient on dental benefits. The use of existing HIV case managers was more common in ASOs and university-affiliated or hospital programs.

Other programs have dedicated "dental case managers or patient navigators," a staff member, usually a nonclinician who monitors HIV-infected patients to ensure they were engaged in dental care. For example at one rural CBO, the dental case manager worked with the dentist and hygienists to schedule patients for appointments; contacted patients who missed appointments, and managed all specialty referrals. At another urban community health center, a patient navigator was a trained dental assistant who educated patients on oral hygiene and followed up on dental services and referrals.

Professional training

Training dental residents and hygienists was another key component of expanding dental services to people living with HIV. Training occurs at ASOs and university-affiliated or hospital programs but not at CHCs. Training programs were more likely to be found in rural areas where one of the greatest barriers to care was availability of dental providers and provider willingness to treat PLWHA. One ASO formed a partnership with a community college to train dental hygiene students and serve rural HIV-infected populations. In this model, the students were able to enhance their skills and the patients gain critical access to essential prevention and diagnostic services such as cleanings, fluoride therapies, and X-rays. Another rural program at a CBO collaborated with a university dental school to place dental residents at its clinics 2 days a week. The additional manpower allowed the CBO to expand the type and availability of dental services provided and to increase the number of HIV-infected patients that could receive treatment.

Providing transportation and ancillary services

Five programs offered "one stop shopping models" for PLWHA to access ancillary services such as substance abuse treatment, mental health services, and counseling and testing at the dental care facility. The five sites represent each type of host agency. The dental care staff could refer a patient in-house for other services that might impact his/her ability to engage in dental care and treatment. For example, at one CBO serving the homeless, HIV-infected clients who attended the daily food program were offered on-site dental care.

Not including mobile vans, seven programs offer transportation services to their patients. Transportation is a major barrier especially in rural areas, and providing transportation/transportation assistance emerged as a key element for engaging and retaining a patient in dental services. One ASO in a rural area bought a van and hired a driver to transport patients to and from their homes to the dental clinic or a specialist.

Patient education

Eight sites, distributed across all host agencies, provided patient education. Programs used individual and group sessions to educate patients about manifestations of HIV in the oral cavity, importance of dental care and oral hygiene practices. Trained dental staff (hygienist or assistant) conducted individual sessions at chair side or a dental case manager met with a patient prior to the clinical appointment. Another strategy for reaching the patient is conducting group sessions in the waiting room. At one community health center, workshops were scheduled for HIV-infected patients from area ASOs, CBOs, and health centers to learn more about dental services and schedule appointments. During dental clinic days, oral health educational videos were shown in the waiting rooms, and for HIV-infected patients small group sessions were held with dentists.

Connections to HIV medical care

All sites reported that they strive to assist PLWHA to access a continuum of services including medical and dental care. This emphasis likely reflects their commitment to the mandate of the Ryan White program. Every program implemented mechanisms to enhance the linkages between HIV medical and dental providers. No variations were found across organizational settings. Eight sites had co-located dental care with medical care and worked to improve collaboration with the HIV medical providers to engage patients without dental care in the past year into their dental services.

To expand dental services to PLWHA, seven sites established formal agreements with HIV medical clinics or providers in their community.

Discussion

For PLWHA, oral health care is one of the most commonly reported unmet needs (1). The typology presented in this article describes the various elements for strategies to reduce unmet needs and expand dental services by the 15 HRSA/SPNS oral health-care sites. As a payer of last resort, the HRSA/SPNS programs provide necessary dental care to the HIV population, thus addressing potential gaps in services for patients with limited or no dental care insurance. The HRSA/SPNS sites provide dental services that range from preventive and diagnostic to comprehensive care with endodontic therapy and complex oral surgery and covered expenses for necessary specialty care and treatment. Several programs train dental professionals or use mobile units to provide services in areas with a shortage of dental providers. Care coordination and patient education are used to address patient fears, beliefs, or attitudes about the importance of dental care and teach proper oral health self-care techniques. Some HRSA/SPNS programs also offer ancillary services such as case management, food, mental health counseling, and transportation as a means to address the other competing needs that can affect patient retention in oral health care. Finally, the HRSA/SPNS programs work collaboratively with HIV medical providers to outreach and engage patients who were in need of dental care and thus ensure a continuum of HIV care.

Each site developed a model which varies according to the geographic area served by their host agency, the needs of their population, community attitudes toward HIV, and local and state policies and regulations around dental care services and financing. However, despite this local variation, results show these key programmatic elements could be adapted to other organizational settings to expand access to dental services for PLWHA. These key elements were not unique to university-affiliated or hospital centers or dental clinics, and could be incorporated into CHCs and ASOs/CBOs through partnerships with dental providers. All models incorporated the assets and expertise of various service providers working in both dental and HIV services.

Across the types of agencies, ASOs/CBOs were more likely to offer a higher level of dental services compared with university-affiliated dental clinics or hospitals; university-affiliated hospital sites were more likely to refer patients for specialty care to other available in-house clinics. Perhaps because CBOs and CHCs did not have access to the specialty care available through a university-affiliated medical center or hospital, they were more likely to develop strategies to deliver all dental services to HIV-infected patients. ASOs and

CHCs were also more likely than university-affiliated or hospital programs to provide transportation and offer other ancillary services such as housing, case management, mental health, and substance use treatment to address other competing needs that reduce access to and use of dental services. This may be attributed to the geographical location of the ASOs and CHCs who were operating in nonurban environments where public transportation was not as accessible.

We also found little variability in approaches to offering professional training. This is an important strategy which typically is maintained by university-affiliated dental schools and clinics. However, because CBOs and CHCs have access to the patient population, they could also adopt this strategy and address the need for dental providers by establishing partnerships with dental training programs at colleges and universities (25). Similar studies have shown positive results with partnerships between academic institutions and community-based organizations in expanding dental services to PLWHA and training providers in HIV and oral health (26).

There was little variability across the types of agency in their use of care coordinators in improving access to dental services. ASOs were likely to use existing HIV case managers to coordinate dental care and this meant additional training on the oral manifestations of HIV and the importance of oral hygiene. CHCs chose to employ dental hygienists or assistants as dental case managers or patient navigators, but needed information about the HIV service system. Despite differences in background and training, care coordinators could be the key to assisting PLWHA with receiving timely and appropriate dental care. Other studies have found the use of dental case managers to be an effective approach in increasing patient use of dental services and dentist participation in Medicaid (27). Previous research has shown that using case managers and other care coordinators can be an effective approach for engaging and retaining PLWHA in HIV medical care and could be a promising strategy for improving access to dental services (28-30). Future evaluations of the results of this project will provide more information about whether this strategy is effective for the study sample.

There are limitations to our methodology in developing this typology for expanding dental services for PLWHA. Our typology emerged from the specific environmental context of the communities, financing mechanisms, and regulatory policies for dental providers across the 15 HRSA/SPNS programs. State Medicaid policies vary in reimbursement for adult dental services; therefore, our programs may have chosen more targeted approaches to reaching underserved populations with severe oral health needs and linkages to dental specialists. Some offer only screening and then refer to providers accepting Medicaid. These factors are important when developing an effective approach for expanding dental services for PLWHA, no matter the model. Also, the catego-

ries were based on the interpretations of the authors and while the classification was validated through a focus group, it may not represent the viewpoints of all individual program participants. Despite these limitations, the typology describes a framework for organizations that could be applied and further evaluated regarding the effectiveness of these strategies for improving access to dental services for PLWHA.

In conclusion, reducing unmet needs for dental services among PLWHA requires considering nontraditional structures to deliver dental services (31). The recent policy statement on principles of health-care reform by the American Dental Education Association calls for implementing new models of oral health care within an integrated health-care system to ensure equitable access to vulnerable populations (32). Our results describe alternative approaches for dental providers in line with these principles and suggest a new role for community-based organizations, AIDS service organizations and health centers as a potential partner in expanding dental services to PLWHA. Future plans for this initiative include an evaluation of these approaches, such as mobile units and the use of dental care coordination and examination of elements that could be replicated in other settings in a sustainable manner.

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