# Creating and maintaining oral health for dependent people in institutional settings

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## Abstract

The absolute number and percentage of the population of dependent individuals in institutional settings are growing dramatically in the United States. The current dominant office-based oral health delivery system is not adequately addressing the oral health needs of these populations and is unlikely to do so in the future.

There are multiple challenges in providing oral health services for dependent people in institutional settings. To achieve improvements in the oral health of these populations, we must change the education of oral health professionals, educate staff in institutional settings about oral health, integrate oral health activities into general health and social service systems, use existing oral health professionals in new ways in community settings, develop new categories of oral health professionals, and reform oral health delivery and reimbursement systems.

Developing new models of oral health services for dependent individuals in institutional settings may provide an opportunity to create a new paradigm of care based on integration of oral health services with general health and social services with an emphasis on prevention and health promotion activities.

## Introduction

There is no single generally accepted definition of who constitutes the "institutionalized" population. The closest federal definition is that described in the 2000 US Census which refers to people living in "group quarters (GQs)" (1,2). This includes all people not living in households. Two general categories of people in GQs are recognized: a) the institutionalized population; and b) the non-institutionalized population.

According to the Census definition, "the institutionalized population includes people under formally authorized, supervised care or custody in institutions at the time of enumeration" including correctional institutions, nursing facilities and skilled nursing facilities, hospitals with patients who have no usual home elsewhere, and juvenile institutions. The noninstitutionalized population includes "all people who live in group quarters other than institutions, such as college dormitories, military quarters, and group homes. Also, included are staff residing at institutional group quarters."

The Census Bureau reported that in 2000, there were almost 8 million people or about 3 percent of the total US population people living in what they categorize as "GQs" (3). However, these statistics do not accurately represent the target population for this article as they include people who do not have particular difficulties obtaining dental care (e.g., people living in college dormitories) and they do not count dependent people living or spending significant amounts of time with relatives or other caregivers in community environments. These people include those in "assisted living" and "independent living" arrangements. Also not counted in this Census definition are children in school settings and adults who are homebound or in day care programs. In addition to these factors which underestimate the current population of people living in institutional settngs, the number and percent of the population who are functionally dependent on others are expected to grow significantly (4). The number of people with significant disabilities living in the community is increasing because of advancements in medicine and changes in the way society supports people with functional limitations. Many members of these groups are dependent on others for basic activities of daily living (ADLs). All of these groups have significant challenges in maintaining good oral health.

This article will address issues with oral health for people with disabilities living in institutional settings and people

with functional dependencies living or spending time in group settings. These groups of people will be referred to as "dependent people in institutional settings."

There is growing recognition that dependent populations in institutional settings and other underserved populations are unlikely to see improvements in their oral health without changes in the oral health workforce, and the organization and delivery of oral health services (5). This article will describe dependent populations in institutional settings in the United States who experience poor oral health with an emphasis on the potential for improving oral health through workforce innovation and delivery system redesign.

## The increasing number of dependent people with poor oral health

The 2000 Surgeon General's Report on Oral Health in the United States indicated that, "Although there have been gains in oral health status for the population as a whole, they have not been evenly distributed across subpopulations" (6). The report points out that "profound health disparities exist among populations including: racial and ethnic minorities, individuals with disabilities, elderly individuals and individuals with complicated medical and social conditions and situations." The report also calls for additional research about the oral health of these understudied groups.

### People with complex medical conditions

People with chronic medical illnesses, developmental disabilities, and psychosocial issues experience more oral healthcare problems than others who do not suffer from these conditions (7-11). Advances in medicine have increased the likelihood that people today will live longer with complex medical conditions that would previously have shortened their lifespan (12). Patients with special needs have also seen a gain in life expectancy. Thirty years ago, for example, a typical person with Down's syndrome would have a life expectancy of roughly 12 years compared to 60 years today (13). Because of these advances, the number of people with special needs requiring oral health services is growing dramatically. According to the US Census in 2000, roughly 50 million people, or almost 20 percent of the US population, had a long-standing condition or disability (14).

### Older adults

In addition to those with chronic medical conditions, the aging population in the United States also has problems obtaining basic oral healthcare services. Between 2000 and 2050, the percent of the population 65 and older is expected to grow from 12.43 percent of the total population to 20.65 percent, and the population 85 and older from 1.51 percent to 4.97 percent (15). As people age, they have increasing difficulty maintaining good oral health. In a 2007 review, Ettinger pointed out that people 65 and older have more caries than children younger than 14 living in nonflouridated areas, that the percent of teeth with decayed or filled root surfaces increases with each decade of adulthood, affecting more than one-half of all remaining teeth by age 75 years, and that the majority of older adults have periodontal disease (16). In spite of the need for dental services, older adults have been shown to face significant barriers to receiving needed dental care (17).

### People with special needs

People with a variety of chronic medical illnesses, developmental disabilities, and psychosocial issues have been described as having "special needs" (18). The Surgeon General's Report of 2000 indicates that people with developmental disabilities are also at a significant disadvantage in obtaining oral health services, have worse hygiene than their nondisabled counterparts, and have an increased need for periodontal treatment than the general population (6). Untreated dental disease has been found in at least 25 percent of people with cerebral palsy, 30 percent of those with head injuries, and 17 percent of those with hearing impairment (7). A study commissioned by the Special Olympics concluded that individuals with intellectual disabilities have poorer oral health, more untreated caries, and a higher prevalence of gingivitis and other periodontal diseases than the general population (19). Children with special healthcare needs have been shown to have greater unmet dental needs than other children, use more dental care services, and are more likely to receive only nonpreventive care (20).

There is also a relation between disability and income, and between income and oral health. People from lower socioeconomic groups and those covered by Medicaid have more dental disease and receive fewer dental services than the general population. Many individuals with disabilities are in these lower socioeconomic groups (21,22).

Finally, there are large increases in the number of people with special needs now living in society and seeking dental treatment. This creates new challenges for dental providers. As with the population of older adults, many of these individuals live in group settings or are dependent on caregivers to maintain oral health.

### Low-income children in schools

One other population at high risk for dental disease and dependent on others are children from low-income families. Although they do not live in institutions, they do attend schools. Schools are institutions where oral health services might be delivered. In California, almost one quarter of all

children have never seen a dentist, and about 40 percent of Black, Latino, and Asian preschoolers and approximately 65 percent of elementary school children in these groups need dental care (23,24). Nationally, in 2008, the GAO reported even though children aged 2 through 18 have coverage for dental services through Medicaid, dental disease remains a significant problem for them (25). They estimated that one in three children in Medicaid had untreated tooth decay. In addition, only one in three children in Medicaid ages 2 through 18 had received dental care in the year prior to the 2005 MEPS survey. In 2007, the CDC reported that after many years of decline, the incidence of tooth decay in primary teeth increased among children aged 2-5 years (26). A recent report from the PEW Center for the States reported that one in five children in the United States between the ages of 1 and 18 go without dental care each year, and the consequences can last a lifetime (27). The report concludes that two-thirds of states are doing a poor job implementing proven, cost-effective policies that could dramatically improve disadvantaged children's dental health. Because low-income children are in schools on a regular basis and in a structured environment, these institutions are good settings for addressing oral health.

### Veterans

The Veterans Administration (VA) is responsible for 21 Integrated Service Networks. These encompass 153 medical centers, 731 community-based outpatient clinics, as well as 135 nursing home facilities (28). In 2003, the VA served an estimated 4.8 million veterans of which only about 470,000 received dental care (29). Because the annual budget is not static from year to year, and the allocated resources are insufficient to provide all needed oral health care to all veterans, a tiered system describing eligibility was created to meter out needed care. Eligibility for dental treatment is based on a range of criteria including service-connected oral conditions, those who were prisoners of war, and where their dental condition may aggravate an existing medical condition (30).

VA dental services provide much needed care for patients with difficulties obtaining care in non-VA dental environments. The use of dental services by veterans can be influenced by factors including financial issues, complex medical problems, and other psychosocial conditions that create barriers to care in private dental offices. Veterans report higher dental need than nonservice cohorts, as well as having more psychological and psychosocial disorders (31). These issues can make it more difficult to obtain needed care.

Because the VA is the largest integrated health system in the country, with extensive quality assurance and integrated data collection systems, the VA has the potential to develop and test new educational and workforce models.

### People in correctional facilities

The PEW Center on the States reported that in 2008, for the first time, more than one in every 100 adults was behind bars. That totaled over 2.3 million adults (32). There are significant racial differences in the incarceration rate. While one in 30 men between the ages of 20 and 34 is behind bars, for black males in that age group the figure is one in nine.

Medical care is one of the principal cost drivers in corrections budgets today (33). From 1998 to 2001, healthcare spending in state prisons grew 10 percent annually, totaling $3.7 billion and accounted for about 10 percent of correctional spending. Under the 1976 US Supreme Court ruling Estelle vs. Gamble, states are compelled to provide a constitutionally adequate level of medical care, or care that generally meets a "community standard." Because of this mandate, most correctional facilities have positions for at least one full-time dental officer, and many sites have full-time registered dental hygienists and other auxiliary staff (34).

The rapidly growing healthcare costs in prisons come largely from the increasing costs associated with an expanding population of HIV-positive prisoners and geriatric inmates (32). Oral health specifically is a significant issue in prison populations. Incarcerated individuals are much like members of lower socioeconomic groups in general, and have higher levels of oral disease (35-37). As with other institutional settings, correctional facilities could be sites for developing new educational and workforce models.

All of the populations of people with significant oral health disparities discussed here, live or spend significant time in institutional settings and are dependent on others for maintenance of oral health. In 2005, the American Dental Association adopted a Workforce Taskforce Report that concluded that people in institutional settings were not well served by the current dental care delivery system (38). For these populations, new workforce models and new delivery systems may be needed.

## Challenges in working with dependent populations

Although each of the population groups described above is unique, as are the systems and institutions they interact with, there are some common challenges to improving the oral health of these groups. These include the need to work with caregivers in addition to the individual, the workload of staff in institutional settings, lack of education about the prevention and treatment of oral diseases among institutional staff, and the difficulty accessing oral health professionals for many dependent people in institutional settings.

The need to work with parents or guardians is expected and routine when providing oral health care to children.

However, it is more complex when working with low-income children because it is more difficult to access and engage their parents in their care. In most office-based oral health practices for adults, the oral health provider interacts directly with the patient, provides information and instructions to the patient, and obtains consent for treatment from the patient. With dependent adults, however, the oral health professional must interact with multiple third parties to perform these functions.

Another challenge in working with dependent populations in institutional settings is the workload of the staff and their perception of the value of oral health. Whether it is an elementary school teacher, certified nurse assistant in a nursing home, or an attendant in an assisted living facility, they generally have more difficulty accomplishing all that is expected of them. Individuals in this position can see oral health activities as being one more thing to do and therefore react negatively to suggestions that they incorporate oral health activities in their responsibilities. In many cases, the overworked staff may not have an understanding of basic oral hygiene practices, and therefore encounter difficulty in caring for their patients' oral health. In addition, many people who are employed as direct care staff in institutional settings are paid minimum wage, have low educational achievement, and are not able to prevent oral diseases in their own mouths. Many have not had adequate educational experiences that prepare them to effectively improve the oral health of those under their care.

Even in institutions with well-trained and motivated staff, it may be difficult to obtain dental services because there is no dedicated dental staff. Therefore, the facility staff must find a source of dental care that is either willing to accept their client in their office or come to the facility to provide care. This can be quite difficult given the medical, physical, and behavioral challenges of many of the people in these institutions.

Inadequate education of oral health professionals can also create barriers to care. Most oral health professional education programs provide minimal or no training and experience in the skills needed to work with dependent people in institutional settings. Many people in adult institutional settings, particularly long-term care, have complex health and social histories, take many medications, and have physical and behavioral limitations. Graduates of dental education programs are not prepared and therefore often reluctant to accept referrals or provide care for these individuals. In addition, the vast majority of educational time and experience in dental education programs is devoted to the "surgical" approach to dental disease, meaning removing diseased (hard and soft) tissue and fabricating artificial replacements. With dependent people in institutional settings, there is a need for greater emphasis on medical (use of diagnostic tests and medications) or social and behavioral strategies (to foster individual and organizational behavior change). Most oral health professionals have had very little training about effective behavior change strategies, organization and operation of institutional facilities, case management, or strategies for integration of oral health into general health and social service systems.

Finally, the economics of office-based dental practice make it unlikely that many office-based oral health professionals will be available or spend time in institutional settings. This is changing somewhat with the spread of "direct access" dental hygiene services which are currently available in 29 states, the introduction of the "dental therapist" model in Alaska and Minnesota, and other community-based strategies such as the "virtual dental home" model being tested in California (39-43).

Each of these challenges presents an opportunity for improvement. Many programs and providers have overcome barriers to working with school districts and established effective school-based oral health programs. Training programs to help direct care staff understand and improve oral health for people they work with have been developed. There is ample opportunity to develop new and effective training programs, and advocate for oral health education in the initial education of general health, social service, and direct caregiver education programs. Finally, there is an opportunity to develop new oral health providers, and economic and delivery models that can better serve dependent people in institutional settings.

## Management, financing, and oversight of oral health services in institutional facilities

Institutional facilities and settings could be fertile sites for developing and testing new educational and workforce models. However, the management, financing, and oversight in these settings may affect the ability to realize this potential. There are particular challenges and opportunities in publicly funded and operated facilities, health-licensed facilities, and community-licensed facilities.

### Public facilities

Many institutional facilities are owned and operated by government entities. These include VA facilities, correctional institutions, and public hospitals and long-term care facilities. As public entities, they operate within a political framework that may be difficult to change. However, some federal facilities may have the advantage of being able to develop and test new workforce models not currently authorized under state regulations. The introduction of dental therapists by the Alaska Native Tribal Health Consortium was facilitated because they do not operate under state jurisdiction. Federal

corrections facilities, VA hospitals, and other federal healthcare facilities may be able to do the same.

Most publicly owned and operated facilities, such as schools and long-term care facilities, do not employ dental professionals. This means that people needing oral health care must be referred to professionals in offices and clinics in the local community. However, many communities have few referral resources available. In some cases, dental professionals come to the facility to provide dental services, but most find that it is not an economically viable practice model. In those instances, the dental professional is often responsible for billing the patient or a third party such as Medicaid. While every state is mandated to provide dental benefits for children under Medicaid, this is not the case for adults. In fact, very few states have comprehensive adult benefits. More have only limited or emergency services. Even where benefits are available through Medicaid or other third parties, they are typically based on the traditional surgical model of dental care with little or no reimbursement available for medical, behavioral, and social interventions.

In other publicly owned and operated facilities where there is a dental staff, the dental staff is salaried. In theory, this would provide them with the freedom to use a diverse set of strategies to improve the oral health of the individuals they are serving. However, their educational background may not prepare them to employ a diverse set of medical, social, and behavioral strategies even if the payment mechanism allows it. In addition, they are often so overwhelmed with addressing the burden of existing disease that they spend much of their time providing basic or emergency services.

Public schools represent another group of institutions owned and operated by government entities. They offer some advantages as places to try innovative approaches to improving the oral health of low-income children. These children face many barriers to good oral health. Delivering services in a location where children are grouped together and regularly attend may remove many of the barriers faced by low-income children. On the other hand, school districts and Boards of Education are very concerned with the safety of and access to school children. Many have adopted regulations designed to keep outside entities from having access to the children or to limit the kinds of services provided. Obtaining parental consent for oral health services can require time and effort. In addition, the school day is highly regulated. Teachers have required curriculum and may resist attempts to integrate oral health activities into the classroom or to have children leave the classroom to receive oral health services. Fortunately, many school districts are realizing the importance of health for children's ability to learn, and some are establishing school-based health centers where oral health activities can take place with support from school personnel (44).

## Private "health-licensed" facilities

Many institutional facilities are privately owned and operated, but generally are subject to sometimes complicated government licensing or oversight regulations. In some states, multiple agencies regulate a complex array of different types of long-term care facilities. For example, in California, long-term care facilities are regulated by the Departments of Social Services, Developmental Services, and Health Care Services.

In general, "health-licensed" facilities have more regulations and oversight than "community-licensed" facilities. For example, nearly all nursing homes or skilled nursing facilities accept Medicaid or Medicare payments, and are subject to the regulations of the Omnibus Budget Reconciliation Act of 1987 (OBRA 1987), also known as the Nursing Home Reform Act (45). This act, which was reauthorized in 2006, and is found in the US Code of Federal Regulation (42 CFR §483) requires facilities, among other things, to:

- Conduct an initial comprehensive and accurate assessment of each resident's functional capacity (42 CFR §483.20).
- Provide, if a resident is unable to carry out ADLs, the necessary services to maintain good nutrition, grooming, and personal oral hygiene (42 CFR §483.25).
- Assist residents in obtaining routine and 24-hour emergency dental care (42 CFR §483.55).

Because operators of many long-term care facilities have difficulty obtaining oral health services for their residents, they may be willing to embrace new models of care that help them to comply with the regulations cited above.

There are some successful models for providing oral health services in long-term care facilities. One of these is the Apple Tree Dental (46). This staff model uses sophisticated portable equipment, transported by truck, and set up in the facility to function as a complete dental office. Staff dentist and allied personnel provide a wide range of services and then move to another facility. A sophisticated IT system allows tracking and management of patients across multiple facilities. In its 2007 Annual Report, Apple Tree reported providing oral health services for almost 15,000 patients through almost 50,000 visits.

## Community-licensed facilities

In general, "community-licensed" facilities such as residential care facilities, assisted living facilities, or group homes have less stringent regulations than health-licensed facilities. Even though some may operate under contract with government agencies, regulatory oversight may be restricted to compliance with building and fire codes, and there may be no regulatory oversight of general health or oral health services. Other facilities operate as private businesses and also do not have regulatory oversight of oral health practices. Operators of these facilities might not be interested in testing new

models of care or oral health services delivery. However, there are marketing and competitive advantages to offering oral health services that might interest these businesses.

As with public facilities that do not offer dental services, privately owned and operated institutional settings also rely on their ability to refer their clients to dental offices or clinics, or find dental professionals willing to provide services at the facility. And, as with public facilities, sources of payment for dental services may be limited and even where they exist, third party reimbursement systems are typically based on the traditional surgical model of dental care with little or no reimbursement available for medical, behavioral, and social interventions.

## Recommendations

Given the challenges described here, it is evident that new systems of organizing and delivering dental services are needed to improve and maintain the oral health of dependent children and adults in institutional settings. The following recommendations for new workforce and system strategies have the potential to improve the oral health of these populations.

### Education of dental professionals

With the dramatic changes taking place in the demographics of the US population, it is evident that reliance on office-based dental care delivery models as the primary means of delivering oral health services is no longer adequate to address the needs of dependent populations. Dental professional education institutions need to prepare graduates for community-based practice and with people with complex medical, physical, and social conditions. This includes a need for greater emphasis on medical (use of diagnostic tests and medications), social, and behavioral strategies (to foster individual and organizational behavior change), and increased educational experiences in effective behavior change strategies. Additional training in organization and operation of institutional facilities, case management, and strategies for integration of oral health into general health and social service systems will help the future dental professional practice in new and beneficial ways for society.

### Education of staff in institutional facilities and integrating oral health into general health and social service systems

Dental professionals cannot do it alone. Improved oral health of dependent people in institutional settings will only come about if interdisciplinary teams are created. Other professionals serving dependent populations and people living in institutions must understand the causes and prevention of dental diseases, and be actively engaged in addressing oral health. Although a number of training materials have been developed for these groups, it is clear that specific mentored, experiential training is needed before new learning will be integrated into daily activities. Oral health professionals can lead the efforts and act as coaches and mentors for training programs of general health and social service professionals.

It is essential that oral health professionals also play a role in integrating oral health activities into general health and social service systems. This involves oral health professionals becoming actively engaged in health teams and participating in system redesign efforts.

### Use existing oral health professionals in new ways

In addition to training oral health professionals about community-based practice, legal and regulatory barriers that prevent allied dental personnel from applying interventions in community settings must be addressed in order to expand access to oral health care in institutional settings. This situation has begun to change with the adoption of "direct access" regulations for dental hygienists in 29 states (39,40). These regulations allow dental hygienists to work with patients in community settings without the specific authorization of a dentist. In many states, dental hygienists are now actively providing therapeutic and preventive hygiene services in community institutional settings. This trend needs to be supported and expanded in order to expand the availability of community-based oral health services.

In California, a project to use dental hygienists and dental assistants is being demonstrated in community sites (43). This "virtual dental home" system is designed to keep people healthy in community settings by providing education, preventive care, interim therapeutic restorations, triage, and case management. It is estimated that as many as half of the dependent individuals in institutional settings can be kept healthy in the community by these procedures alone. The community-based hygienists and assistants collaborate with office-based dentists using an Internet-based teledentistry system. Where complex dental treatment is needed, the virtual dental home connects patients with dentists in the area.

The use of geographically distributed, collaborative oral health systems using multiple members of the team in different locations to establish dental homes has great potential for improving the oral health of dependent individuals in institutional settings, and needs further demonstration and support. These systems can be deployed in multiple settings including schools, long-term care facilities, correctional facilities, retail dental clinics, individual homes, child and adult day care settings, and other institutional settings.

### Develop new oral health professionals

There are now numerous proposals for adding oral health professionals to the US workforce. These include dental therapists which have been deployed in Alaska, are being trained in Minnesota, and endorsed in several other states. Other new provider types include the advanced dental hygiene practitioner proposed by the American Dental Hygienists' Association, and the community dental health coordinator proposed by the American Dental Association. It is unlikely that any of these new models will be the single answer for all underserved populations. The effectiveness of these new professionals needs to be evaluated carefully to understand the costs and benefits of each model, and the situations where they can be most effective.

### Reform the oral health reimbursement system

Most oral health payment systems do not provide reimbursement for the medical, social, and behavioral approaches to improving oral health that were discussed earlier. There has been some incremental progress, for example, payment for fluoride varnish applications by oral health professionals and physicians. However, what is needed is a fundamental rethinking of what strategies are likely to improve oral health of dependent individuals in institutional settings and provide reimbursement for those interventions. This is not likely to happen in a system that is focused on measurable "procedures" because of concern about fraud and abuse of payment mechanisms tied to interventions that do not produce a verifiable product. Before a fundamental rethinking can occur, it will be necessary to move away from a focus on verifiable products to health outcomes.

Currently, oral health services are generally reimbursed based on the procedures, visits, or enrollees in health plans. In some settings, oral health professionals are paid a salary. None of these reimbursement mechanisms are tied directly to the health of the populations being served. This link is especially important with dependent individuals in institutional settings. There are several projects underway in the United States to design oral health delivery and financing systems based on oral health outcomes. One of these is being conducted by the Pacific Center for Special Care at the University of the Pacific School of Dentistry. These incentive systems have the potential to change the dominant delivery model from one based on surgical interventions performed in dental offices and clinics, to one that emphasizes community-based application of health promotion, disease prevention, case management, and integration of oral health into general health and social service systems. These new systems will emphasize the use of community-based oral health professionals with new skills and roles, and have increased potential for improving and maintaining the oral health of dependent individuals in institutional settings.

## Conclusions

The absolute number and percentage of the population of dependent individuals in institutional settings are growing dramatically. The current dominant office-based oral health delivery system is not adequately addressing the oral health needs of this population and is unlikely to do so in the future.

There are multiple challenges in providing oral health services for dependent people in institutional settings. To achieve improvements in the oral health of these individuals, we must change the education of oral health professionals, educate staff in institutional settings about oral health, integrate oral health activities into general health and social service systems, use existing oral health professionals in new ways in community settings, develop new categories of oral health professionals, and reform oral health delivery and reimbursement systems.

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## Conflict of interest

The authors have no conflicts to declare.

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