MASSACHUSETTS
HEALTH POLICY COMMISSION

AUGUST 1, 2016

HPC POLICY BRIEF

Oral health care access and emergency department utilization for avoidable oral health conditions in Massachusetts

BACKGROUND

The HPC has identified avoidable emergency department (ED) utilization as an area of continued policy interest.[1] While EDs play a crucial role in the health care system, when patients seek care at the ED for conditions that are non-emergent, treatable in community settings, or otherwise avoidable, healthcare resources are inefficiently and inappropriately utilized. The overall ED utilization rate in Massachusetts is 14 percent higher than the national average and the HPC has found that 42 percent of these visits may have been avoidable. Avoidable ED use stems from a number of factors, including lack of access to community-based care, affordability, and other social and community factors. This policy brief, issued in connection with the HPC's ongoing mandate to identify data-driven opportunities for health system improvement, is presented as a complement to the efforts of many in the Commonwealth to improve oral health care and to further inform dialogue about policy interventions.

THE IMPORTANCE OF ORAL HEALTH

Oral health is a key component of general health and well-being.[2] The effects of poor oral health include pain, lost work and school time, poorer nutrition, and sleep disruption.[3] Numerous studies have also identified chronic oral infections as a risk factor for heart and lung disease, osteoporosis, low-birthweight, and diabetes.[2,4,5] Regular dental care not only improves overall health, but research has shown that it decreases medical expenses and hospitalizations for some systemic conditions, such as cerebral vascular disease and rheumatoid arthritis.[6] Despite the importance of oral health and the fact that the majority of oral health disease is preventable, millions of Americans go without dental care each year. Forgoing such routine care often leads to more severe, advanced forms of oral health disease later in life.[7,8] One key reason underlying this missed opportunity is insufficient access to dental care, particularly among low-income populations.

ORAL HEALTH CARE IN THE U.S.

Barriers to routine oral health care include a shortage of dental professionals, inadequate insurance coverage, and lack of affordability. Dentists have traditionally served as the front line providers of oral health services. Yet, according to the Health Resources and Services Administration, there are areas and populations within every state in the U.S. with insufficient numbers of dentists to meet demand - and the shortage in providers is expected to increase over the next ten years.[i,9] Another factor causing inadequate utilization of dental care is the lack of insurance coverage. Research has shown that compared to those without dental benefits, Americans with dental insurance are twice as likely to go to a dentist, take their children to a dentist, and receive restorative care.[10] Unfortunately, 36 percent of the U.S. population lacked dental insurance in 2014.[ii,11] Furthermore, even with insurance, the amount patients pay out of

i The Health Resources and Services Administration's guidelines define a shortage area as one that has more than 5,000 residents per dentist in a dental service area.

ii More than half of dentally uninsured Americans are non-elderly adults. Of the 64 percent of Americans with dental insurance, the vast majority (92 percent) received it through their employer or another group plan, such as the AARP.

36%
of US population lacked **dental insurance** in 2014

pocket can be substantial, typically more than for medical care. According to the Centers for Medicare and Medicaid, 40 percent of dental spending was paid out-of-pocket in 2014, compared to 11 percent of medical spending. Thus, financial barriers to receiving dental care remain high, even when compared with other segments of the healthcare sector.[12] Not surprisingly, affordability is the most cited reason for foregoing needed care.[12,13]

Obtaining oral health care is challenging for vulnerable populations in general, but low-income non-elderly adults experience the greatest barriers to receiving oral health care.[12] While the American Dental Association (ADA) recommends that adults visit a dentist at least once per year, a 2014 ADA survey found that less than half of lower income adults said they had seen a dentist that year, compared to almost three-quarters of those at higher income levels. Following the passage of the Affordable Care Act, Medicaid programs are required to provide dental benefits for children; while coverage of adults remains optional.[iii] As a result, Medicaid adult dental coverage varies tremendously across the U.S. and is limited in many cases to emergency services such as tooth extractions, or to specific populations, such as pregnant women. Even when adults have dental insurance through Medicaid, accessing care can be problematic. Only 20 percent of dentists nationwide accept this form of insurance, citing burdensome administrative requirements, lengthy payment wait times, missed appointments, and low reimbursement rates as barriers to participation.[14] Accordingly, the rate of untreated dental caries (cavities) among adults with incomes below 100 percent of the federal poverty level (FPL) was more than twice the rate of adults with incomes at or above 200 percent FPL (44 percent versus 17 percent).[15] Notably, the Medicare program, which covers elderly adults and nonelderly adults with disabilities, does not offer dental benefits.

Only 20%
of dentists nationally accept Medicaid

With few dental care options, many people seek care for acute dental needs at hospital EDs. The utilization of EDs for oral health care is a growing phenomenon in the U.S. In 2000, 1.1 million patients sought treatment for dental pain in the ED. By 2010, the number had nearly doubled to 2.1 million.[16] The ADA estimated that for 2010, these visits cost the healthcare system between $867 million and $2.1 billion. Research has shown that most of these oral health ED visits are for non-traumatic dental conditions that could have been addressed in a less costly and more effective manner in a dental office or prevented altogether with routine professional care.[17] The cost of a visit to the ED for an oral health condition can range from $400 to $1,500 per visit, which is 4 to 7 times more than a dental office visit, where the costs average between $90 and $200 per visit.[18]

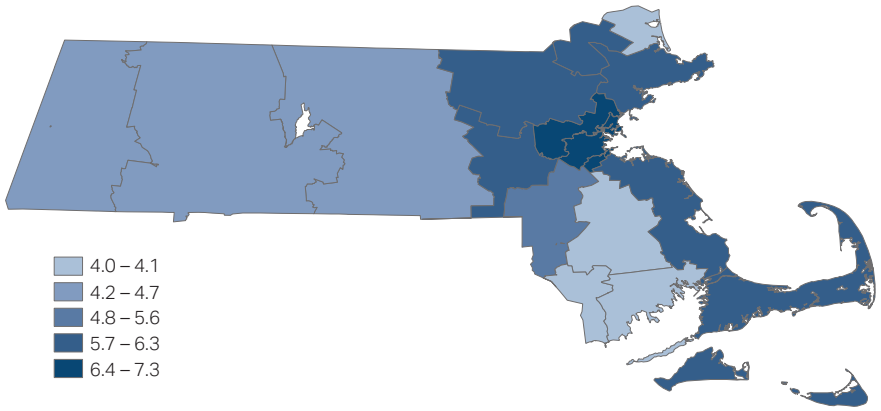
Further, EDs are not equipped to provide comprehensive dental care. Many oral health patients receive only antibiotics or pain medication, with the underlying condition left unaddressed. One study of ED visits found that of patients who sought oral health care in a hospital ED, 80 percent subsequently had to go to a dentist for treatment.[19]

ORAL HEALTH CARE IN MASSACHUSETTS

Mirroring national trends, certain Massachusetts residents also face significant barriers to oral health care and are increasingly reporting unmet dental care needs. According to the 2015 Massachusetts Healthcare Reform Survey, 18 percent of adults reported an unmet need for dental care, a 5 percentage point increase from 2012. There could be many explanations for this unmet need, including the availability of providers, insurance coverage, and affordability. Like the nation as a whole, Massachusetts has an insufficient supply of dentists in some areas. The Commonwealth has 61 federally designated dental care health professional shortage areas (HPSAs), which encompass nearly a tenth of

iii MassHealth currently offers dental insurance to adults. The services covered have changed over time. As of 2015, Massachusetts is one of 15 states to offer extensive adult dental benefits to the Medicaid base population, and one of 11 states to offer dental benefits to the Medicaid expansion population. Extensive coverage is defined as offering a comprehensive mix of services, including diagnostic, preventive and minor and major restorative procedures. Major gaps in coverage remain, such as root canals and gum and bone treatments such as scaling.

Figure 1: Full-time dentists per 10,000 population, by HPC region, 2014



SOURCE: Massachusetts Department of Public Health: Health Care Workforce Center

NOTES: These data are based on the number of active full-time dentists who completed an online workforce survey during the 2012 license renewal cycle between January 1, 2012 and June 30, 2012 and reported a primary practice location in Massachusetts (n=3,739)

There are **2x as many dentists per resident** in Metro Boston than in New Bedford, Metro South, or the upper North Shore

the state's total population.[iv,20] While Massachusetts has more dentists per capita than the U.S. as a whole, there is an uneven distribution in the Commonwealth's dental workforce.[21] For example, there are almost twice as many dentists per resident in Metro Boston than in New Bedford, Metro South, or the Upper North Shore [see **Figure 1**].

Further, 39 percent of dentists in the Commonwealth were 55 years old or older and a third of all dentists have stated that they plan to stop practicing within the next 10 years. These data suggest that provider access may become an even more significant issue in the coming 5 to 10 years.[v, 22]

Similar to the nation as a whole, a person's access to dental care in the Commonwealth largely corresponds with income. An analysis of a 2015 survey of Massachusetts residents found that while the vast majority of adult respondents had a dental visit in the past year, those with family incomes at or below 138 percent FPL were less likely than all other income groups to report a dental care visit (56 percent versus 82 percent of individuals at higher income levels).[23] The survey also found that 1 in 5 individuals reported an unmet dental care need due to cost, indicating that affordability was a significant barrier to care. Non-elderly adults were particularly likely to report unmet need for dental care due to cost – 24.4 percent of non-elderly adults versus 2.6 percent of children and 16.1 percent of elderly adults.

Policy shifts may have affected oral health access. On July 1, 2010, MassHealth reduced dental benefits for its members age 21 and over, eliminating coverage for endodontics (root canals), periodontics (care for gums, such as plaque removal from below gums), crowns, and denture coverage for roughly 700,000 adults.[vi,24] Some of these benefits have since been restored, including fillings (March 2014) and dentures (May 2015). One retrospective study found that dental-related ED visits and costs at Boston Medical Center increased following MassHealth dental cuts.[25] Of particular note, these dental visits increased 2 percent in 2011 and 14 percent in 2012, suggesting that higher ED use may be due in part to the cumulative effects of forgone prevention.

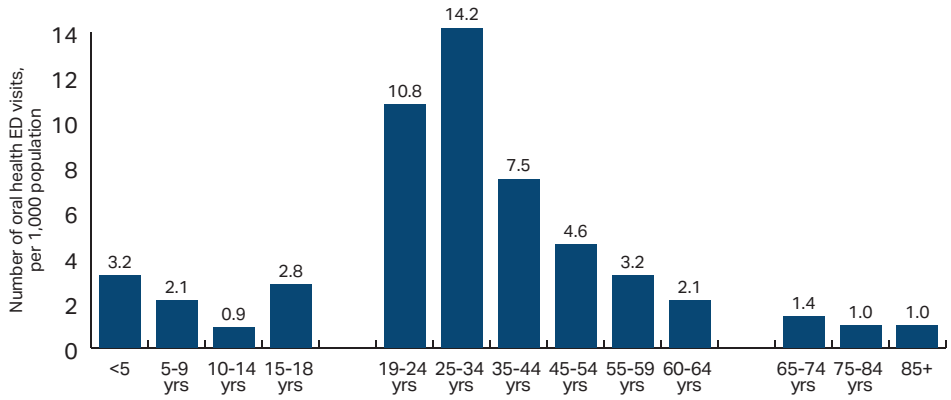
While children retained benefits throughout this time period, recent work has shown that 47

iv The Department of Health and Human Services designates HPSAs using a provider-to-population ratio based on the number of full-time equivalent professionals serving in a specific geographic area, population group, or facility. Dental HPSAs require a ratio of dentist to population of 1:5,000 or greater.

v These figures are based on all dentists in the Commonwealth, full-time, part-time, and per diem, who completed the Department of Public Health's Health Care Workforce Center online survey in 2012. The data also include some non-practicing dentists. Thus, this represents a larger sample than the data presented in Figure 1, which only include active full-time dentists.

vi Almost all private dental insurance covers some portion of these eliminated services. MassHealth adult dental benefits retained throughout the studied time period include diagnostic services, cleanings, and extractions.

Figure 2: Preventable oral health ED visits per 1,000 population, by age group, 2014



SOURCE: HPC analysis of Center for Health Information and Analysis: Emergency Department Database, 2014; population data from the Kaiser Family Foundation, 2014

NOTES: Oral health ED visits were defined using ICD-9 primary diagnostic codes designated by the California HealthCare Foundation. These include ICD-9: 521 (diseases of hard tissues of teeth), 522 (disease of pulp and periapical tissues), 523 (gingival and periodontal disease), 525 (other diseases and conditions of the teeth and supporting structures), and 528 (diseases of the oral soft tissues, excluding lesions specific for gingiva and tongue). ICD-9 525.11, loss of teeth due to trauma, was excluded from the analysis

Just 35%
of dentists in Massachusetts
treated a MassHealth patient in 2014

percent of children aged 1–21 enrolled in MassHealth did not see a dentist in 2014, despite national standards calling for children to visit a dentist every 6 months.[26,27] There could be many reasons for children not receiving the recommended number of visits, but a likely contributing factor is the fact that only half of Massachusetts' cities and towns have a dentist who accepts MassHealth.[28] In fact, in 2014, just 35 percent of dentists in the Commonwealth treated a MassHealth patient, and only 26 percent billed at least $10,000 to the program.[29] The difference in amount between MassHealth and commercial reimbursement rates is likely a significant factor in a providers' willingness to treat MassHealth patients.[vii]

ORAL HEALTH-RELATED ED UTILIZATION IN MASSACHUSETTS

36,060
preventable oral health ED visits in MA in 2014

When people lack access to oral health care in a dentist's office, they may seek care for preventable conditions in EDs. Between 2008 and 2011, MassHealth paid $11.6 million for oral health related ED visits.[30] In 2014, the HPC estimates there were 36,060 preventable oral health ED visits in Massachusetts, costing the health care system between $14.8 and $36 million.[viii] Sixty percent of these preventable visits occurred during traditional weekday business hours when dental practices are typically open, and just over a third of all visits were made by patients who had more than one oral health ED visit that year. Some of the most common conditions seen included pulpitis (an inflammation of the dental pulp caused by tooth decay and the spread of bacteria) and gingivitis (inflammation of the gums caused by plaque).

Adults accounted for 90 percent of the preventable oral health ED visits. As shown in **Figure 2**, young adults (aged 19-35) visited the ED for oral health conditions at the highest rates, a finding consistent with results from other reviews of ED use for oral health conditions in California (2009) and Florida (2010).[31,32] These results may reflect both problems arising from a lack of care earlier in life as well as relatively low rates of coverage for this age group.[12]

vii In 2014, the Massachusetts' Medicaid reimbursement rate was 58% of the average commercial payment for pediatric dental care (the 11th-highest in the U.S.) and 44% of the average commercial payment for adult dental care (the 12th-highest in the U.S.). While national studies have cited reimbursement as a barrier to dental practices accepting Medicaid patients, analyzing the effects here in Massachusetts was not the focus of this policy brief.

viii Hospital fiscal years run from October 1 of the prior year through September 30 of the named year. For example, ED visits between October 1, 2013 and September 30, 2014 occurred during hospital fiscal year 2014. Unless otherwise noted, hereon ED visits in 2014 refers to visits during the 2014 hospital fiscal year.

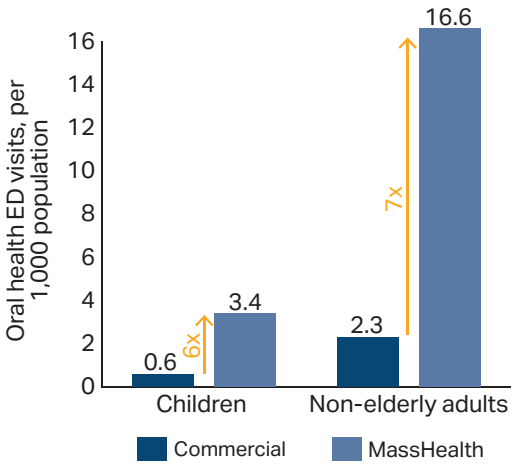
Adults accounted for **90%** of preventable oral health ED visits

As shown in **Figure 3**, MassHealth enrollees made up a disproportionate share of these visits. Children covered by MassHealth visited the ED for oral health reasons at nearly 6 times the rate of commercially-insured children (3.4 per 1,000 versus 0.6 per 1,000). Similarly, non-elderly adults covered by MassHealth visited the ED at approximately 7 times the rate of commercially-insured adults (16.6 per 1,000 versus 2.3 per 1,000).

Despite covering only 24 percent of the state's residents, MassHealth was the primary payer of oral health ED visits in 2014, paying for 48.8 percent of all visits. As shown in **Figure 4**, the payer-mix profile for oral health ED visits differs from that of overall ED visits and ED visits for other ambulatory care sensitive conditions. While MassHealth enrollees comprised a third of all ED visits and two-fifths of all ambulatory care sensitive visits, half of all oral health ED visits were MassHealth enrollees. There could be many reasons for higher rates of preventable oral health ED visits among MassHealth enrollees, but likely contributing factors include clinical risk factors, a low number of dentists accepting MassHealth patients, and patient-incurred costs.

MassHealth paid for **48.8%** of all oral health ED visits

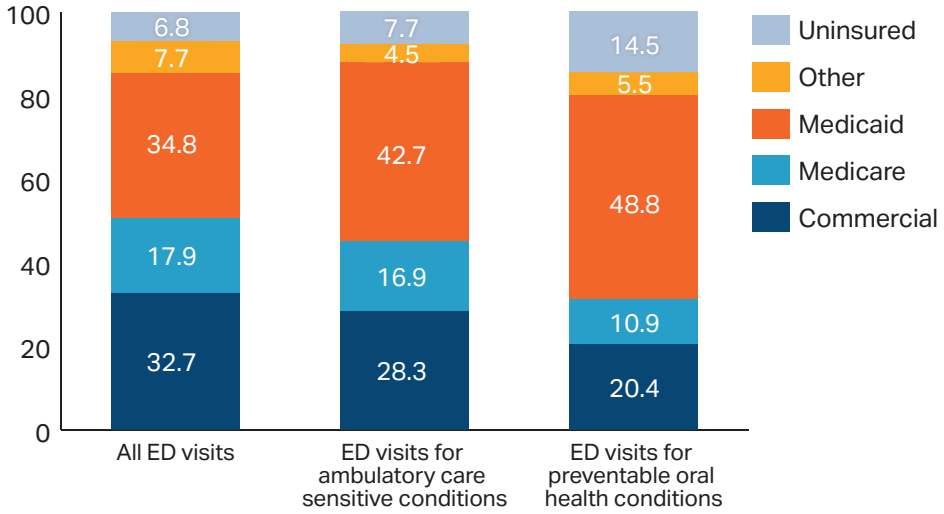
Figure 3: Preventable oral health ED visits per 1,000 population for children and non-elderly adults, by payer, 2014



SOURCE: HPC analysis of Center for Health Information and Analysis: Emergency Department Database, 2014; population data from the Kaiser Family Foundation, 2014

NOTES: See Figure 2 Notes

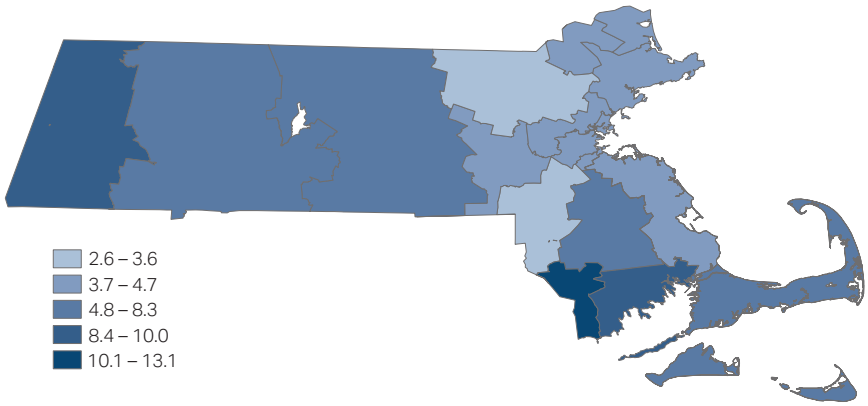
Figure 4: Distribution of ED visits, by payer, 2014



SOURCE: HPC analysis of Centers for Health Information and Analysis: Emergency Department Database, 2014; population data from the Kaiser Family Foundation, 2014

NOTES: See Figure 2 Notes

Figure 5: Number of preventable oral health ED visits per 1,000 population, by HPC region, 2014



SOURCE: HPC analysis of Center for Health Information and Analysis: Emergency Department Database, 2014; population data from the Kaiser Family Foundation, 2014

NOTES: See Figure 2 Notes

Finally, as shown in **Figure 5**, the HPC found a five-fold regional variation in the number of oral health ED visits per population, with a high of 13.1 visits per 1,000 in Fall River and a low of 2.5 visits per 1,000 in Middlesex/Merrimack. Areas with higher median incomes had fewer oral health ED visits (a correlation of -0.6). There also exists a negative correlation (-0.6) between the number of oral health ED visits and the number of full time dentists in each region, indicating that the fewer providers there were, the higher the rate of oral health ED visits. These findings suggest that social and economic factors as well as the availability of providers, particularly those serving low-income populations, may lead to higher regional rates of ED visits.[ix]

MODEL POLICY INTERVENTIONS TO EXPAND ACCESS TO ORAL HEALTH CARE

Health care advocates, clinicians, and researchers consider visits to EDs for preventable oral health conditions an indicator of inefficient utilization of the healthcare system. A variety of factors contribute to ED use for preventable conditions, including shortages of community-based dental providers, inadequate coverage of dental services, or high out-of-pocket costs. In turn, a range of programs and policies may improve consumers' dental health and access to services, such as integrating oral health into broader health system delivery and payment reform models (patient centered medical homes (PCMHs) and accountable care organizations (ACOs)), strengthening payment and coverage policies, increasing the extent of community water fluoridation, and increasing the involvement of other health care providers in the delivery of preventable oral health care. Below, consistent with this brief's focus on access, highlighted are several interventions that seek either to directly reduce ED use or to extend the number and reach of community-based dental providers.

ED referral programs

Poor access to care may be reflected in the observed, larger share of oral health ED visits by MassHealth patients. Many states are taking steps to address the utilization of EDs for oral health conditions by creating referral programs that aim to shift dental patients from EDs to community settings. One such program is the Dental Emergencies Needing Treatment (DENT) pilot project in Washington State. Launched in 2014, DENT connects oral health ED patients to both a dental provider and a case management officer. In the first 5 months of the project, more than 575 patients were referred to regular dental care, 95% of whom

ix Median income and the number of full time dentists in a region are correlated and this analysis does not differentiate the separate effects of these two factors.

complied with their referral.[33] In Massachusetts, MassHealth piloted an oral health ED diversion program in 2014. Participating ED providers are educated on how to refer patients presenting in the ED to MassHealth's dental services vendor. The vendor's team then reaches out to the member within 24-hours to assist them in understanding their dental benefits, educating them on the importance of oral health, and helping them find a dental home. This program is expected to be implemented statewide in the second half of the calendar year with the goal of reducing preventable services in the ED and connecting members with a consistent source of dental care.

Augmenting the oral health workforce

One way to improve access is to authorize and encourage additional dental providers to offer basic oral health care. While referral programs are an immediate solution to patients presenting to EDs with oral health conditions, interventions that increase the supply of dental providers are complementary interventions that can reduce the eventual need for oral health ED visits. A recent Institute of Medicine report on oral health care recommended that states explore amending laws to enable new mid-level dental providers (MLDPs) to practice. MLDPs, such as advanced dental hygiene practitioners or dental therapists, typically have 12 to 18 months of education beyond that of a traditional dental hygienist and can provide a variety of preventive and basic dental services including filings and temporary crowns. In most states, MLDPs scope of practice allows them to provide basic care without the direct supervision of a dentist, though some states require approval from supervising dentists before preforming restorative and surgical procedures. Emerging research has shown that MLDPs can provide quality, safe, and effective care at low costs.[34,35] Having MLDPs perform triage and treat simple cases could also allow dentists to focus on treatment of complicated cases, reducing wait times for dental care. Further, given that MLDPs can have lighter infrastructure requirements, these providers may be better situated and more willing to provide care in schools, assisted living centers, and community health centers, thus reaching populations that face difficulties accessing the dental health care system due to transportation or mobility issues.

The use of MLDPs to expand dental care teams is long established in many countries, including Canada, Australia, the United Kingdom, the Netherlands, and New Zealand. In 2005, the Alaskan Native Tribal Health Consortium pioneered this model in the U.S. by allowing dental aide therapists to provide care in native communities. Since the Alaska program began, more than 40,000 Alaska natives living in 81 previously underserved or unserved communities gained regular access to care.[34] Studies have shown that 60 percent of procedures performed by these providers are preventive and evaluative in nature.[35]

In 2009, Minnesota became the first state to authorize dental therapists, creating two new categories of practitioners, a dental therapist with a bachelor's degree and a master's-level advanced dental therapist. One of the most distinctive provisions in the Minnesota law is that dental therapists are required to serve primarily low-income, uninsured, or underserved patients. Preliminary findings of the program suggest that by expanding capacity at dental clinics, these therapists may have reduced both ED utilization and wait times for dental appointments.[36] An economic analysis of these alternative dental providers found that their salaries accounted for less than a third of the revenue they generated: 27 percent in Alaska and 29 percent in Minnesota.[37] Maine authorized dental therapists in 2014, Vermont in 2016, and there are currently 14 additional states, including Massachusetts, considering similar legislation.

Supporting teledentistry initiatives

Technology can also be used to expand the geographic reach of dental providers. Teledentistry is a combination of telecommunications and dentistry and involves the exchange of clinical information and images over remote distances for dental consultation and treatment planning. With teledentistry, dentists can remotely supervise staff and advise them on treatment decisions

using a range of audio, visual, and information transfer technologies allowing dental hygienists or MLDPs to enter schools, nursing homes, and other community organizations where underserved populations gather. Teledentistry represents an effective complementary strategy with MLDPs to expand access.

Teledentistry has been under development since 1994, and today, providers associated with a variety of pilot projects (including MLDPs in both Alaska and Minnesota) routinely use teledentistry tools to connect with supervising dentists. One illustrative pilot project is the Virtual Dental Home based at the University of the Pacific in California. In this model, members of dental teams, such as dental hygienists and dental aides, practice in community settings. Using portable imaging equipment and an internet-based dental record system, they collect electronic dental records and send them to collaborating dentists who review the information and create tentative dental treatment plans. Roughly two-thirds of the treatments are carried out by the hygienists or aides in the community setting (services include fluoride varnish, dental sealants, prophylaxis (cleanings), and periodontal scaling), while a third of patients are typically referred back to the dentist for additional care.

Evaluations of different teledentistry applications have shown that these programs provided both good quality dental care and reduced total patient care costs.[34,37,38] One study of the Alaska program demonstrated that 70 percent of outpatient dental care was delivered by aides supervised by remote dentists and that the program had resulted in 50 percent savings in the total cost of care. Recognizing the potential of teledentistry to alleviate many barriers that currently exist in providing oral health care, California and Colorado recently passed legislation authorizing teledentistry and allowing their state Medicaid programs to provide reimbursement for it. The Arizona, Florida, and New York Medicaid programs also cover some teledentistry services.

CONCLUSION

Mirroring national trends, some Massachusetts residents receive inadequate levels of preventive dental care and use EDs to address preventable health conditions. Impediments to care include the availability of dentists, the willingness of dental providers to accept MassHealth patients, and the affordability of dental care. Policy initiatives to address these impediments, when implemented in accordance with appropriate oversight and training guidelines, may not only avert future expensive ED visits, but also improve patient health and wellbeing.

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The Massachusetts Health Policy Commission, an independent state agency, strives to advance a more transparent, accountable, and innovative health care system through its independent policy leadership and investment programs.

For more information about the HPC, please visit our website www.mass.gov/hpc

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