



ORAL HEALTH CHALLENGES IN LACKAWANNA AND LUZERNE COUNTIES

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Table of Contents

Research Methods	5
Introduction	5
Background	5
Relationship between Oral and Systemic Health.....	7
Nutrition and Oral Health	7
Tobacco and Oral Health.....	8
Fluoride and Oral Health.....	8
Relationship between Oral and Mental Health	9
National Trends.....	11
Regional Trends.....	12
Challenges and Concerns	15
Economic Burden on Emergency Rooms	15
Training & Workforce Deficits.....	18
Insurance Coverage.....	19
Policy Recommendations.....	21
Conclusion.....	24
Endnotes	25

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Research Methods

Data and sources for this report were collected from a variety of resources including academic journals, dental societies, oral health specialists, community agencies and health clinics, and medical/dental school faculty.

Introduction

The purpose of this report is to provide Lackawanna and Luzerne counties with detailed information about the state of oral health in the region, the economic impact in the community and the barriers to access that affect population well-being. The report discusses factors and co-factors that play a role in proper oral health as well as policy suggestions to address the challenges and concerns as outlined.

Background

The oral cavity encompasses an extensive range of structures. From the mucosal tissue to the teeth and gums to the muscles of the tongue to the nerves embedded in the soft palate and uvula, the oral cavity participates in an extensive range of physiological activities. It is used for a wide variety of functional activities such as smiling, talking, chewing, spitting, and swallowing. Any notable deficit in these activities or dysfunction of an oral component can lead to a decline in physical, emotional, and social health. Therefore, good oral health and hygiene is vital to overall well-being. According to the World Health Organization, oral health is defined as “a state of being free from chronic mouth and facial pain, oral and throat cancer, oral sores...tooth decay and tooth loss, and other diseases and disorders that affect the oral cavity.”¹ Symptoms of infection, neoplasms, skin conditions, gastrointestinal disorders, blood disorders, and much more can involve the oral cavity. This is why many physicians and dentists view the oral exam as a valuable tool for diagnosis, frequently terming it the “mirror of systemic diseases.”² However, because most dental conditions in the mouth are either perceived as benign or deemed manageable without specialty treatment, oral health is often taken for granted or overlooked when the opposite should be occurring.

One of the most common complaints in emergency departments and outpatient clinics regarding the oral cavity is tooth pain. Tooth pain can be a result of decay, traumatic injury, infection, or other etiologies. Dental caries (also called cavities) are frequently seen in patients across age, gender, and race demographics. Dental pathology occurs as a result of the buildup of biofilm from normal flora in the oral cavity called plaque. The acidity of plaque erodes the

enamel on the tooth creating holes called cavities. When those cavities become infected, it can lead to abscesses and periodontitis. In adults, dental caries are the most prevalent chronic disorder in the oral cavity.³ Aside from dental issues, diseases and conditions affecting the oral cavity include thrush, herpes simplex virus sores, childhood viral exanthems (measles, chickenpox, Scarlet fever, etc.), Sjogren’s syndrome, temporomandibular joint pain, pharyngeal cancers, cleft lip and palate, and much more. Table 1 shows the incidence and prevalence of a few of these listed disorders that involve the oral cavity.

Table 1: Oral Manifestations of Various Systemic Diseases

Disorder	Oral Manifestation
Scurvy	Gum inflammation, bleeding, loose teeth
Rickets	Delayed tooth eruption, misalignment of teeth
Pellagra	Bright red and painful mucosa, tongue inflammation
Anemia	Pale mucosa, cracks in corner of mouth, changes in tongue size and texture
Leukemia	Gum swelling, mucosal ulcers, bleeding
Crohn's Disease	Oral lesions, "cobble stoning" of cheek mucosa
Bulimia	Dental erosion, dry mouth, dental caries
Diabetes mellitus	Dry mouth, oral thrush, parotid gland enlargement
Stevens Johnson syndrome	Painful, large oral lesions in entire oral cavity
Pemphigus	Painful, ruptured blistering lesions
Sjogren's syndrome	Dry mouth, altered taste sensation
Scleroderma	Pursing of lips, difficulty opening mouth
Lupus	Red oral lesions with central ulceration
Rheumatoid arthritis	Can present as temporomandibular joint pain
Herpes Simplex Virus	Grouped vesicles on lip or oral mucosa
Measles	Clustered white lesions on cheek mucosa (Koplik spots)

Source: <https://www.researchgate.net/publication/233391502> Mouth as a mirror of systemic diseases

Oral health disorders can affect every population regardless of income, age, race, gender, and occupation. However, certain conditions are more prevalent in specific demographics. Children are particularly susceptible to tooth decay and misaligned dentition because their teeth are still developing during childhood.⁴ Elderly are susceptible to abscesses and periodontitis as their immune system declines and they become more prone to poorer health behaviors. One of the most impactful factors to affect good oral hygiene is socioeconomic status. Poorer populations are particularly at risk for tooth decay because they tend to be less educated about dental

hygiene and not have the economic means to prevent adverse outcomes. Additionally, many jobs don't offer dental benefits; this is especially true for lower-earning jobs.

Relationship between Oral and Systemic Health

For system-specific specialists such as nephrologist or pulmonologist, a medical doctorate (allopathic or osteopathic) is obtained before specializing in their respective field. Aside from oral surgery, this is not the case for specialties involving the oral cavity. A specialist in the oral cavity attends Doctor of Dental Surgery or Doctor of Medical Dentistry programs before practicing. It's a mystifying notion to many that oral health is so separated from general medical practice in this way but it goes back to the mid-1800s with the inception of the first dental school.⁵ Since that time, oral health has been distanced from general health despite it being such an integral part of not just the human anatomy, but the entire living experience. Fortunately, within the last three decades, the focus on oral health care has expanded to include discussions of its impact on physical and mental health.

Over 15 years ago, the U.S Surgeon General David Satcher published the first report on oral health, detailing its importance to overall health and well-being. The report included research that demonstrated the association between poor dental health – especially periodontal infections – and certain chronic diseases. Therefore, it is feasible to imagine that treatment of periodontal conditions may dampen the negative effects of these diseases. The direct link between oral and systemic diseases has yet to be ascertained due to a variety of factors such as study design and confounding variables; therefore most of the literature is retrospective and limited.⁶ Regardless there are a significant number of established connections that are backed by strong evidence. In particular, researchers in the U.S. Surgeon General report stated that diabetic patients were susceptible to periodontitis. Conversely, the microbes responsible for periodontal infections may affect glycemic control in these patients. As of yet, periodontitis has not been accepted as a risk factor for diabetes, but it is well-documented that the pathogens responsible for these oral infections can be disseminated via the blood stream and infect other organs.⁶ There are several studies that indicate that women with severe periodontal disease could reduce their risk of spontaneous preterm birth by thorough cleaning of their teeth above and below the gum line.⁷ An overall view of studies examining the relationship between oral and systemic health show mixed results. But most of them agree that health behaviors that lead to poor general health are similar, if not identical, to the health behaviors leading to poor oral care. Instead of a direct bacterial dissemination from oral flora leading to endocarditis, researchers believe that the accumulation of unhealthy habits leads to poor outcomes both orally and systemically.⁸

From 2005 – 2009 United Concordia completed a study using medical records of over 335,000 patients to determine if periodontal treatment or lack thereof had an impact on medical

treatment and at what cost. Based on the cohorts, there was a savings of \$1,000 - \$5,700 per person for those individuals that received regular care. In addition, hospitalizations were reduced by 21 percent to 30 percent. Thus demonstrating the value of consistent dental care.

Nutrition and Oral Health

Proper nutrition is also another factor in maintaining good oral health. A balanced diet provides the vitamins and minerals to support healthy teeth and gums. A reduction in foods containing sugar is also important for oral health. The value of water – especially fluoridated water – is explained later in this report. Poor nutrition leads to tooth decay, tooth loss and periodontal disease. Dentists have labeled the connection between nutrition and oral health as “strong.”⁹ The Academy of Nutrition and Dietetics indicated that proper nutrition is integral to oral health and that “ongoing education and information is necessary to create the awareness and understanding.”¹⁰

The region has been designated as somewhat unhealthy in terms of the higher incidences of behavioral-based diseases and obesity. In addition, the region has a higher poverty rate and the impoverished tend to have particularly acute challenges with nutrition. Therefore, it leads to the conclusion that the region’s oral health is also compromised by the lack of proper nutrition.

Tobacco and Oral Health

According to the American Dental Association and Delta Dental, about 50 percent of adults who smoke will be diagnosed with periodontal disease. Smoking leads root canals, tooth decay and tooth loss at significantly faster rates and in higher proportion to non-smokers. Further, according to the Oral Cancer Foundation, smoking and oral tobacco products are associated with increased incidences of mouth cancer. Finally, smoking reduces the ability of the body to fight infection and damage gum tissue. There is a direct link of poor dental outcomes for smokers. Given the data indicating that Lackawanna and Luzerne counties have a disproportionate share of tobacco smokers, this likely results in worse dental health outcomes overall.

Fluoride and Oral Health

Fluoride is a naturally occurring mineral that helps to make the surface of the tooth stronger. This helps to reduce tooth decay. Fluoride occurs naturally in small amounts in foods, however many public water systems add fluoride to public drinking water and its use is supported by organizations such as the Centers for Disease Control (CDC) and the American Dental Association (ADA).¹¹

Pennsylvania American Water System does not add fluoride to its water. Fluoride may occur naturally in some water. Fluoridation is only used in one water system in Lackawanna and Luzerne Counties – Hazleton.¹² Pennsylvania American Water will only add fluoride at its

treatment facilities if all municipalities within the service area agree that fluoride should be added to their drinking water. They require a letter from the highest municipal office from each municipality within a service area and DEP must approve the chemical addition.¹³

Relationship between Oral and Mental Health

In addition to physical well-being, oral health and hygiene is important for quality of life. Studies have identified oral health-related quality of life (OHRQoL) as a measure that incorporates cultural, social, and mental factors, along with the physical as shown in Figure 1.¹⁴

Figure 1: Factors Related to Oral Health Quality of Life

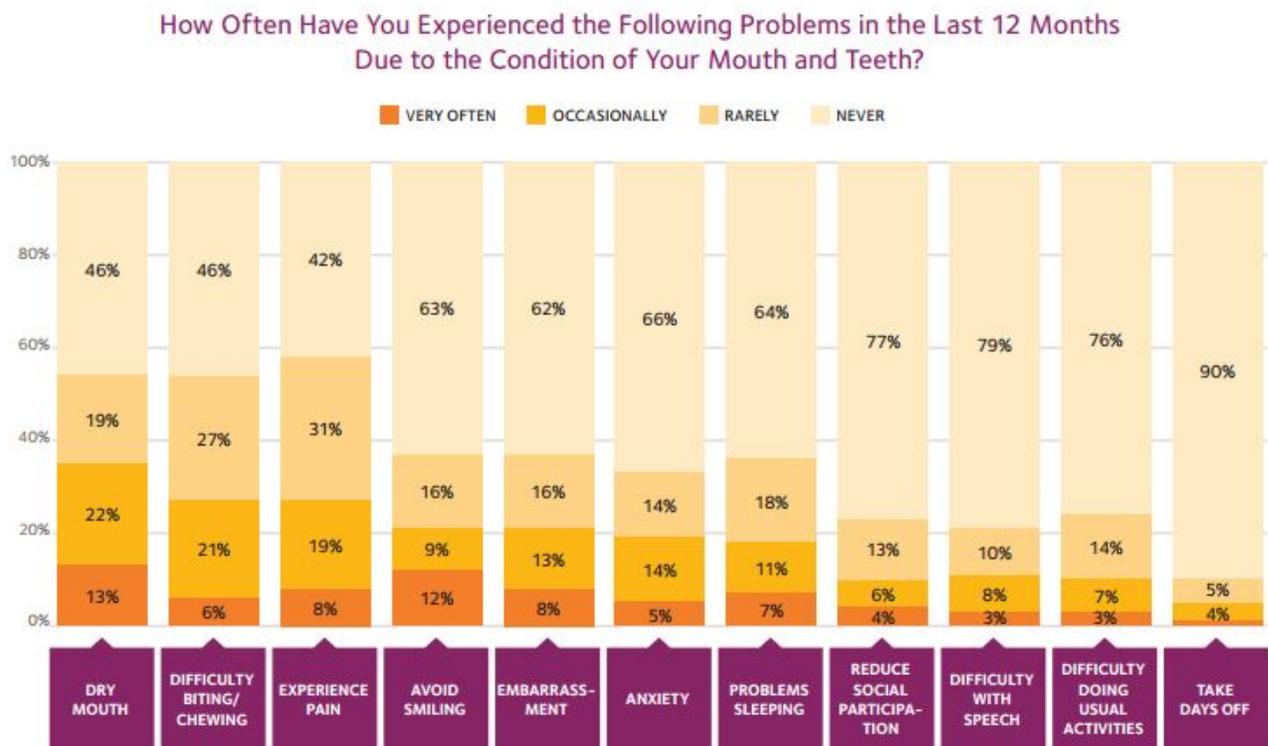


Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3318061/>

The oral cavity is an integral part of social functions such as smiling, talking, laughing, eating, drinking, and spitting. Tooth loss can cause a decline in self-esteem and social interaction. Those that suffer from tooth loss secondary to disease or trauma therefore tend to smile,

laugh, and talk less. The issues are compounded by income and age. Younger people tend to have a greater hit to self-esteem and social interaction with tooth loss. Additionally, those with higher income levels may be able to afford the veneers or implants, restoring social function. Even crooked teeth can be detrimental to self-esteem without corrective measures such as braces and retainers, which is generally not fully covered by Medicaid. Several problems arise from dental issues as seen in Figure 2. The American Dental Association prepared a report on the findings of self-reported dental patients from Pennsylvania. The cohort was comprised of adults that reported on attitudes, dental health and utilization in 2015. Perceived belief of self-unattractiveness has routinely been found to correlate with poor dentition.¹⁵ Recent articles outline the difficulty in finding a job if the applicant has chipped, discolored, crooked, or missing teeth. Lastly, tooth pain is a contributor towards sick days at work and emergency room visits, which can lead to poorer social economic status.¹⁶

Figure 2: Top Issues Resulting from Disorders of the Mouth and Teeth



Source: <http://www.ada.org/en/science-research/health-policy-institute/oral-health-and-well-being/Pennsylvania-facts>

Oral health outcomes tend to be worse in populations suffering from a chronic mental illness such as depression, anxiety, schizophrenia, and mood disorders. Several anti-depressants and

anti-psychotics list xerostomia (dry mouth) as a side effect. As a result, patients with dry mouth lose the ability to protect and lubricate the oral cavity and are therefore more prone to bacterial and fungal infections. Loss of saliva in the oral cavity can lead to cavities, pain and difficulty swallowing, and difficulty with speech. In addition to pharmacological causes of xerostomia, the severity of the mental illness can lead to poor oral care. In mood disorders such as depression or anxiety, daily activities are markedly reduced including proper oral hygiene. There is also increased craving for sugar in patients with bipolar disorder, leading to further issues with their oral care. Programs and initiatives targeting this population are greatly needed.

National Trends

Since the Surgeon General's report, national strides have been made to improve oral health for all citizens. More research is being conducted to investigate the relationship between oral diseases and chronic conditions and improvements have been made. The largest stride in dental health outcomes may be seen in children. The percentage of children between ages three and five with untreated dental decay has decreased from 23.8 percent (in 1999-2004) to 11.7 percent (in 2011-2012), far surpassing the Healthy People target for 2020 of 21.4 percent.¹⁷ Though this data predates the rollout of the Affordable Care Act, some have stated that recent decline in dental decay in children may be in part due to the passing of the ACA, which has extended funding for the Children Health Insurance Program (CHIP). Although there isn't a specific mandate in the ACA for dental care, spillover effects may be responsible.¹⁸ Moreover, there are required dental benefits that *are* mandated by CHIP for children up to age 19. It is no wonder that dental health outcomes – particularly decay and tooth loss – have improved in recent years. However, while a great deal of progress has been made on these Healthy People 2020 initiatives, other initiatives have not met target goals and some have even worsened. Nationwide, the proportion of children and adults who had visited the dentist or received other oral health care services is down compared with ten years ago. While the ACA has supported CHIP for children, there is no equivalent for adults. Several states have even refused to expand Medicaid for their residents. For the states that have, fewer than half offer comprehensive dental benefits for adults. A study by the Kaiser Commission on Medicaid and the Uninsured indicated that low income adults suffer a disproportionate share of dental disease than their higher income counterparts. These factors combined with the effects of the Great Recession – job loss, lower wages and increased poverty, out of pocket dental costs are not a high priority for lower income individuals— resulting in worsening trends.¹⁹ Aside from fewer visits to the dentist, the number of oral and pharyngeal cancer screenings in adults has dropped between 2008 and 2011 and the number of adults with moderate to severe periodontitis has remained stagnant.¹⁷

Within these populations, further disparities exist. Racial and ethnic minorities fall behind in certain outcomes compared to their white counterparts. Among African Americans, the number of adults with severe periodontitis has disproportionately risen as has the number of black elderly who have lost all their teeth.¹⁷ Similar disparities are found in ethnic populations. For example, the number of tooth extractions due to oral disease in Mexican-Americans has increased. Social factors such as income and education frequently determine health status. Populations who have only attained their high school diploma or GED have increased prevalence of periodontitis while the prevalence among those that have their bachelor's degree has decreased. Families with incomes less than 100 percent of the federal poverty line showed a slight increase in visits to the ED while the other demographics in that category remained stagnant or showed a decline. However, these families were also worse off regarding tooth extractions compared to the others. Since 2008, the uninsured showed a significant increase in visits to the dentist while others decreased, yet again correlating with the passage of the ACA.¹⁷

It is difficult to address shortcomings in oral health care without talking about the professionals that provide this care. Health outcomes can only be addressed when training and workforce gaps are met. The American Dental Association states there are 195,722 dentists in the nation.²⁰ Of that, 154,719 are general dentists and the remainder are specialists. The largest specialty in the dental field is orthodontists at 10,539. According to the Health Resources and Services Administration (HRSA), there is a shortage of 7,300 dentists in the nation and Lackawanna and Luzerne Counties are designated as a dental profession shortage area.²¹ Furthermore, a 2006 report by the Pennsylvania Association of Orthodontists identified Northeastern Pennsylvania as an area with an "urgent" need for orthodontists, particularly among the Medical Assistance population.²² This shortage along with an aging dentist population raises great concern about ability to provide care to the millions of Americans that need it. On top of this, training deficits for these professions do not help to alleviate the workforce shortage. There are fewer than 70 dental schools in the entire nation, including District of Columbia and Puerto Rico, with 14 states having no dental programs at all.²³ This naturally puts a restrictive cap on the number of new dentists entering the market. Disenfranchised populations take the greatest blow due to this shortage, which is further complicated by the lack of dentists that accept medical assistance for adults.

Regional Trends

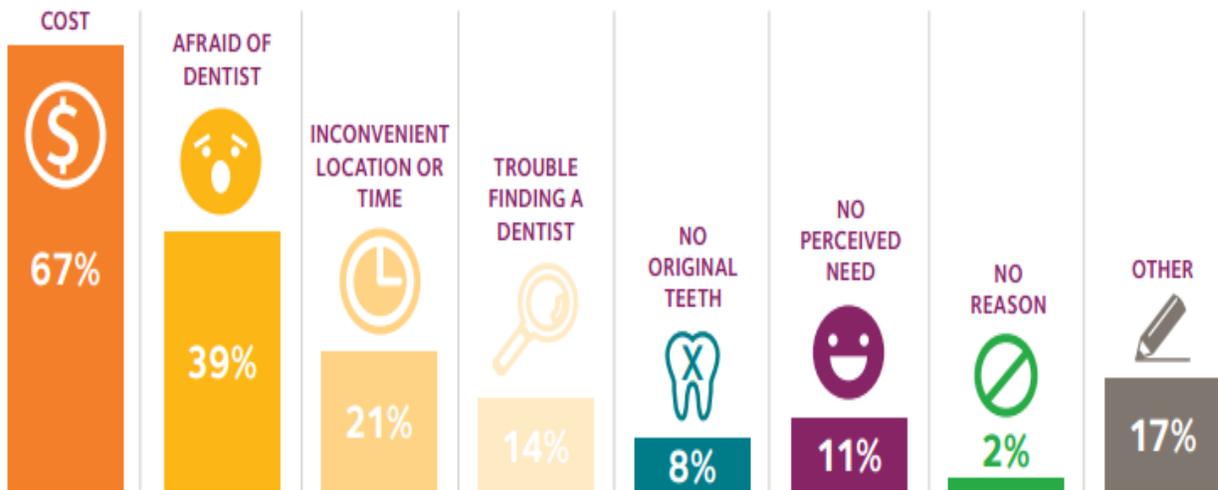
Lackawanna and Luzerne Counties have had higher than average rates of poverty than other parts of Pennsylvania and the Commonwealth as a whole. There have been distressed unemployment levels for decades and wages for comparable jobs in other communities are lower in the region. In accordance with the findings of the Kaiser Commission (and ADA and HRSA), lower income individuals have a disproportionate share of dental caries and other dental health issues.

Despite the trends on a national level, Pennsylvania is performing relatively well, though some parts of Pennsylvania are falling behind, especially regarding its disenfranchised and low income populations. In the state, the top issue for low-income adults is difficulty biting and chewing, potentially due to tooth loss and decay as well as infection. Twenty-nine percent of low income Pennsylvania residents avoided smiling due to poor dentition, further illustrating a significant decline in function and overall well-being.²⁴ In the same survey, it was noted that over two-thirds of residents haven't been to the dentist in over a year due primarily to cost. Pennsylvania is among the few states that offer limited dental benefits to the expanded Medicaid population under the Affordable Care Act. This means recipients of these benefits have access to fewer than 100 dental procedures and the per-person annual expenditure to the state is less than \$1,000.¹⁹ For northeastern Pennsylvania, \$1,000 will cover two regular exams, two cleanings x-rays and two simple fillings or three simple extractions (no anesthesia) in a year.²⁵ In comparison to many other states in the nation, Pennsylvania has a more comprehensive plan.²⁶

The recent cuts to adult dental benefits in the 2012 state budget have disproportionately affected poor populations such as those in the Lackawanna and Luzerne counties. The Health Resources and Services Administration (HRSA) ranked the area low for number of dental providers in general and the number accepting medical assistance.²⁷ There are only 27 Federally Qualified Health Centers (FQHCs) with dental services in the 13 counties of NEPA out of the over 250 in Pennsylvania's 67 counties.²⁸ Specifically in Lackawanna and Luzerne, there are five locations. These FQHCs receive funding from HRSA to establish clinics that will allow the uninsured and underinsured to receive services (some on a sliding scale and others at no cost). This means depending on income and household statistics, certain procedures can be discounted. There are only a few truly free clinics in the Lackawanna and Luzerne counties. Aside from the local dental societies, there are few community agencies that provide dental education and resources for low-income residents. In 2012, The Institute for Public Policy & Economic Development prepared a regional Community Health Needs Assessment (CHNA) on behalf of the State Health Improvement Partnership in the northeastern Pennsylvania (SHIP). The study noted quite a few challenges in the Northeastern PA (NEPA) area. According to the CDC, there are 67.2 dentists per 100,000 people in Lackawanna and 57.1 per 100,000 people in Luzerne, roughly translating to 143 and 182 dentists in the counties, respectively. Though this ranks among the highest in the state, this is a decline from the 76.4 dentists and 65.4 dentists per 100,000, respectively and very few accept MA. Overall, Pennsylvania has 60.2 dentists per 100,000 residents.²⁹ Although the counties are not falling too far behind statewide, this does not account for specialty and access. Fifteen percent of participants in the 2012 CHNA survey indicated that they had not visited the doctor in the past five years either because there was no reason to go or it was too expensive. Figure 3 shows a variety of reasons that Pennsylvania

residents who haven't seen the dentist in over a year continue not to see the dentist. This illustrates how little the importance of preventative dental care is viewed.

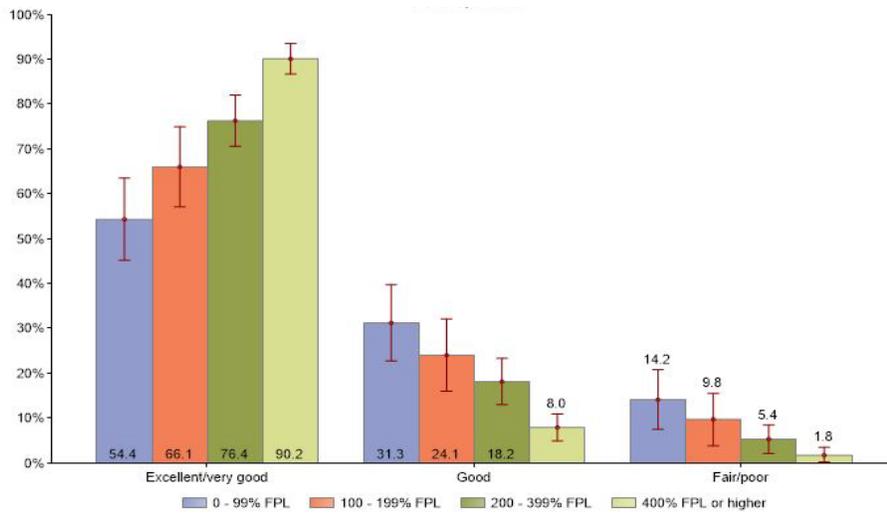
Figure 3: Reasons for Not Visiting the Dentist More Frequently



Source: <http://www.ada.org/en/science-research/health-policy-institute/oral-health-and-well-being/Pennsylvania-facts>

The most concerning barrier to dental care as identified by the survey is the lack of dental insurance. This is in part to the lack of awareness to medical assistance programs available such as Children's Health Insurance Program (CHIP) and the availability of dental providers that accept Medicaid/Medicare. Dental outcomes for children have improved but disparities still exist among lower income children, despite the widespread acceptance of CHIP as depicted in the figure below which examines condition by Federal Poverty Level (FPL) status (Figure 4). However, for adults over the age of 18, dental care is severely lacking in the region.

Figure 4: Overall Condition of Children's Teeth Ages 1-17 in Pennsylvania by Federal Poverty Level (FPL) Status



Source: <http://childhealthdata.org/browse/survey/results?q=2458&r=40&q=458>

Challenges and Concerns

Given the results from the 2012 CHNA, three major concerns are identified in the report as relating to oral care challenges in the region:

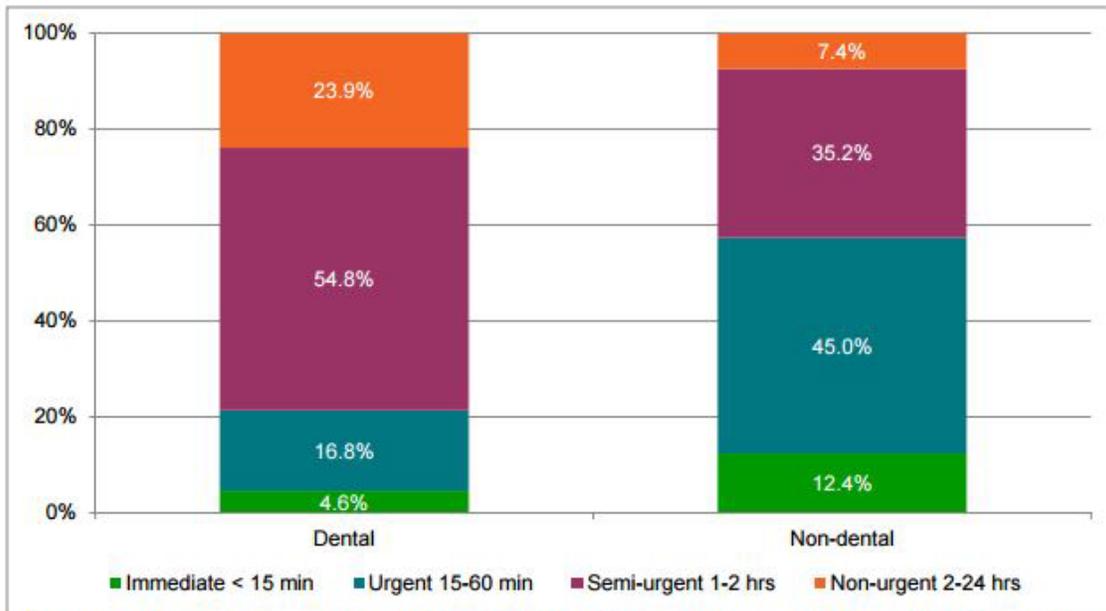
- 1) overuse of emergency resources
- 2) deficits in dental training and workforce, and
- 3) access to dental insurance along with providers who accept the medical assistance for adults

Economic Burden on Emergency Rooms

The economic impact of poor dental hygiene is steadily increasing nationwide, especially in regards to emergency departments (ED). A common complaint in EDs is tooth pain. Tooth pain in itself is not an emergent issue but acute trauma or infection that manifest as tooth pain can be something worthy of emergent investigation. Overall a disproportionate number of ED cases are dental, and most patients in the ED for dental complaints are non-emergent cases.

According to a study published by the American Dental Association, it was noted that only 4.6 percent of dental cases in the emergency room were truly emergent compared to 12.4 percent of non-dental cases (Figure 5). There were more than three times more non-urgent dental cases compared to non-dental cases.

Figure 5: Percentage of Emergency Visits by Triage Status



Source: 2009 and 2010 NHAMCS. Note: Differences in triage status by "Dental" and "Non-dental" are significant at the 1 percent level.

Source: http://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0415_2.ashx

In the same study, dental ED visits rose from 2010 to 2012.³⁰ Non-dental ED visits rose in that time period as well but it is notable that the proportion of dental ED visits to dental outpatient visits increased. This indicates that the use of the emergency department for dental complaints is increasing faster than outpatient dental clinics. Dental ED visits have grown slightly as a percentage of all ED visits, from about 1.5 percent of all ED visits in 2006 to 1.6 percent in 2012.

Table 2: Charges for Dental Emergency Visits by Patient Age and Primary Source of Payment, 2012

Age	Primary Payer	Number	Average Charge Per Visit	Total	Percentage of Charges	
0 to 18						
	Medicare	1,223	\$715	\$874,317	0.6%	
	Medicaid	137,918	\$684	\$94,375,908	61.8%	
	Private	40,453	\$845	\$34,170,498	22.4%	
	Self-Pay	26,164	\$715	\$18,709,568	12.3%	
	No Charge	275	\$820	\$225,506	0.1%	
	Other	6,487	\$666	\$4,322,624	2.8%	
	Subtotal	212,520	\$718	\$152,678,420	100.0%	9.5%
19 to 64						
	Medicare	125,050	\$774	\$96,774,945	7.0%	
	Medicaid	613,574	\$690	\$423,537,861	30.7%	
	Private	280,464	\$877	\$245,835,110	17.8%	
	Self-Pay	763,939	\$712	\$543,771,780	39.4%	
	No Charge	20,178	\$905	\$18,266,629	1.3%	
	Other	73,268	\$713	\$52,271,447	3.8%	
	Subtotal	1,876,473	\$736	\$1,380,457,770	100.0%	86.0%
65+						
	Medicare	44,865	\$1,378	\$61,842,365	85.6%	
	Medicaid	1,835	\$975	\$1,788,553	2.5%	
	Private	4,589	\$1,317	\$6,044,489	8.4%	
	Self-Pay	1,570	\$1,218	\$1,912,421	2.6%	
	No Charge	43	\$655	\$27,962	0.0%	
	Other	604	\$1,031	\$623,042	0.9%	
	Subtotal	53,507	\$1,350	\$72,238,831	100.0%	4.5%
TOTAL		2,142,500	\$749	\$1,605,375,021	100.0%	

Source: ADA Health Policy Analysis of 2012 Nationwide Emergency Department Sample Data

Before the passage of the Affordable Care Act, the elimination of adult dental benefits from Medicaid in the states that chose to do so resulted in an increase in patient load to emergency departments and community health centers.²⁶ Fortunately, the passage of the ACA has resulted in a marked decrease in uninsured patients in the emergency room across the nation, especially states that have elected to expand their Medicaid population, such as Pennsylvania. Likewise, some clinics especially free clinics in Lackawanna and Luzerne have noticed more of their patients leaving the facility now that they have insurance. However, ACA does not address dental health. Leaving another portion of the population vulnerable.

However, as the uninsured population in the emergency departments has dropped, there has been a corresponding increase in Medicaid populations in the emergency rooms.³¹ This continues to strain hospital resources. Table 2 shows charges by age population. Children mostly use Medicaid and the elderly mostly use Medicare. But the primary form of payment is divided for other adults. A large percentage are self-pay and many times may not actually be paid fully by the patient.

Training & Workforce Challenges

There are a variety of oral and dental specialty programs available across the nation. Aside from general dentistry, the oral health field expands to include oral surgeons, orthodontists, pediatric dentists, oral pathologists, prosthodontists, and more. There are also mid-level dental providers such as dental hygienists and dental assistants. Lackawanna and Luzerne counties perform relatively well with overall number of providers. Despite the lack of training options available, there are 67.2 dentists per 100,000 people in Lackawanna and 57.1 per 100,000 people in Luzerne. This number does not include other specialists beyond general dentistry, but this measure for other specialists is significantly lower. Despite performing well compared to the national average at the countywide level, several rural areas in the two counties are without access to these providers. This represents a significant workforce challenge that must be addressed. There are no dental schools in the NEPA region so direct recruitment is difficult. The most straightforward way to increase the number of dentists to parts of the region that lack adequate care would be to establish training programs in that area. However, this is the least feasible and the most costly option. There are three dental schools in the entire state: two in Philadelphia and one in Pittsburgh. A more realistic goal would be to facilitate the return of Lackawanna and Luzerne residents who go away to these dental schools. Several studies have shown that healthcare professionals tend to return to their communities (or resembling communities) after training.³² Consciously recruiting college students interested in dentistry and providing support for them to come back after training could help bolster the number of dentists in the region, especially among specialists where there is a more apparent need for more dentists and in underserved parts of the two counties that have dentist shortages in general. Compared to the national level, Lackawanna and Luzerne counties have a higher number of dentists available, but the number of dentists that accept medical assistance is low, resulting in oversaturated health clinics and certain populations that have difficulty accessing care.

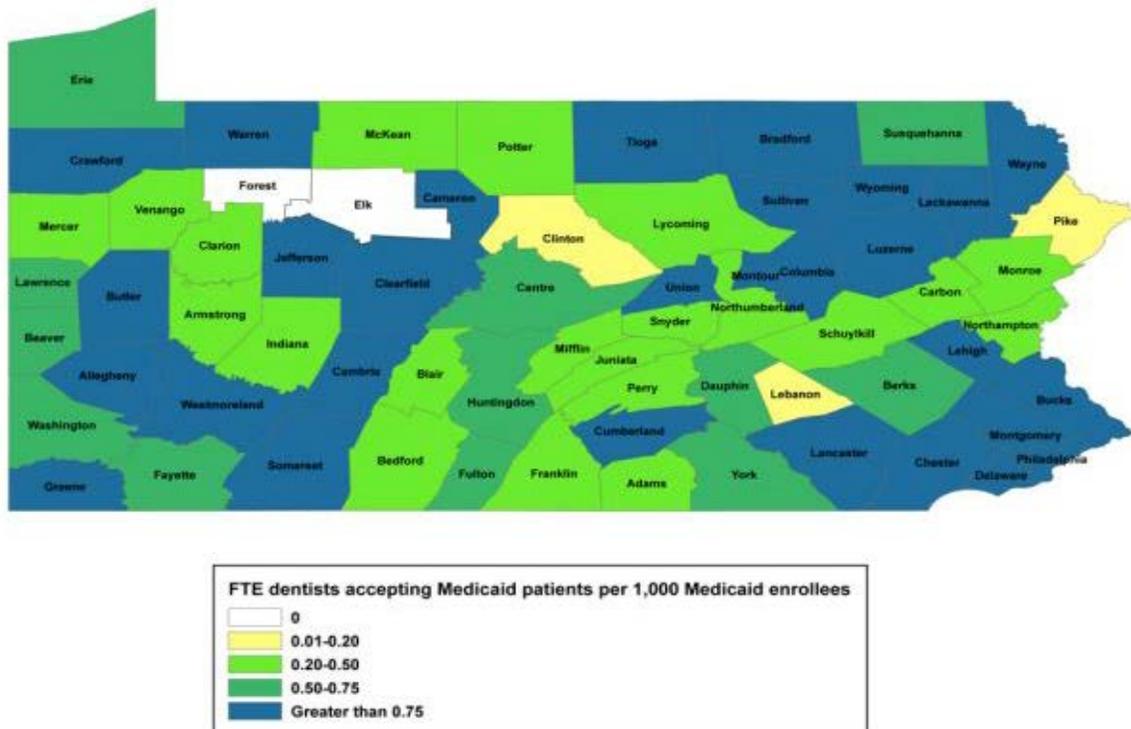
The only dental training options available in the NEPA counties are fewer than five dental hygienist programs. Specifically, the Luzerne County Community College (LCCC) has three programs in Dental Health: dental assisting, dental practice management, and dental hygiene. Students in this program provide care on weekdays at the Benco Dental Health clinic during the

school year. They are supervised by licensed dentists and dental hygienists. The students go through hands-on training to provide a variety of services to LCCC students, staff, and the local community, including the uninsured. Services include but are not limited to comprehensive teeth cleaning, fluoride treatment, sealants, denture care, and oral cancer screenings. Community members pay a small fee ranging between five and fifteen dollars for services provided. Dental hygienist programs such as the one at LCCC may help to enhance the region's dental care workforce. Several states have already begun to pilot programs and create legislation that would allow these mid-level dental providers to care for patients without requiring the supervision of a dentist. Several dentist associations are advocating against the use of dental hygienists in this way. The argument against this policy is two-fold: first, the policy doesn't mandate that dental hygienists work in underserved areas. The implementation of a program of this nature may end up oversaturating already covered areas. Second, dental hygienists are not trained as long as dentists and therefore lack the expertise to handle complicated cases and fully manage the care of patients who have not had access to dentists over the course of many decades. Still, many advocate for the policy citing more outreach to communities lacking dentists and at a cheaper cost. And with areas such as NEPA that have no dental schools, this may be the best long-term solution.

Insurance Coverage

Workforce shortage does not appear to be the primary problem with access to dental care in these counties. Of the available dentists, there appears to be a shortfall of dentists that accept medical assistance for adults. According to Figure 6 (shown below), both Lackawanna and Luzerne have a large ratio of dentists accept Medicaid patients. However, the number of practitioners may still be insufficient to meet the existing demand. Furthermore, this figure is likely misleading because the number of Medicaid patients are restricted in many offices and this figure includes the practices that accept only Medicaid for children and not adults. It is left up to FQHCs and free clinics to close the gap for adults. However, several free clinics do not accept insurance and there are only five FQHCs available to this population. This leaves a large number of residents without access to dental care. This potential shortage of medical assistance-accepting dentists is a top concern in the region. Additionally, certain services under Medicaid have been cut, creating issues for clinics that do offer services to medical assistance clients. As of September 2011,³³ root canals, crowns, and select other endodontic and periodontal services were limited to only patients that qualified for the Dental Benefit Limit Exception. These patients would only be eligible to receive services if “without the additional service, the patient's life would be in danger, the patient's health would get much worse, or the patient would need more expensive services.”³⁴ This has become an issue because according to several providers in the area, this exception is not frequently granted. The only demographics this rule does not apply to are patients under the age of 21 and those living in nursing homes – children and the elderly.

Figure 6: Number of Full Time Dentists Accepting Medicaid Patients per 1000 Medicaid Enrollees



Source: http://www.rand.org/content/dam/rand/pubs/research_reports/RR1300/RR1351/RAND_RR1351.pdf

A Geisinger Commonwealth School of Medicine student serving as an Institute intern interviewed two dentists and two dental office managers in Lackawanna and Luzerne. They all noted a frustration with reimbursement policies and the burden of paperwork when dealing with Medicaid as a top reason they do not accept medical assistance patients in private practice. According to the ADA, the reimbursement rate for Medicaid Fee-For-Service in Pennsylvania dropped by 20 percent from 2003 to 2013, indicating a worsening problem.³⁵ When asked if they had any patients at all with Medicaid, positive responses were recorded. However, these patients were generally private insurance patients upon initial reception and stayed on after losing their insurance. Another notable frustration is poor dental knowledge, missed appointments and non-compliance among Medicaid patients. This should not be construed as being universal, however there tends to be higher incidences of these issue among Medicaid patient. One director of a free clinic in Luzerne states that insurance is not accepted at all. Therefore there tends to be some coverage for private insurance payers and the uninsured. However, the underinsured – those covered by Medicaid ACCESS in Pennsylvania – have the greatest issues. To compound the issue, when adult dental benefits were cut in 2011,

the services available to medical assistance patients included cleanings/fillings and tooth extractions. Oral health specialists were not reimbursed for providing root canals and dental crowns in order to restore function while keeping the aesthetic of the teeth. This was frustrating to the few health clinics that provide services to Medicaid patients. Free clinics do not have this issue, but because they depend instead on donations and very little government funding, resources are limited.

The oral health care challenges that counties in Northeastern Pennsylvania face all center around adequate access. Geographic access is not as much of an issue for Lackawanna and Luzerne counties as it is for other areas in NEPA. However, access to providers that accept medical assistance is the largest barrier these two counties face. Lackawanna and Luzerne are fortunate to have the resources available to address poor oral health care. There must be an integrated approach to this issue. Oral health is intrinsically tied into general systemic health – not only physically but mentally and emotionally. There are many stakeholders that need to be a part of the conversation – lawmakers, graduate programs, free clinics, schools, community centers, physicians and dental care providers. It will take active participation from all these entities to alleviate the barriers to access. Expanding services available through adult medical assistance and increasing the number of providers that accept medical assistance would alleviate a large barrier to access. But there are also preventative measures that can be taken. Dental education can be taught in schools from elementary to medical colleges. Free clinics can be better supported by the community resources to provide care in their areas and hopefully expand to other counties in NEPA. The next section provides greater detail to these policy suggestions and more.

Policy Recommendations

There are a variety of policy recommendations that may be of use for Lackawanna and Luzerne counties.

Public health agencies dedicated to education

- One of the major complaints dentists have with treating patients across the board are the public perceptions about oral health care. They term this “dental IQ.” There seem to be limited resources for patient education regarding oral hygiene and health care that is accessible to the general public. There are still families that don’t believe it is necessary to brush their teeth every day. Flossing is still not a common practice, especially in low-income households. Many low-income families don’t take their children to the dentist as often as is recommended. Public health agencies across the nation have helped establish dental sealant programs in elementary schools as an avenue to provide dental education and services for children.³⁶ In these counties, tobacco use is very high and

well-known to be linked to poor oral hygiene. Education about smoking cessation could help prevent tooth loss and decay.

Fluoridated water systems

- According to the Center for Disease Control (CDC), “community water fluoridation is recommended by nearly all public health, medical, and dental organizations. It is recommended by the American Dental Association, American Academy of Pediatrics, US Public Health Service, and World Health Organization.”³⁷ The benefits of fluoridated water have been boasted upon by these listed organizations plus more. Several studies have shown that fluoridated water strengthens teeth and prevents tooth decay in a highly cost-effective manner. Currently there is only one water system in both Lackawanna and Luzerne that have fluoridated water(Hazleton).³⁸ In the long run, the implementation of fluoridated water systems would improve the oral health of the population and reduce costs for local counties.

Integration of oral care in general medical practice

- Because tooth pain is a top complaint in emergency departments and health clinics, it is important that physicians know how to treat and manage these patients properly, especially the Medicaid population. Interprofessional collaboration with emergency room doctors, free clinic staff, and dentists may prove beneficial in two ways. First, there may be more appropriate use of drugs for these patients, especially narcotics. Second, emergency room doctors can promote proper oral hygiene and regular visits to the dentist by making referrals. Now that the region has its own medical school, Geisinger Commonwealth School of Medicine, which integrates oral health into the curriculum, this creates a platform to increase public awareness about oral health concerns. For patients with mental health disorders, providers should encourage patients to take special care to maintain proper oral care including managing the xerostomia side effects of their medication and to keep up with daily oral hygiene.

Take Five program and Medicaid Reform

- The Take Five initiative is a program developed by the Pennsylvania Dental Association in response to the statewide lack of oral health specialists.³⁹ The program is designed to alleviate costs for those dentists who accept at least five patients using Medicaid. This initiative has spread beyond general dentists to include orthodontists, which was determined to be a much needed dental specialty in the NEPA area in 2006.⁴⁰ Promoting this program further could address the issue Lackawanna and Luzerne counties are having with dentists accepting medical assistance.
- One of the most impactful reforms that could be made on a state level regards reimbursement policies for Medicaid. In 2007, Texas increased reimbursement for

Medicaid dental services by 50 percent, created loan forgiveness programs for dental providers in low income areas, and provided more funds to free clinics. As a result, Texas saw an increase in dental care use among Medicaid-enrolled children, even surpassing dental care use among private dental insurance. Similarly, other states have seen an increase in dental care use by streamlining reimbursement, tracking missed appointments, and increasing the Medicaid dental provider network. Pennsylvania should look into how these states achieved this and work to implement something similar.

Active support of free clinics

Data collected from three local dental clinics in the tables below show patient demographics, payer status, and provider seen. One common element is that dental patient visits increased annually. The Wright Center (TWC) saw a major increase in MA patients to coincide with MA expansion services. Volunteers in Medicine (VIM) serves the working poor that have no insurance or are under insured. Therefore, no paper status is available. Patient volume doubled from 2015 to 2016 (and 2016 is only 10 months). Scranton Primary showed an increase in patients as well. It should be noted that the number of patients are unique patients and the provider seen identify the total number of patient visits. The tables show the number of unique patients, not the total number of patient visits.

- Currently there are only three or four free clinics that provide dental care services to the uninsured in Lackawanna and Luzerne. More financial support and public awareness of the efforts of these clinics could help decrease the number of patients going to the emergency rooms for treatment. Free clinics such as Volunteers in Medicine in Luzerne County only accept clients that have no insurance. But with the passage of the ACA, fewer patients qualify. Some patients are unaware that there are premiums involved with the health insurance and are still unable to pay those costs. Therefore, free clinics that are focused on the underinsured may be a gap that needs to be filled. Cutting dental benefits such as for root canals and crowns for low-income patients has been of great concern to these free and discounted dental clinics. Much of the time, these dentists in low-income areas have to pull teeth when a root canal or crown might have saved the tooth. There is a decline in social function and economic function when patients' teeth are pulled. Returning to the PA 2012 benefit package that included these services for adults would greatly benefit this population. Data collected from three dental clinics in the tables below show patient demographics, payer status, and provider seen.

Table 3: Patient Demographics at Regional Free, FQHC, and Sliding Scale Clinics

	2016	2015
Number of Patients	4024	3395
Gender		
Male	1872	1533
Female	2152	1862
Age		
Under 25	1546	1236
25-54	1202	1038
55+	703	627
Race and Ethnicity*		
Asian	174	95
Black	484	359
Hispanic/Latino	820	616
White	2429	2200
Other	207	206
Provider Seen*		
Dentist	3328	2285
Hygienist	2169	983
* Numbers vary for age and race and ethnicity as data collection is voluntary		
** Includes multiple visits by some patients		

Conclusion

Further study on this topic may be warranted, as some data was not available for this report and other gaps in knowledge remain. Particularly, there is a need for further analysis of vulnerable and underserved populations, such as seniors, people with disabilities, racial and ethnic minorities, non-English speakers, and low income families. Furthermore, a detailed inventory on existing programs and initiatives aimed at improving oral health, including programs in schools, clinics, day cares, etc., may be warranted to better understand where specific gaps exist.

Oral health is a major concern in Lackawanna and Luzerne counties, especially in lower income communities. The condition of the oral cavity matters because it is intertwined with general health, social function, and emotional well-being. Over the decades, oral health care has improved on a national scale but due to shifting policies and changing demographics it has remained stagnant or worsened in certain parts of the country. In Lackawanna and Luzerne, the percentage of residents with dental decay and tooth loss is high and the number of dentists who accept medical assistance is low. This contrast creates challenges in addressing oral health for these populations. The economic impact these patients have on emergency rooms makes it a health concern for each hospital system in the area. The difficulty with finding providers that

take medical assistance warrants far more investment in free clinics and Federally Qualified Health Centers. This report includes several recommendations that may address these challenges. From launching new organizations (or new initiatives from existing organizations) that will raise awareness about proper oral hygiene to incentivizing dentists to take more Medicaid patients to establishing community fluoridated water systems, there is much Lackawanna and Luzerne counties can do to combat disorders of the oral cavity.

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