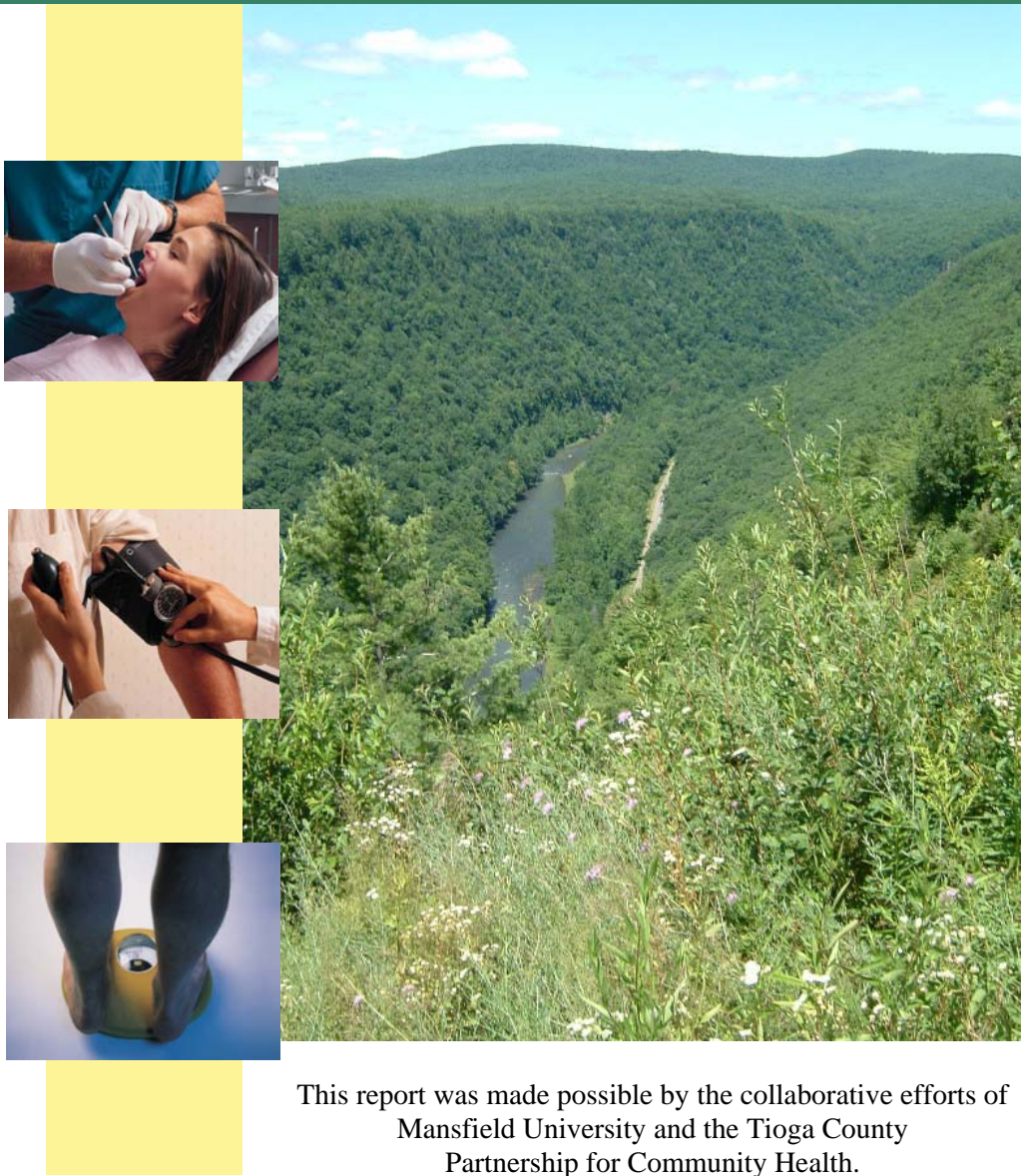


Oral Health

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Oral Health in Tioga County, Pennsylvania

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Introduction

In conjunction with the national program Healthy People 2010, the Tioga County Partnership for Community Health is collecting and monitoring indicator data that pertain to key health issues in the area. Healthy People 2010 is a comprehensive national health promotion and disease prevention agenda with set objectives designed to guide health agencies to improve the health of all people. The two main goals of this program are to: 1) increase quality and years of healthy life and 2) eliminate health disparities.¹ Of the 28 focus areas and 467 objectives within the national program, the Tioga County Partnership for Community Health is tracking eight areas and approximately 35 objectives. The selection of key indicators for Tioga County was based on priority health issues that were identified previously, appropriateness of objectives and availability of data. The focus area of this report is oral health and the following objectives are discussed:

- Reduce dental decay in children (21.1),
- Reduce untreated dental decay in children and adults (21.2),
- Reduce gingivitis and periodontal disease among adults (21.5),
- Increase sealants in 8-year-old first molars and 14-year-old first and second molars (21.8),
- Increase number of persons on public water receiving fluoridated water (21.9),
- Increase utilization of the oral health system (21.10),
- Increase preventive dental services for poor children (21.11),
- Increase the proportion of pregnancies begun with optimal folic acid level (16.16),
- Reduce tobacco use by adults (27.1) and adolescents (27.2) and
- Reduce the oropharyngeal cancer death rate (3.6).

Overview of Oral Health

Oral health consists of more than healthy teeth. Oral health includes the health of the gums, connective tissue, jaw bones and facial muscles, all of which allow us to be ourselves by helping us smile, laugh, cry, talk, speak and eat. Like other body systems, these oral components are prone to infection, injury, cancer, malformation, decay and other abnormalities. In addition to pain, certain chronic oral infections have been associated with general health problems such as Chronic Obstructive Pulmonary Disease, specific types of heart disease, diabetes, stroke and low birth weight.² Likewise, certain general health conditions such as AIDS, osteoporosis, malnutrition and chemotherapy may lead to poor oral health. Oral health problems can also affect overall health and well being causing speech difficulties, poor diet, malnutrition, poor self-esteem and decreased social contact.

Poor oral health is largely preventable through fairly simple steps taken in the community, home and doctor's office. Due to these steps oral health in the U.S. is the best it has ever been.² However, those of low socioeconomic status are facing a silent epidemic in regard to oral health. Data at the national, state and county levels consistently show that those families and individuals with less education and lower income face the brunt of poor oral health largely because of their limited access to oral health care.

Prevention

In addition to regular brushing, flossing and dental visits there are other preventive steps people can take to promote good oral health. These include tobacco cessation, water fluoridation and folic acid consumption.

Oral/Facial Birth Defects

Studies have shown that taking a daily prenatal vitamin that contains 400 micrograms of folic acid prior to and during the first two months of pregnancy may help prevent oral/facial birth defects. The most common type of oral/facial birth defect is cleft lip/palate.³ Both cleft lip/palate and isolated cleft palate occur in approximately 1 out of 1000 births.³ These babies may have problems associated with feeding, ear disease, speech development and dental problems. Dental problems can include missing teeth, misshaped teeth and teeth that are positioned incorrectly.

According to the Tioga Health Survey 2000, 79% of women ages 18-39 reported they took vitamins daily during their most recent pregnancy.⁴ However, large discrepancies exist between subgroups. Poor and less educated women were far less likely to have taken prenatal vitamins during their most recent pregnancy (Table 1).

Tobacco Use

Almost all oral cavity cancers can be attributed to smoked and smokeless tobacco.² Spit or chew tobacco is the primary cause of precancerous oral lesions.² While oral cancer represents a very small percentage of all cancer (2-4%), it has one of the lowest survival rates with only a 50% 5-year survival rate.² In 2000, 18% of Tioga County adults were found to be current smokers.⁴ Males, young adults, and those of low socioeconomic status were more likely to be current smokers. In addition, 2% of Tioga County adults reported using chew or spit tobacco. These individuals were primarily young men (Table 2).

Table 1. Percent of Women Who Took Prenatal Vitamins During Their Most Recent Pregnancy.

Subgroup	Frequency		
	Never	Occasionally	Daily
<u>Education</u>			
No H.S. Dip	25.3%	21.1%	53.7%
H.S. Dip	16.0%	9.4%	74.6%
Some College	11.7%	10.3%	79.5%
<u>Income</u>			
Poor	13.0%	19.5%	67.5%
Near Poor	21.6%	11.1%	67.3%
Middle/High	10.7%	8.6%	80.7%

Source: Tioga County Health Survey, 2000.

Table 2. Demographics for Smokeless Tobacco Users in Tioga County.

	Percent of Population Who Are Users	
	Chew	Snuff
Males	2.8	5.3
Females	0.0	0.2
All Adults	0.9	1.8

This data was obtained from valid survey responses to a question regarding use of tobacco products other than cigarettes. Response options also included none, cigars and pipes to equal 100%.

Source: Tioga County Health Survey, 2000.

Water Fluoridation

Fluoride is a naturally occurring element that is present in water at varying concentrations. In the 1930s it was first observed that persons drinking water with high levels of fluoride had little or no tooth decay.⁶ Fluoride prevents or reverses tooth decay by preventing the loss of minerals in tooth enamel.⁷ In 1945, fluoride was first added to community water systems.⁷ Today, about 2/3 of the U.S. population drinks optimally fluoridated public water. Fluoridation levels vary between 0.7 and 1.2 parts per million, depending on a community's annual average maximum daily air temperature.⁸ This process has been shown to be a safe and cost-effective means to prevent tooth decay and is thought to be one of the greatest public health achievements of the 20th century.

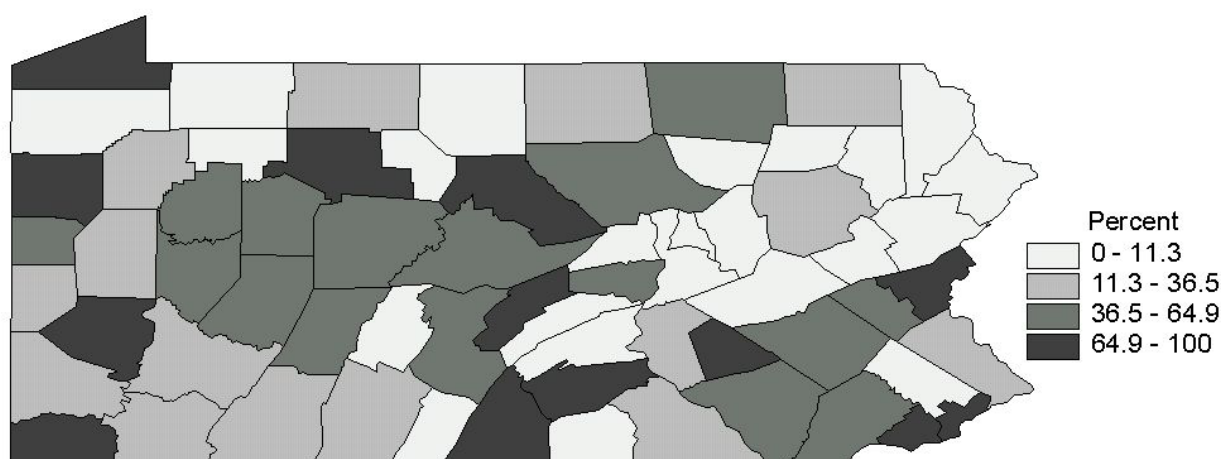
Since its inception, the adjustment of fluoride levels in water have been challenged. Opponents charge fluoridation is an infringement of choice, causes adverse health effects and can speed the deterioration of water system equipment. Their main list of unproven health effects include dental fluorosis, bone fractures and cancer.⁹ Over the past decade anti-fluoridation campaigns have been led by a handful of key individuals from Canada and New Zealand.¹⁰ While this report does not go into the depth needed to fully cover the debate of water fluoridation, initial review indicates that these

groups opposing water fluoridation tend to use highly selective and biased citations of scientific and non-scientific literature to scare individuals.

For over fifty years public health leaders and scientists have studied the safety of fluoridated water using both population and animal studies. Again, this report does not go into the depth needed to fully discuss the numerous studies conducted on the safety and effectiveness of fluoride in the prevention of dental decay. However, initial review concurs that it is generally accepted by the scientific community that when used appropriately, fluoride is a safe and effective way to prevent dental decay.

In the early and mid 1990s fluoride use was re-evaluated and considered safe by numerous public and private scientists and organizations including: the National Research Council (NRC) of the National Academy of Sciences, the Institute of Medicine (IOM), World Health Organization (WHO), U.S. Department of Health And Human Services (USDHHS), Centers for Disease Control and Prevention (CDC), American Dental Association (ADA), National Institute of Health (NIH), Food and Drug Administration (FDA), American Medical Association (AMA), American Association of Pediatrics (AAP) and the American Association of Family Physicians (AAFP).^{2,8, 9,11,12,13,14.}

Figure 1. Percent of County Public Water System Population Receiving Fluoridated Water.



Source: Centers for Disease Control and Prevention, National Center for Chronic Disease and Health Promotion, Oral Health Resources, available at <http://apps.nccd.cdc.gov/gisdoh/map.asp>.

Trends in the Oral Health of Children

Good oral health begins before birth and lasts throughout one's lifetime. The Surgeon General has stated that, "Americans have the potential to experience a life time of oral health rather than a lifetime of restorative care."² While the oral health of children has vastly improved over the past thirty years through set practices of regular dental visits, brushing with fluoride toothpaste, community fluoridated water or fluoride treatments, dental sealants and sound dietary habits, a specific group of children carry the brunt of oral disease. These are children of low socioeconomic status.

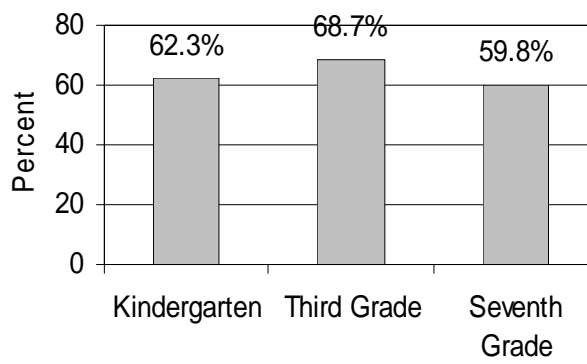
While tooth decay can occur at any age, it is one of the most common childhood health problems. Early childhood caries (ECC), which includes untreated and treated tooth decay, is the most common chronic childhood disease and is a major unmet health need in children.¹⁵ ECC affects primary teeth of infants and young children ages 1-6. At the national level, tooth decay increases with age affecting 17% of 2-4 year olds, 52% of eight year olds and 78% of adolescents by time they are age 17.² If untreated, oral diseases can lead to more serious health problems such as dental pain, dental abscesses, interference with eating, compromised nutrition and diminished growth. In addition, children with poor oral health must deal with the embarrassment of damaged teeth, distractions from learning and play and more missed school days.

School Dental Exams

Article 14 of the Pennsylvania public school code provides that all children will receive school health services.¹⁶ This includes either dental hygiene services or a dental exam program, depending on which is chosen by the local school board. For the 2003-2004 school year, all school districts in Tioga County chose to provide their students with dental hygiene services. This program is a preventive program that provides educational services and dental screenings upon parental permission. During the exam, the hygienist can not diagnose but can identify suspicious oral health problems. Students are graded on a pass/fail basis and those students failing the exam are given either a general or immediate referral for a full dental exam.

Overall, 64% of Tioga County school children, in kindergarten, third and seventh grades were referred.¹⁷ Of these students, 8.6% were given immediate referral. When divided by school district, the percentage of students who were referred ranged from 56.9% to 68.5%. In their sample of rural schools throughout the state, the Center for Rural Pennsylvania found that often times the need for referral changes as students get older.¹⁸ Kindergarten students are generally referred for tooth decay in primary teeth while older students may need referral for things such as tooth decay in permanent teeth, orthodontics and dental injury. Across Tioga County the need for referral was highest for third grade students with 68.7% being referred (Figure 2).¹⁷

Figure 2. Percent of Tioga County Students Failing Dental Exam by Grade



Source: Tioga Dental Services, 2004.

Trends in the Oral Health of Adults

Good oral health continues to be an issue throughout adulthood and the prevalence of tooth decay increases with age. Additional oral health problems that adults often experience include periodontal disease, gingivitis and tooth loss.

Dental Pain

A tooth ache is the most common type of oral pain and is often caused by tooth decay.¹⁹ On average, Americans miss 164 million hours of work per year due to oral health problems or visits.¹⁹ In Tioga County, those reporting they currently had a tooth ache increased from 9.9 % in 1995 to 12.7% in 2000.^{4,20} Most of these people were young adults, the poor and less educated (Table 3).

Regular place/ dentist

Adults who have a regular person or place where they receive oral health care are more likely to partake in preventive oral health practices. In 2000, 81% of Tioga County adults reported that they had a regular place or person where they received dental care.⁴ Large differences were observed between the subgroups of education and income (Table 4).

Ninety-eight percent of Tioga County adults visit a private dentist's office for dental care.⁴ When broken into subgroups, 8.5% percent of poor residents reported receiving care from some place other than a dentist's office compared to only 1% of middle to high income residents.

Most Recent Dental Exam or Cleaning

Regular dental cleanings and check-ups are essential for good oral health. These visits are vital in the prevention, early detection and treatment of oral health problems. In the 1999 Behavioral Risk Factor Surveillance Survey, 68% of Americans and 71% of Pennsylvanians reported going for a dental exam or cleaning in the past year.²¹ According to the Tioga County Health Survey 2000 only 57% of residents had received a dental exam or cleaning in the past year (Table 5).⁴ For 33% of Tioga County residents it had been more than a year since they had a dental exam or cleaning, while 10% reported they had never had an exam or cleaning.

Table 3. Percent of subgroups answering 'Yes' to the question "Do you now have a toothache?"

<u>Education</u>	
No H.S. Dip.	17.1%
H.S. Dip	12.3%
Some College	11.9%
<u>Income</u>	
Poor	25.2%
Near Poor	13.0%
Middle/High	11.2%

Source: Tioga County Health Survey, 2000.

Table 4. Percent of Subgroup With a Regular Place/Person for Dental Care

<u>Education</u>	
No H.S. Dip.	60.7%
H.S. Dip.	78.9%
Some College	89.6%
<u>Income</u>	
Poor	67.6%
Near Poor	72.8%
Middle/High	88.1%

Source: Tioga County Health Survey, 2000.

Table 5. Percent Distribution of Most Recent Dental Cleaning/Exam (2000).

<u>Education</u>	<u>1 Year Ago</u>	<u>More Than 1 Year Ago</u>	<u>Never</u>
No H.S. Dip.	32.7%	37.8%	29.5%
H.S. Dip	51.7%	37.4%	10.9%
Some College	72.0%	25.1%	2.9%
<u>Income</u>			
Poor	43.0%	40.2%	16.8%
Near Poor	42.5%	42.5%	14.9%
Middle/High	68.1%	26.6%	5.3%

Source: Tioga County Health Survey, 2000.

Barriers to Treatment

In the US dental health care is largely a private endeavor. While limited oral health care can be provided by public clinics, hospitals and institutions, a majority of Americans see a dentist at a private office consisting of one or two dentists, hygienists, assistants and office staff. In 1997, 91% of the dentists in the US were in private practice.² Depending on the office size, the number of staff and its location, private dental offices directly and indirectly influence the availability and accessibility to oral health care and services.

Dental Shortage

At the national, state and county levels there are simply fewer dentists today than there have been in the past. This is largely due to the number of retiring dentists with insufficient numbers of new dentists to replace them. In a recent report published by the Center for Rural Pennsylvania, rural counties in the northern and southern tiers were found to have some of the least favorable ratios.¹⁸ The dentist to population ratio is a very crude measure of capacity (Table 6). It does not take into account efficiency or location but simply indicates current trends.

Because dentists tend to be centered in and around metropolitan areas, the Health Resources and Services Administration uses a standard set of criteria to determine if a geographic area or population group is a Health Professional Shortage Area. More than 34 federally funded programs depend on the shortage designation to determine eligibility or as a funding preference. As of April 2000, the low income population in Tioga County was designated as having a shortage of dental health professionals.²²

Cost and Lack of Dental Insurance

Dental services in the US are primarily paid for through private sources, either as out-of-pocket expense for the patient or through employee based dental insurance benefits. Based on 1996 data, 46.5% of national expenditures on dental service was paid for by out of pocket payments, 48.7% was paid for through private insurance and only 4.8% was paid for through other public and private funds.²

For both children and adults, having dental insurance is a major determinant in whether or not one receives dental care.² This benefit is often provided as part of a comprehensive medical and dental plan or as a separate plan. However, it is often only available to full time employees in medium to large size companies and is often lost when one loses, changes or retires from a job. Lack of dental insurance can lead to over use and misuse of emergency rooms, unnecessary pain, eating problems, missed school or work and a decline in overall health.

In the Surgeon General's report on oral health it was estimated that for every child without medical insurance there are at least two that do not have dental insurance.² Also, the Surgeon General's report estimated at the national level that for every adult with medical insurance there are three without dental insurance.² The Tioga County Health Survey 2000 indicated that 12.6% of Tioga County adults did not have medical insurance while 44.3% did not have dental insurance.⁴ Those least likely to have dental or medical insurance are the poor, near poor and those with less education.

Table 6. Dentist-to-Population Ratios

	1999	2001
Tioga County	1:2,179	1:2,434
Pennsylvania	1:1,436	1:1,533

Sources: The Center for Rural Pennsylvania (2004) & American Dental Association, Statistical Abstract of the United States (2001) via the Bureau of Health Professions.

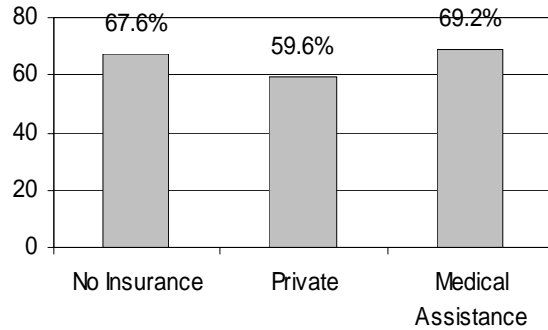
Medical Assistance

Eligibility and enrollment in the Medicaid program does not guarantee the receipt of adequate and necessary dental care. This may be for a number of reasons. The overall dental shortage combined with the fact that there are a limited number of dentists who accept MA patients on a routine basis, makes it more difficult for many people to find adequate and necessary dental care on a regular basis. While most dentists may be enrolled in the MA program it does not mean they are actively participating. A report of dental health in rural Pennsylvania recently stated that the major reasons for why dentists do not actively participate include 1) inadequate reimbursement, 2) complex regulations and paperwork and 3) high rates of patient appointment non-compliance.¹⁸

According to the 2003-04 Tioga County school dental health data, those on MA or with no medical insurance were more likely to have failed the school dental exam than their privately insured counterparts.¹⁷ Similarly the Tioga County Health Survey 2000 indicated only 39% of those on Medicaid reported having a dental exam or cleaning in the past year, compared to 63% of those with private medical insurance (Figure 3, Table 7).⁴

While this report does not go into enough detail to fully discuss the utilization of Medicaid for dental services, it should be noted that factors other than a dental shortage can limit one's access to care. These can include the perception that oral health is unimportant, lack of transportation or the inability to take time off from work to attend appointments.

Figure 3. Percent of Tioga County Students Failing Dental Exam by Insurance Type



Source: Tioga Dental Services, 2004.

Table 7. Most Recent Dental Cleaning/Exam By Type of Insurance by

	1 Year Ago	More Than 1 Year Ago	Never
Private	63.4%	29.7%	6.9%
Medicare	40.8%	35.9%	23.4%
Medicaid	39.3%	42.9%	17.9%
Other	46.6%	34.6%	18.6%
None	35.8%	49.1%	15.1%

Source: Tioga County Health Survey, 2000.

Action

One of the Healthy People 2010 objectives (21.10) calls for increased utilization of the oral health system. In March of 2001 State Representative Matt Baker initiated discussion of the parties needed to bring a dental clinic to Tioga County. These agencies include the School of Dentistry of Temple University, the Tioga County Partnership for Community Health, Laurel Health System, Northcentral Area Health Education Center and Tioga County Dental Society. Through their diligent work and collaboration, the Tioga Dental Services was opened in fall of 2002 to serve low income residents.

The clinic, which is located in Lawrenceville, offers full dental services ranging from routine dental check-ups to major restorative care. It is staffed with a Temple University faculty member, Temple University dental students, a dental assistant and a licensed dental hygienist. Services of the dental clinic are available to both children and adults who are at or below poverty level. The clinic on average sees between 150-200 patients per month. A majority (60%) of these are adults, one third of which needed emergency dental services.

Another Healthy People 2010 objective (21.9) aims to increase the percentage of community water systems users who receive optimal fluoridation. Water fluoridation has been shown to be a safe and cost-effective means to help prevent tooth decay for persons of all ages and incomes. In the United States, 66% of the population on public water systems receives fluoridated water.⁵ Pennsylvania, which ranks 38th among the 50 states, has only 54.2% of the public water system population receiving fluoridated water.⁵ Within Tioga County only those served by the Mansfield Borough Municipal Authority receive fluoridated water. This represents only 20.5% of the public water system population and 10% of the total population of Tioga County.⁵

In 2001, the Independent Task Force of Community Preventive Services released their findings of a systematic review that community water fluoridation has strong evidence of being an effective way to reduce tooth decay and recommended that it be part of a comprehensive population-based strategy to reduce tooth decay.²³ In their *Status of Oral Health* report in May 2002, the Pennsylvania Department of Health recommended that “fluoridation legislation targeted at community water systems serving a population base greater than 1,000 persons could significantly reduce childhood tooth decay.”²⁴ The areas of this size in Tioga County include those served by the Blossburg Municipal Authority (1,650), Elkland Borough Water System (1,800), Wellsboro Municipal Authority (3,780) and Westfield Water Works (1,300).²⁵ This report from the Pennsylvania Department of Health further recommends that water fluoridation be promoted by “broad-based community health partnership efforts, including dentists.”²⁴ This promotion should include education on the safety of fluoridation and the oral health benefits of fluoride in the community water systems, including appropriate use and dosage.

Discussion

No one group is responsible for improving oral health in Tioga County. Good oral health is a result of actions by the individual, health care providers and the community. Individuals can achieve and maintain good oral health through good oral hygiene practices. These include daily brushing with a fluoride toothpaste, flossing, a healthy lifestyle with proper nutrition and avoidance of tobacco, and regular visits to an oral health care provider.

Conclusion

Health-care providers must provide early diagnosis and prompt treatment. They are responsible for patient education and risk factor identification. These responsibilities are not limited to oral health care providers but also include primary health care providers and emergency room personnel. For the many residents who do not have a regular oral health care provider, this may be the only occasion for them to receive education regarding the importance of good oral health and ways to achieve it. As the U.S. Surgeon General indicates “management of the oral health-general health interface calls for the interdisciplinary and coordinated care and an enhanced role for primary care providers.” Both oral health and primary care providers are crucial in supporting the fact that oral health is a part of general health.

Community efforts to promote oral health in Tioga County should primarily focus on oral health education, as lack of information can affect access to prevention and treatment services. Some of the major issues for Tioga County include the importance of oral health and its relation to general health, importance of primary teeth, good oral hygiene habits, and the importance, safety and proper use of fluoride products. In addition, public health leaders must act as liaisons between individuals and oral health care providers, by explaining needs, discussing problems and finding acceptable solutions. In doing so, oral health initiatives can complement personal and provider approaches to oral health.

In turn, oral health care providers and individuals must be accepting and supportive of community efforts to promote oral health and improve access for high-risk groups such as those with low-income. Together all groups can work to address issues that would specifically help promote oral health in Tioga County. These include:

- increasing the use of optimally fluoridated water,
- promoting oral health in other high-risk groups, such as the elderly and young children,
- minimizing the rising cost of oral health care and
- encouraging employers to offer a dental health insurance component.

There is much to be done to address the oral health issues of Tioga County. It is clear from this report that the young and those of low socioeconomic status are most likely to experience oral health problems. In addition, these groups are likely to have the most difficulty obtaining treatment. The Surgeon General’s Report on Oral Health (2000) provides several calls to action that are applicable at the local, state and national levels. The readers of this report are encouraged to either begin or continue their efforts in the following areas:

- Change perceptions regarding oral health and disease so that oral health becomes an accepted component of general health. This includes changing the perceptions of the public, policy makers and health care providers.
- Accelerate the science and evidence base and apply science effectively to improve oral health.
- Build an effective health infrastructure that meets the oral needs of all residents and integrates oral health effectively into overall health.
- Remove barriers to the access of oral health services.
- Use public-private partnerships to improve the oral health of those who still suffer disproportionately from oral diseases.

Those seeking assistance with oral health needs should talk with a primary health provider or oral health professional. Contact Guideline in Tioga County at 1-800-332-6718 for referral to the appropriate service.

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... to improve the health and quality of life of individuals and communities in Tioga County.

Work Groups and Committees

Charlie's Place	Community Health Awareness
Elder Services	Fit for Life
Healthy Families	Planning Committee
Immunization	Kids First
Mental Health	Measurement & Outcomes
Countryside Council	Tobacco Coalition
Communities that Care (CTC)	Disability Awareness Network
Community Access Program (CAP) Operating Committee	Alcohol, Tobacco and Other Drugs (ATOD)

If you would like to learn more about these groups or would like to be a member please contact the Tioga County Partnership for Community Health.

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