INDIANA ORAL HEALTH PLAN 2012

June 2014 Version

INDIANA ORAL HEALTH COALITION

Dear Colleagues,

The Indiana Oral Health Coalition (IOHC) is pleased to support the 2012 Indiana Oral Health Plan (IOHP).

We think that the goals, objectives and activities listed in this plan will help Indiana understand the burden of oral diseases in the state and allow it to use public health principles to promote the primary prevention of these diseases. This plan also promotes access to dental care by the underserved.

The members of the IOHC were consulted throughout the development of this plan and were given the opportunity to comment. We look forward to participating in the implementation of the IOHP.

However, we realize that for this plan to work all people and organizations throughout the state with an interest in oral health will need to embrace the IOHP and contribute to its implementation.

In closing, we would like to thank everyone who has contributed to making the IOHP a reality and we look forward to working with you in the future.

Sincerely,

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

Indiana has been at the forefront of dental public health for many decades. This has occurred through collaborative efforts of state government, state educational institutions, dental organizations, and other interested organizations and individuals. In the early 20th century, dentists and researchers in Indiana conducted research on the use of fluoride to prevent dental decay, which helped lead to fluoridated toothpaste and the use of fluoride in community water systems. The early adoption of fluoridated toothpaste and the use of fluoride in community water systems in Indiana undoubtedly contributed to the dramatic reduction in the incidence of dental decay among Indiana children during the latter half of the 20th century. The use of fluoridated toothpaste and fluoride in community water systems continues to have a profound positive impact on the oral health of people in Indiana.

However, there are still challenges to oral health in the 21st century. Anecdotal reports from numerous dentists throughout the state indicate that many of Indiana's children are still experiencing dental decay. Among adults in Indiana, periodontal disease (gum disease) is common and can cause the loss of permanent teeth. Other oral diseases are less common, but no less important. Oral cancers are often very serious conditions and can be life-threatening. Muscle and joint pain in the oral/facial region afflicts many people and can be severe and become chronic. Malocclusions are also common among children and adults in Indiana and some malocclusions can be debilitating, psychologically as well as physiologically. There are many other important oral diseases, not all of which can be mentioned in this summary.

The Indiana Oral Health Plan (IOHP) identifies four broad goals to help improve the oral health of the residents of Indiana. The IOHP emphasizes the collection and analysis of epidemiological data on dental caries and periodontal disease, as well as emphasizing the use of primary prevention to decrease oral diseases. Furthermore, the IOHP establishes objectives and specific activities within each of these goals. With continued hard work by all of the individuals and organizations that have already demonstrated an interest and commitment to the oral health of the residents of Indiana, much can be achieved and the oral health of the residents of Indiana can be improved.

OVERVIEW OF ORAL HEALTH

There are many diseases and disorders that can afflict the oral region. **Dental caries** and **periodontal disease** are two common oral diseases. Both of these diseases generally start as mild forms of disease, but can naturally progress over time to more severe forms. Age, race/ethnicity, gender, and socioeconomic status can influence whether these diseases occur and how they progress once they have occurred. Although dental caries and periodontal disease are common in the population, the occurrence of both of these disorders can be reduced through primary prevention. Many types of primary prevention are simple, inexpensive and readily available. Something as simple as the widespread practice of good oral hygiene could substantially reduce the occurrence and progression of these diseases. Once these diseases have occurred, many factors determine the outcome of these diseases. Often early intervention, which may include early treatment, can mitigate one or more of these factors and arrest or slow the progression of these diseases. If left untreated, dental decay can progress to the point that it involves the nerve of the tooth, which can result in **irreversible pulpitis** and the eventual death of the nerve. This necessitates root canal treatment or extraction. If periodontal disease is left untreated, it can cause significant bone loss around the teeth, lessening their chance of long-term survival. Dental caries and periodontal disease are both common, and they have a large impact on the overall oral health of the residents of Indiana. Major dental public health challenges exist when trying to prevent and treat dental caries and periodontal disease, especially among disadvantaged children and adults, many of whom do not have the resources to individually meet these challenges.

There are other oral diseases and disorders, besides dental caries and periodontal disease. **Malocclusions** (crooked teeth) are relatively common in the population and can vary from very minor irregularities to severe malocclusions, which can include the facial bones and require surgery for complete correction. **Temporomandibular disorders** refer to a variety of disorders, some of which are relatively common. Many of these disorders are associated with pain, which can vary from minor acute pain, which is usually easily treated, to severe chronic pain that can be quite debilitating and difficult to treat. **Oral and facial injuries** can vary from something relatively minor, such as a slightly chipped tooth, to something as severe as fractures of facial bones. **Craniofacial anomalies** refer to various anomalies of the oral structures, face and/or head, the most well recognized by the general public being cleft lip and/or cleft palate. There are many types of craniofacial anomalies, many of which involve significant anomalies that require a team of dental and medical specialists to treat. **Oral cancers** are varied and there is often significant morbidity associated with these cancers, and even mortality. Although not all oral cancers are preventable, some oral cancers have risk factors such as smoking, chewing tobacco and the consumption of alcohol that if eliminated would reduce the risk of the associated oral cancers.

In addition to these diseases and disorders, there has been a lot of interest and research on the purported association between oral and systemic diseases. Some oral diseases have been reported to influence systemic diseases, while some systemic diseases have been reported to influence oral diseases. In most of these instances, there is not enough evidence to prove a causal relationship. However, some of these relationships, if true, could have important public health implications. For example, many investigators believe that diabetes is a risk factor for periodontal disease. This presents a public health concern for the oral health of the large number of individuals in the population with diabetes. Another example is the purported association between periodontal disease and various systemic diseases. These examples illustrate that preventing and treating systemic diseases (such as diabetes) may improve oral health. Likewise, preventing and treating oral diseases (such as periodontal disease) may improve systemic health.

OPPORTUNITIES FOR IMPROVEMENT

Many people and organizations in Indiana have been working for years to identify opportunities to improve the oral health of the residents of Indiana. In 2009, the Strategic Oral Health Initiative (SOHI) reported a Strategic Oral Health Plan (SOHP) with eleven goals to advance oral health in Indiana. In 2010, the Indiana Oral Health Coalition (IOHC) was formed. The members of the IOHC prioritized the eleven goals of the SOHP and established the top five goals of the IOHC. (Please refer to Appendix A.)

Thus, the 2012 Indiana Oral Health Plan (IOHP) is based upon a strong foundation of previous work, which has been synthesized in the IOHP into four overall goals and their associated objectives for improving oral health in Indiana. Now is the time for specific activities to be implemented in order to make tangible progress towards fulfilling these goals and objectives, which should measurably improve the oral health of the residents of Indiana over the next several years.

2012 Indiana Oral Health Plan (IOHP)	
Goal 1: Decrease Disease	
Objective 1.1:	Prevent oral diseases through enhanced knowledge
Objective 1.2:	Prevent oral diseases through primary prevention
Objective 1.3:	Treat oral diseases in underserved and special populations
Goal 2: Improve Use of Information	
Objective 2.1:	Obtain surveillance data to monitor oral health
Objective 2.2:	Obtain population-based estimates of the prevalence (burden) of oral diseases
Goal 3: Improve Partnerships	
Objective 3.1:	Maintain and improve working relationships between existing partners
Objective 3.2:	Develop new partnerships
Goal 4: Improve Operations and Policies	
Objective 4.1:	Improve oral health operations within the ISDH
Objective 4.2:	Improve oral health operations around the state
Objective 4.3:	Improve oral health policies

Goal 1: Decrease Disease

Background

There are many oral diseases and disorders. Common oral diseases include dental caries and periodontal disease.

According to the CDC's National Center for Health Statistics, the report, "Trends in Oral Health Status—United States, 1988–1994 and 1999–2004," among children 2 to 5 years old, tooth decay in primary teeth has increased from 24 percent to 28 percent between the years 1988-1994 and 1999-2004 (Centers for Disease Control and Prevention, 2007).

According to the National Institute of Dental and Craniofacial Research, 8.52% of adults 20 to 64 years old have periodontal disease and 5.08% of these adults have moderate or severe periodontal disease (National Institute of Dental and Craniofacial Research, 2011).

Both of these diseases are largely preventable with appropriate education of the public and the implementation of cost-effective methods of primary prevention and secondary prevention associated with early treatment.

Issues

In order to decrease disease through primary prevention, the public needs to be educated concerning the benefits of both self-directed preventive activities, such as adequate routine oral hygiene, and professional preventive services, such as fluoride applications and the placement of dental sealants on newly erupted permanent molars. However, knowledge alone is not adequate. People must use this knowledge, both personally and by having access to professional services and making use of these services.

In order to decrease disease through secondary prevention, the public needs to be educated about the benefits of early treatment for both dental caries and periodontal disease and again have access to professional services that they will routinely use.

Objectives

The three major objectives to help meet the goal of decreasing oral disease include, preventing oral diseases through enhanced knowledge, preventing oral disease through primary prevention, and preventing and treating oral diseases in underserved and special populations.

Objective 1.1: Prevent oral diseases through enhanced knowledge

Action Plan 1.1.1: Present information on oral health to organizations and stakeholders

Activity 1.1.1.a: The Oral Health Program (OHP) at the Indiana State Department of Health (ISDH) will present dental public health information to the Indiana Oral Health Coalition (IOHC)

Activity 1.1.1.b: The OHP will be available to present dental public health information to other organizations and stakeholders

Action Plan 1.1.2: Present information on oral health to the general public

Activity 1.1.2.a: The OHP will present dental public health information to the general public through the ISDH website

Action Plan 1.1.3: Present information on oral health to special populations

Activity 1.1.3.a: The OHP will be available to present dental public health information to organizations that serve special populations, which in turn can present this information to these populations

Objective 1.2: Prevent oral diseases through primary prevention

Action Plan 1.2.1: Support community water fluoridation

Activity 1.2.1.a: The OHP will consult with the Indiana Fluoridation Program at the ISDH on issues pertaining to water fluoridation

Action Plan 1.2.2: Support community-based primary prevention programs

Activity 1.2.2.a: The OHP will strive to continue supporting existing dental sealant programs

Activity 1.2.2.b: The OHP will work with the Indiana University School of Dentistry (IUSD), and other interested parties, to expand dental sealant programs taking advantage of the prescriptive supervision of dental hygienists

Activity 1.2.2.c: The OHP will work with safety-net clinics, such as Federally Qualified Health Centers (FQHC), to increase the primary prevention and early treatment of oral diseases

Activity 1.2.2.d: The OHP will work with the Indiana University School of Dentistry and Riley Hospital to support the education of dental students and residents in infant oral care

Activity 1.2.2.e: The OHP will work with the oral health workforce to encourage the oral health screening of infants by dentists in local communities, with appropriate follow-up preventive services

Action Plan 1.2.3: Encourage medical primary care providers to become involved in the oral health of children

Activity 1.2.3.a: The OHP will inform primary care providers of resources offered by such organizations as the American Dental Association (ADA) and the American Academy of Pediatric Dentistry (AAPD) about oral health for children

Activity 1.2.3.b: The OHP will encourage primary care providers to learn and conduct oral health screenings on young patients

Activity 1.2.3.c: The OHP will encourage medical residents, primary care providers, and pediatricians to refer patients younger than one year of age to a dental practice to establish a dental home.

Objective 1.3: Treat oral diseases in underserved and special populations

Action Plan 1.3.1: Support efforts by dentists to donate dental services to needy individuals

Activity 1.3.1.a: The OHP will strive to continue supporting the Dental Lifeline Network in Indiana (Donated Dental Services)

Action Plan 1.3.2: Encourage Medicaid to continue to provide oral health care to their enrollees

Activity 1.3.2.a: The OHP will strive to work with Medicaid to help them meet the oral health needs of their enrollees

Action Plan 1.3.3: Develop a competent and diverse workforce that can provide care to all residents of Indiana

Activity 1.3.3.a: The OHP will support institutions in Indiana in their efforts to educate a competent and diverse oral health workforce that can provide oral health care to all the residents of Indiana

Activity 1.3.3.b: The OHP will support the Indiana University School of Dentistry in their efforts to provide service learning opportunities for their dental students at various public health dental clinics

Activity 1.3.3.c: The ISDH will continue their efforts at identifying and establishing Dental Health Professional Shortage Areas to provide opportunities for dentists to provide care for the underserved

Activity 1.3.3.d: The OHP will support efforts that allow all persons with HIV/AIDS to receive appropriate and timely oral health care

Oral health is an important and often overlooked area of health care for people living with HIV/AIDS. It is recommended that all HIV patients have dental examinations to identify infections which may have an impact on their overall health. Adequate oral health care is also important to support HIV treatment and maintain the quality of life of people with HIV/AIDS.

Goal 2: Improve Use of Information

Background

There are many types of oral diseases such as dental caries and periodontal disease that are very common. These diseases can result in dental decay and the destruction of the bone that supports the teeth, respectively, both of which can result in the premature loss of teeth.

In order to promote and provide for the oral health of the residents of Indiana, it is essential that epidemiological data about the prevalence (burden) of dental caries and periodontal disease be available. This information can provide guidelines for specific dental public health activities and the best use of scarce resources.

Issues

Indiana does not have current data on the prevalence (burden) of dental caries and periodontal disease.

Note: In 2013, the Oral Health Program did complete a state-wide survey of the oral health status of 3rd grade children in Indiana. A short summary of the information provided by this survey has been added in a subsequent section.

Objectives

The two major objectives to help meet the goal of improving the use of information include, obtaining surveillance data to monitor oral health and obtaining population-based estimates, through surveys, of the prevalence (burden) of oral diseases.

Objective 2.1: Obtain surveillance data to monitor oral health

Action Plan 2.1.1: Obtain periodic information about the oral health status among children in local communities and statewide

Activity 2.1.1.a: The Oral Health Program (OHP) of the Indiana State Department of Health (ISDH) will strive to collect surveillance data on dental decay and dental sealants among children in local communities from the existing dental records of children

Activity 2.1.1.b: The Oral Health Program (OHP) of the Indiana State Department of Health (ISDH) will work with FSSA/Medicaid to analyze selected data to better understand the oral health of children enrolled in Medicaid

Objective 2.2: Obtain population-based estimates of the prevalence (burden) of oral diseases

Action Plan 2.2.1: Obtain an estimate of the prevalence of dental decay among children in Indiana

Activity 2.2.1.a: The OHP will periodically conduct statewide surveys on the oral health status of children in Indiana, which will result in estimates of the prevalence (burden) of dental decay in this population

Action Plan 2.2.2: Obtain an estimate of the prevalence of periodontal disease among adults in Indiana

Activity 2.2.2.a: The OHP will periodically conduct statewide surveys on the oral health status of adults in Indiana, which will result in estimates of the prevalence (burden) of periodontal disease in this population

Goal 3: Improve Partnerships

Background

Trying to improve the oral health of people in a state as large and diverse as Indiana can be a daunting task. Improvement can only be achieved by institutions, organizations and individuals working together. Indiana is fortunate in that the Oral Health Program at the Indiana State Department of Health, the Indiana University School of Dentistry and the Indiana Dental Association have a long history of cooperating on public health issues related to oral health. One common meeting place for representatives of these three institutions, along with other organizations, institutions and individuals, has been the quarterly meetings of the Indiana Oral Health Coalition (IOHC), which was formed in December 2010.

Issues

Diseases and disorders of the oral and associated facial regions are varied and complex. Preventing and treating oral disease and disorders in a population through public health measures is complicated. Therefore, it is important to maintain established relationships, as well as develop new relationships to address these complicated issues.

Objectives

The Oral Health Program at the ISDH will strive to maintain and improve existing partnerships both within the ISDH and around the state and seek to establish new partnerships as needed. Likewise, other institutions and organizations around the state, interested in oral health, will be encouraged to maintain and improve existing partnerships and seek to establish new partnerships as needed.

Objective 3.1: Maintain and improve working relationships between existing partners

Action Plan 3.1.1: Maintain and improve working relationships between existing partners *within the ISDH*

Activity 3.1.1.a: The State Oral Health Director will attend regular meetings of the Commission of Health and Human Services within the ISDH, in which all Division leaders are present

Activity 3.1.1.b: A representative of the OHP will attend meetings of the Division of Maternal and Child Health (MCH) at the ISDH

Activity 3.1.1.c: A representative of the OHP will attend meetings of the Chronic Disease Epidemiology Integration Group (CDEIG)

Activity 3.1.1.d: A representative of the OHP will periodically meet with the Division of Children's Special Health Care Services

Activity 3.1.1.e: A representative of the OHP will periodically meet with the Indiana Family Helpline

Activity 3.1.1.f: The OHP will work with the Division of HIV/STD and its collaborators to help address the oral health care needs of people with HIV/AIDS

Action Plan 3.1.2: Maintain and improve working relationships between institutions, organizations and individuals *around the state*

Activity 3.1.2.a: The State Oral Health Director will attend quarterly meetings of the Indiana Oral Health Coalition (IOHC)

Activity 3.1.2.b: The State Oral Health Director, at the invitation of the Indiana Dental Association (IDA), will attend the regularly scheduled Executive Board Meetings, and will serve as an *ex officio* member of the IDA Council on Dental Public Health

Activity 3.1.2.c: The State Oral Health Director, at the invitation of the Indiana University School of Dentistry (IUSD), will attend the regularly scheduled Executive Committee Meetings of the IUSD

Activity 3.1.2.d: A representative of the OHP, at the invitation of Medicaid, will work with this state agency to improve the oral health of its enrollees

Activity 3.1.2.e: A representative of the OHP will work with the Department of Education (DOE) to share ideas on how to better meet the oral health needs of their students

Objective 3.2: Develop new partnerships

Action Plan 3.2.1: Develop new partnerships *within the ISDH* among divisions, offices and programs

Activity 3.2.1.a: The OHP will seek to collaborate with the Division of Nutrition and Physical Activity

Activity 3.2.1.b: The OHP will seek to collaborate with the Division of Women, Infants and Children

Activity 3.2.1.c: The OHP will seek to collaborate with the Office of Minority Health

Activity 3.2.1.d: The OHP will seek to collaborate with other partners *within the ISDH* to improve oral health in Indiana

Action Plan 3.2.2: Develop new partnerships between institutions, organizations and individuals *around the state*

Activity 3.2.2.a: A representative of the OHP will seek more collaborative opportunities with FSSA/Medicaid to promote oral health among their enrollees.

Activity 3.2.2.b: A representative of the OHP will seek collaboration with Head Start programs to promote oral health in young children

Activity 3.2.2.c: The OHP will seek to collaborate with other partners *around the state* to improve oral health in Indiana

Goal 4: Improve Operations and Policies

Background

There are many *operations* in various institutions and organizations around the state that impact oral health. There are also many *policies* of various institutions and organizations around the state that impact oral health.

Issues

The main issue is how to both improve these individual operations and policies and then to coordinate them, where appropriate, for improved operations and policies at local, regional and state levels.

Objectives

The major objectives of the current IOHP include how the Oral Health Program (OHP) at the ISDH can improve its operations and policies at a state level.

Objective 4.1: Improve oral health operations within the ISDH

Action Plan 4.1.1: Improve activities of the OHP at the ISDH

Activity 4.1.1.a: The OHP will periodically review its activities to help determine their effectiveness at improving the oral health of the residents of Indiana

Activity 4.1.1.b: The OHP will track its major activities

Action Plan 4.1.2: Improve communicating the activities of the OHP

Activity 4.1.2.a: The OHP will submit an Annual Report of its major activities to the Commission of Health and Human Services at the ISDH, the Indiana Oral Health Coalition, the Indiana Dental Association, and the Executive Committee of the Indiana University School of Dentistry

Activity 4.1.2.b: The OHP will maintain a marketing plan to be periodically updated and reviewed by the Office of Public Affairs at the ISDH

Action Plan 4.1.3: Improve universal precaution activities related to oral health

Activity 4.1.3.a: The OHP will strive to improve the activities of the ISDH, required by statute, as they pertain to universal precautions in dental facilities

Objective 4.2: Improve oral health operations around the state

Action Plan 4.2.1: Improve oral health programs around the state supported by the ISDH

Activity 4.2.1.a: The OHP will review the reports submitted by the oral health programs around the state supported by the ISDH

Activity 4.2.1.b: The OHP may conduct periodic site visits to oral health programs around the state supported by the ISDH

Objective 4.3: Improve oral health policies

Action Plan 4.3.1: Encourage collaboration to improve policies on oral health

Activity 4.3.1.a: The OHP will collaborate with the Indiana Oral Health Coalition (IOHC) and other entities on statewide oral health policies

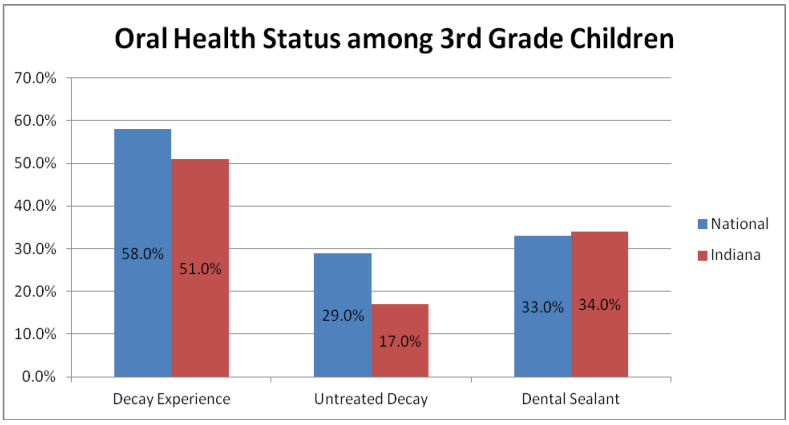
PREVALENCE AND INCIDENCE

The Indiana Oral Health Plan (IOHP) includes various activities to improve the oral health of the residents of Indiana. To judge whether these activities are successful, the state needs baseline epidemiological data to estimate the current oral health status of the residents of Indiana, which can then serve as a basis for judging whether the oral health of the population improves over time. Indiana does not have current estimates of the prevalence (burden) and/or incidence of common oral diseases in the state, such as dental decay and periodontal disease. (Note: Oral health status among 3rd graders became available in 2013, see below.) Furthermore, Indiana does not currently have a system for periodically collecting data on these diseases. Thus, it is appropriate that some of the objectives of the IOHP emphasize the collection and analysis of epidemiological data.

The state still lacks population-based estimates on the burden of many oral diseases. However, the state does collect surveillance data on dental extractions with the Centers for Disease Control and Prevention (CDC) through their Behavioral Risk Factor Surveillance System (BRFSS), surveillance information on birth defects as part of the National Birth Defects Prevention Network (NBDPN), information about the morbidity associated with oral diseases as observed in hospital discharge data collected by the Indiana State Department of Health (ISDH), and the mortality associated with oral diseases, again through the surveillance efforts of the CDC.

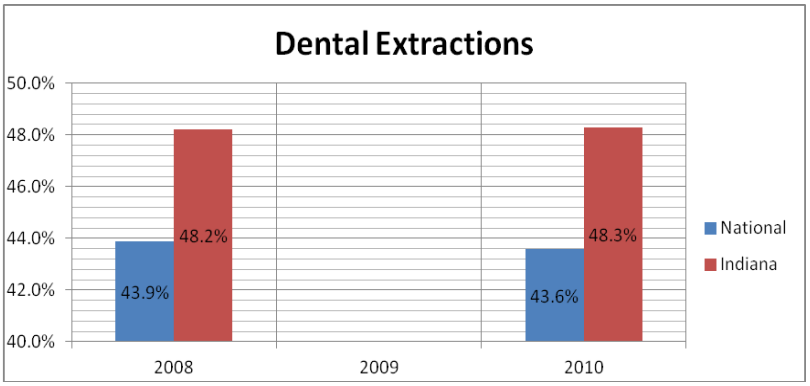
Oral Health Status of 3rd Grade Children

In 2013, the OHP completed a state-wide survey of the oral health status of 3rd grade children in Indiana. This survey estimated that the percentage of 3rd grade children with *decay experience* was 51% in Indiana, compared to 58% in the U.S.; the percentage of 3rd grade children with *untreated decay* was 17% in Indiana, compared to 29% in the U.S.; and that the percentage of 3rd grade children with a *dental sealant* on one or more permanent first molar was 34% in Indiana, compared to 33% in the U.S. (Phipps and Miller, 2014). Note: The percentage of 3rd grade children with *treated decay* can be calculated by subtracting the percentage with *untreated decay* from the percentage with *decay experience*.



Dental Extractions

In 2010, according to the BRFSS, the national average for the percentage of adults that had any permanent teeth extracted was 43.6%, while Indiana's percentage of 48.3% was measurably worse. In 2008, the national average was 43.9%, while Indiana's percentage of 48.2% was again measurably worse. Furthermore, while the national average improved slightly from 43.9% to 43.6%, Indiana's percentage appears to have stayed the same, or has gotten slightly worse, from 48.2% to 48.3%.



In Indiana, those with the highest prevalence of tooth extraction, in 2010, consisted of individuals that were Black, had an annual household income less than $15,000 and had a low education level. These trends match those of the nation. Also, these trends are similar to trends from previous years. Another trend for the prevalence of tooth extraction was associated with age. As age increased, so did the percentage of Indiana residents who had a permanent tooth extracted. Again, this trend is consistent with the national trend (Centers for Disease Control and Prevention, 2010).

Cleft Lip and Cleft Palate

The Indiana State Department of Health (ISDH) collects surveillance information on birth defects within the state and is part of the National Birth Defects Prevention Network (NBDPN). The NBDPN works to establish and maintain a national network of state and population-based programs for birth defects surveillance, research and prevention. The ISDH reported that, in 2010, there were 79 cases of Indiana children born with a cleft lip with and without a cleft palate. In 2009, there were 77 cases of children with a cleft lip with and without a cleft palate (National Birth Defects Prevention Network, 2010).

Morbidity

Indiana's hospital discharge data can provide a glimpse of the occurrence of oral diseases, in the state. The hospital discharge data contains, along with many other variables, the primary diagnosis associated with the hospital discharge of patients. In 2010, oral diseases were related to 1,226 hospital discharges. Oral health related diagnoses, related to hospital discharges, have remained stable from 2007 to 2010 (Indiana State Department of Health, 2010).

Mortality

Most deaths related to oral disease are due to various forms of cancer. In 2008, the age-adjusted rate for all forms of oral cancer deaths in Indiana was 2.4 per 100,000, while there were a total of 169 deaths attributable to all forms of oral disease, for an overall mortality rate of 2.7 per 100,000. The overall mortality rate has remained stable from 2003 to 2008. This trend is consistent with the national trend (CDC Wonder, 2008).

INFLUENCING FACTORS

Various factors can influence the occurrence of dental decay and periodontal disease, either as risk factors or protective factors. Some of the risk factors are subject to modification, which offers the opportunity for primary prevention.

Risk Factors for Dental Decay in Children

Demographics

The demographic factors, age, race/ethnicity, gender and socioeconomic status can influence the risk of dental decay. For example, dental decay can be more common among children and adolescents in certain populations.

Genetics

Not all dental decay can be blamed on poor diet and poor oral hygiene. Some people likely have a genetic predisposition for developing decay.

Diet

Eating a poor diet can lead to poor nutrition, which affects the development of teeth. Children need good nutrition to develop healthy teeth, and to keep them that way. A common cause of dental decay in children is a diet with excess sugar. This sugar can be used by bacteria in dental plaque to produce acid, which can break down the structure of the teeth (demineralization), which can lead to caries and ultimately dental decay.

Oral Hygiene

Poor oral hygiene is a risk factor for dental decay. Plaque that remains on the surface of the tooth can cause the teeth to decay over time. This is why it is important to practice good oral hygiene on a regular basis. Parents can clean their toddler's teeth by rubbing them with a wet cloth. Parents can brush young children's teeth, and then children can learn to brush and floss their own teeth, a habit that should be maintained for the rest of their life.

Access and Utilization of Oral Health Care Services

Not visiting the dentist routinely can be a risk factor for the occurrence and progression of dental decay. The BRFSS for 2010 reported that 68.8% of Indiana residents visited the dentist for any reason, which is below the national percentage of 70.1%. The percentage of Indiana residents visiting the dentist has remained about the same since the prior survey in 2008 (Centers for Disease Control and Prevention, 2010).

There are 23 counties in Indiana that have a total of 43 Dental Health Professional Shortage Areas (DHPSA) (Health Resources and Services Administration, 2011). Health Professional Shortage Areas (HPSAs) were established under the U.S. Public Health Service Act. This federal designation is based on the availability of health professional resources within an

area. There are three types of areas which receive HPSA designations: geographical areas; population groups; and facilities. Each type of area has its own requirements.

Half of Indiana's counties are officially designated as rural counties, which typically have a less favorable dentist to population ratio than urban areas. Dental students are more likely to practice in the community from which they came than would dentists with no ties to the community. Therefore, it might be important to consider making a special effort to recruit potential dental students from underserved rural counties (Webster & Packer, 1981).

Protective Factors for Dental Decay in Children

Community Water Fluoridation

The fluoridation of drinking water provides protection against the occurrence and progression of dental decay. Fortunately, a large portion of the population in Indiana is served by community water systems, and about 94% of these systems have optimal levels of fluoridation to prevent dental decay, either naturally or by adding fluoride to the water. Furthermore, approximately 100,000 Indiana residents receive fluoridated water from a private well (Indiana State Department of Health, n.d.). The Centers for Disease Control and Prevention (CDC) established a goal of 79.6% of community water systems having optimal levels of fluoride. Indiana has exceeded this goal for many years, and will likely exceed it for the foreseeable future (U.S. Dept. of Health and Human Services, Healthy People 2020).

Dental Sealants

Dental sealants are a protective barrier applied to the chewing surfaces of teeth to prevent decay (American Dental Association, 2011). The largest dental sealant program in Indiana is Seal Indiana, which is a mobile program operated by the Indiana University School of Dentistry and is partially funded by the Indiana State Department of Health. Over the course of eight years, Seal Indiana has placed 32,000 dental sealants on the permanent molars of 22,000 children (Soto-Rojas, 2011). The CDC Healthy People 2020 goals include the placement of dental sealants on the primary molars of 1.5% of children 3-5 years old, and on the permanent first molars of 28.1% of children 6-9 years old (U.S. Dept. of Health and Human Services, Healthy People 2020).

The recent 2013 state-wide survey of 3rd grade children (mostly 8-9 year old children) estimated that 34% of this population of children has a dental sealant on one or more of their permanent first molars. This is about the national average. Extrapolating this data to 6-9 year old children indicates that about 25.5% of 6-9 year olds in Indiana have a dental sealant. Although, 25.5% is likely close to the national average for 6-9 year olds, it is below the *goal* of 28.1% set by Healthy People 2020 for this population of children.

Dental Visits and Indiana Medicaid

Regular dental visits can help prevent the occurrence of dental decay and affords the opportunity to treat dental decay early. According to the Indiana Office of Medicaid Policy and Planning (OMPP), for the state fiscal year of 2011 (SFY 2011), there were 754 dentists

in Indiana that participated in Medicaid/CHIP. Furthermore, for SFY 2011, there were 508 Medicaid/CHIP billing dentists who saw 100 or more beneficiaries under the age of 21. Additionally, there were 720,264 children, under the age of 21, enrolled in Title XIX Medicaid for at least one month of the 2011 fiscal year (Indiana Office of Medicaid Policy and Planning, n.d.).

Indiana State Department of Health Indiana Family Helpline (IFHL)

The IFHL addresses questions related to maternal and child health, WIC, oral health, and other health issues. The IFHL assesses the caller's needs and makes appropriate referrals, utilizing an extensive computer database. Follow-up calls are made or letters are sent.

Calls related to oral health are among the most frequent calls made to the IFHL. As the Indiana Family Helpline is able to link residents of Indiana to providers of oral health services in their community, it acts as a protective factor against dental decay in children.

Risk Factors for Periodontal Disease in Adults

Demographics

The demographic factors, age, race/ethnicity, gender and socioeconomic status can influence the risk for periodontal disease. For example, periodontal disease (gum disease) is more common among older adults.

Genetics

Some people likely have a genetic predisposition for certain types of periodontal disease.

Diet

Poor nutrition can be a risk factor for periodontal disease. A diet with a larger proportion of sugars can provide dental plaque the opportunity to produce acids that can be harmful to the gums.

Oral Hygiene

A lack of good oral hygiene is a risk factor for the occurrence of periodontal disease. Brushing and flossing teeth can be an effective and relatively inexpensive way to periodically remove plaque from the teeth and gums. Furthermore, toothbrushes and floss are readily available to the general population.

Systemic Disease

Some systemic diseases purportedly make people more susceptible to periodontal (gum) disease. For example, research has shown that those people with diabetes are at higher risk for periodontal disease than those without diabetes. Therefore, for those persons with a systemic disease, known to be a risk factor for periodontal disease, it is especially important that they practice good oral hygiene.

Tobacco Use

According to the National Institute of Dental and Craniofacial Research, "Smoking is one of the most significant risk factors associated with the development of gum disease." (National Institute of Dental and Craniofacial Research, 2011). Indiana ranks high among all states in adult smoking prevalence and is higher than the average U.S. rate of 17.2% (Indiana State Department of Health, 2010).

Access and Utilization of Oral Health Care Services

Lack of access to care can be a risk factor for the occurrence and progression of periodontal disease. The BRFSS results from 2010, reported that 68.8% of Indiana residents visited the dentist for any reason. This percentage is lower than the national percentage of 70.1%. The percentage of Indiana residents visiting the dentist has remained about the same since the prior survey in 2008 (Centers for Disease Control and Prevention, 2010).

There are 23 counties in Indiana that have a total of 43 Dental Health Professional Shortage Areas (Health Resources and Services Administration, 2011). Half of Indiana's counties are officially designated as rural counties, which typically have a less favorable dentist to population ratio than urban areas.

Protective Factors for Periodontal Disease in Adults

Community Water Fluoridation

Because fluoridated water helps prevent dental decay, which can have an adverse effect on the gums, community water fluoridation can be considered a protective factor for periodontal disease in adults.

A large portion of the population in Indiana is served by community water systems, and about 94% of these systems have optimal levels of fluoridation to prevent dental decay, either naturally or by adding fluoride to the water. Furthermore, approximately 100,000 residents receive fluoridated water from a private well (Indiana State Department of Health, n.d.). The CDC established a goal of 79.6% of community water systems having optimal levels of fluoride. Indiana has exceeded this goal for many years, and will likely exceed it for the foreseeable future (U.S. Dept. of Health and Human Services, Healthy People, 2020).

Dental Visits and Indiana Medicaid

Regular dental visits can help prevent the occurrence of periodontal disease and afford the opportunity to treat periodontal disease early. According to 2010 Behavioral Risk Factor Surveillance System data, 68.8% of adult Indiana residents visited a dentist or dental clinic within the last year, and 68.3% had their teeth cleaned by a dentist or dental hygienist within the last year (Indiana State Department of Health, n.d.).

Medicaid acts as a protective factor for those who are enrolled in Medicaid and utilize its services.

According to the Indiana Office of Medicaid Policy and Planning (OMPP), for state fiscal year 2011, there were 754 dentists in Indiana that participated in Medicaid/CHIP performing and rendering services, or treating patients (Indiana Office of Medicaid Policy and Planning, n.d.). Adults in Indiana enrolled in Medicaid are able to receive specified dental services from dentists in the state who are Medicaid providers.

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The IFHL addresses questions related to maternal and child health, WIC, oral health, and other health issues. The IFHL assesses the caller's needs and makes appropriate referrals, utilizing an extensive computer database. Follow-up calls are made or letters are sent.

Calls related to oral health are among the most frequent calls made to the IFHL. As the Indiana Family Helpline is able to link residents of Indiana to providers of oral health services in their community, it acts as a protective factor against periodontal disease in adults.

The Indiana Tobacco Quitline

Since smoking tobacco is a known risk factor for periodontal disease, then the prevention of smoking could help protect people from developing periodontal disease.

The Indiana Tobacco Quitline is an effort to help those who use tobacco to quit using it. Therefore, while not all tobacco users in the state utilize this service, those who do will have the opportunity to receive help to reduce or stop the use of tobacco products.

The Indiana State Department of Health supports the Indiana Tobacco Quitline. Services include one-on-one coaching for tobacco users who have decided to quit, resources for healthcare providers who want to improve patient outcomes, best practices for employers who want to implement smoke-free policies, support for family and friends who want to help loved ones stop smoking and more. These services are available 7 days-a-week in multiple languages. Trained quit coaches work with current tobacco users and provide tailored solutions (Indiana State Department of Health, n.d.).

WORKFORCE

Dentists

In an effort to characterize the current workforce of oral health care professionals in Indiana, the Indiana Professional Licensing Agency (PLA) and the Indiana State Department of Health sponsor a survey that dentists can complete, if they renew their license electronically. While this re-licensure survey provides some indication of the number of dental healthcare providers in the state, it is important to realize that not all active licensed dental professionals renew their license electronically, or some may have chosen not to complete the survey, either in whole or in part.

The PLA reported that 3,760 dentists renewed their dental license as of March 2012. The Oral Health Program at the ISDH analyzed data from the *2011-2012 Indiana Dentist Re-licensure Survey* conducted by the Indiana Professional Licensing Agency. This analysis indicated that as of March 2012 there were about 3.89 practicing general dentists per 10,000 people in Indiana, for a practicing general dentist to population ration of about 1:2,572. These dentists were unevenly distributed throughout the state. The proportion of Black, Hispanic, or female practicing general dentists in Indiana was less than the proportion of people in Indiana that were Black, Hispanic, or female (2010 U.S. Census), respectively. The average age of practicing general dentists in Indiana was about 49.0 years, and a relative large cohort of these dentists is approaching retirement age (Miller, 2012).

The Indiana University School of Dentistry (IUSD) is the only institution within the state that educates dentists. In 2011, the IUSD graduated 108 dentists, 69 of which were Indiana graduates (Indiana University School of Dentistry, 2011).

Of the 3,343 Indiana University School of Dentistry graduates from 1970-2010, as recorded in the records of the IU Alumni Association, 2,389 (72%) listed their preferred address as Indiana. From these same records, for the years 1980-2010, the female to male ratio of all dental graduates was approximately 1:3, with 85% listing White as their race, with a similar pattern for gender and race among those listing Indiana as their preferred address. In 2012, the IUSD enrolled a freshman class of dental students that is nearly evenly split between females and males, and is more diverse with respect to race/ethnicity than in prior years (Yoder, 2011).

Hygienists

According to the 2010 survey for dental hygienists, there were 4,112 dental hygienists in Indiana, which renewed their licensure electronically (Kochhar, Lewis, Richard, Brandt, & Zollinger, 2010). The counties in Indiana with the fewest number of dental hygienists per standardized population included, Benton, Vermillion, and Vanderburgh counties.

There are 7 programs in Indiana accredited by the American Dental Association that provide training in dental hygiene; four in the Indiana University system, two in the Ivy Tech system, and one at the University of Southern Indiana. These programs graduated approximately 150 dental hygienists in 2011, with various degrees. Most of these graduates were white females in their twenties (Young, 2012; Quimby, 2012; Valliere, 2012; Carl, 2012; Hudson, 2012; MacMillan, 2012).

Future Trends

The 2010 re-licensure survey demonstrated that a large portion of dentists in Indiana that renewed their licenses electronically were over 55 years old, and thus are likely approaching retirement age. This is juxtaposed to the large portion of dental hygienists in Indiana that renewed their license electronically who were under the age of 35 (Kochhar, Lewis, Richard, Brandt, & Zollinger, 2010). This contrast in the ages of dentists to dental hygienists suggests that the expected workforce for these two types of oral healthcare providers may be different. With respect to the expected workforce of dental hygienists, it should also be noted that, in certain circumstances, Indiana dental hygienists can now practice under prescriptive supervision (Indiana Code IC 25-13-1-10).

Future demand for dental services is expected to increase. Baby boomers are retaining more of their natural teeth than previous generations and will require more services as they become older. In addition, health reform legislation may increase the number of people (most likely children) eligible for dental coverage beginning in 2014. Health reform legislation is also slated to accelerate growth of Federally Qualified Health Centers (FQHC) with dental services, thereby enabling more low-income adults to receive care. With a projected gradual increase in Indiana's population over the next ten years, one might expect a greater decline in the dentist to population ratio in Indiana than is expected nationally (Brown, 2005). These trends need to be monitored carefully in order to avoid Indiana having an inappropriate number and distribution of oral healthcare professionals to meet its future needs.

PROGRAMS

External Programs

There are several external dental public health programs in the state that are supported by state funds or federal funds, such as the Indiana Title V Block Grant. State funds support Dental Lifeline Network - Indiana. The Division of Maternal and Child Health at the ISDH, through the Indiana Title V Block Grant, supports Seal Indiana, Amish Dental and Healthy Beginnings.

Dental Lifeline Network – Indiana (Donated Dental Services)

Dental Lifeline Network - Indiana provides dental care to the disabled, elderly or medically at-risk patients who lack adequate income to pay for dental care.

Seal Indiana

Seal Indiana is a mobile dental program in central Indiana that provides preventive oral health services for children who do not have adequate access to dental care. The program works to locate children who are not receiving dental care. Seal Indiana provides oral exams, applies dental sealants and fluoride varnishes and helps families locate dental homes. In addition, this program provides opportunities for dental school students to gain experience in these areas of dentistry.

Amish Dental

The Amish Dental Intervention Project is administered through the Indiana Hemophilia and Thrombosis Center. This project provides dental services to the dentally underserved population of Amish children and children from low-income families in northern Indiana. The Amish Dental Intervention Project aims to increase access to dental care and provide direct services such as prevention, dental education and monitoring of fluoridation.

Healthy Beginnings

Healthy Beginnings offers four programs aimed at prevention, education and early intervention to enhance the health and lives of infants, young children and pregnant and/or breastfeeding women. Those programs include Dental Services for Children (dental education, exams, cleanings, fluoride treatments and limited restorative care), Healthy Babies Prenatal Care Coordination, Prenatal Substance Use Prevention Program (PSUPP) and Women, Infants and Children (WIC). This program is located in the Elkhart County Health Department.

ISDH Divisions and Programs

There are several Divisions and Programs within the ISDH that conduct activities that influence the oral health of the residents of Indiana.

Division of Maternal and Child Health (MCH)

The Division of MCH supports many activities related to oral health, both within the ISDH and through external programs, using funds from the Indiana Title V Block Grant.

Indiana Family Helpline (IFHL)

The IFHL is a statewide resource with specially trained communication specialists who provide callers to the IFHL with information and referrals, and consumer education and advocacy, on a variety of topics including: early prenatal and child health care; accessing Medicaid and WIC providers; accessing oral health care providers; locating emergency housing, food pantries, utility assistance, transportation; and connecting callers with literacy, vocational and GED programs. The activities of the IFHL are made possible with Indiana Title V Block Grant funds provided through the Division of Maternal and Child Health at the ISDH.

Indiana Fluoridation Program (IFP)

The IFP is within the Division of Environmental Public Health (EPH), within the Public Health and Preparedness Commission. The activities of the IFP are made possible with Indiana Title V Block Grant funds provided through the Division of Maternal and Child Health at the ISDH.

Division of Children's Special Health Care Services (CSHCS)

The Division of CSHCS provides supplemental healthcare coverage to help families pay for the care of their children who have serious and/or chronic medical conditions, and who meet the program's financial and medical criteria. This program is aimed at keeping families together and to help those children with special healthcare needs. The activities of the CSHCS are made possible with Indiana Title V Block Grant funds and with state funds.

Oral Health Program (OHP)

The OHP is located in the Health and Human Services Commission. It works with other Divisions and Programs within the ISDH on activities pertaining to oral health. The OHP consists of a State Oral Health Director, paid with state funds, and two part-time Health Educators and a Consultant in Infection Control, made possible with Indiana Title V Block Grant funds provided through the Division of Maternal and Child Health at the ISDH.

APPENDIX A – COMPARISON OF GOALS / OBJECTIVES

Indiana Oral Health Plan (IOHP) - 2012	Indiana Oral Health Coalition (IOHC) - 2011	Strategic Oral Health Plan (SOHP) - 2009
Goal 1: Decrease Disease		
Objective 1.1: Prevent oral diseases through enhanced knowledge		Goal 4: Educate the public on oral health issues Goal 7: Educate pregnant women on oral health issues Goal 10: Educate on the benefits of dental insurance coverage
Objective 1.2: Prevent oral diseases through primary prevention	Goal 4: Assist communities with water fluoridation (CWF)	Goal 5: Assist communities with water fluoridation (CWF) Goal 6: Increase community oral disease prevention programs Goal 8: Encourage medical providers to help prevent dental decay
Objective 1.3: Treat oral diseases in underserved and special populations	Goal 3: Develop a competent and diverse workforce Goal 5: Increase dental students' involvement in underserved areas Goal 2: Engage Medicaid in discussions on reimbursement	Goal 1: Develop a competent and diverse workforce Goal 2: Obtain additional DHPSA designations Goal 3: Increase dental students' involvement in underserved areas Goal 9: Engage Medicaid in discussions on reimbursement
Goal 2: Improve Use of Information		
Objective 2.1: Obtain surveillance data to monitor oral health	Goal 1: Develop an oral health surveillance system in Indiana	Goal 11: Develop an oral health surveillance system in Indiana
Objective 2.2: Obtain population-based estimates of the prevalence (burden) of oral diseases		
Goal 3: Improve Partnerships		
Objective 3.1: Maintain and improve working relationships between existing partners		
Objective 3.2: Develop new partnerships		
Goal 4: Improve Operations and Policies		
Objective 4.1: Improve oral health operations within the ISDH		
Objective 4.2: Improve oral health operations around the state		
Objective 4.3: Improve oral health policies		

APPENDIX B – HEALTHY PEOPLE 2020

Please **Control+Click** on the following URL:

http://www.healthypeople.gov/2020/default.aspx

to obtain access to the Healthy People 2020 Objectives established by the Centers for Disease Control and Prevention (CDC) for oral health.

Directions

After opening the webpage associated with the above URL, click on the blue tab towards the top of the page entitled, **2020 Topics & Objectives**.

Once you do this, a list of topics will appear in alphabetical order. Go to **Oral Health** and click on it.

A new webpage will appear, and towards the top of this page click on the green tab entitled, **Objectives**.

You should now see a list of the objectives for oral health established by the CDC under Healthy People 2020. You can get more details on each objective by clicking on the appropriate button.

APPENDIX C – CONTRIBUTORS

Many people and organizations helped develop the 2012 Indiana Oral Health Plan (IOHP). The Indiana Oral Health Coalition (IOHC) reviewed the preliminary versions of the IOHP and offered valuable suggestions, many of which were incorporated into the final plan. Also, many individuals participated in the predecessor to the IOHC, the Oral Health Task Force (OHTF). The OHTF did considerable work through a Strategic Oral Health Initiative, which resulted in a Strategic Oral Health Plan (SOHP). Many concepts in the SOHP were incorporated into the 2012 IOHP. Several institutions and organizations in Indiana, including but not limited to the Indiana University School of Dentistry and the Indiana Dental Association, contributed to this plan. Finally, there were many people within the Indiana State Department of Health (ISDH) that contributed to this plan. The Oral Health Program at the ISDH compiled the various ideas and suggestions from all of these organizations, institutions and individuals and wrote the 2012 IOHP, which was presented to the ISDH Office of Public Affairs for review and adopted by the ISDH in early 2013. The Oral Health Program appreciates all those who helped produce the 2012 Indiana Oral Health Plan.

This 2014 Version of the 2012 Indiana Oral Health Plan includes information obtained through a 2013 state-wide survey on the oral health status of 3rd grade children. Many organizations and individuals helped the Oral Health Program conduct this survey, for which the Program is appreciative.

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