

THE SENATE
HOUSE OF REPRESENTATIVES
THE TWENTY-EIGHTH LEGISLATURE
INTERIM OF 2016

COMMITTEE ON COMMERCE, CONSUMER PROTECTION, AND HEALTH

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NOTICE OF INFORMATIONAL BRIEFING

DATE: Thursday, October 20, 2016
TIME: 10:00am
PLACE: Conference Room 325
State Capitol
415 South Beretania Street

A G E N D A

The purpose of this informational briefing is to discuss the state of children's dental health in Hawai'i in light of the recent national study exposing Hawai'i's unacceptably high rate of tooth decay and examine strategies that can be implemented to address these findings and thus improve oral healthcare here. The Committees have invited the Department of Health to describe their oral health initiatives to improve children's oral health throughout the state and learn how telehealth and virtual dentistry can be used to better reach underserved populations.

Presenters:

Virginia Pressler, MD, Director – Department of Health
Matthew Shim, PhD, MPH, Chief, Family Health Services Division – Department of Health
Andrew Tseu, DDS, JD, Chief, Hospital & Community Dental Services – Department of Health
Donna Altshul, RDH, Dental Director – West Hawai'i Community Health Center
Paul Glassman, DDS, MA, MBA, Director, School of Dentistry, Pacific Center for Special Care – University of Pacific

No public testimony will be accepted.

If you require auxiliary aids or services to participate in the informational briefing (i.e. ASL or foreign language interpreter, or wheelchair accessibility), please contact the committee clerk at least 24 hours prior to the briefing so that arrangements can be made.

For further information, please call the Committee Clerk at 586-6070.

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Rep. Della Au Belatti
Chair

Senator Rosalyn H. Baker
Chair

Rep. Joseph M. Souki
Speaker of the House

Senator Ronald D. Kouchi
President of the Senate





Program Updates October 2016

The Department has been able to leverage a 5-Year Centers for Disease Control (CDC) Oral Health Disease Prevention grant to secure additional resources to achieve progress toward building the State Oral Health Program.

Data Surveillance

- Conducted a third grade oral health screening survey, Hawaii Smiles, using a representative sample of 67 public and charter schools statewide to collect data on the oral health status of children (report published August 2016 and available at DOH website under publications);
- Completed Oral Health Key Findings data report with recommendations for consideration based on collection of existing oral health data sources (available at DOH website under publications);
- Annual reporting of data to the National Oral Health Surveillance System;
- Establishment of an oral health data advisory group comprised of diverse stakeholders including Hawaii Dental Association, Hawaii Dental Service (HDS), and University of Hawaii School of Nursing and Dental Hygiene;
- Collaborated with the NYU-Lutheran Dental Public Health residency program to pilot an oral health survey of seniors at Kokua Kalihi Valley (FQHC) to identify oral health status and needs.
- Planning for basic screening survey of young children and pregnant women.

Assessment

- Completed an inventory of state oral health resources including workforce data, safety net services, fluoridated water systems, and other major community/state-level programs;
- Development of an oral health environmental scan project with input from diverse stakeholders to systematically survey the oral health landscape and the conditions and activities that are affecting the availability, accessibility, and quality of dental health care in Hawaii;
- Conducted a statewide dental care survey for persons with intellectual and developmental disabilities in Spring 2016. Report forthcoming.

Leadership

- Recruitment for Dental Director Position and support staff, including program manager and office assistant;
- Partnering with the New York University (NYU) - Lutheran Dental Public Health residency program for resident placement at the Department of Health.

Dental Sealants

- Conducted a pilot dental sealant project in partnership with West Hawaii Community Health Center in Spring 2016 at 3 Kona elementary schools with support of HDS Foundation, Aspen Institute Excellence in State Public Health Law Program and the CDC Preventive Health & Health Services Block Grant.

Other Activities

- Implementing a pilot tele-dentistry project with grant support from the HDS Foundation in partnership between the DOH Developmental Disabilities Division, WHCHC, and Dr. Paul Glassman at the University of the Pacific at three early childhood programs: WIC, Head Start and Tutu & Me.
- Partnered with the American Academy of Pediatrics to conduct fluoride varnish training with pediatric providers and development of website resources;
- Sponsored oral health data workshop with diverse stakeholders which had led to establishment of a DOH Oral Health Data Advisory group and completion of oral health data reports;
- Contracted with University of Hawaii School of Nursing and Dental Hygiene to integrate oral health promotion at WIC clinics and conduct analysis of fluoridation knowledge among WIC parents;
- Organized Oral Health Track for the Hawaii Health Workforce Summit to provide continuing education to physicians and dentists regarding integration of oral health into primary care, the status of the state's oral health environmental scan, and new workforce models within the state
- Partnership with Tobacco Prevention and Education within Hawaii State Department of Health to create press materials that inform dental providers of Hawaii Tobacco Quitline resources and encourage their referral of patients for tobacco cessation support;
- Conducting statewide oral health trainings for caregivers, families and oral health providers involved with the care of persons with intellectual and developmental disabilities.

Ongoing Assurance Activities

- Operate five dental clinics on Oahu that serve those individuals with chronic and severe developmental and intellectual disabilities, medically indigent, frail elderly, and clients under the Developmental Disabilities Division;
- Contract with The Queen's Medical Center Dental Residency Program for the provision of care for patients with disabilities or conditions that are medically fragile, or both;
- Aligned Maternal Child Health five-year plan with oral health program activities to include oral health evidence based strategies targeting an improvement in access and utilization of preventive dental visits for children and pregnant women;
- Contract with 16 health service programs (including the Federally Qualified Health Centers) to provide primary care services for the uninsured and under-insured that includes dental treatment services; and
- Monitor workforce shortages including dental services and establish federal designations for health professional shortage areas.

August 2016



FAMILY HEALTH SERVICES DIVISION • HAWAII DEPARTMENT OF HEALTH • STATE OF HAWAII

Hawaii Smiles 2015

The Oral Health of Hawaii's Children



Hawaii Smiles

EXECUTIVE SUMMARY

With *Hawaii Smiles*, the Hawaii State Department of Health takes its first in-depth look at the oral health status of a representative sample of third grade children throughout the state. During the 2014-2015 school year, a total of 3,184 third grade children in 67 public elementary schools on six islands received a dental screening. Third grade children were screened because third grade is the target elementary school population for the National Oral Health Surveillance System. The findings presented in this report support the need for *culturally appropriate community-based prevention programs, screening and referral services, and restorative dental care to improve the oral health of Hawaii's children.*

The results of *Hawaii Smiles* confirm that Hawaii's children have the highest prevalence of tooth decay in the United States. The results also demonstrate that the burden of oral disease is significantly greater in certain segments of the population. For example, tooth decay is disproportionately experienced by low-income children, defined as those who are eligible for the National School Lunch Program (NSLP). About 31% of children eligible for NSLP have untreated tooth decay compared to 13% for those not eligible. The disparities gap is even more pronounced when looking at urgent dental needs due to pain and/or infection. The need for urgent dental care is more than five times higher in low-income children compared to their higher-income peers (13% vs. 2% respectively).

KEY FINDINGS

1. Hawaii has the highest prevalence of tooth decay among third graders in the United States. More than 7 out of 10 third graders (71%) are affected by tooth decay; substantially higher than the national average of 52%.
2. Almost 1 out of 4 third graders (22%) in Hawaii has untreated tooth decay demonstrating that many children are not getting the dental care they need.
3. About 7% of Hawaii's third grade children are in need of urgent dental care because of pain or infection. If applied to all children in kindergarten to sixth grade, more than 6,600 children in Hawaii's public elementary schools experience pain or infection due to dental disease on any given day.
4. More than 60% of children in Hawaii do not have protective dental sealants, a safe, simple, cost-effective clinical intervention to prevent tooth decay in molar teeth.
5. There are significant oral health disparities by income, as well as by race/ethnicity, among third graders in Hawaii.
6. Third graders living in Kauai, Hawaii, and Maui counties are more likely to have experienced tooth decay than children living in Honolulu County.



There are also oral health disparities based on race/ethnicity with Micronesian and Other Pacific Islanders (Guam, Samoa, Tonga and Other Pacific Islands) having the highest prevalence of untreated decay. About 56% of Micronesian and 41% of Other Pacific Islander children have untreated decay – four times higher than the prevalence among White (13%) and Japanese (11%) children. As with income, the race/ethnicity disparities gap is more pronounced when we look at the need for urgent dental care. Thirty percent (30%) of Micronesian and 23% of Other Pacific Island children have dental pain and/or infection compared to only 3% of White and 2% of Japanese children.

With this report, the Hawaii State Department of Health builds upon the oral health data in the *2015 Oral Health Key Findings* report to inform policy development and program planning. Based on the findings of this study, Hawaii must strengthen oral disease prevention efforts and implement strategies that lead to improved access to both preventive and restorative dental care for all children. Everyone has a role in improving and promoting the oral health of Hawaii's children.

Several key strategies have been identified to improve the oral health of children in Hawaii. The strategies are grouped into three general categories highlighted in the key findings: *community-based prevention programs, screening and referral services, and restorative dental care*. Teeth develop before birth and start to appear in the mouth when a child is about 6 months of age. Therefore, the strategies listed below demonstrate efforts to prevent tooth decay starting from the prenatal period all the way through childhood.

COMMUNITY-BASED PREVENTION PROGRAMS

- ♦ Incorporate oral health promotion and preventive services, such as parental education and fluoride varnish, into well-child visits, Women, Infants, Children (WIC), Early Head Start, Head Start and other early childhood programs geared toward children 0-5 years of age.
- ♦ Expand school-based oral health prevention programs at high risk schools to include, at a minimum, the placement of dental sealants, the application of topical fluorides and oral health education.
- ♦ Conduct ongoing educational campaigns to (1) encourage the first dental visit by age one, (2) increase oral health literacy and awareness, (3) promote the importance of oral health as part of general health and well-being, and (4) promote the benefits of water fluoridation and other fluorides for the reduction of dental disease.

SCREENING AND REFERRAL SERVICES

- ♦ Offer oral health screenings and referral services in programs that serve children at greatest risk.
- ♦ Develop case management systems that help parents navigate the complex dental care delivery and payment system to assure that children needing dental care obtain it.

RESTORATIVE DENTAL CARE

- ♦ Increase the number of children who use their annual dental exam benefits offered through their insurance (private and public) coverage.
- ♦ Assess and address issues regarding Medicaid participation among private dentists.
- ♦ Advocate for the expansion of dental services that target high-risk populations.

QUICK FACTS

DECAY EXPERIENCE

- ♦ 71% of Hawaii's third grade children have experienced tooth decay.

UNTREATED TOOTH DECAY

- ♦ 22% of Hawaii's third grade children have untreated tooth decay.

DENTAL SEALANTS

- ♦ 38% of Hawaii's third grade children have dental sealants.

NEED FOR URGENT DENTAL CARE

- ♦ 7% of Hawaii's third grade children are in need of *urgent* dental care because of pain or infection.

ORAL HEALTH DISPARITIES

- ♦ In Hawaii, low-income, Micronesian, Native Hawaiian, Other Pacific Islander and Filipino children have poorer oral health outcomes.

COMMUNITY WATER FLUORIDATION

- ♦ 11% of Hawaii's residents are served by a fluoridated community water system.



THE IMPORTANCE OF GOOD ORAL HEALTH

Although tooth decay (dental caries) is a preventable bacterial disease, it continues to be the most common chronic disease of children in the United States. In fact, it is five times more common than asthma and two times more common than childhood obesity.¹⁻³ Nationally, tooth decay affects more than half of all children by the third grade.⁴

The public perception is largely that tooth decay is an insignificant occurrence. If left untreated, however, poor oral health has significant consequences on children and their families including:

- ♦ **Pain:** Tooth decay can cause acute or chronic pain. Many children are not aware that teeth are not supposed to hurt.
- ♦ **Infection:** Infected teeth are reservoirs of bacteria that flood the rest of the body, leaving the child prone to many other childhood infections, including ear infections and sinus infections. Development of secondary infections, in more severe cases, may require emergency care or hospitalization.
- ♦ **Nutrition problems:** Chronically painful and infected teeth make chewing and swallowing uncomfortable and difficult. Children with dental disease often do not get the nutrition they need to grow.
- ♦ **Tooth and space loss:** Chronic childhood tooth decay often results in the early loss of “baby” teeth. This can result in space loss due to movement of remaining teeth into the space, leaving insufficient room for the adult teeth to come into the mouth.
- ♦ **Sleep deprivation:** Children with chronically painful teeth have trouble getting a good night’s sleep.
- ♦ **Attention problems:** Children with infected and painful teeth have a hard time relaxing, sitting still, and paying attention in class.
- ♦ **Slower social development:** Disfigured or missing teeth can lead to difficulties speaking and can negatively affect a child’s self-esteem. When a child’s front teeth are damaged or missing in their very crucial early years of development, they often can’t form words correctly.
- ♦ **Missed school days:** Children with infected and painful teeth miss more school days than other children, disrupting their educational and social experiences. One study demonstrated that children between 5 to 17 years of age in the United States missed 1,611,000 school days due to acute dental problems – an average of 3.1 days per 100 students.⁵
- ♦ **Missed work hours:** Parents are more likely to miss work because of their child’s dental problems.⁶
- ♦ **Increased costs of dental care:** As tooth destruction progresses, the treatment costs for families and the State increase considerably.
- ♦ **Poor overall health:** Dental disease impacts overall health and children with poor oral health often have poor overall health.

TOOTH DECAY IS PREVENTABLE

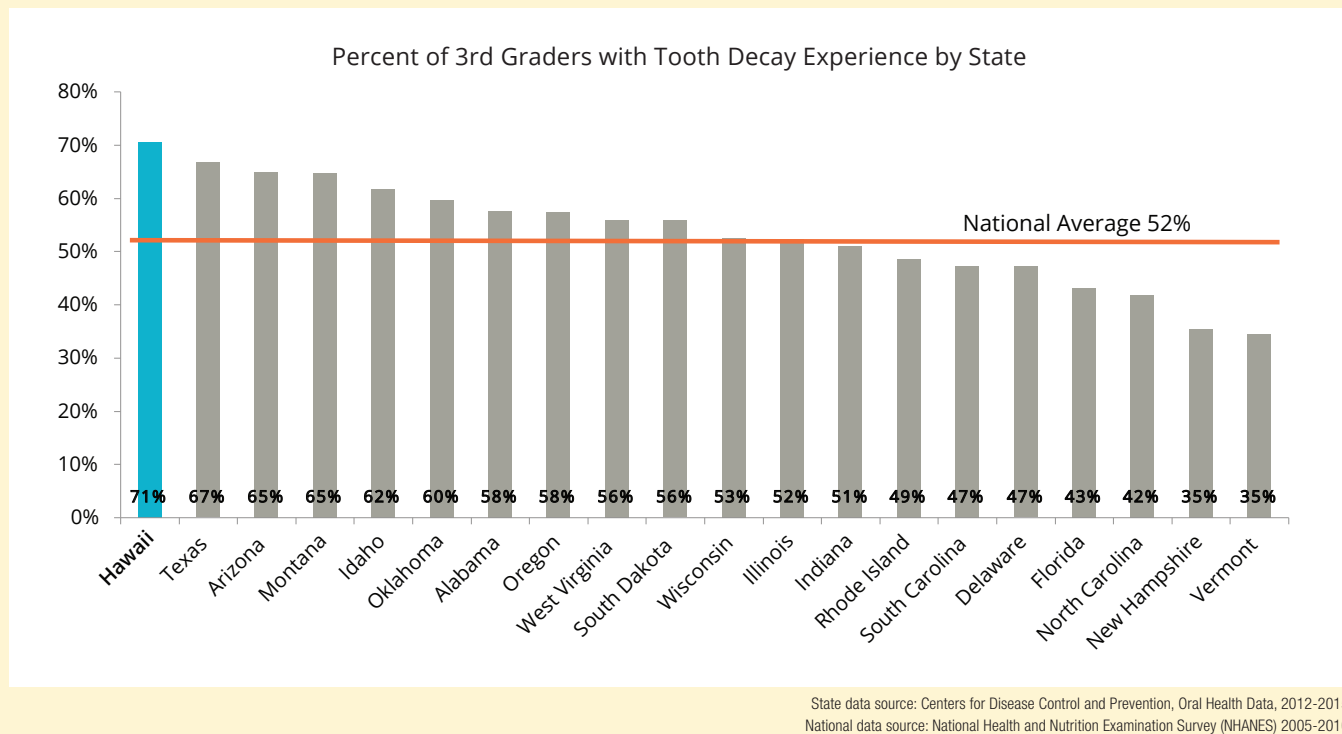
Tooth decay can be prevented. Medical, dental and public health professionals must focus dental disease prevention efforts on families with children less than 2 years of age because *two is too late*. The American Dental Association, the American Academy of Pediatric Dentistry, and the American Association of Pediatricians all recommend preventive dental care and parent education by age 1. Evidence based strategies for preventing tooth decay in children include:

- ♦ **Fluoride varnish:** Application of fluoride varnish twice a year to the teeth of all infants and children starting when the first tooth comes into the mouth at about 6 months of age has been shown to prevent tooth decay. Fluoride varnish can be applied at medical and dental clinics and in community settings such as preschools and WIC programs.
- ♦ **Brushing with fluoride toothpaste:** Parental brushing with fluoride toothpaste twice a day as soon as teeth appear in the mouth prevents tooth decay.
- ♦ **Community water fluoridation:** Fluoridation has been shown to prevent tooth decay in both children and adults.
- ♦ **Fluoride supplements:** Daily fluoride supplementation starting at 6 months of age is recommended for children whose water supply does not contain fluoride.
- ♦ **Good eating habits:** Limiting food and beverages with added sugars will prevent dental decay and other health issues.
- ♦ **Early and regular dental visits:** All children should be referred to a dentist as early as 6 months of age to establish a dental home. Following that initial visit, most children should have a dental examination at least once a year; some high risk children may need more frequent examinations.
- ♦ **Dental sealants:** Dental sealants are placed to protect the chewing surface of the permanent molars soon after they come into the mouth around 6 and 12 years of age.
- ♦ **Improved family oral health:** Decreasing dental disease among a child's caregivers, benefits the oral health of the child. Through routine oral health care, early education regarding infant oral health can be shared with pregnant mothers and caregivers.

Preventing tooth decay improves a child's health and keeps them from having costly dental care. Because of this, ending cavities saves money for both the family and society. Annual spending on dental care in the U.S. is well over \$100 billion, representing nearly 20% of children's overall health spending.⁷ Medicaid-enrolled children who received their first preventive dental visit by age 1 had 40% lower dental care costs over 5 years than children who received their first preventive visit at a later age.⁸ Therefore, early dental visits can reduce the need and cost associated with future treatment.

Addressing the oral health needs of Hawaii's infants, toddlers, and young children, requires the development of policies and strategies that will ensure all children receive the oral health care they need. There is no better investment in the future of Hawaii than supporting the health and well-being of our children.

KEY FINDING #1: HAWAII HAS THE HIGHEST PREVALENCE OF TOOTH DECAY AMONG THIRD GRADERS IN THE UNITED STATES. MORE THAN 7 OUT OF 10 THIRD GRADERS (71%) ARE AFFECTED BY TOOTH DECAY; SUBSTANTIALLY HIGHER THAN THE NATIONAL AVERAGE OF 52%.



Tooth decay experience or being affected by tooth decay means that a child has had tooth decay in the primary (baby) and/or permanent (adult) teeth during his or her lifetime. Decay experience can be past (fillings, crowns, or teeth that have been extracted because of decay) or present (untreated tooth decay or cavities). In Hawaii, 71% of third grade children have experienced tooth decay. This represents the highest prevalence for any state that has collected similar data in the recent past (2012-2015) and substantially higher than the national average for third grade children of 52%.⁴ This suggests that ***Hawaii needs more primary prevention programs***. Primary prevention programs, may include parent and caregiver education, dental sealants and topical fluoride applications. Hawaii is the state with the lowest percent of its population served by fluoridated water (11% vs. 75% nationally). Because of this, Hawaii's children must access fluoride from other, more costly, sources if they are to receive the tooth decay prevention benefits of fluoride.

THE PROBLEM

Too many children in Hawaii are affected by tooth decay.

To Address this Problem Hawaii MUST...

Improve access to community based primary prevention programs.

KEY FINDING #2: ALMOST 1 OUT OF 4 THIRD GRADERS (22%) IN HAWAII HAVE UNTREATED TOOTH DECAY DEMONSTRATING THAT MANY CHILDREN ARE NOT GETTING THE DENTAL CARE THEY NEED.



Having untreated decay means that a child has tooth decay or a cavity that has not received appropriate treatment. Tooth decay in children destroys more than just a smile. Untreated decay compromises the child's ability to eat well, sleep well, and function well at home and at school. In addition, the unpleasant appearance of untreated decay can compromise a child's self-esteem and social development. Untreated tooth decay in children can be painful and without appropriate treatment can lead to infection of the teeth and gums. Although rare, infections due to untreated tooth decay can lead to severe illness and even death.

Children who had not visited a dentist in the last year were significantly more likely to have untreated decay (54% vs. 16%). Third grade children that had not been to the dentist in the last year were also less likely to have protective dental sealants (23% vs. 41%). By increasing the percent of Hawaii's children with an annual dental visit, the percent with untreated decay will likely decrease and those with protective dental sealants will likely increase.

Hawaii mirrors the national average regarding untreated tooth decay (22% and 23% respectively). This demonstrates that substantial treatment is being performed by Hawaii's dental providers to offset the much higher prevalence of disease in the state. While these efforts are commendable, expensive treatment and transportation costs for children living on neighbor islands continue to mount, costing individuals, families, and the State considerably more time and money. To decrease the overall burden of dental disease, more focus on prevention is needed.

THE PROBLEM

Too many children in Hawaii have untreated tooth decay.

To Address this Problem Hawaii MUST...

Develop services and policies that encourage use of the dental care system and allow for better access to dental care.

KEY FINDING #3: ABOUT 7% OF HAWAII'S THIRD GRADE CHILDREN ARE IN NEED OF URGENT DENTAL CARE BECAUSE OF PAIN OR INFECTION. IF APPLIED TO ALL CHILDREN IN KINDERGARTEN TO SIXTH GRADE, MORE THAN 6,600 CHILDREN IN HAWAII'S PUBLIC ELEMENTARY SCHOOLS EXPERIENCE PAIN OR INFECTION DUE TO DENTAL DISEASE ON ANY GIVEN DAY.



About 23% of Hawaii's third grade children need dental care – with 7% needing urgent dental care because of pain or infection and 16% needing early care. In 2014-2015, there were close to 14,000 third grade children in Hawaii. If 23% need dental care, this means that more than 3,220 third grade children are in the classroom with a cavity and about 1,000 of them attend school in pain or with an oral infection, both of which can affect their ability to concentrate and learn. If these percentages are applied to all children in kindergarten to sixth grade, almost 21,900 children have untreated decay and more than **6,600 experience pain or an oral infection**

due to dental disease on any given day. The percent of Hawaii's children needing urgent dental care is substantially higher than the national average among 6-9 year olds of less than 1%.⁹

The *Hawaii Smiles* survey did not include complete diagnostic dental examinations. Instead, dental screenings were performed. This is a quick look inside the mouth with a dental mirror, without x-rays and the more advanced diagnostic tools. Because of this, some problems were likely missed. It is reasonable to assume that these findings actually underestimate the number of children needing dental care.

THE PROBLEM

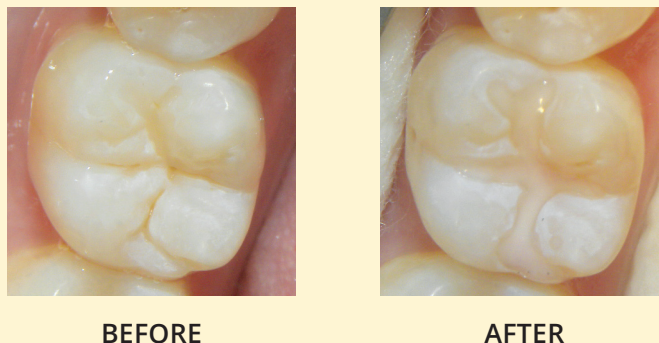
Too many children in Hawaii have dental pain or a dental infection.

To Address this Problem Hawaii MUST...

Develop community-based screening and referral programs that include a case management component so that children in need have better access to dental care.

KEY FINDING #4: MORE THAN 60% OF CHILDREN IN HAWAII DO NOT HAVE PROTECTIVE DENTAL SEALANTS, A SAFE, SIMPLE, COST-EFFECTIVE CLINICAL INTERVENTION TO PREVENT TOOTH DECAY IN MOLAR TEETH.

Molar Tooth with Before and After Dental Sealants



Dental sealants are thin plastic coatings that are applied to the grooves on the chewing surfaces of the permanent back teeth, which usually appear when a child is about 6 years of age. Sealants protect the chewing surfaces from tooth decay by keeping germs and food particles out of these grooves. They are a safe, effective way to prevent tooth decay among school-aged children. The Surgeon General's report on oral health indicates that sealants can reduce decay in school-aged children by more than 70%.¹ In some cases, placement of sealants can even stop tooth decay that has already started.¹⁰

A 2012 Hawaii Dental Service study, based on commercial insurance patients, found that children who had sealants placed on first molars experienced fewer dental problems during their childhood. The study examined dental claims for children with continuous insurance coverage and found that those who did not have sealants on their first molars incurred 34% more dental expenditures by age 15 than those who had received the sealants.¹¹

Sealants can be applied in a dentist's office or through school-based sealant programs that generally target children in second grade. School-based sealant programs are especially important for reaching children from low-income families who are less likely to receive private dental care.

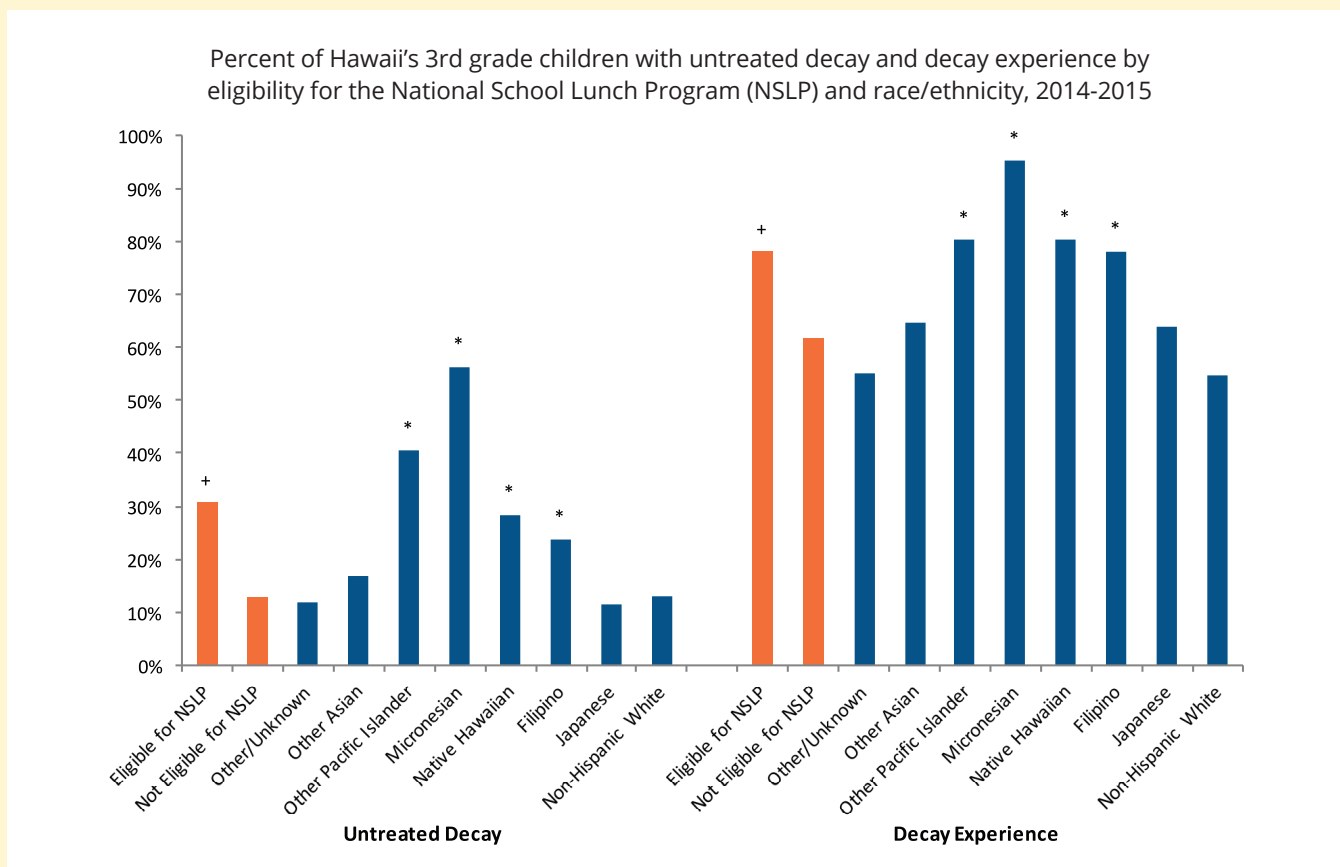
THE PROBLEM

Not enough children in Hawaii have preventive dental sealants.

To Address this Problem Hawaii MUST...

Increase access to preventive dental sealants by providing education on the importance of sealants and encouraging the development of school-based sealant programs.

KEY FINDING #5: THERE ARE SIGNIFICANT ORAL HEALTH DISPARITIES BY INCOME, AS WELL AS BY RACE/ETHNICITY, AMONG THIRD GRADERS IN HAWAII.



* Significantly different than non-Hispanic Whites ($p < 0.05$)
 + Significantly different than not eligible for NSLP ($p < 0.05$)
 Other Pacific Islander: Guamanian/Chamorro, Samoan, Tongan, and Other Pacific Islander
 Other Asian: Chinese, Indo-Chinese, Korean, Asian two or more, and Other Asian
 Other/Unknown: American Indian/Alaska Native, Black, Hispanic, multi-racial, and unknown race/ethnicity

Children eligible for NSLP are significantly more likely to have decay experience and untreated decay. In Hawaii, Micronesia, Native Hawaiian, Other Pacific Islander (Guamanian/Chamorro, Samoan, Tongan, Other Pacific Islander), and Filipino children are significantly more likely to have decay experience and untreated decay than non-Hispanic White children. This suggests that lower-income children and racial/ethnic minorities are not getting the benefit of early preventive services and are less likely to access a dentist for restorative treatment.

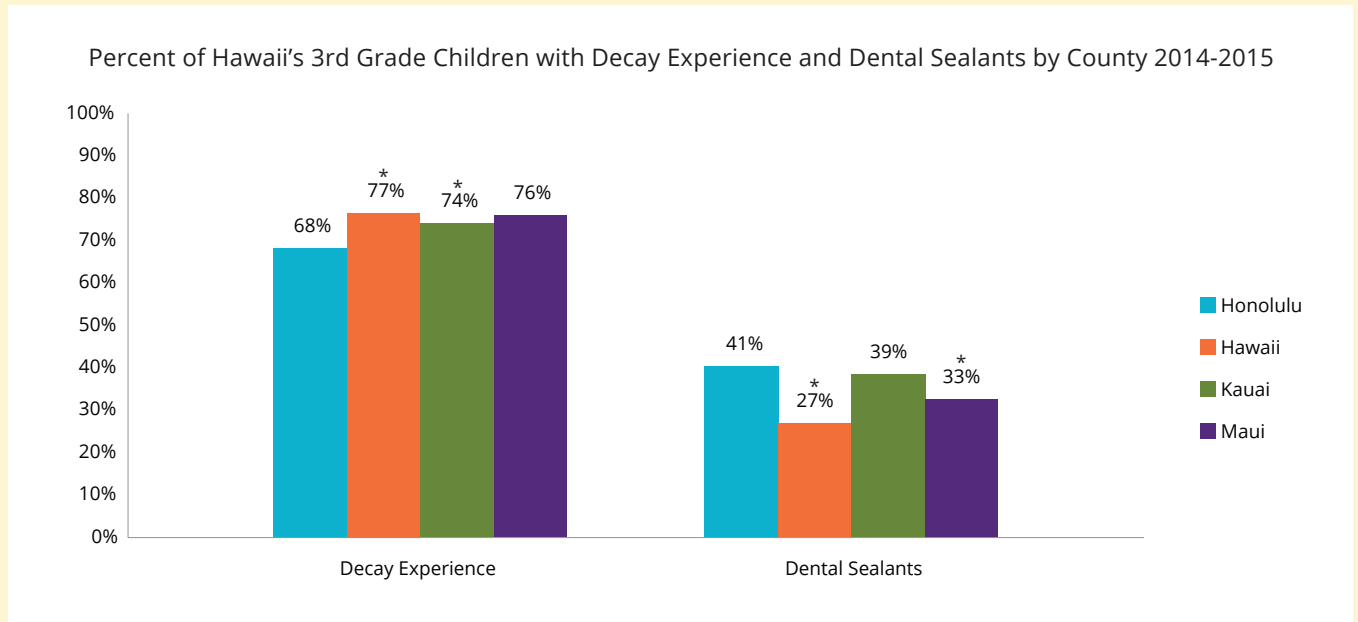
THE PROBLEM

Low-income, Micronesia, Native Hawaiian, Other Pacific Islander and Filipino children have more dental disease.

To Address this Problem Hawaii MUST...

Develop community based prevention programs, screening and referral services, and restorative dental care programs that target the highest risk populations.

KEY FINDING #6: THIRD GRADERS LIVING IN KAUAI, HAWAII, AND MAUI COUNTIES ARE MORE LIKELY TO HAVE EXPERIENCED TOOTH DECAY THAN CHILDREN LIVING IN HONOLULU COUNTY.



* Significantly different than Honolulu County (determined by confidence intervals)

Compared to Honolulu County, third grade children living in Kauai, Hawaii, and Maui Counties have higher rates of decay experience. While 68% of the third grade children in Honolulu County had a history of tooth decay, children living in Kauai, Hawaii, and Maui Counties had decay experience ranging from 74-77%.

One reason for the higher prevalence of dental decay when comparing counties may be associated with access to preventive oral health care. Due to the increased prevalence of disease demonstrated among children in Kauai, Hawaii, and Maui Counties, additional primary prevention programs would be beneficial in these counties. Sealants are one such primary preventive measure that has been shown to reduce dental decay. However, Hawaii (27%) and Maui (33%) Counties demonstrated a significantly lower percentage of children with existing sealants when compared to Honolulu County (41%).

THE PROBLEM

Children living in Kauai, Hawaii, and Maui Counties have less access to preventive oral health care.

To Address this Problem Hawaii MUST...

Improve access to community-based primary prevention programs, such as school-based oral health programs and community education campaigns.

KEY STRATEGIES TO IMPROVE ORAL HEALTH

The results of *Hawaii Smiles* highlight the need for improvements in the oral health of children living in Hawaii. Access to culturally appropriate community-based prevention programs, screening and referral services, and restorative dental care must be improved. The Hawaii State Department of Health, in collaboration with various stakeholders, has identified several strategies which could improve the oral health of children in Hawaii. The strategies are grouped into three general categories highlighted in the key findings: *community-based prevention programs, screening and referral services, and restorative dental care*. Because teeth develop before birth and start to appear in the mouth when a child is about 6 months of age, efforts to prevent tooth decay must start during pregnancy and continue throughout childhood.

COMMUNITY-BASED PREVENTION PROGRAMS

- ♦ Incorporate oral health promotion and preventive services, such as parental education and fluoride varnish, into well-child visits, Women, Infants, Children (WIC), Early Head Start, Head Start and other early childhood programs geared toward children 0-5 years of age.
- ♦ Expand school-based oral health prevention programs at high risk schools to include, at a minimum, the placement of dental sealants, the application of topical fluorides and oral health education.
- ♦ Conduct ongoing educational campaigns to (1) encourage the first dental visit by age one, (2) increase oral health literacy and awareness, (3) promote the importance of oral health as part of general health and well-being, and (4) promote the benefits of water fluoridation and other fluorides for the reduction of dental disease.

SCREENING AND REFERRAL SERVICES

- ♦ Offer oral health screenings and referral services in programs that serve children at greatest risk.
- ♦ Develop case management systems that help parents navigate the complex dental care delivery and payment system to assure that children needing dental care obtain it.

RESTORATIVE DENTAL CARE

- ♦ Increase the number of children who use their annual dental exam benefits offered through their insurance (private and public) coverage.
- ♦ Assess and address issues regarding Medicaid participation among private dentists.
- ♦ Advocate for the expansion of dental services that target high-risk populations.

SURVEY METHODS

Hawaii Smiles sampled children in third grade, the target elementary school population for the National Oral Health Surveillance System. Public and charter elementary schools with at least 20 children in third grade were included in the sampling frame from four counties in Hawaii: Kauai, Hawaii, Honolulu, Maui. The sampling frame was stratified by county then ordered by the school’s National School Lunch Program (NSLP)* participation rate. A systematic probability proportional to size sampling scheme was used to select 64 schools. If a school refused to participate, a school within the same sampling interval was randomly selected. Data is available for all 64 sampling intervals; 58 original schools and 6 replacement schools. In addition, to the 64 schools selected, 3 additional schools on Molokai were also screened resulting in a total of 67 schools representing 64 sampling intervals.

Screenings were completed during the 2014-2015 school year. Letters were sent home to parents explaining the goals of the survey. Parents were asked to return a signed consent form. Only those children whose parents returned a positive consent form were screened. Of the 5,541 third grade children enrolled in the 67 schools, 3184 were screened for a response rate of 57%. Trained dental examiners completed the screenings using gloves, penlights, and disposable mouth mirrors. The training consisted of a two hour didactic session followed by a two hour clinical training. Inter- and intra-rater reliability were not determined. The diagnostic criteria outlined in the Association of State and Territorial Dental Director’s publication *Basic Screening Surveys: An Approach to Monitoring Community Oral Health* were used.¹⁴

Data were collected on paper forms and Microsoft Access was used to enter the data. All statistical analyses were performed using the SAS software complex survey procedures (Version 9.3; SAS Institute Inc., Cary, NC). Sample weights were used to produce population estimates based on selection probabilities and indicating the number of children in the sampling interval each screened child represented.

Information on parent reported race/ethnicity and eligibility for the National School Lunch Program was provided by the Hawaii State Department of Education. Prior to analysis, unique identifiers were removed from the dataset so that anonymity was maintained.

Table 1 presents additional information on the number of schools and children in the state, the sampling frame, participating schools, and children screened. In terms of eligibility for NSLP, the children screened are representative of all third grade children in Hawaii’s public and charter schools.

TABLE 1: Comparison of Hawaii schools in the sampling frame, participating schools and children screened

	# Schools	# 3rd Graders	NSLP%
All schools with 3rd grade	203	13,985	53.4%
All schools in sampling frame	184	13,781	53.4%
Participating schools	67	5,541	54.7%
Children screened	67	3,184	52.9%

Source: Hawaii State Department of Education
NSLP = National School Lunch Program

* The National School Lunch Program (NSLP) is a federally assisted meal program operating in public and nonprofit private schools. It provides nutritionally balanced, low-cost or free lunches to children each school day. Eligibility for NSLP is often used as an indicator of socioeconomic status. To be eligible for NSLP during the 2014-2015 school year, annual income for a family of four in Hawaii could not exceed \$50,746.(13)

TABLE 2: Demographic characteristics of the third grade children screened, 2014-2015

Characteristic	Weighted Percent	Confidence Interval
Gender (n=3,175)		
Female	49.7	46.7 – 52.7
Male	50.3	47.3 – 53.3
NSLP Participation (n=3,166)+		
No	47.1	40.2 – 54.0
Yes	52.9	46.0 – 59.8
County (n=3,184)		
Honolulu	69.1	68.0 – 70.2
Hawaii	14.1	13.8 – 14.3
Kauai	4.9	3.4 – 6.5
Maui	11.9	11.7 – 12.1
Race/Ethnicity (n=3,184)		
White (non-Hispanic)	21.8	16.6 – 27.0
Japanese	10.3	6.5 – 14.1
Filipino	22.5	16.3 – 28.6
Native Hawaiian	22.4	17.9 – 26.8
Micronesian	4.2	2.2 – 6.1
Other Pacific Islander	5.8	3.5 – 8.0
Other Asian	6.8	4.1 – 9.5
Other/Unknown	6.3	4.2 – 8.5

+ NSLP= National School Lunch Program

NOTE: Information on race/ethnicity and NSLP participation was provided by the Hawaii State Department of Education (DOE). Because of small sample sizes, some of the categories provided by DOE were collapsed into the following: White: Parent reported child's race as White or Portuguese; Other Pacific Islander: Parent reported child's race as Guamanian/Chamorro, Samoan, Tongan, or Other Pacific Islander; Other Asian: Parent reported child's race as Chinese, Indo-Chinese, Korean, Asian two or more, or Other Asian; and Other/Unknown: Parent reported child's race as American Indian/Alaska Native, Black, Hispanic, Multi-racial, or Unknown

TABLE 3: Percent of Hawaii's third grade children with decay experience, untreated decay, dental sealants, urgent need for dental care, eligible for NSLP, and with a dental visit in the last year by selected characteristics, 2014-2015

Characteristic	Decay Experience Percent (95% CI) n = 3,181	Untreated Decay Percent (95% CI) n = 3,182	Dental Sealants Percent (95% CI) n = 3,180	Needs Urgent Dental Care Percent (95% CI) n = 3,173	Eligible for NSLP Percent (95% CI) n = 3,166	Dental Visit in Last Year* Percent (95% CI) n = 2,447
All children	70.6 (67.5 - 73.6)	22.4 (19.1 - 25.7)	37.6 (35.1 - 40.1)	7.2 (4.9 - 9.5)	52.9 (46.0 - 59.8)	88.1 (85.6 - 90.5)
Gender						
Female	69.0 (65.0 - 72.9)	20.7 (17.3 - 24.0)	40.1 (36.8 - 43.5)	5.4 (4.0 - 6.7)	52.7 (45.3 - 60.1)	89.1 (86.5 - 91.7)
Male	72.1 (69.0 - 75.2)	24.0 (19.8 - 28.2)	35.1 (31.5 - 38.6)	9.0 (5.2 - 12.8)	53.1 (45.7 - 60.6)	87.1 (83.6 - 90.5)
NSLP participation+						
No	61.8 (58.6 - 65.1)	12.9 (10.5 - 15.3)	40.9 (37.3 - 44.5)	2.3 (1.4 - 3.3)	--	92.4 (90.1 - 94.8)
Yes	78.2 (75.1 - 81.3)	30.8 (26.4 - 35.1)	34.7 (30.1 - 39.3)	11.6 (7.8 - 15.3)	--	83.6 (80.2 - 87.0)
County						
Honolulu	68.2 (63.9 - 72.5)	21.5 (16.8 - 26.1)	40.5 (37.1 - 44.0)	7.2 (4.0 - 10.4)	49.3 (39.6 - 58.9)	89.1 (85.7 - 92.5)
Hawaii	76.5 (73.3 - 79.7)	26.3 (22.9 - 29.7)	26.9 (21.8 - 32.0)	6.1 (3.7 - 8.5)	72.1 (63.3 - 80.9)	88.4 (85.3 - 91.5)
Kauai	74.1 (NA)	26.2 (NA)	38.5 (NA)	7.1 (NA)	55.0 (NA)	81.3 (NA)
Maui	76.0 (71.6 - 80.3)	21.7 (17.1 - 26.2)	32.6 (29.5 - 35.7)	8.5 (5.9 - 11.1)	50.5 (40.8 - 60.2)	85.4 (81.6 - 89.2)
Race/Ethnicity						
White (non-Hispanic)	54.9 (49.9 - 60.0)	13.2 (9.6 - 16.8)	44.2 (37.7 - 50.8)	2.7 (1.4 - 4.0)	35.5 (27.9 - 43.0)	86.8 (82.2 - 91.4)
Japanese	63.7 (59.4 - 67.9)	11.4 (8.2 - 14.7)	36.5 (31.7 - 41.3)	1.8 (0.5 - 3.1)	25.1 (15.5 - 34.6)	96.1 (93.3 - 98.8)
Filipino	78.2 (74.4 - 82.0)	23.8 (21.1 - 26.6)	37.5 (32.8 - 42.2)	8.4 (6.5 - 10.3)	54.3 (46.8 - 61.7)	88.2 (84.3 - 92.2)
Native Hawaiian	80.4 (76.7 - 84.2)	28.5 (22.3 - 34.6)	35.7 (31.8 - 39.7)	6.5 (2.1 - 10.9)	70.3 (62.8 - 77.9)	86.2 (79.0 - 93.4)
Micronesian	95.2 (91.7 - 98.8)	56.4 (49.3 - 63.5)	29.9 (21.7 - 38.1)	30.0 (21.9 - 38.1)	91.6 (83.2 - 100.0)	72.7 (56.5 - 88.9)
Other Pacific Islander	80.2 (73.2 - 87.2)	40.5 (27.2 - 53.9)	34.4 (24.0 - 44.8)	22.7 (8.5 - 36.9)	72.9 (63.3 - 82.6)	80.9 (68.2 - 93.5)
Other Asian	64.8 (57.5 - 72.1)	17.0 (11.0 - 23.1)	29.7 (21.6 - 37.8)	3.6 (0.2 - 7.0)	39.3 (27.3 - 51.3)	94.5 (90.0 - 98.9)
Other/Unknown	55.1 (42.6 - 67.5)	12.0 (6.2 - 17.9)	39.7 (28.8 - 50.5)	3.9 (1.1 - 6.8)	62.7 (50.2 - 75.2)	91.2 (86.3 - 96.0)
Dental visit in last year*						
No	73.5 (66.3 - 80.7)	54.1 (45.1 - 63.0)	23.2 (16.8 - 29.6)	25.9 (16.1 - 35.7)	68.3 (60.7 - 75.9)	--
Yes	68.7 (65.2 - 72.2)	15.8 (13.1 - 18.6)	41.1 (37.6 - 44.6)	3.4 (2.2 - 4.6)	47.3 (40.3 - 54.4)	--

+ NSLP= National School Lunch Program

* Information on time since last dental visit was missing for 737 children and results should be viewed with caution

NOTE: Information on race/ethnicity and NSLP participation was provided by the Hawaii State Department of Education (DOE). Because of small sample sizes, some of the categories provided by DOE were collapsed into the following: White: Parent reported child's race as White or Portuguese; Other Pacific Islander: Parent reported child's race as Guamanian/Chamorro, Samoan, Tongan, or Other Pacific Islander; Other Asian: Parent reported child's race as Chinese, Indo-Chinese, Korean, Asian two or more, or Other Asian; and Other/Unknown: Parent reported child's race as American Indian/Alaska Native, Black, Hispanic, Multi-racial, or Unknown

NOTE: All estimates are weighted

NA=Not applicable, all schools on Kauai were screened

CI=Confidence interval

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PARTICIPATING SCHOOLS

Honolulu County

Aikahi Elementary
 Aina Haina Elementary
 August Ahrens Elementary
 Barbers Point Elementary
 Holomua Elementary
 Kaala Elementary
 Kaewai Elementary
 Kahuku Elementary
 Kapalama Elementary
 Lehua Elementary
 King William Lunalilo Elementary
 Maemae Elementary
 Makakilo Elementary
 Makalapa Elementary
 Mililani Ike Elementary
 Mililani Mauka Elementary
 Mililani Waena Elementary
 Mokapu Elementary
 Puuhale Elementary
 Royal School
 Sunset Beach Elementary
 Wahiawa Elementary
 Waianae Elementary
 Waiau Elementary
 Waikiki Elementary
 Gustav H. Webbing Elementary

Kauai County

Eleele Elementary
 Hanalei Elementary
 Kalaheo Elementary
 Kapaa Elementary
 King Kaumualii Elementary
 Kekaha Elementary
 Kilauea Elementary
 Koloa Elementary
 Elsie H. Wilcox Elementary

Hawaii County

Ernest Bowen de Silva Elementary
 Haaheo Elementary
 Prince Jonah Kuhio Kalanianaʻole
 Elementary & Intermediate
 Chiefess Kapiolani Elementary
 Kaumana Elementary
 Ke Kula o Nawahiokalaniopuʻu Iki Laboratory
 Public Charter School
 Keaau Elementary
 Kealakehe Elementary
 Keonepoko Elementary
 Konawaena Elementary
 Mountain View Elementary
 Paaui Elementary & Intermediate
 Pahoa Elementary
 Waiakea Elementary
 Waiakeawaena Elementary
 Waikoloa Elementary & Middle
 Waimea Elementary

Maui County

Lanai High & Elementary
 Kahului Elementary
 Kamalii Elementary
 Pomaikai Elementary
 Kihei Elementary
 Lihikai Elementary
 Makawao Elementary
 Princess Nahienaena Elementary
 Pukalani Elementary
 Puu Kukui Elementary
 Wailuku Elementary
 Kaunakakai Elementary
 Kilohana Elementary
 Kualapuu Elementary New Century
 Public Conversion Charter School
 Maunaloa Elementary

ACKNOWLEDGMENTS

The *Hawaii Smiles* survey was an enormous collaborative undertaking and the Hawaii State Department of Health extends our sincere thanks to the Hawaii State Department of Education, the 67 sample schools, parents/guardians, students, dental/healthcare professionals, and volunteers that participated in this project.

Association of State & Territorial Dental Directors

Kathy Phipps

Department of Education

Kathryn Matayoshi

Dave Moyer

Steven Shiraki

Lyndia Uchimura

Hawaii Keiki Nurses

School Principals, Liaisons,
Health Aides, Teachers

Department of Health (DOH)

District Health Offices (DHO)

- Hawaii, Kauai, Maui

Developmental Disabilities Division

Family Health Services Division
(FHSD)

Immunization Branch

Office of Primary Care & Rural Health

Office of Program Planning &
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Funders

Hawaii Dental Service Foundation

Kaiser Foundation

- Community Benefit

Partners

American Academy of Pediatrics

- Hawaii Chapter

Hawaii Dental Association (HDA)

Hawaii Dental Hygiene Association

Hawaii Primary Care Association

Hawaii Public Health Institute

Hawaiian Islands Oral Health
Task Force

New York University - Lutheran

Medical Dental Public Health

Residency Program

- Jennifer Domagalski

New York University - Lutheran

Medical Pediatric Dental

Residency Program

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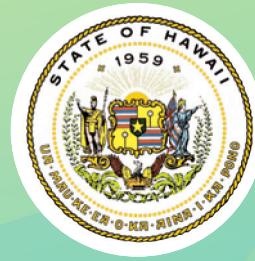
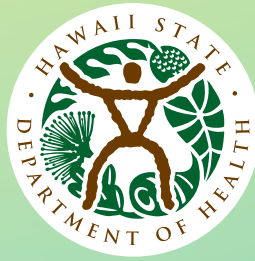
Girl Scout Troop 291 - Cadets

Girl Scout Troop 99

- Brownies and Juniors

Hawaii Island Oral Health Coalition

Maui Oral Health Task Force



For more information:
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Phone: 808-586-4122
Fax: 808-586-9303

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This publication was supported by Cooperative Agreements 5U58DP004884-03 and 2 B01TO009015 from the Centers for Disease Control and Prevention and by Grant Number H18MC00012 from the U.S. Department of Health and Human Services (HHS). Its contents are solely the responsibility of the authors and do not necessarily represent the official view of HHS.



Improving Oral Health Using Telehealth Connected Teams: The Virtual Dental Home

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Acknowledgements

- **Hawaii Dental Service**
- **Pacific Center for Special Care, University of the Pacific, School of Dentistry**
Paul Glassman, DDS, MA, MBA
- **West Hawaii Community Health Center**
Donna Altshul, RDH



Presentation Agenda

- **General Oral Health Environment in Hawaii**
- **The Virtual Dental Home - Overview**
- **Why the Virtual Dental Home is a significant opportunity for Hawaii?**

Hawaii - State of Oral Health

- **Dental disease rates significantly higher than national average**
- **Oral health disparities**
 - Uninsured
 - Low-income
 - Intellectually & developmentally disabled
 - Native Hawaiian/Pacific Islanders
- **Redeveloping public oral health infrastructure and a coordinated system of care**
- **Pew Charitable Trust Report Cards- “F”**

Unique Factors Contributing to the Oral Health Disparities in Hawaii

- **Geographic isolation**
- **No community water fluoridation**
- **Low % of dentists actively accepting Medicaid patients**
 - In 2013, almost \$850K spent by Medicaid on airfare for individuals with oral health needs
- **Ethnically diverse with a large immigrant population**
- **No dental school in the state**



Hawaii Oral Health Data and Statistics

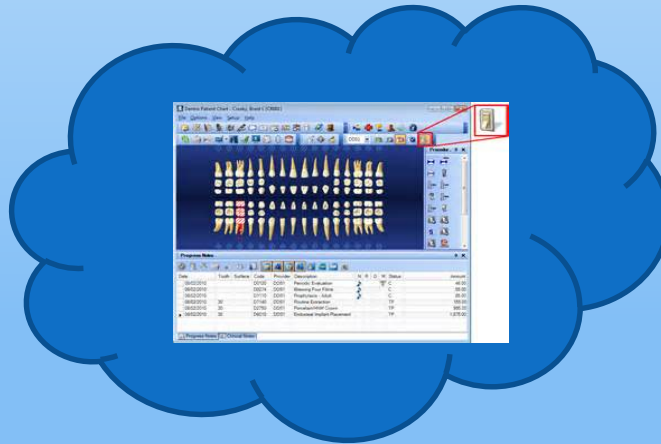
- **Highest prevalence of tooth decay experience in the United States***
 - 3rd grade BSS – Hawaii 71%, National average 52%
 - Even higher on neighbor islands
- **Almost one quarter of Hawaii's children have untreated tooth decay***
- **The percent of Hawaii's children needing urgent dental care is substantially higher than the national average among 6-9 year olds of less than 1%.**
- **More than 60% of children in Hawaii do not have protective dental sealants***

* Hawaii State Department of Health. Hawaii Smiles 2015. (August 2016)



Teledentistry

The Virtual Dental Home



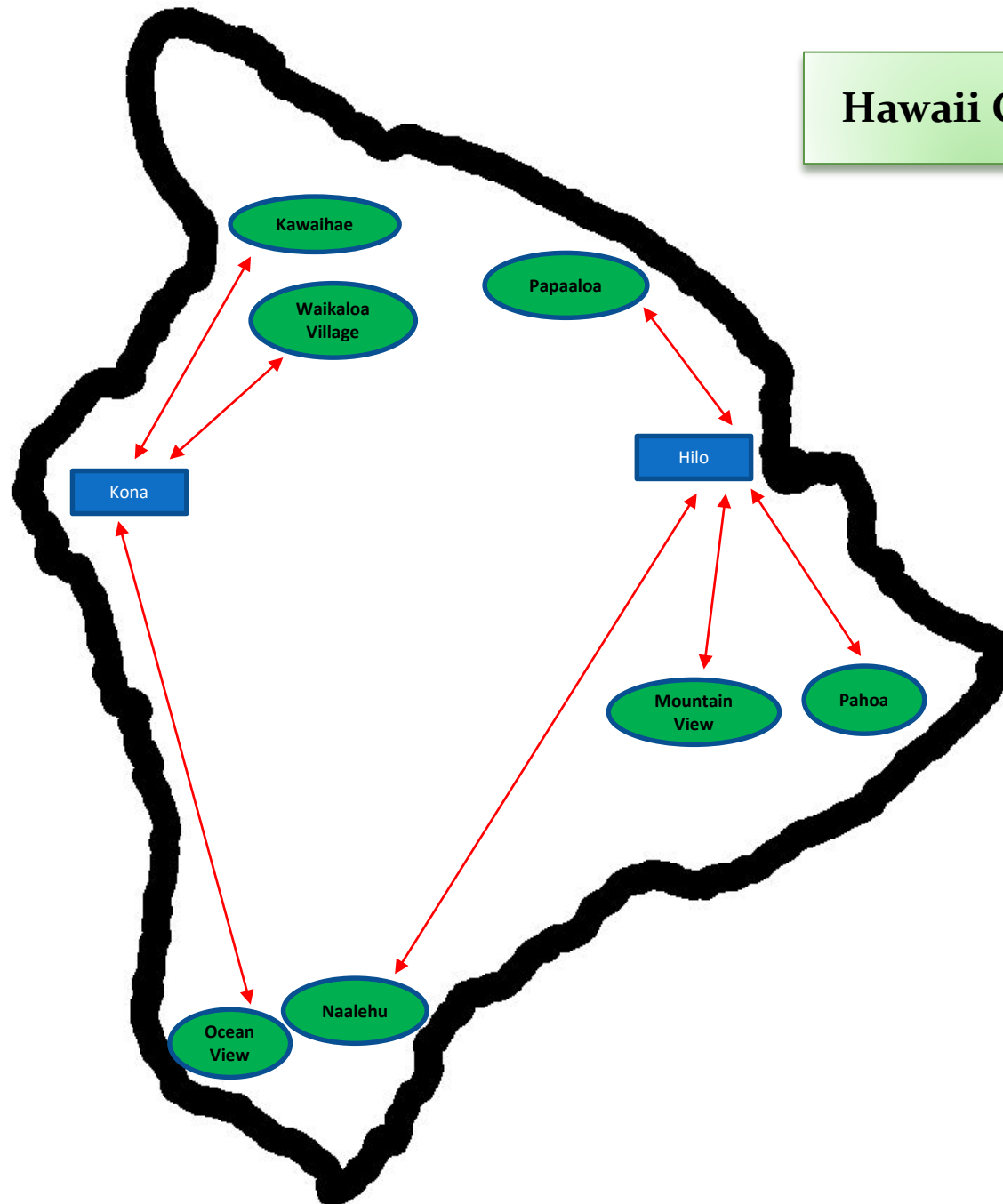
Virtual Dental Home (VDH)

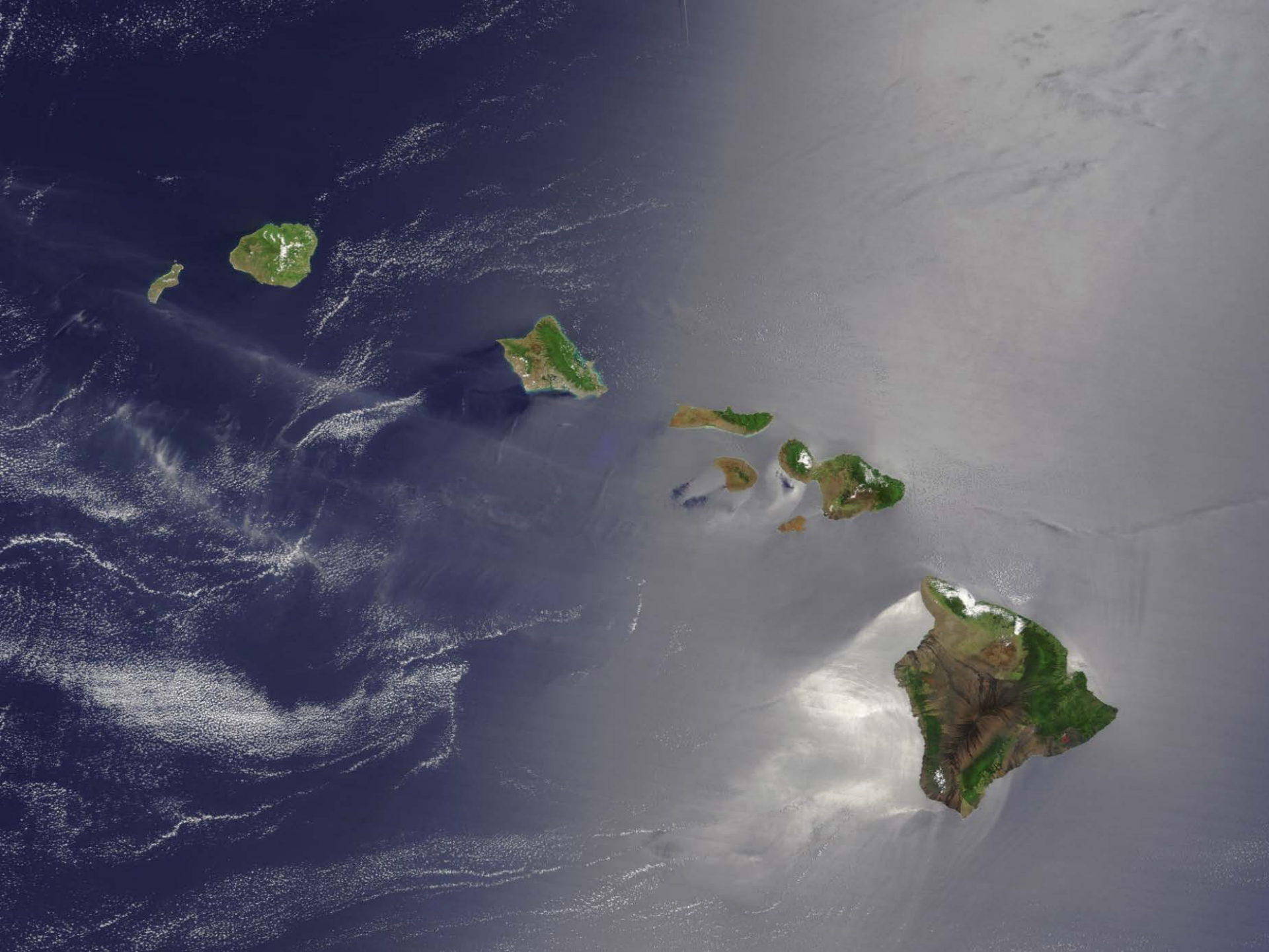
- **Community based delivery of care system**
 - Telehealth connected dental teams
 - Brings dental care into the communities
- **Pacific Center for Special Care, University of the Pacific, School of Dentistry**
 - Completed a 6 year demonstration project (2010 to 2016) in California
 - 11 communities, approx. 50 sites, treated 3442 patients
 - Proved to be safe, effective, and cost efficient
- **Nationally: Pilot programs in Hawaii, Oregon and Colorado**

Why is the virtual dental home a significant opportunity for Hawaii?

- **Brings oral health care to the vulnerable and underserved populations in the community.**
- **Provides dental services to those most in need and not receiving dental services**
- **Emphasizes oral health prevention, education, and early intervention dental services.**
- **Provides dental care at a far lower cost**

Hawaii County





EMERGENCY

A low-angle photograph of a modern hospital building. The central focus is a large, three-dimensional red sign that reads "EMERGENCY" in all caps, mounted on a light-colored concrete overhang. Above the sign is a semi-circular glass skylight. Below the overhang, a curved architectural element features a series of parallel black lines over a yellowish-tan background. The building's facade is composed of light-colored concrete panels and large glass windows. In the background, a taller section of the building made of red brick is visible against a blue sky with scattered white clouds.



Access to Care

Hawaii VDH Pilot Project

- **Funding:**
 - Hawaii Dental Service
 - Awarded December 2015
- **Teledentistry Team:**
 - Pacific Center for Special Care, University of the Pacific, School of Dentistry
 - West Hawaii Community Health Center (WHCHC)
 - Hawaii State Department of Health
- **3 year pilot project (2016-2019)**
 - Community Site: Head Start, WIC, Tutu & Me
 - Expansion dependent upon available funds



Virtual Dental Home in Hawaii: Goals

- **Demonstrate the effectiveness of the VDH given unique needs of Hawaii**
- **Reach and provide dental care to the underserved populations that are not receiving dental care in their community**
- **Provide services at a far lower cost**
- **Demonstrate this is a reproducible and sustainable delivery of care system**

Hawaii VDH – Key Points

- **Hawaii Dental Practice Act**
 - Current – Teledentistry allowed in “public health settings”
- **Insurance Coverage – Sustainability**
 - State Medicaid Dental
 - Act 226 – Telehealth (2016 Legislation Session)
 - Adult dental coverage
 - Commercial Sector
- **Collaboration & Alignment**
 - Hawaii Primary Care Association
 - Community health centers (FQHCs)
 - Private Sector

Introduction

- **Pacific Center for Special Care,
University of the Pacific, School of
Dentistry**
Paul Glassman, DDS, MA, MBA
- **West Hawaii Community Health
Center**
Donna Altshul, RDH



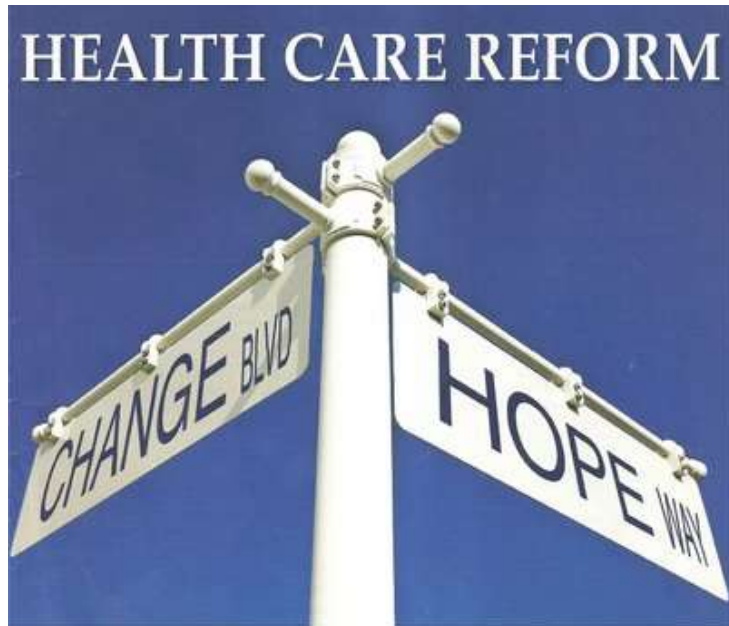
Creating Oral Health for Hawaii's Underserved Populations Using Virtual Dental Homes



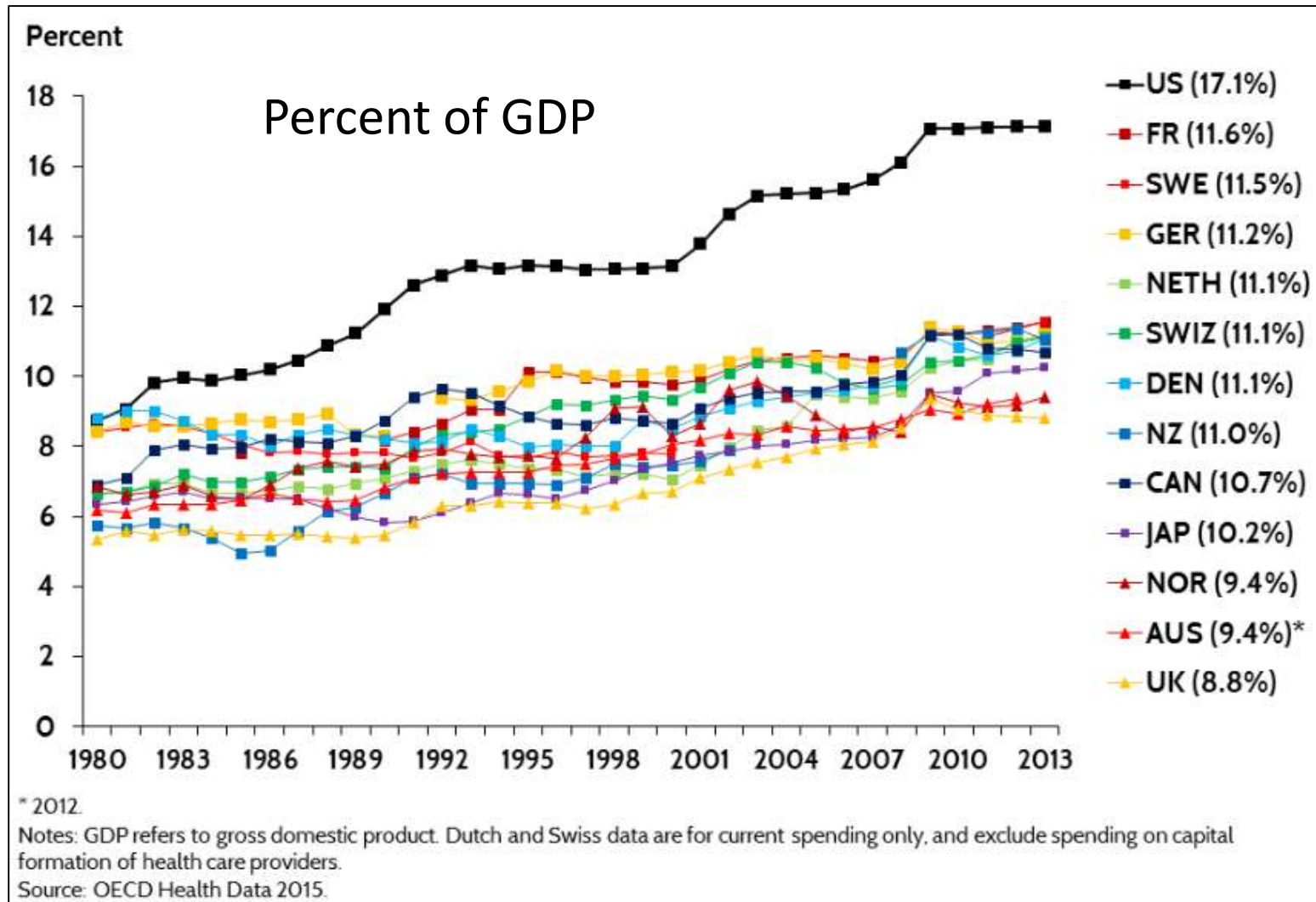
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The US Health Care System is Undergoing Profound Change



Health Care Spending 1980-2013



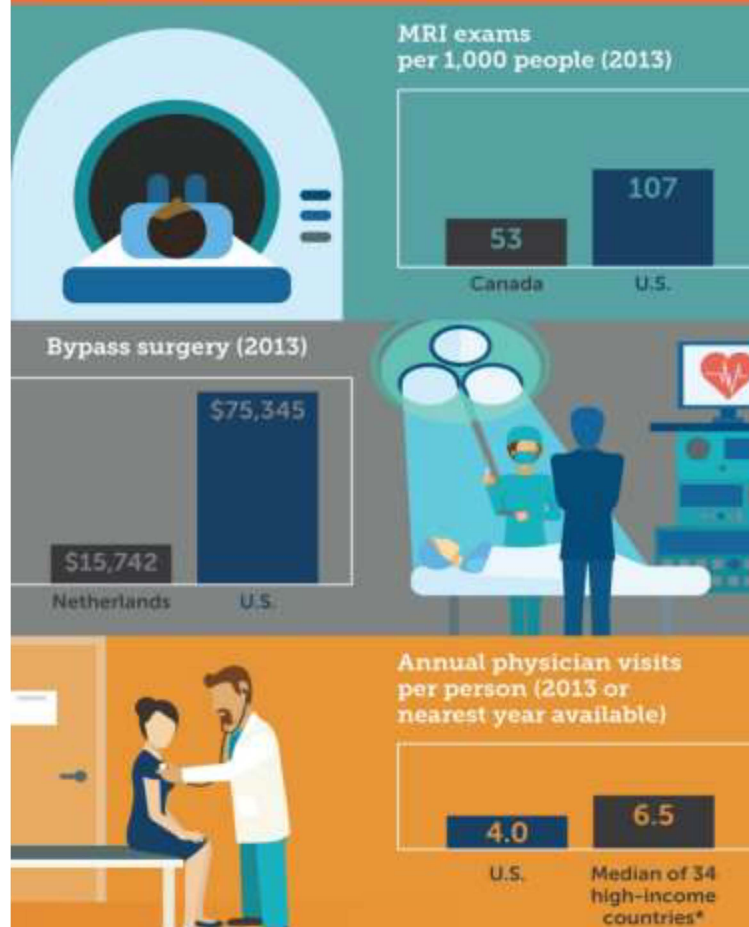
<http://www.commonwealthfund.org/publications/issue-briefs/2015/oct/us-health-care-from-a-global-perspective>.

Data: OECD Health Data 2015.

High U.S. Health Care Spending Is Largely Driven by Technology Use, Prices

Despite spending more on health care, the United States generally has worse health outcomes than other high-income nations, including higher rates of chronic conditions and infant mortality and lower life expectancy.

High spending in the U.S. is largely the result of greater use of medical technology and higher health care prices, rather than more frequent doctor visits or hospital admissions.



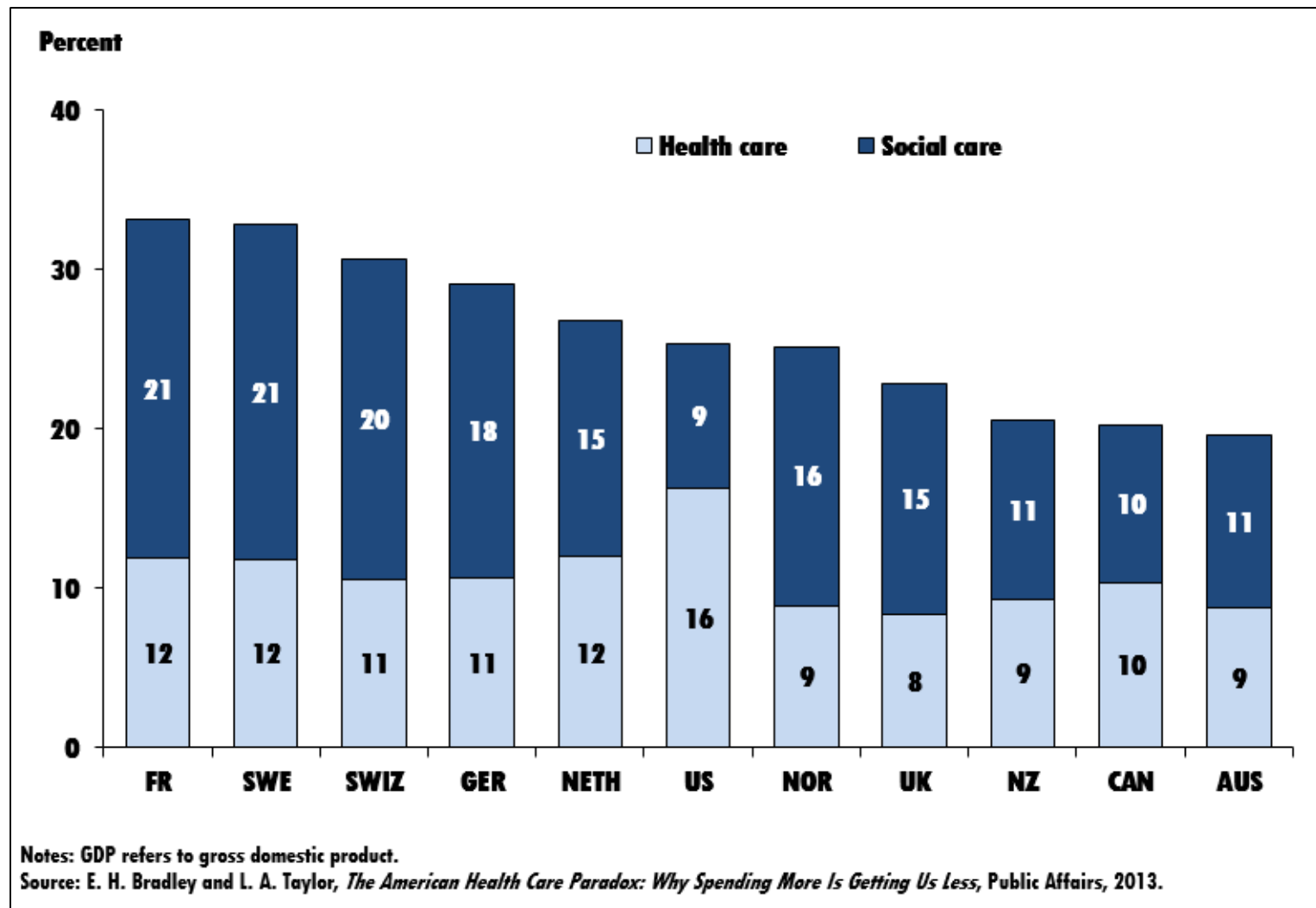
* Includes 34 member countries of the Organization for Economic Cooperation and Development: <http://www.oecd.org/about/membersandpartners/>

Source: D. Squires and C. Anderson, *U.S. Health Care from a Global Perspective: Spending, Use of Services, Prices, and Health in 13 Countries*, The Commonwealth Fund, October 2015.



The
COMMONWEALTH
FUND

Health Care and Social Spending as a Percent of GDP 2013



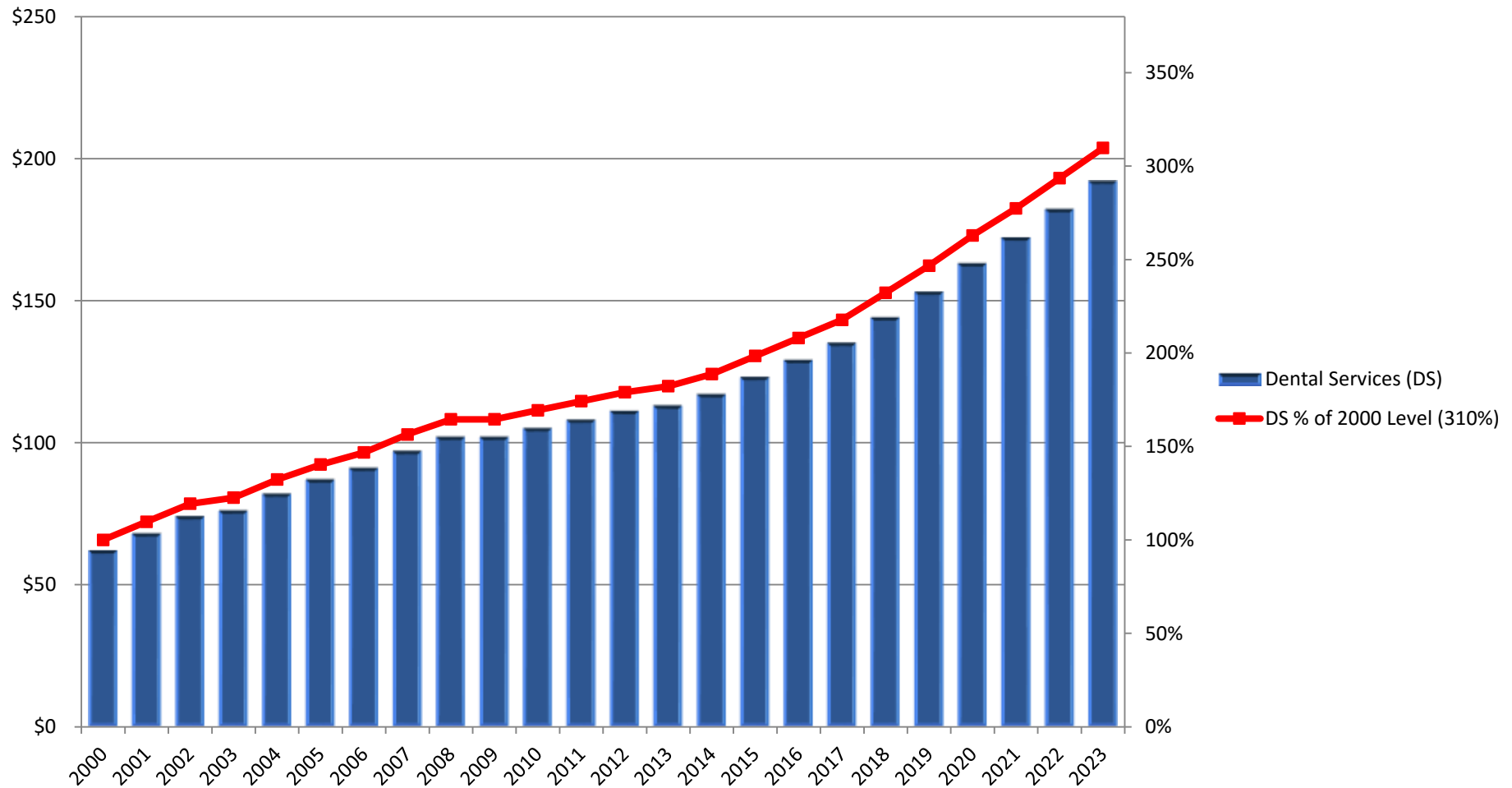
The Commonwealth Fund

U.S. Health Care from a Global Perspective: Spending, Use of Services, Prices, and Health in 13 Countries

<http://www.commonwealthfund.org/publications/issue-briefs/2015/oct/us-health-care-from-a-global-perspective>.

National Oral Health Expenses

U.S. National Dental Expenditures 2000 - 2023 (\$ Billions)



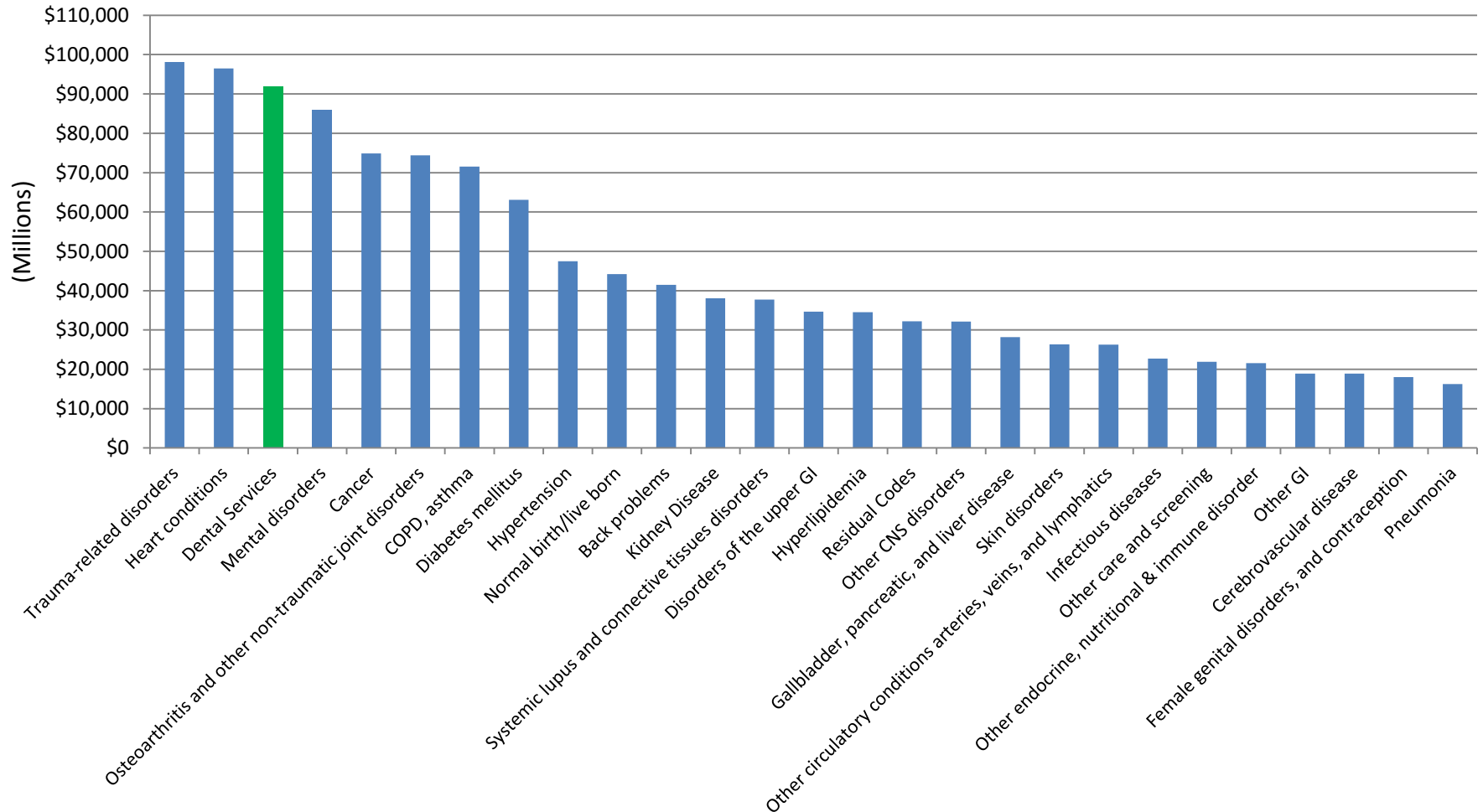
Source: CMS National Health Expenditure NHE Historical and projections,

<http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical.html>

<http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsProjected.html>

Health Spending by Condition

Medical Expenditure Panel Survey - Top 25, 2013



General Health: MEPS: Expenditures by Medical Condition 2013, Table 3

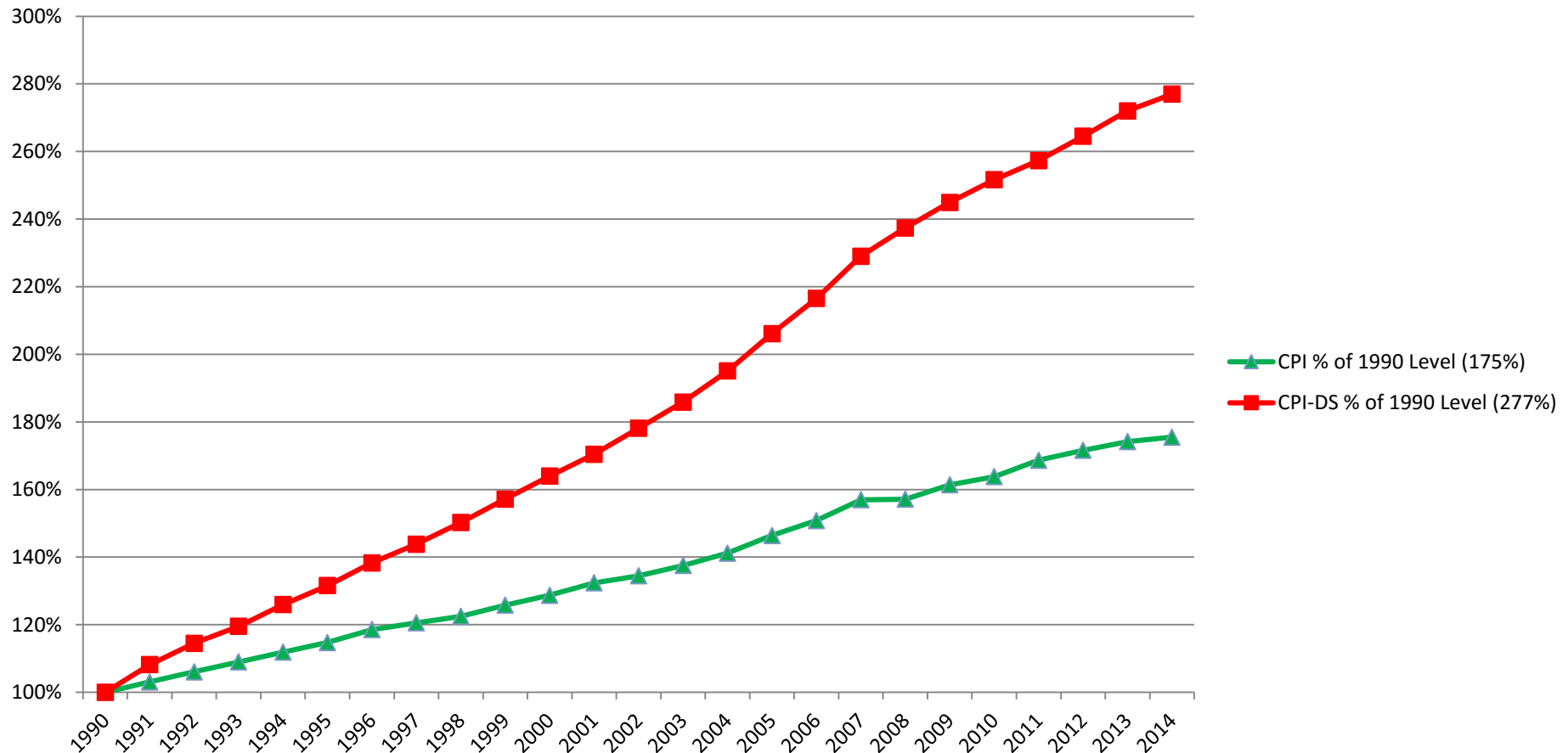
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Dental Health: MEPS: Expenditures per Person by Health Care Service 2012, Table 3

http://meps.ahrq.gov/mepsweb/data_stats/tables_compendia_hh_interactive.jsp?_SERVICE=MEPSSocket0&_PROGRAM=MEPSPGM.TC.SAS&File=HCFY2013&Table=HCFY2013%5FPLEXP%5FB&VAR1=AGE&VAR2=SEX&VAR3=RACETH5C&VAR4=INSURCOV&VAR5=POVCAT13&VAR6=REGION&VAR7=HEALTH&VARO1=4+17+44+64&VARO2=1&VARO3=1&VARO4=1&VARO5=1&VARO6=1&VARO7=1&_Debug=

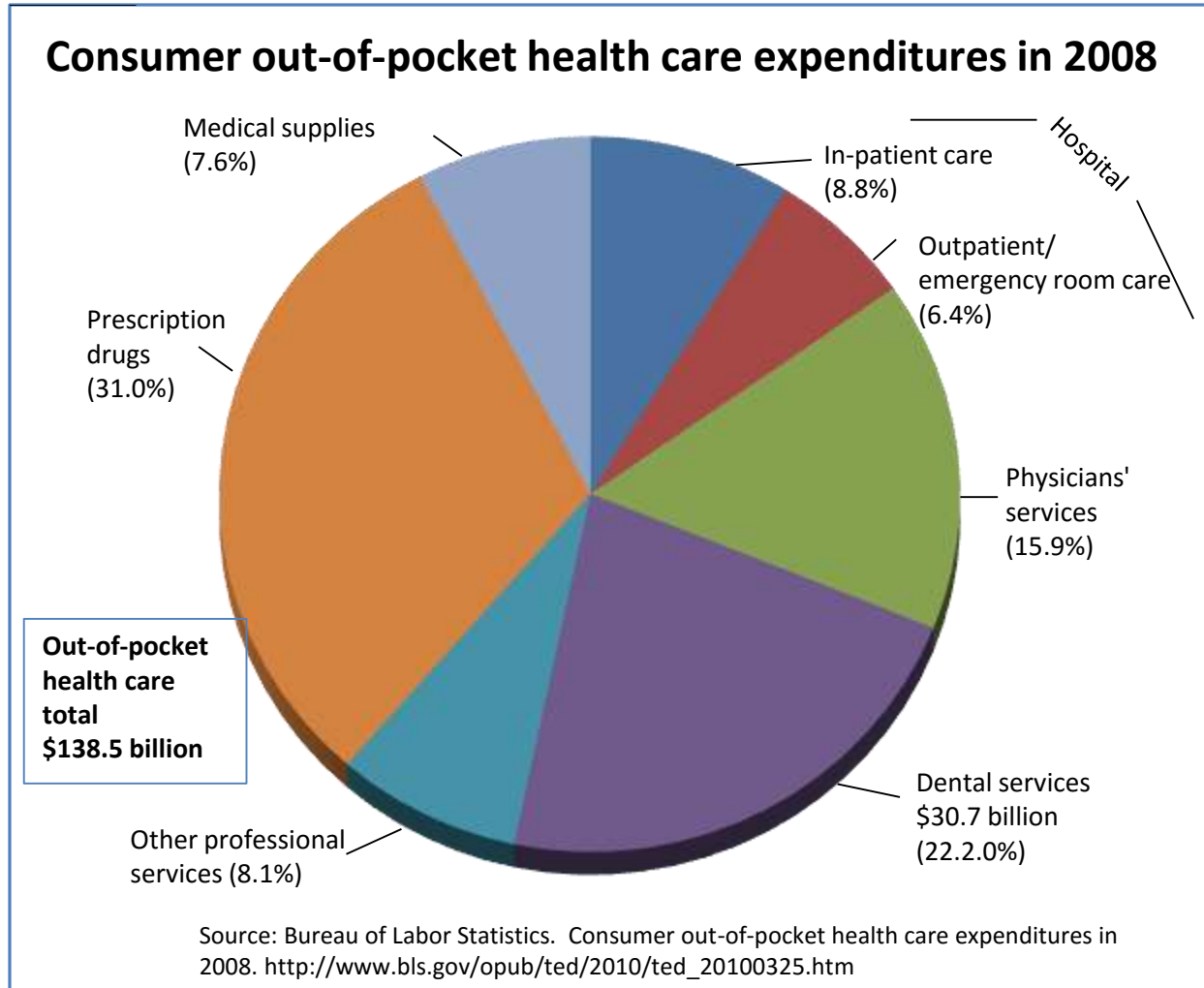
Oral Health Expenses

Consumer Price Index (CPI) and CPI for Dental Services (% of 1990 dollars)



Source: Bureau of Labor Statistics: Consumer Price Index
http://www.bls.gov/cpi/cpi_dr.htm

Out-of-Pocket Health Expenses

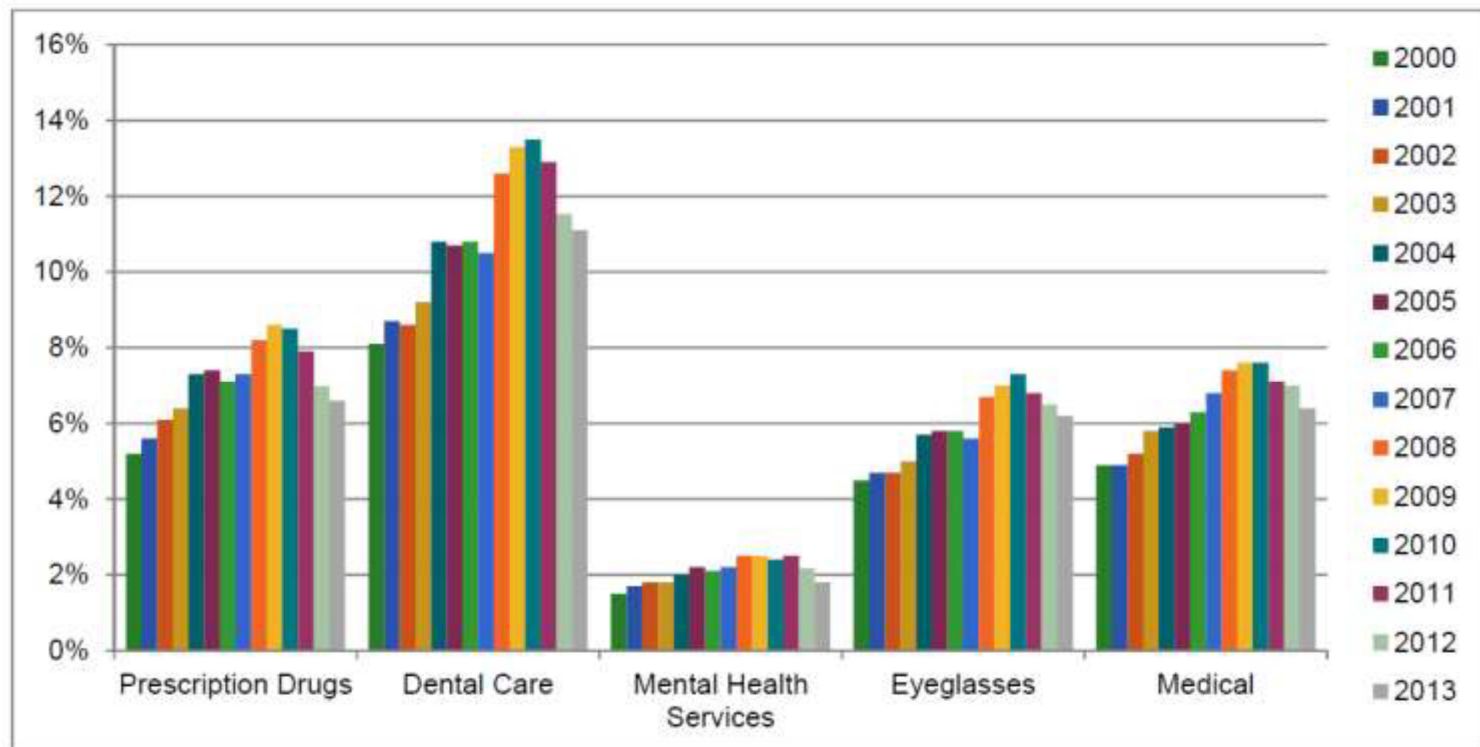


Fewer Americans Forgoing Dental Care Due to Cost

October 2014

Authors: Thomas Wall, M.A., M.B.A.; Kamyar Nasseh, Ph.D.; Marko Vujicic, Ph.D.

Figure 1: Percentage of the Population Who Needed But Did Not Obtain Select Health Care Services during the Previous 12 Months Due to Cost, 2000-2013



Source: National Health Interview Survey, National Center of Health Statistics. **Notes:** Changes from 2000 to 2010 for all services were statistically significant at the 1% level. Changes from 2010 to 2013 for all services were statistically significant at the 1% level. Changes from 2012 to 2013 were not statistically significant.

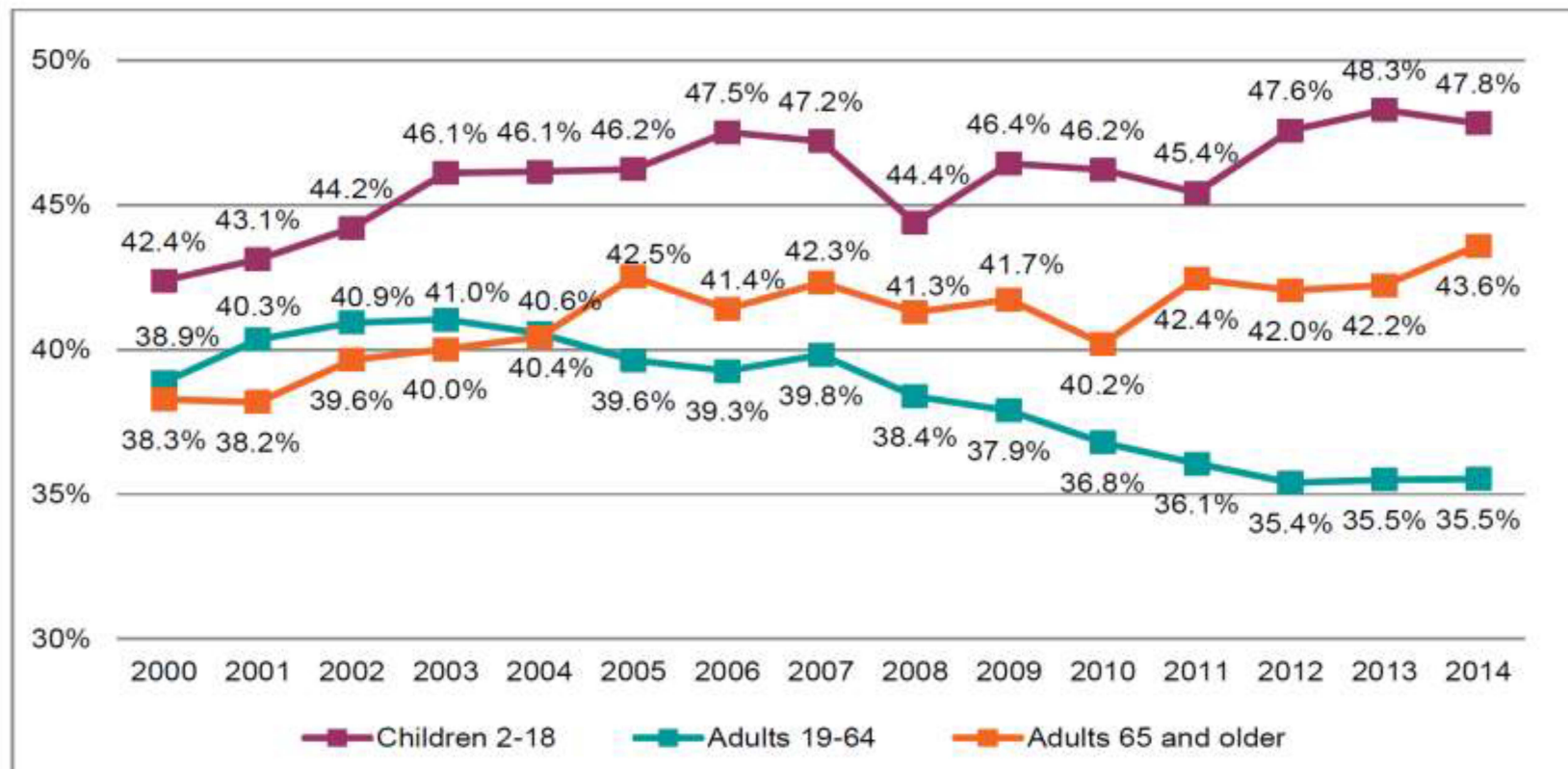
Dental Care Utilization Steady Among Working-Age Adults and Children, Up Slightly Among the Elderly

Kamyar Nasseh, Ph.D.

Marko Vujicic, Ph.D.

October 2016

Figure 1: Percentage of the Population with a Dental Visit in the Year, 2000-2014



Source: Health Policy Institute analysis of the Medical Expenditure Panel Survey, AHRQ. **Notes:** For children ages 2-18 and adults ages 65 and older, changes were statistically significant at the 1% level (2000-2014). Among adults ages 19-64, changes were statistically significant at the 1% level (2003-2014). Changes from 2013 to 2014 among children, adults 19-64, and the elderly 65 and older were not statistically significant.

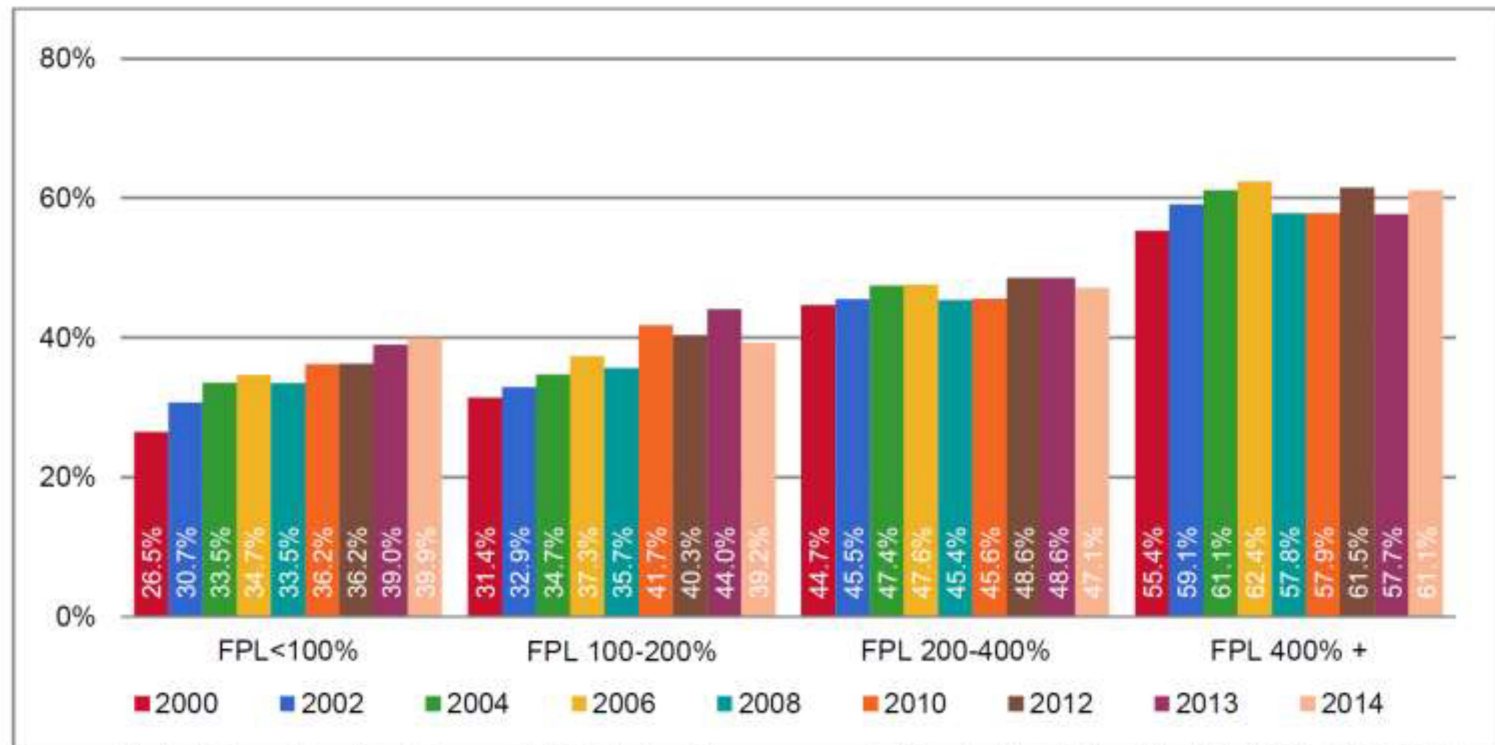
Dental Care Utilization Steady Among Working-Age Adults and Children, Up Slightly Among the Elderly

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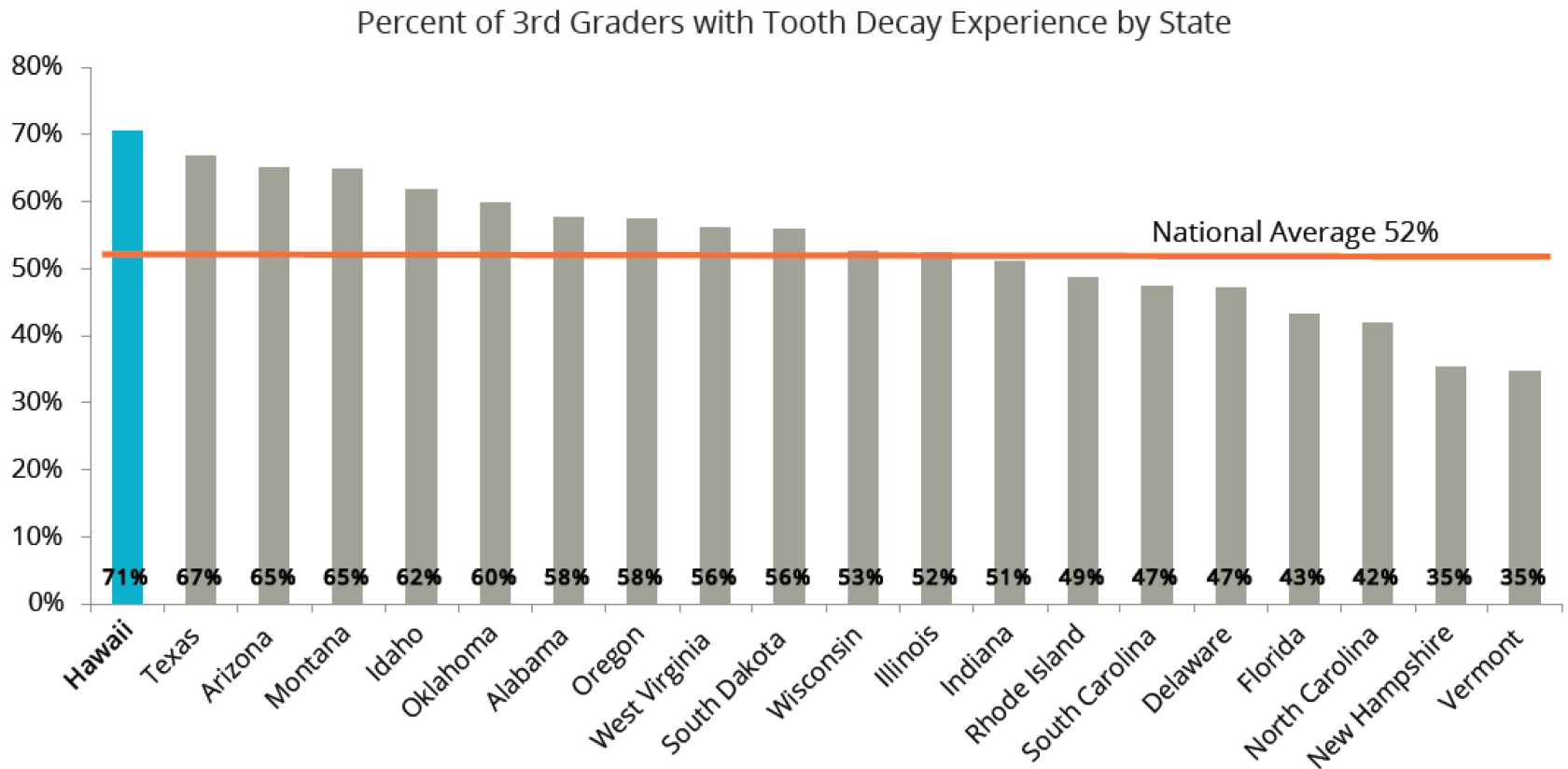
October 2016

Figure 3: Percentage of Children Ages 2-18 with a Dental Visit in the Year for Select Income Groups, 2000-2014



Source: Medical Expenditure Panel Survey, AHRQ. **Notes:** Changes were significant at the 1% level for FPL<100% (2000-2014). Changes for FPL 100-200% and FPL 400%+ were significant at the 5% level (2000-2014). The change from 2013 to 2014 for FPL 100-200% was statistically significant at the 10% level. Changes among other income groups were not statistically significant from 2013 to 2014.

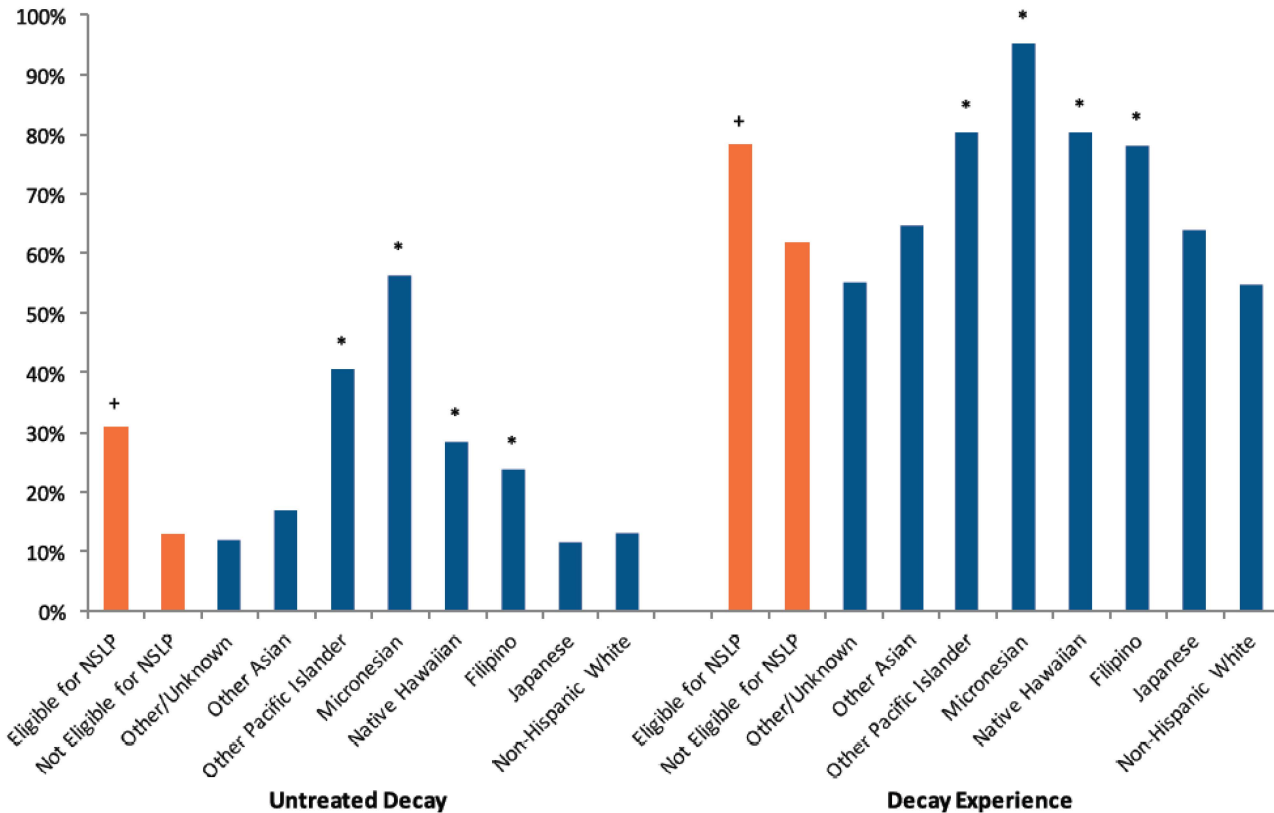
KEY FINDING #1: HAWAII HAS THE HIGHEST PREVALENCE OF TOOTH DECAY AMONG THIRD GRADERS IN THE UNITED STATES. MORE THAN 7 OUT OF 10 THIRD GRADERS (71%) ARE AFFECTED BY TOOTH DECAY; SUBSTANTIALLY HIGHER THAN THE NATIONAL AVERAGE OF 52%.



State data source: Centers for Disease Control and Prevention, Oral Health Data, 2012-2015
National data source: National Health and Nutrition Examination Survey (NHANES) 2005-2010

KEY FINDING #5: THERE ARE SIGNIFICANT ORAL HEALTH DISPARITIES BY INCOME, AS WELL AS BY RACE/ETHNICITY, AMONG THIRD GRADERS IN HAWAII.

Percent of Hawaii's 3rd grade children with untreated decay and decay experience by eligibility for the National School Lunch Program (NSLP) and race/ethnicity, 2014-2015



* Significantly different than non-Hispanic Whites ($p < 0.05$)

+ Significantly different than not eligible for NSLP ($p < 0.05$)

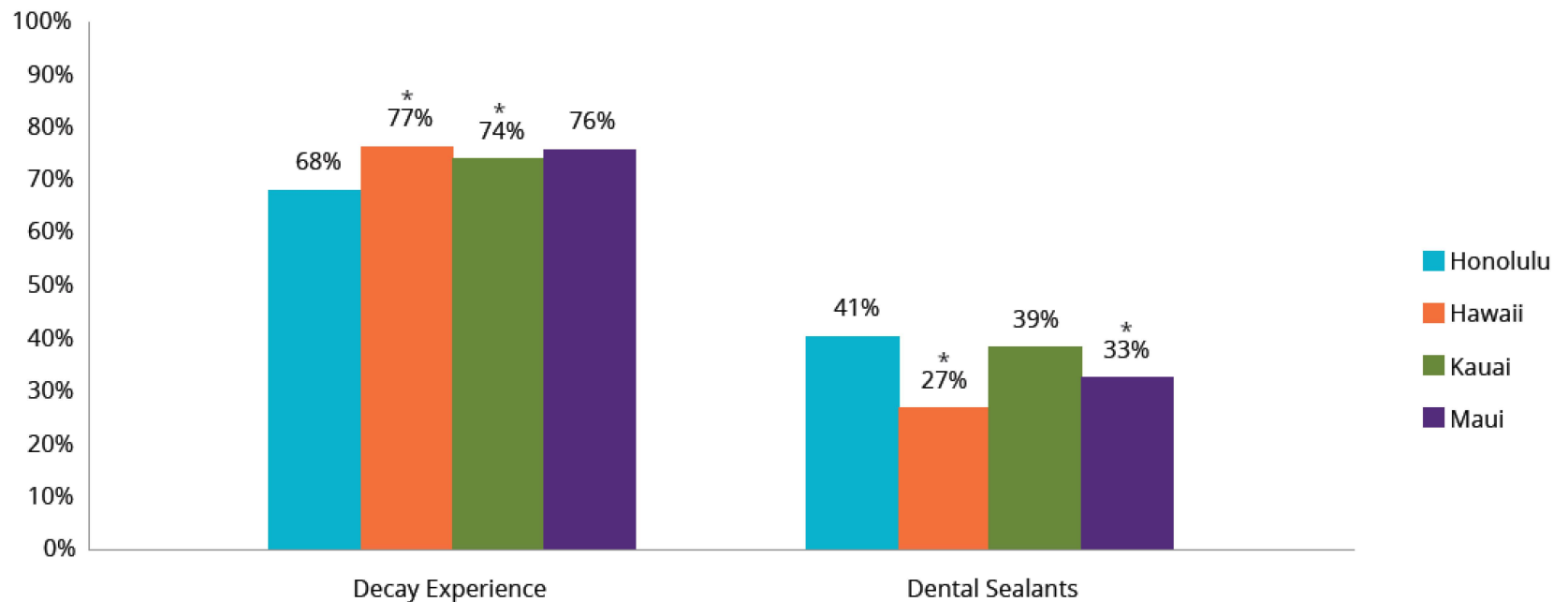
Other Pacific Islander: Guamanian/Chamorro, Samoan, Tongan, and Other Pacific Islander

Other Asian: Chinese, Indo-Chinese, Korean, Asian two or more, and Other Asian

Other/Unknown: American Indian/Alaska Native, Black, Hispanic, multi-racial, and unknown race/ethnicity

KEY FINDING #6: THIRD GRADERS LIVING IN KAUAI, HAWAII, AND MAUI COUNTIES ARE MORE LIKELY TO HAVE EXPERIENCED TOOTH DECAY THAN CHILDREN LIVING IN HONOLULU COUNTY.

Percent of Hawaii's 3rd Grade Children with Decay Experience and Dental Sealants by County 2014-2015



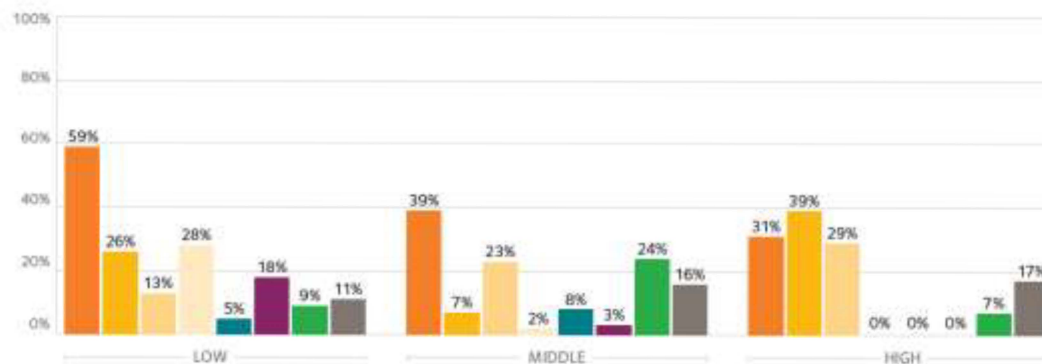
* Significantly different than Honolulu County (determined by confidence intervals)

Oral Health and Well-Being in Hawaii

Reasons for Not Visiting the Dentist More Frequently,
Among Those Without a Visit in the Last 12 Months



Household Income



28% of low income adults cite trouble finding a dentist as a reason not to visit the dentist.

24% of middle income adults cite no reason for not visiting the dentist.

39% of high income adults cite fear as a reason not to visit the dentist.

An analysis of dentists' incomes, 1996-2009

Marko Vujicic, PhD; Vickie Lazar, MA, MS; Thomas P. Wall, MA, MBA; Bradley Munson, BA

JADA 2012;143(5):452-460.

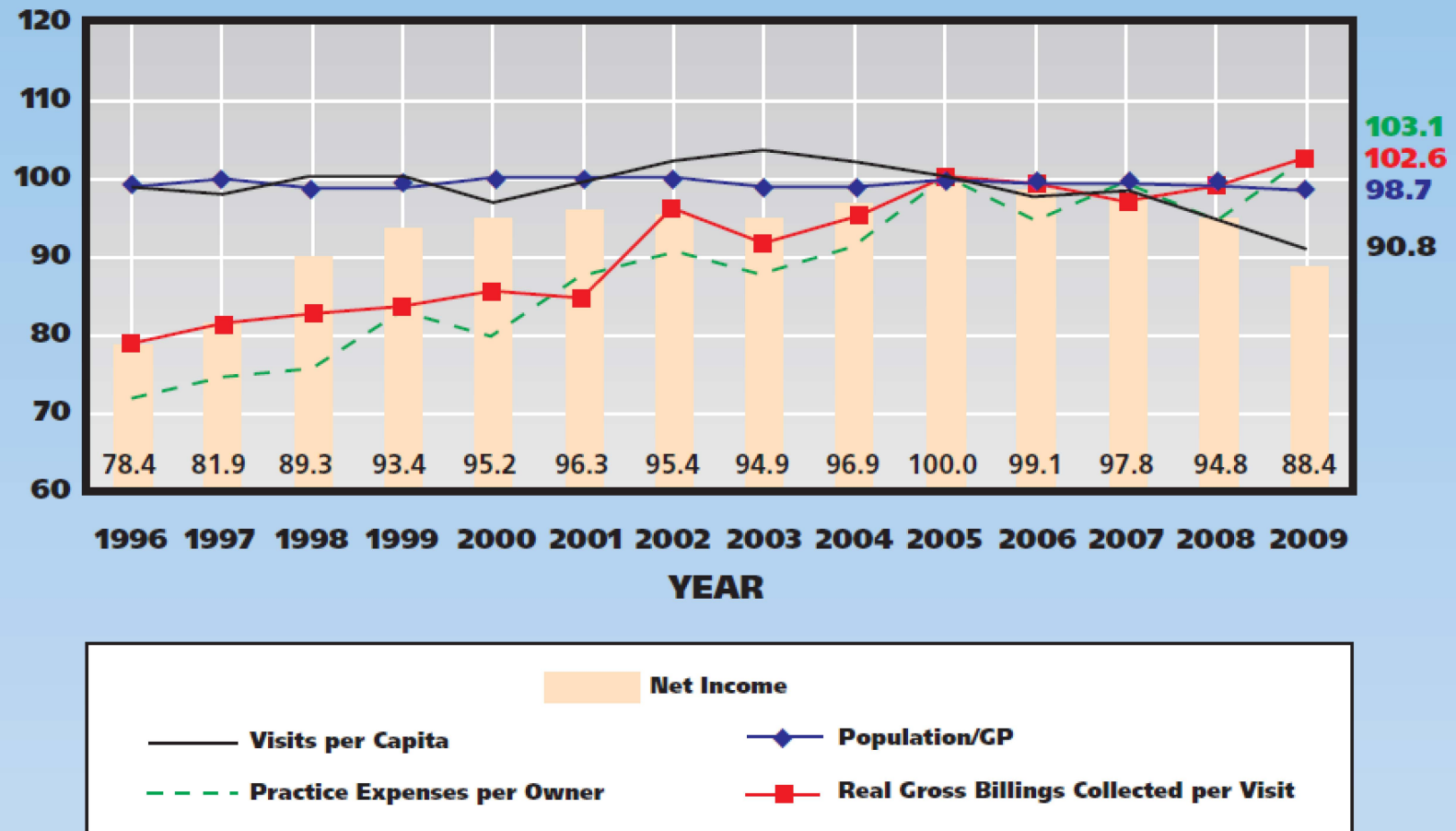


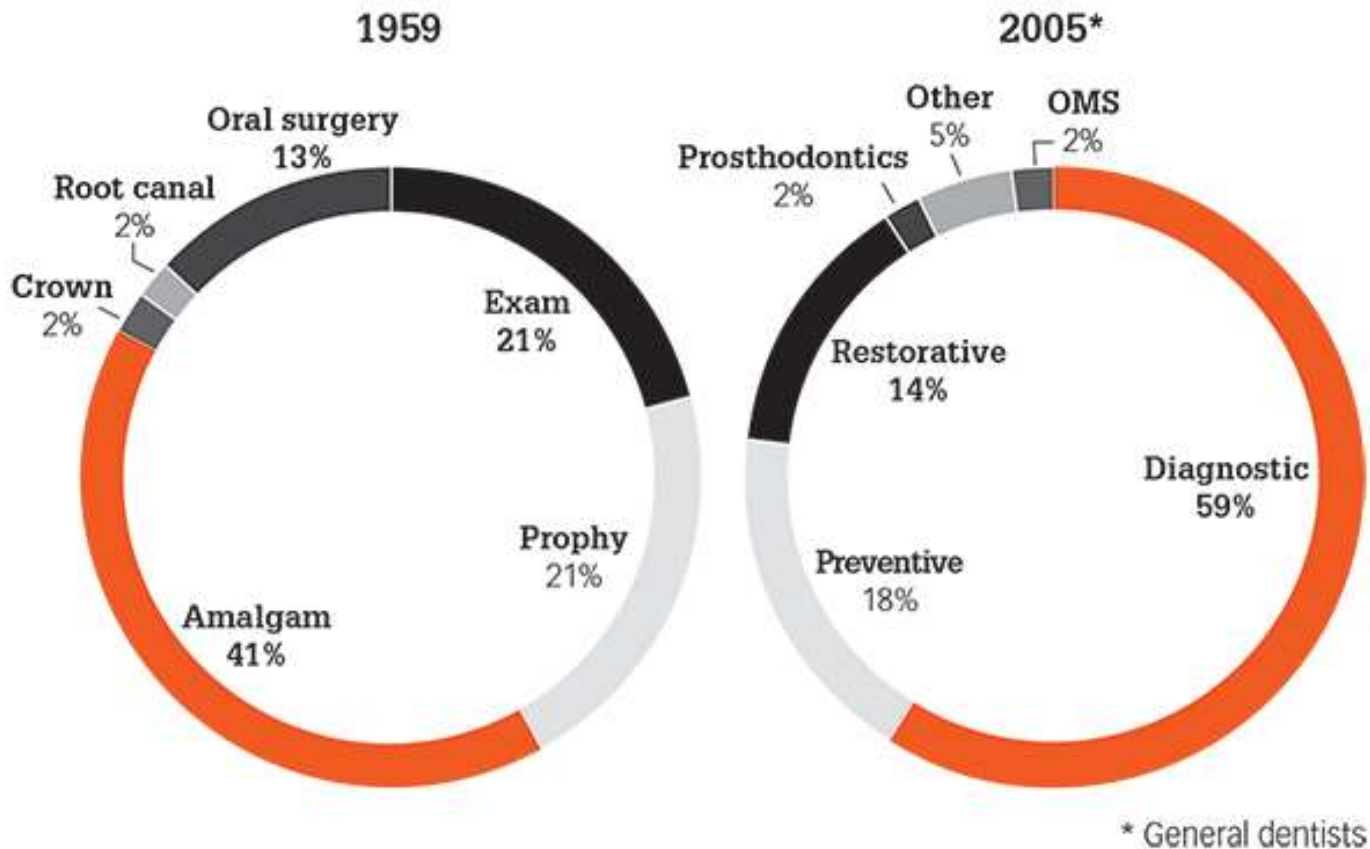
Figure 2. General practitioners' (GPs') real net income and all explanatory variables index (all variable values indexed to 100 in 2005).

The future of dental practice: Demographics

April 10, 2015

By Eric Solomon, DDS, MA

FIGURE 2—Procedures completed in the dental office



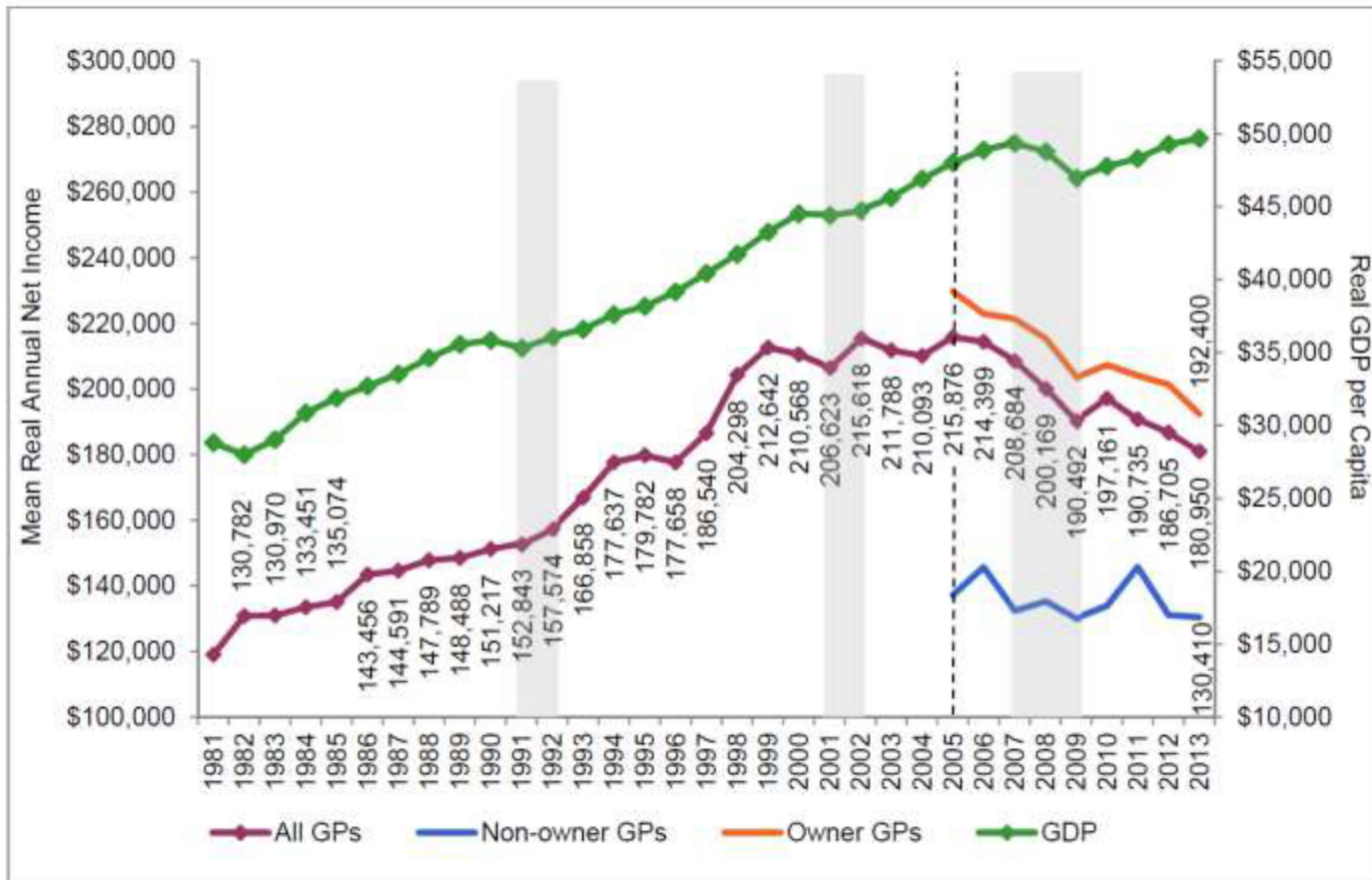
Solomon S. The future of dental practice: Demographics. April 15, 2015.
<http://www.dentaleconomics.com/articles/print/volume-105/issue-4/macroeconomics/the-future-of-dental-practice-demographics-patients-professionals-and-procedures.html>

Dentist Earnings Not Recovering with Economic Growth

Authors: Bradley Munson, B.A.; Marko Vujicic, Ph.D.

December 2014

Figure 1: General Practitioner Dentist Earnings, 1981 to 2013



Source: ADA Health Policy Institute; Bureau of Economic Analysis; Bureau of Labor Statistics. **Note:** Net income data are based on the ADA Health Policy Institute annual *Survey of Dental Practice* with years 2000-2013 weighted to adjust for nonresponse bias. Shaded areas denote recession years according to NBER. GDP is deflated using the GDP deflator. Net income is deflated using the all-item CPI. All values are in constant 2013 dollars.



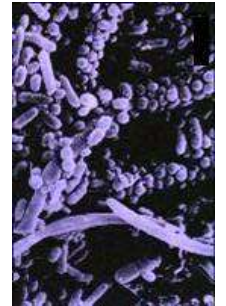
A Profession in Transition:

Key Forces Reshaping the Dental Landscape

**The current dental care system
primarily serves the
wealthiest and healthiest
segments of the population**

Care for Chronic Oral Diseases

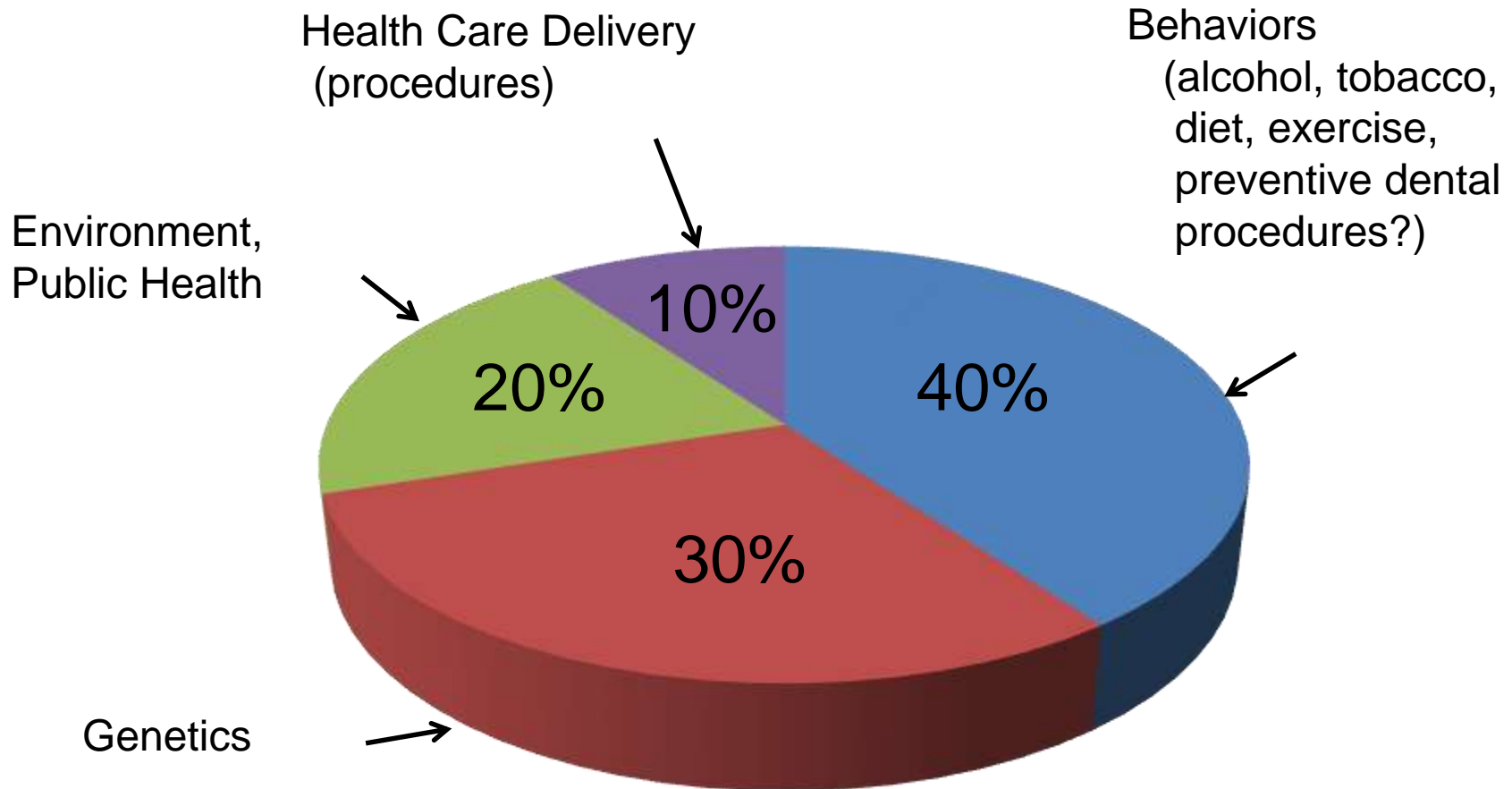
Acute Care/
Surgical
Intervention



Chronic
Disease
Management



Total Health: How Long and How Well We Live



McGinnis JM & Foege WH. Actual Causes of Death in the United States. JAMA 1993; 270(18):2207-12 (Nov 10). McGinnis JM, Williams-Russo P, Knickman JR. The case for more active policy attention to health promotion. Health Affairs 2002; 21(2):78-93 (Mar).

Care for Chronic Oral Diseases

Acute Care/Surgical Intervention

- Provider-centric model
- Care delivered in fixed offices and clinics
- “Treatment” based on discrete procedure-based episodes of care
- Payment based on discrete procedure-based episodes of care
- Emphasis on surgical interventions

Chronic Disease Management

- Patient-centric model
- Care delivered where people are to the extent possible
- “Management” based on maintaining health across the life-cycle of a condition
- Payment based on value of health improvement across life-cycle of a condition
- Emphasis on risk assessment, prevention, and early intervention, using biological, medical, behavioral, and social tools

Deployment

of

Science of
caries and
chronic disease
management

Oral Health

Resources

Pacific Center for Special Care at the University of the Pacific Arthur A. Dugoni School of Dentistry

Evidence-based clinical recommendations for the use of pit-and-fissure sealants

A report of the American Dental Association Council
on Scientific Affairs

JADA 2008;139(3):257-267.

Jean Beauchamp, DDS; Page W. Caufield, DDS, PhD; James J. Crall, DDS, ScD; Kevin Donley, DDS, MS; Robert Feigal, DDS, PhD; Barbara Gooch, DMD, MPH; Amid Ismail, BDS, MPH, MBA, DrPH; William Kohn, DDS; Mark Siegal, DDS, MPH; Richard Simonsen, DDS, MS

- Expert panel convened by ADA Council on Scientific Affairs
- Sealants are effective in reducing occlusal caries incidence in permanent first molars of children, with **caries reductions of 76.3 percent at four years**, when sealants were reapplied as needed. Caries reduction was **65 percent at nine years from initial treatment, with no reapplication during the last 5 years**
- The use of explorers is not necessary for the detection of early lesions. Forceful use of a sharp explorer can damage tooth surfaces
- The clinician should use recent radiographs, if available, in the decision-making process but should not obtain radiographs for the sole purpose of placing sealants

Incomplete Caries Removal

ULTRACONSERVATIVE AND CARIOSTATIC SEALED RESTORATIONS: RESULTS AT YEAR 10

EVA J. MERTZ-FAIRHURST, D.D.S.; JAMES W. CURTIS JR., D.M.D.; JANET W. ERGLE, C.D.A.; FRED A. RUEGGERBERG, D.D.S., M.S.; STEVEN M. ADAIR, D.D.S., M.S.

JADA, Vol. 129, January 1998 55

- This 10-year study evaluated bonded and sealed composite restorations placed directly over frank cavitated lesions extending into dentin vs. sealed conservative amalgam restorations and conventional unsealed amalgam restorations.
- The results indicate that both types of sealed restorations exhibited superior clinical performance and longevity compared with unsealed amalgam restorations.
- Also, the bonded and sealed composite restorations placed over the frank cavitated lesions arrested the clinical progress of these lesions for 10 years.

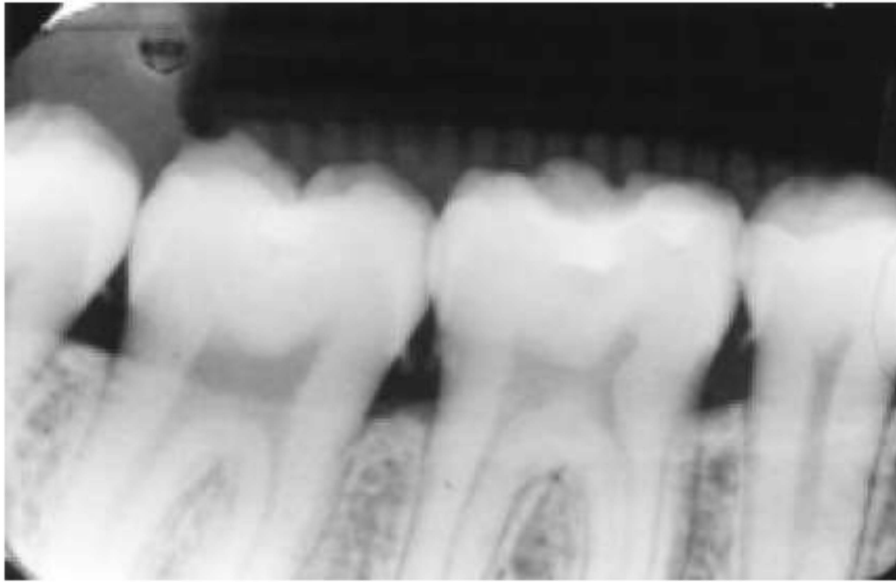


Figure 1B. At year 6, there is no evidence of progress of the lesions shown in Figure 1A.

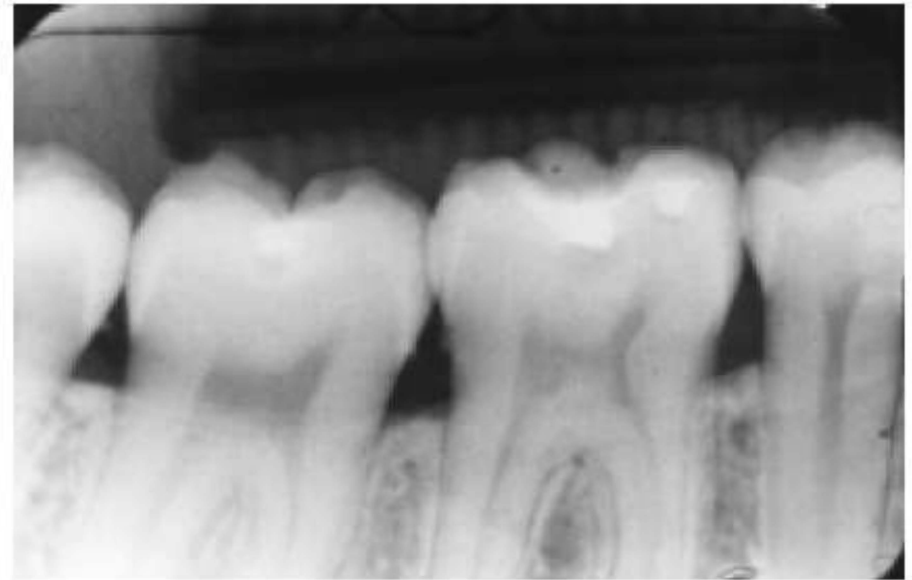


Figure 1C. At year 10, the lesions in Figure 1A are well-delineated and not progressing, the distance between the carious lesions and the pulp is not decreasing and the pulp is not in danger in either tooth no. 30 or 31.

Incomplete Caries Removal

CLINICAL REVIEW

F. Schwendicke*, C.E. Dörfer,
and S. Paris

Department for Conservative Dentistry and Periodontology,
Christian-Albrechts-University, Arnold-Heller-Str. 3, 24105
Kiel, Germany; *corresponding author, schwendicke@
konspar.uni-kiel.de

J Dent Res 92(4):306-314, 2013

Incomplete Caries Removal: A Systematic Review and Meta-analysis

- Increasing numbers of clinical trials have demonstrated the benefits of incomplete caries removal, in particular in the treatment of deep caries.
- Teeth treated with incomplete caries removal showed risk reduction for both pulpal exposure and pulpal symptoms.

The Changing Standard of Care¹

- 1923 Frye vs United States (community standard)
 - Supreme Court ruling - “Locality rule” - originated in the late 1800s, accommodated clinicians living in rural and urban areas who had differing education, training and access to information.
- 1993 - Daubert v Merrell Dow Pharmaceuticals Inc
 - Required judges to act as gatekeepers to ensure that only sound scientific knowledge is admitted in court
 - Scientific knowledge, in this context, derives from human clinical trials that involve implementation of the Baconian scientific method to identify valid and reliable outcomes. Furthermore, sound scientific knowledge is not excluded simply because it may not be accepted by the local community.
- Conclusion: Clinicians who do not know, or do not follow, practices based on the best evidence-based guidelines may be placing themselves at risk.

1. Niederman R, Richards D, Brands W. Guest Editorial: The Changing Standard of Care. JADA 2012;143(5):434-437.

Deployment

of

Science of
caries and
chronic disease
management

Oral Health

Resources

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Deployment

of

Science of
caries and
chronic disease
management

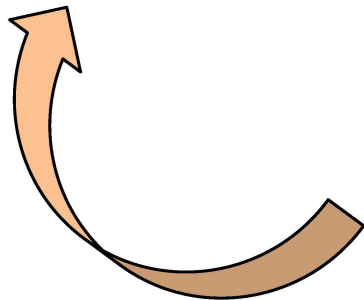
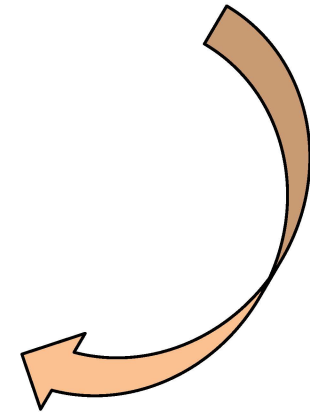
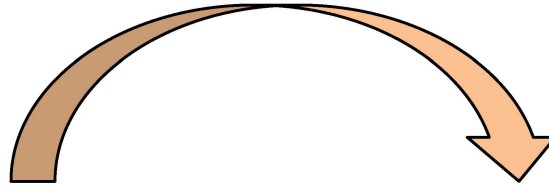
Community-
based
telehealth
enabled teams

Oral Health

Resources

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The Virtual Dental Home



EHR: Radiographs



EHR: Photographs



Space and Equipment



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Space and Equipment



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Space and Equipment



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Space and Equipment



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Space and Equipment



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Denticon!! :: Patient Window :: Welcome, CHAEKIM@MSN.COM :: - Internet Explorer provided by Dell

https://www.denticon.com/ASPX/Charting/PatChartNew.aspx

Scheduler Patient Transactions Charting Reports Utilities Setup **Office** Los Angeles Help Logout

Members Print Patient

Patient Chart

Patient: Mouse, Mickey M Type: CA Patient ID: 100 Responsible: Mouse, Mickey M Prim. Ins: Delta Dental of Cali
 (H) : 714-555-1212 Age/Sex: 59 / M Balance: 5839.40 949-555-1212
 (C) : 714-555-1213 MD First Visit: 11/29/2004 Est Ins: 2838.10 Ben Rem: 0.00
 (W) : 800-555-1212 RT Last Visit: 01/12/2009 Est Pat: 3001.30 Ded Rem: 0.00

Change Dentition View Chart as on 1/12/2009 Clear Selection ADA Codes Progress Notes Perio

Pre-existing Compl. Procs. Treat Plans

Decay Detective Crown Bridge Implant Denture Missing Impacted Erupted Watch

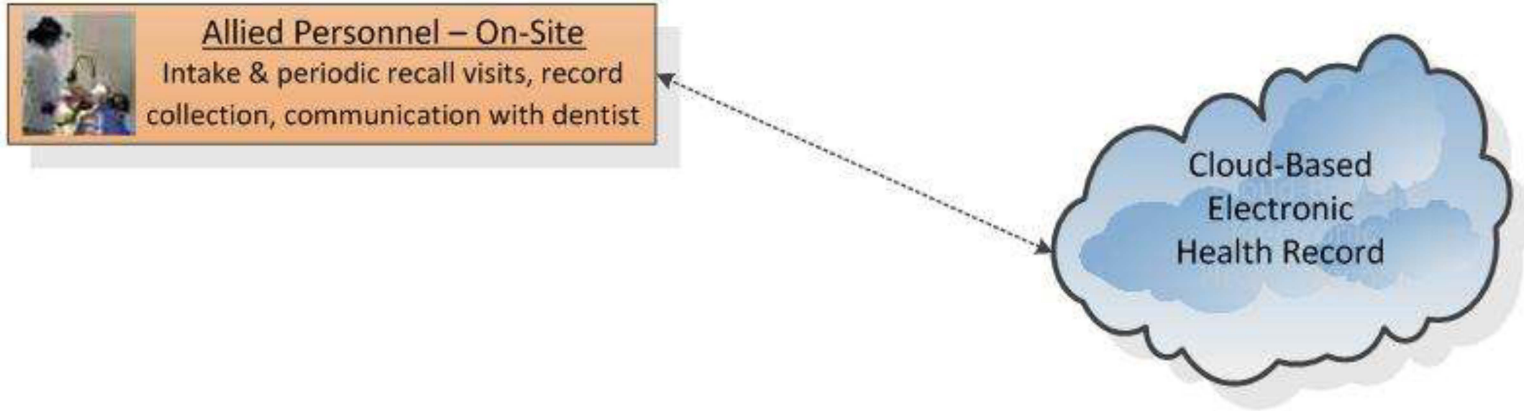
Pre-existing Conditions

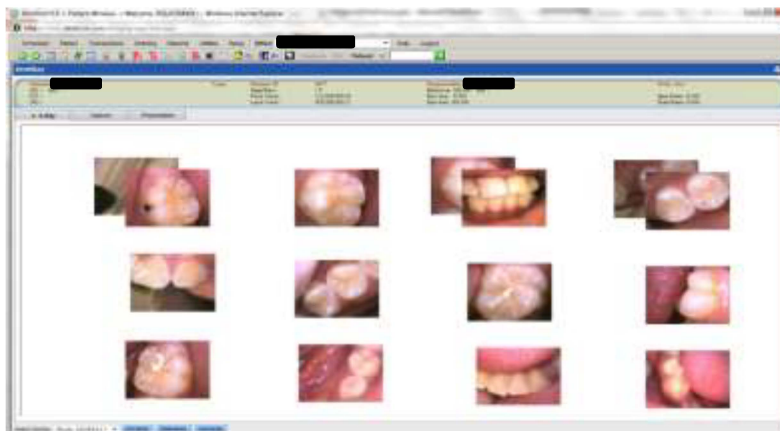
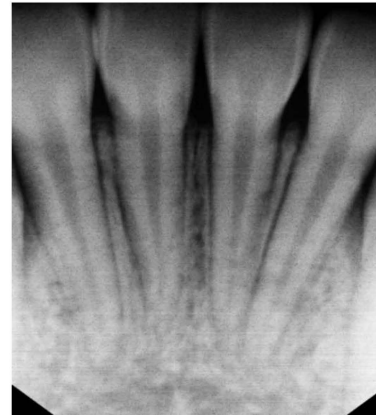
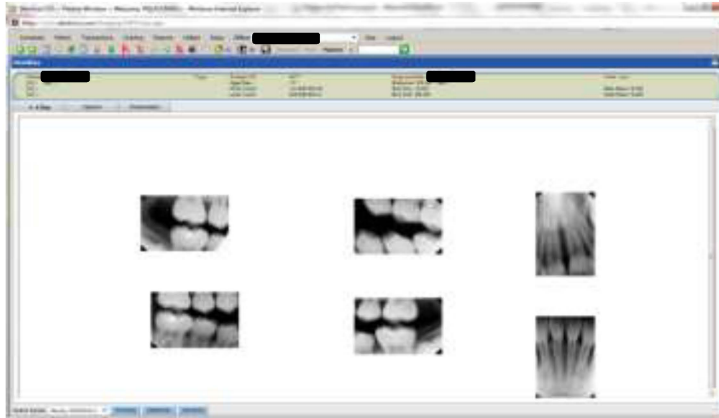
Type	Date	St	Code	Description	Th	Surf	Est. Ins.	Fee	Office
LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	3	M	\$0.00	\$84.00	LA
LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	4	M	\$0.00	\$84.00	LA
LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	5	M	\$0.00	\$84.00	LA
LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	6	M	\$0.00	\$84.00	LA
LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	7	M	\$0.00	\$84.00	LA
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LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	9	M	\$0.00	\$84.00	LA
LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	10	M	\$0.00	\$84.00	LA
LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	11	M	\$0.00	\$84.00	LA
LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	12	M	\$0.00	\$84.00	LA
LEDGER	10/27/2008		D2140	Amalgam One Surface Perm/Prim	13	M	\$0.00	\$84.00	LA
LEDGER	1/12/2009		D2140	Amalgam One Surface Perm/Prim	2	M	\$0.00	\$84.00	LA

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The Virtual Dental Home Concept Model



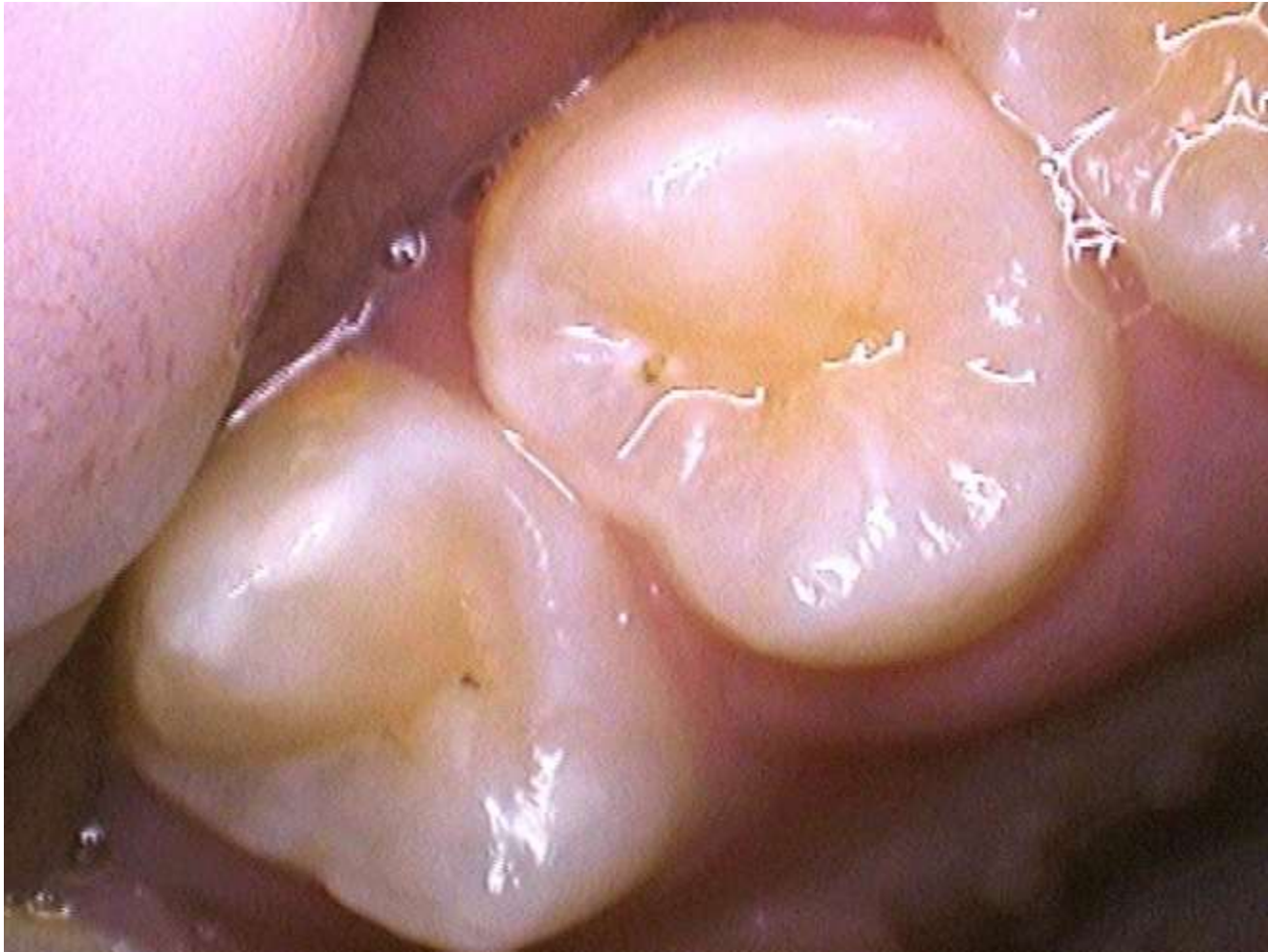


Pacific Center for Special Care at the University of the Pacific Arthur A. Dugoni School of Dentistry

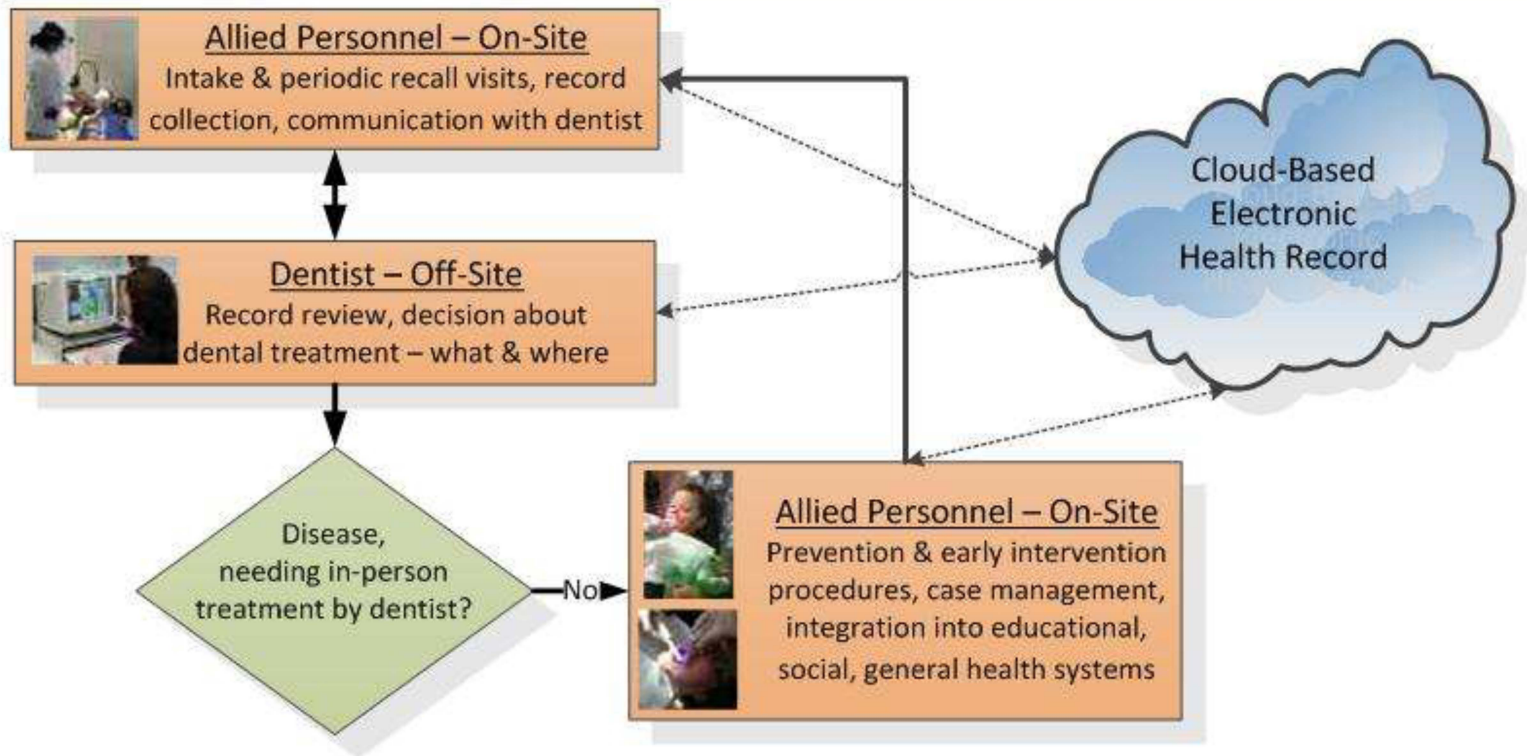
Radiographs



Photographs

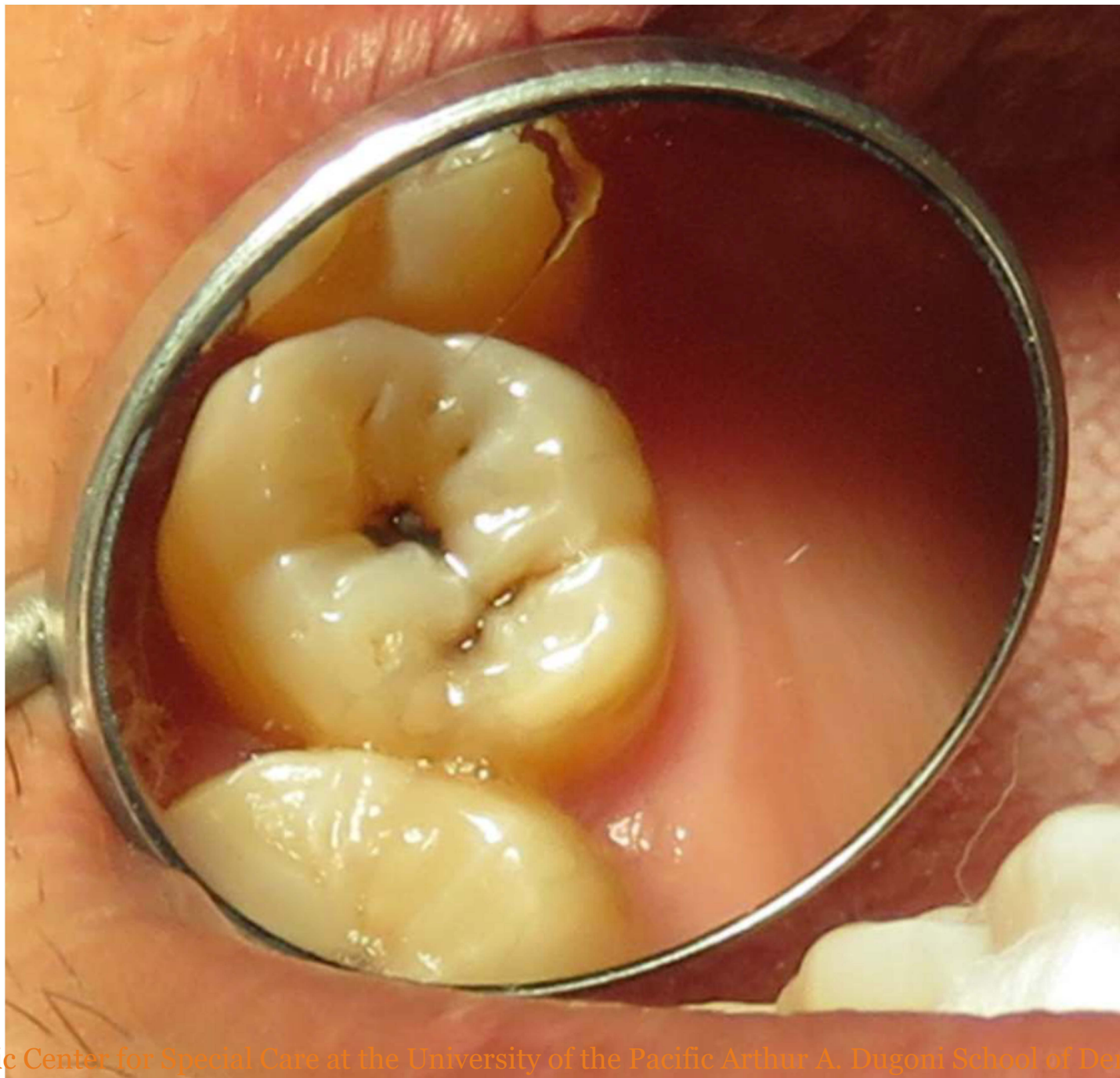


The Virtual Dental Home Concept Model



Community-based Prevention and Early Intervention Procedures



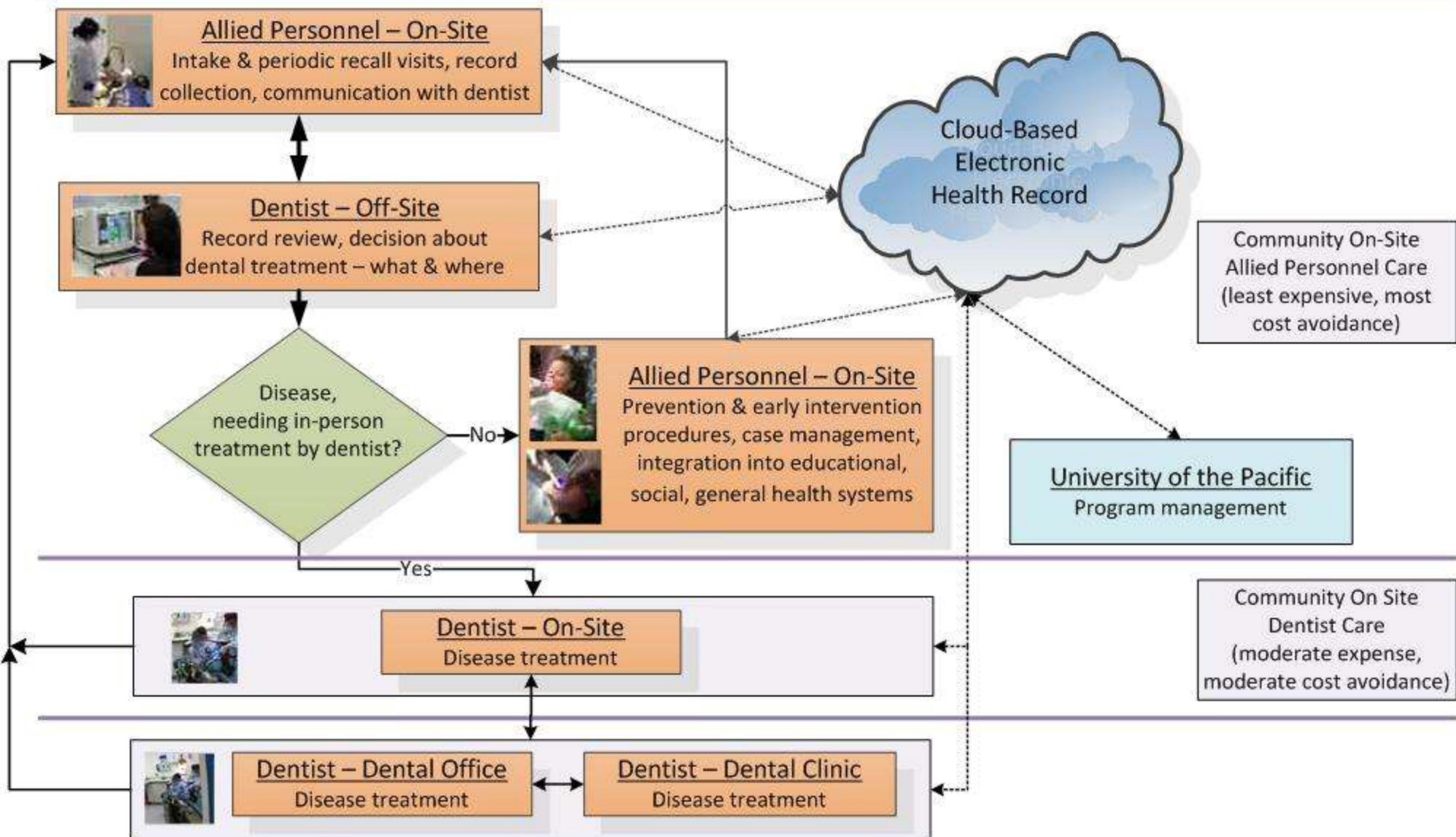




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The Virtual Dental Home Concept Model



The Virtual Dental Home Sites

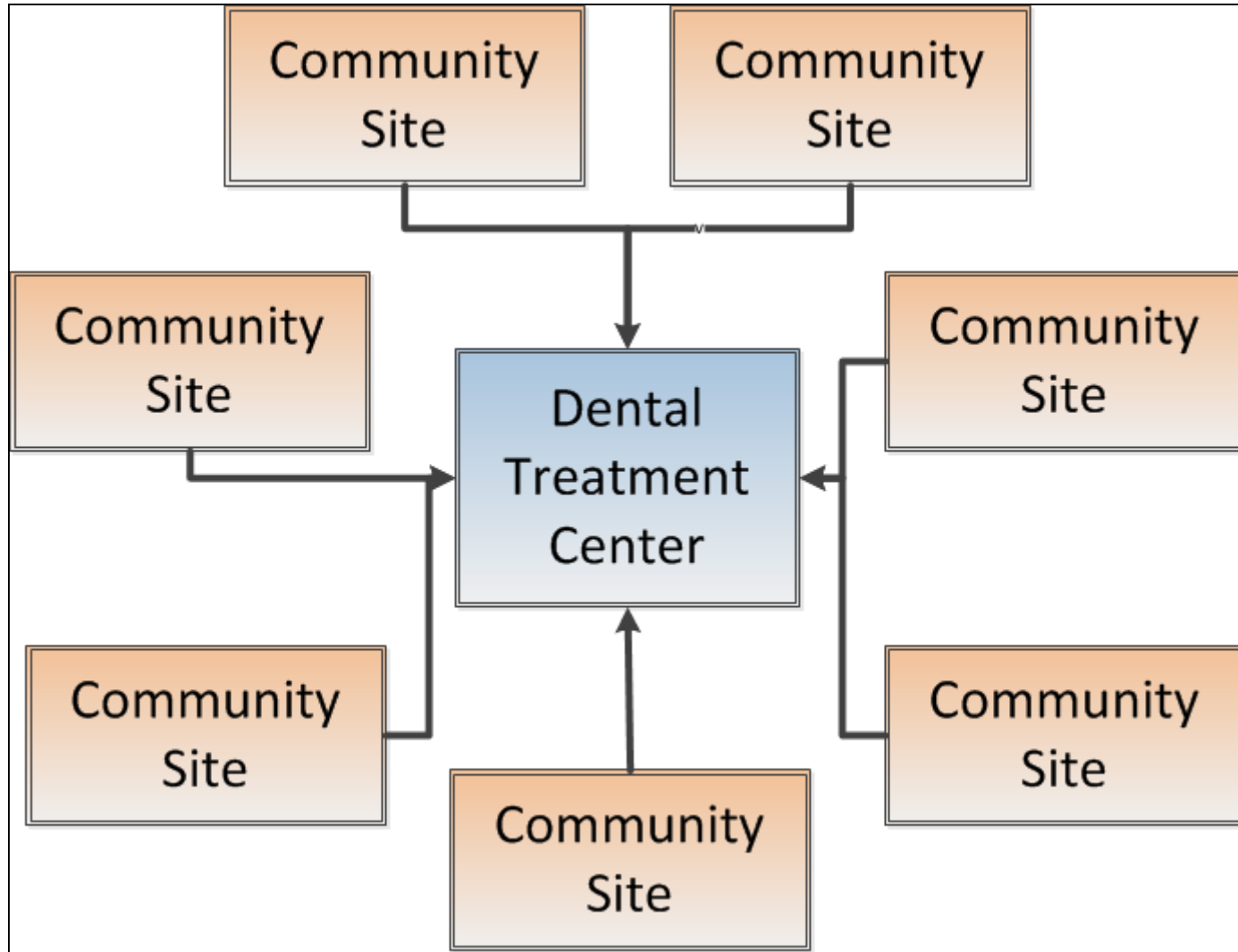


Pacific Center for Special Care at the University of the Pacific Arthur A. Dugoni School of Dentistry

Oral Health Systems for Underserved Populations

Telehealth-Connected Teams

Hub and Spoke System





Health & Science

California To Launch Medicaid-Funded Teledentistry

Pacific Center for Special Care at the University of the Pacific Arthur A. Dugoni School of Dentistry

ADA News

House passes guidelines on teledentistry

December 07, 2015

Washington — It's similar to visiting a bricks and mortar dental office, only the dentist may be on a computer screen instead of in person.

Or the treating dentist could have securely emailed their patient care instructions to a specialist or dental hygienist at a community dental care event. Dentists could also virtually supervise the oral health care of nursing home patients, residents in rural areas or others who don't have access to a dentist in their area.

Teledentistry can take many forms and the ADA now has specific guidelines and expectations for dentists interested in delivering their services virtually.

The ADA House of Delegates passed Resolution 45H-2015, Comprehensive ADA Policy Statement on Teledentistry, in November at ADA 2015 – America's Dental Meeting.

Having ADA policy is certainly critical for the profession to accept and implement teledentistry because the Association can now support dentists to do it, said Dr. Paul Glassman, a consultant to the ADA Council on Access, Prevention and Interprofessional Relations.

Dr. Glassman looks at teledentistry as an expansion of the traditional dental practice, where patients can have a virtual dental home instead of a physical one. It provides easier access to dental care to patients in nursing homes or those who live in rural areas without a dentist.

Dentists can also develop a plan for patients to receive cleanings, fluoride varnishes, sealants and other treatment at a community site from allied dental personnel, under the dentist's virtual supervision.



Testimony based on experience: Dr. Paul Glassman discusses how teledentistry has been implemented in his home state of California. Photos by EZ Event Photography

Virtual Dental Home Timeline

2009

Proof of
Concept

Proof of Concept



Proof of Concept

- Telehealth connected teams work
- Its possible to reach underserved populations and apply proven preventive and early intervention procedures
- Its possible to create a “continuous presence” system that uses principles of “chronic disease management”
- We can create community/clinical linkages to dental clinics and offices
- People want this service

Proof of Concept

Proof of Concept

- Dental Hygienists placement of ITRs
 - Total placed 1039
 - Adverse outcomes 0
- Patients who dentists decided needed referral - Initial
 - Elementary school 33%
 - Head Start 32%
 - Long term care 54%

Proof of Concept

Proof of Concept

- Patients who dentists decided needed referral – 18 mo
 - Head Start 24%**
- Referrals kept
 - Elementary school 59%**
- Total care
 - Elementary school 85%**

** Preliminary data based on special studies, chart reviews

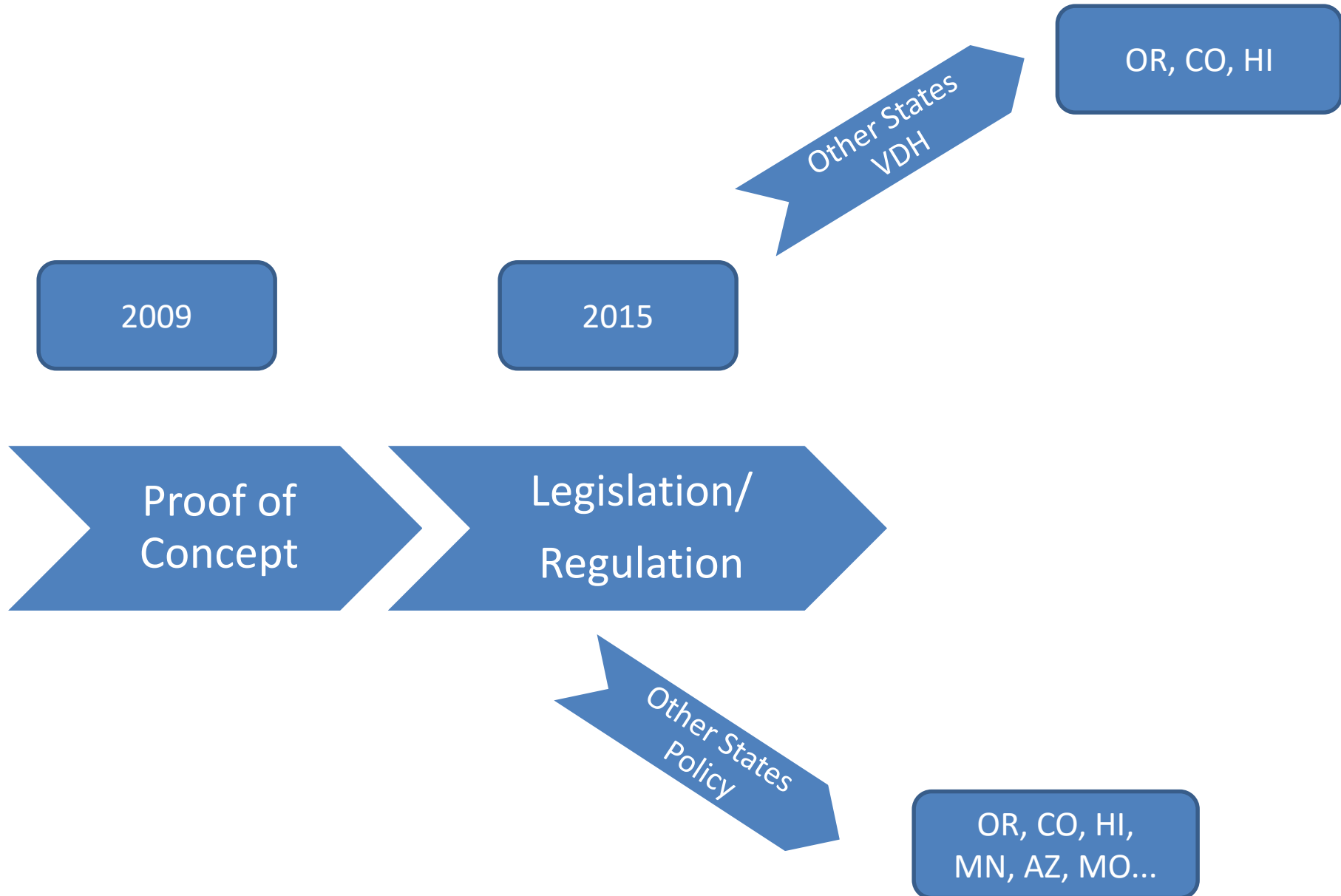
Satisfaction

Dear "Ms. Teeth Caretaker",

What I really like about you is that your treatments are very special. I wonder how you keep track of everything? I've never imagined someone like you being so special. You know, actually, you have been given the right life. I bet you can get your hands on any patient - including me! I bet you receive more than 100 kids in 2 years. It's nice been knowing you (and will always remember you).

THANK YOU,

Virtual Dental Home Timeline



Report of the Virtual Dental Home Demonstration

Executive Summary

Improving the Oral Health of Vulnerable and Underserved Populations
Using Geographically Distributed Telehealth-Connected Teams

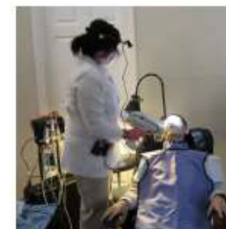
June 14, 2016



Report of the Virtual Dental Home Demonstration

Improving the Oral Health of Vulnerable and Underserved Populations
Using Geographically Distributed Telehealth-Connected Teams

June 14, 2016



UNIVERSITY OF THE
PACIFIC
Arthur A. Dugoni
School of Dentistry
Pacific Center for Special Care

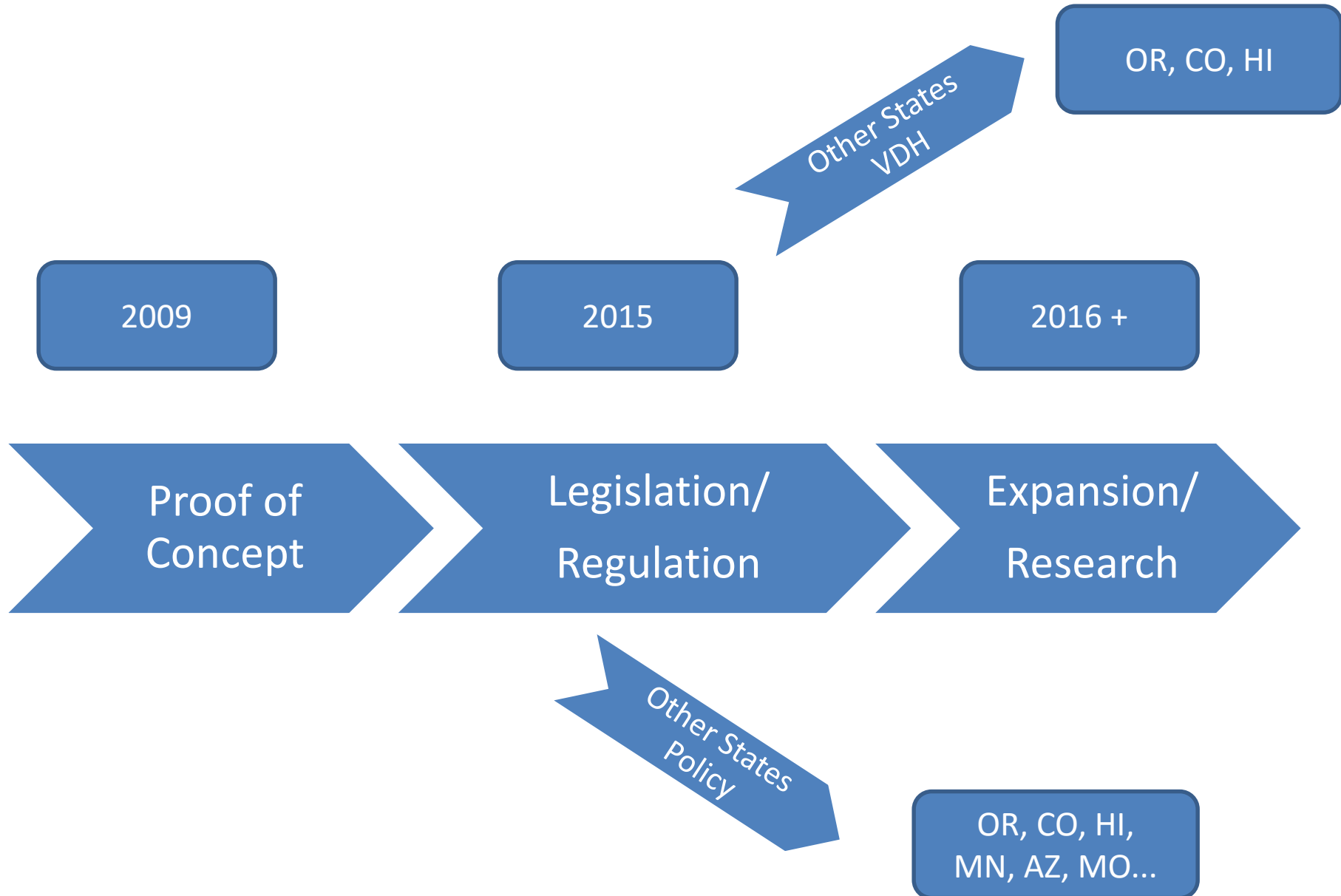
Teledentistry Improving Oral Health Using Telehealth-Connected Teams



Prepared by: Paul Glassman DDS, MA, MBA
University of the Pacific Arthur A. Dugoni School of Dentistry
San Francisco, California

August, 2016

Virtual Dental Home Timeline



Deployment

of

Science of
caries and
chronic disease
management

Community-
based
telehealth
enabled teams

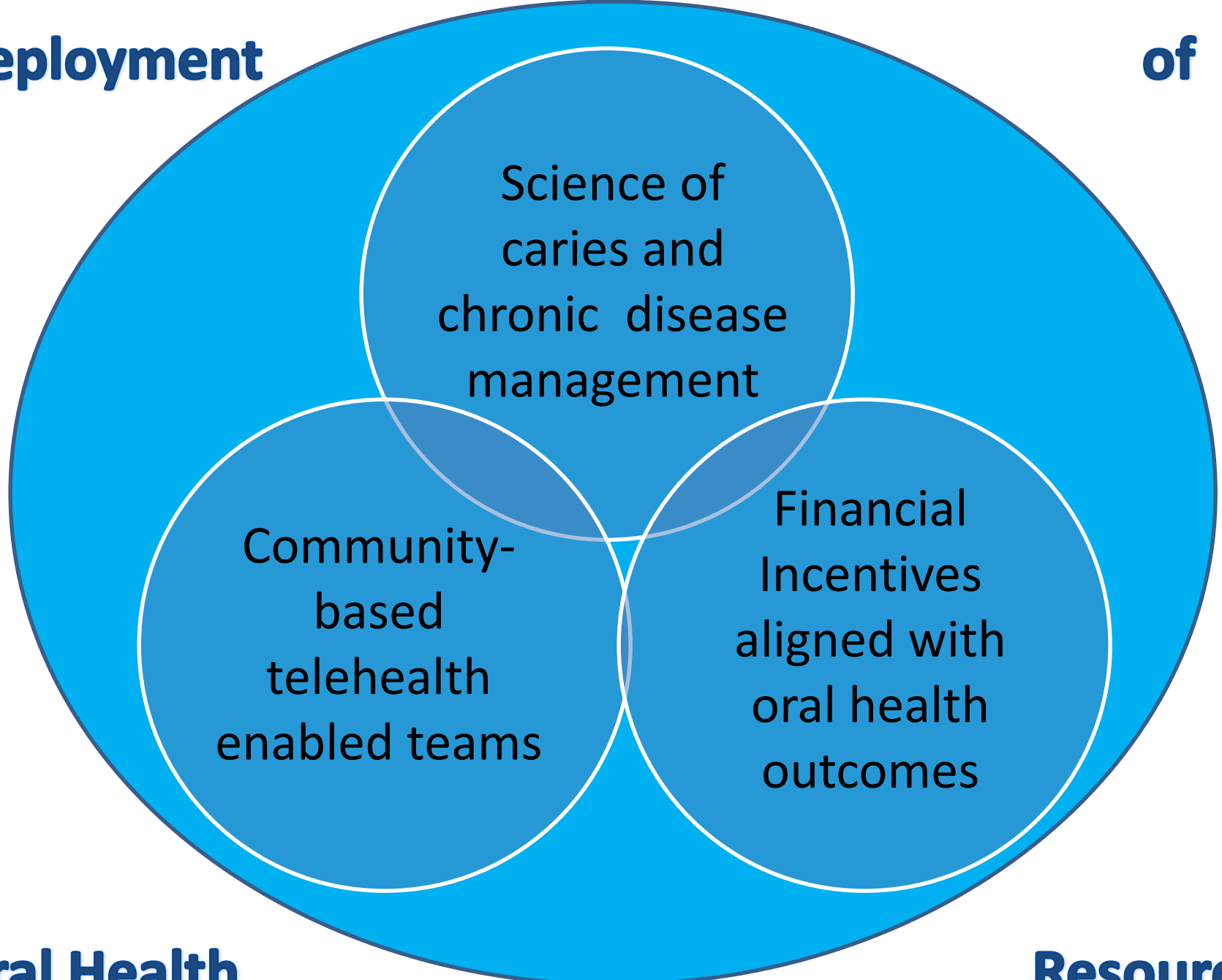
Oral Health

Resources

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Deployment

of

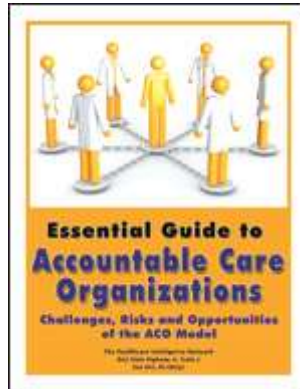
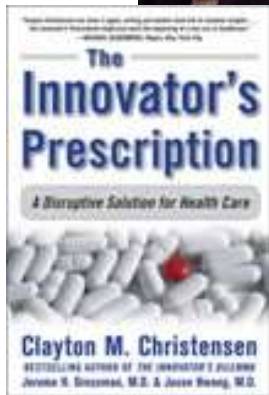


Oral Health

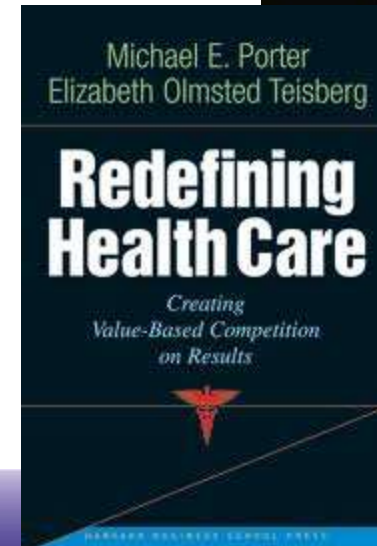
Resources

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The Era of Accountability



$$\text{VALUE} = \frac{\text{QUALITY}}{\text{COST}}$$



The Triple Aim



- improving the experience of care
- improving the health of populations
- reducing per capita costs of health care

The Era of Accountability

The Urban Institute

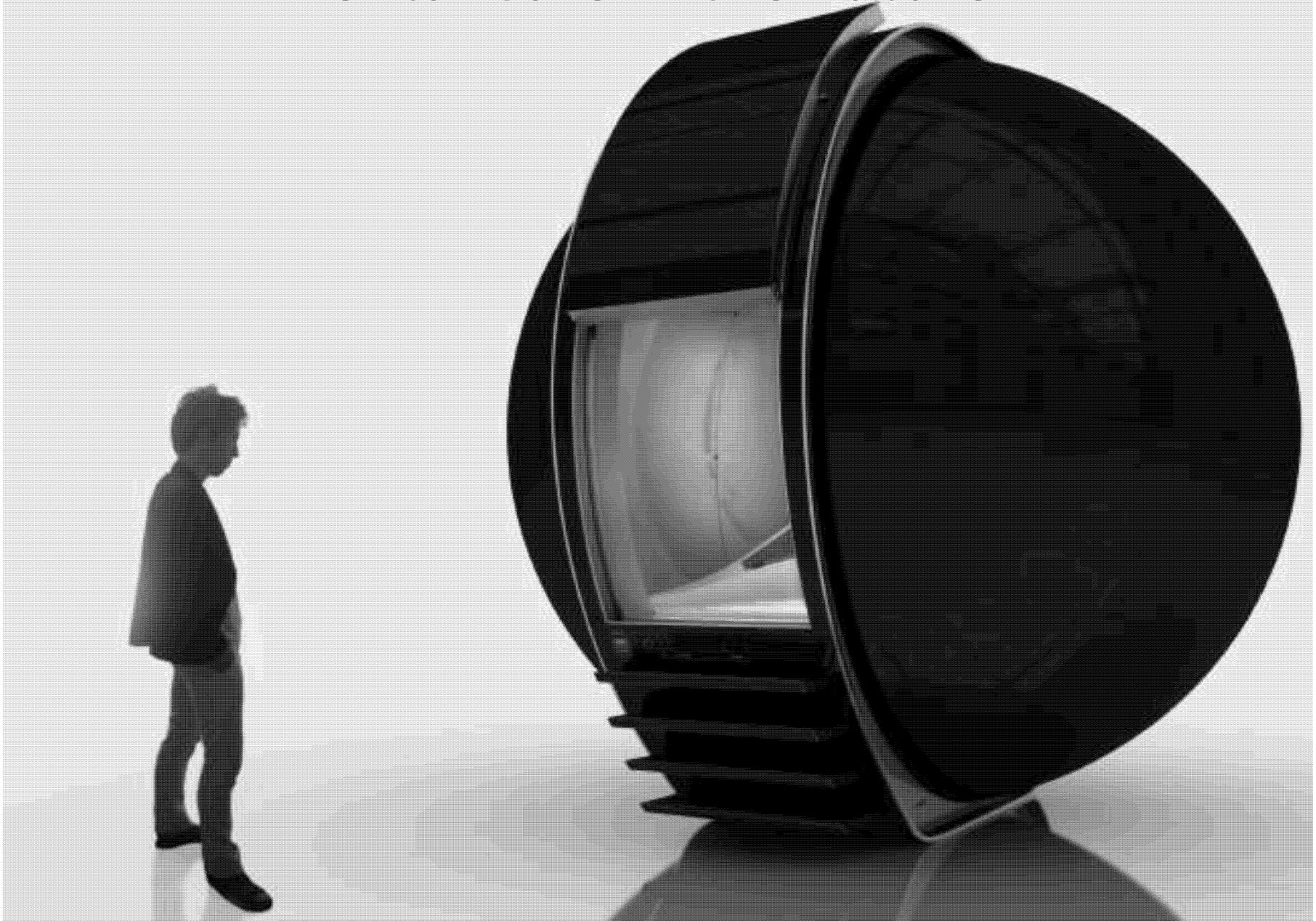
**Moving Payment from Volume to Value:
What Role for Performance Measurement?**

Timely Analysis of Immediate Health Policy Issues

December 2010

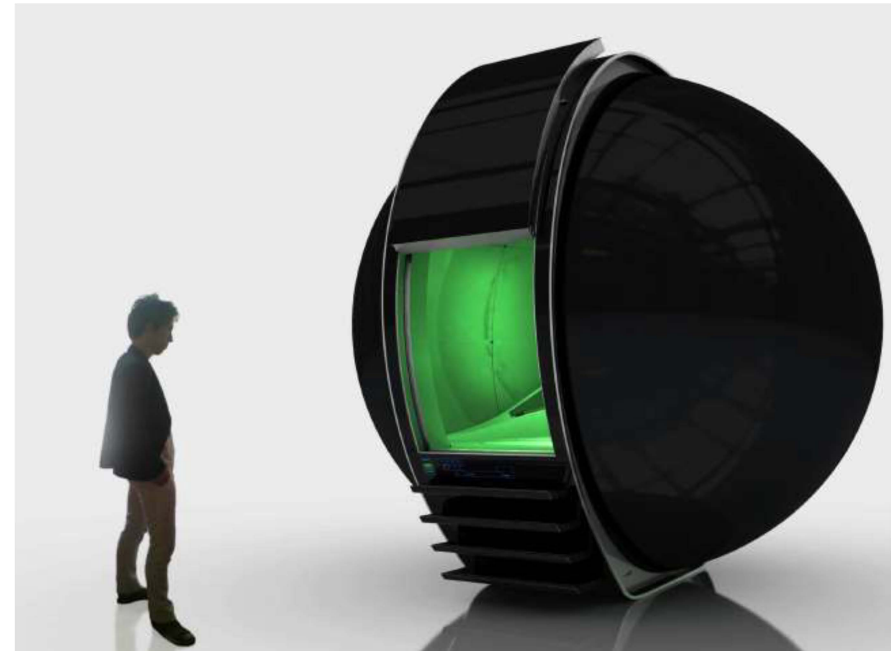
Robert A. Berenson

Dental Care in the Future



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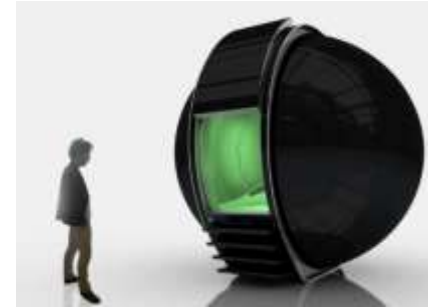
Dental Care in the Future



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Dental Care in the Future

- Dental Practice =
 - Geographically distributed
 - Telehealth enabled
 - Oral health teams
- Chronic disease management
 - using biological, medical, behavioral, and social tools
- Integrated with general health, educational, and social service systems
- Interacting with the majority of the population
- Focused on oral health outcomes in the



Era of Accountability



West Hawaii Virtual Dental Home

- 3 year proof of concept
- Target: low income Head Start children
- Goals:
 - Reach children who would not get care
 - Connect community and clinical sites
 - Build awareness of the value for patients, profession
 - Create background for policy change



Creating Oral Health for Hawaii's Underserved Populations Using Virtual Dental Homes



Paul Glassman DDS, MA, MBA
Professor and Director of Community Oral Health
University of the Pacific School of Dentistry
San Francisco, CA
pglassman@pacific.edu





*West Hawaii
Community Health Center*
Caring for West Hawaii's `ohana since 2005

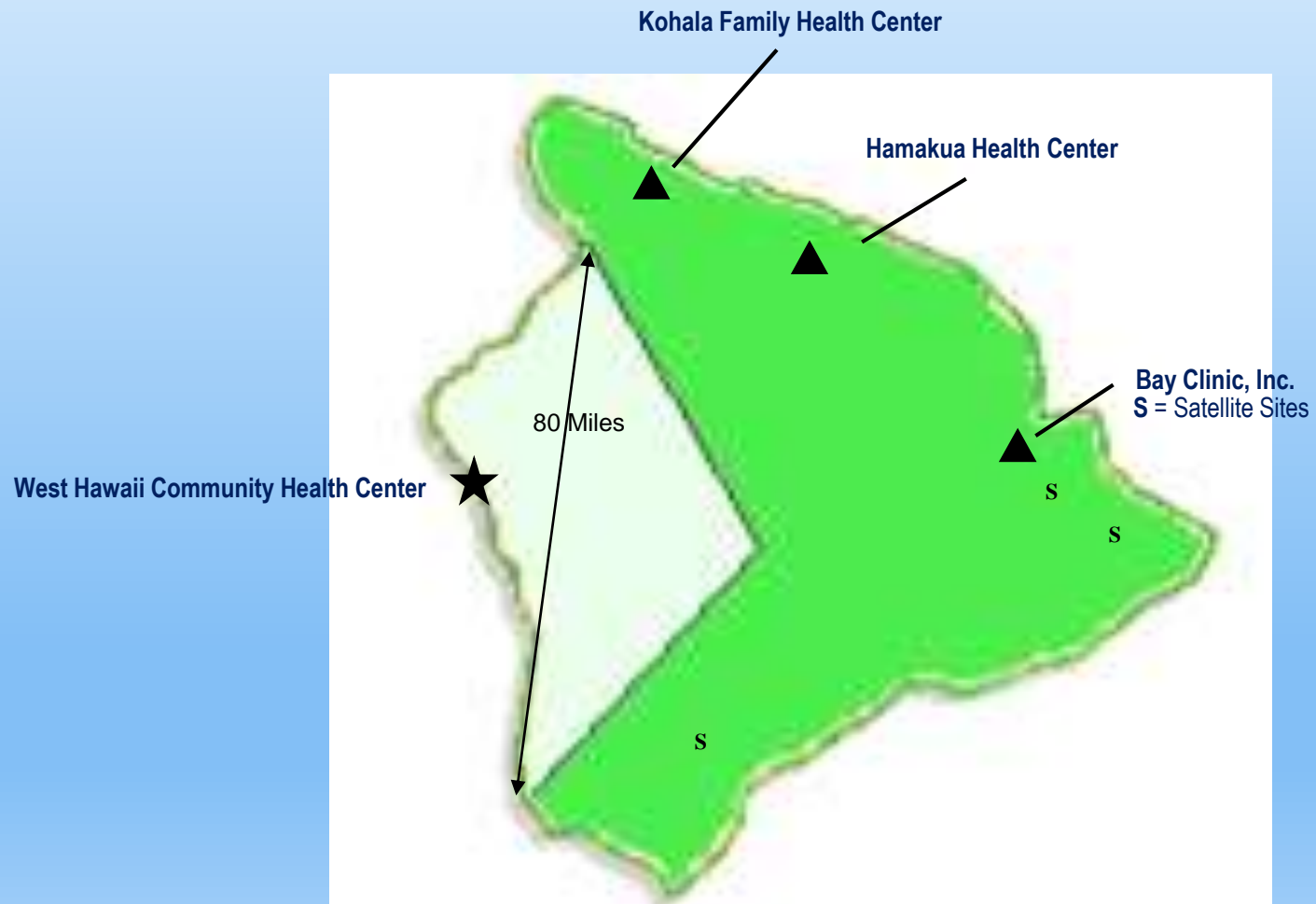
Donna Altshul, RDH, BS
Dental Program Director



*West Hawaii
Community
Health Center*



Federally Qualified Health Center's on the Big Island Circle of Care



Access to Care for Keiki on the West Side of Hawaii



Keiki and Hapai Annual Dental Screenings

Office of Social Ministry Dental Van



Collaboration & Community Partners

- Office of Family Services
- Head Start, Early Head Start
- Perinatal Consortium
- Office of Social Ministry
- Community Case Management Corporation
- West Hawaii Dental Hygienist Association
- WIC
- County Council Representatives
- Hawaii Island Oral Health Coalition
- Hawaii Department of Health
- March of Dimes



WHCHC Keiki Health Center











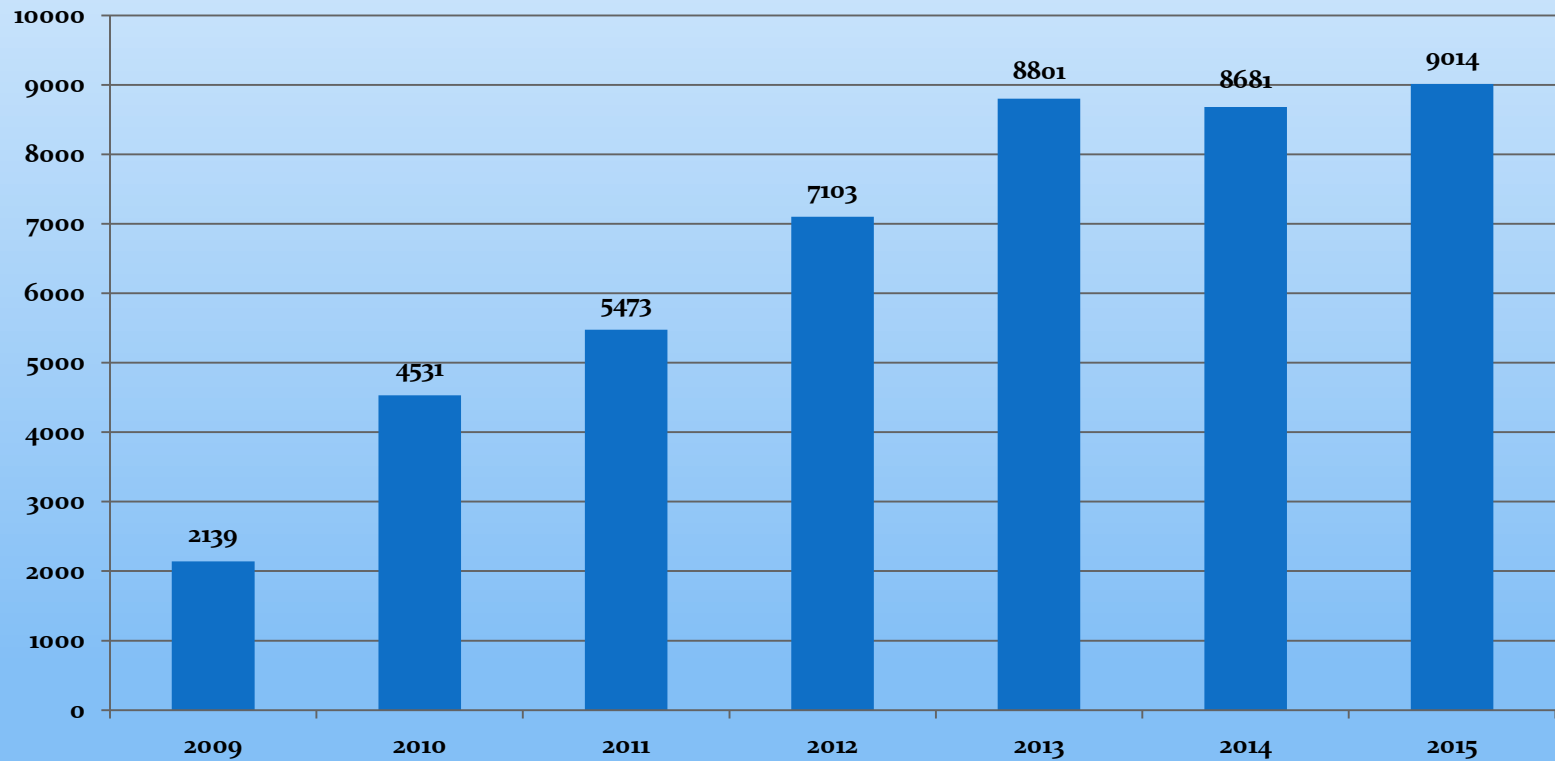








Keiki Encounters (Kealakekua & Kealakehe) Over time



Hawai'i Virtual Dental Home Team





Kealakekua WIC





09/28/2016 08:25



10/18/2016 10:40

Keauhou Head Start



New Sites Planned 2016

- Head Start Sites:
 - Kealakehe
 - Waimea
- Tutu and Me Traveling Preschools
 - Kealakehe
 - Kona