CareQuest Institute for Oral Health®

WHITE PAPER

Advantage Dental's Approach

A model for better health, better access and better value

SUGGESTED CITATION:
CareQuest Institute for Oral Health. *Advantage Dental's Approach: A model for better health, better access and better value.* Boston, MA; December 2018.

Executive Summary

Advantage Dental is the largest dental accountable care organization in the State of Oregon. It delivers services to approximately 284,000 members of the Oregon Health Plan, the state's Medicaid program, and contracts with all 16 of the state's coordinated care organizations.

Advantage operates 42 clinics and has over 300 contracted OregonHealth Plan dental providers strategically located throughout Oregon. In October 2016, Advantage entered into a partnership with DentaQuest, the leading U.S. oral health company and the largest in the Medicaid space, to achieve their shared mission of improving the oral health of all.

Advantage Dental has developed a model that offers a unique approach to oral health care, emphasizing prevention over surgery, care in the community, and population health management. The purpose of this white paper is to examine key elements of the Advantage Dental model and to share insights that help explain their success in achieving better oral health, better access to care, and better value for every dollar spent.

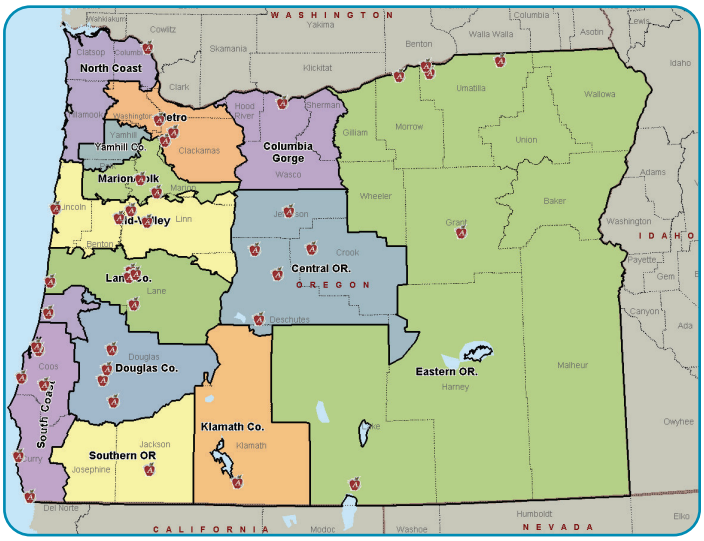
Advantage Dental has developed a model that offers a unique approach to oral health care, emphasizing prevention over surgery, care in the community, and population health management.

Key Findings:

- **Care plans are based on patients' risk profiles.** In 2015, 20% of children enrolled with Advantage Dental had a caries risk assessment, compared to 0.1% of children in a national Medicaid sample.
- **Interventions for better oral health begin before Advantage Dental members are born.** The number of pregnant women receiving oral health care and Xylitol increased 98% since 2011.
- **More children receive preventive care** — 85% of services provided to children by Advantage Dental were a preventive or diagnostic (Type 1) service, compared to 77% of a national Medicaid sample, in 2015.
- **Increase in sealant placements** — 29% of 6-9 year olds and 31% of 10-14 year olds received them by 2016.
- **With chronic disease management,** the Advantage model has **reduced the need for restorative and surgical services** for children each year, dropping from 21% in 2011 to 15% in 2016, both lower than the national Medicaid sample, which stays the same over those years at 21%.
- The Advantage model **improves access to care** through the use of 15 expanded practice dental hygienists (EPDHs), who provide dental services in the community. By 2016, community-based EPDHs performed 10% of all services for children ages 20 and under.
- The Advantage Model extends the disease management approach to care **throughout the patient's lifespan**. Between 2011 and 2016, more than 60% of services received by adults were preventive or diagnostic, resulting in lower needs and rates of restorations for Advantage's adult population.
- **Investments in technology minimize waste** in health care spending by reducing inefficiently delivered services. Advantage's leadership and its continued investment in health information technology helps patients avoid costly emergency department visits for dental conditions.
- **Elevating cultural competency improves the patient care experience.** Based on the Bridges Out of Poverty community support program, the Advantage model includes a cultural competency training and development program for all employees and providers.
- **This preventive care model reduces costs over time for children and adults.** In 2015, Advantage Dental spent $101,132 to treat 1,000 children, 17% less than the national Medicaid sample. In the same year, it is estimated that treating 1,000 adults cost Advantage Dental $111,206, 21% less than the national Medicaid sample.
- **The Advantage model of care accomplishes the Triple Aim:** better access and patient experiences, and better outcomes at a lower cost.

The History and Promise of Advantage Dental Model

Advantage Dental (Advantage) was founded in 1994 by a group of dentists concerned about the rising cost and lack of access to dental care in rural Oregon. In parallel, the health care landscape changed, moving away from the traditional fee-for-service (FFS) model to an accountable care organization (ACO) model that focuses on prevention and quality rather than volume (Yorkery, 2017). Today, after exponential national growth, the ACO model covers more than 18 million Americans — many enrolled in Medicaid. However, most ACOs do not include dental care due to challenges in billing technology integration, the nature of care delivery and utilization, and lack of consensus on the importance of oral health (Fraze, Colla, Harris, & Vujicic, 2015; Meyer & Tolleson-Rinehart, 2016; Partners, 2015; Vujicic & Nasseh, 2013).



In 2012, Oregon pioneered a unique type of ACO called coordinated care organizations (CCOs) with the goal of integrating physical, dental, and mental health services to focus on disease prevention and keeping people healthy (Stecker 2013). Oregon was an early adopter of the integration of dental care within an ACO model for all state Medicaid and Children's Health Insurance Programs (CHIP) (Fraze et al., 2015). Oregon also is one of only 15 states offering extensive dental benefits for adult Medicaid enrollees (Hinton & Paradise, 2016).

Recent evaluations of Oregon's CCO model have shown substantially reduced health care costs, in part attributed to reductions in the number and length of inpatient hospital stays (McConnell et al., 2017). State quality outcomes demonstrate continued improvements on a variety of measures, including dental sealants; however, they also highlight challenges related to geographic access, the provision of dental services to adults, and the provision of preventive dental services overall (Oregon Health Authority, 2017a; Oregon Health Authority, 2017b).

The Advantage model is unique, even within Oregon's CCO structure, for its strong emphasis on broadening access to preventive care. Alignment is between payment and outcomes, incentivizing dental providers to provide preventive care and manage dental problems before they escalate. This also enables Advantage to invest in community engagement. The result from this shift is a model that increases access to care for many Oregonians.Advantage patients are primarily insured by Medicaid or CHIP and therefore have relatively low incomes and are in poorer overall and oral health (Baicker et al., 2013). Throughout this white paper, dental services received by Advantage patients from 2011 to 2016 are compared to those received by a national sample of Medicaid patients (2013 to 2015). Detailed methodology is presented in the Appendix.

Advantage patients are primarily insured by Medicaid or CHIP and therefore have relatively low incomes and are in poorer overall and oral health.

Taking Care of Oral Health Before Birth

The Advantage model integrates dental careinto the lives of pregnant women so that women and their children are set up for optimal health. Three low-cost, high-value interventions have been particularly effective:

- Dental home assignments for pregnant women,
- The PREDICT partnership with University of Washington, and
- Xylitol to reduce transmission of bacteria from mother to child.

As part of its community involvement efforts, Advantage assigns a dental home — a primary care dentist responsible for all aspects of an assigned members' oral health — to pregnant women enrolled in the federal Women with Infants and Children (WIC) program. Continuing assessments of the program found that those women were more likely to receive dental care than pregnant women not assigned (Milgrom et al., 2008). Moreover, their children were more likely to be caries free by age 2 than children whose mothers were not assigned a dental home (Milgrom, Sutherland, Shirtcliff, Ludwig, & Smolen, 2010).

Through a strategic collaboration, Advantage partnered with the University of Washington on PREDICT (Population-Centered Risk- and Evidence-Based Dental Interprofessional Care Team), which is designed to improve the dental health of low-income pregnant women, mothers and children in Oregon. PREDICT is testing the effectiveness of new delivery and payment systems to reduce dental caries in children (Cunha-Cruz et al., 2015).

Focusing on mothers' education about the infectious nature of caries, the Advantage model implemented a program in 2011 to provide xylitol chewing gum for pregnant women. Consumption of xylitol in sufficient quantities is proven to reduce mutans streptococci, the bacteria that most commonly causes human tooth decay, in saliva and plaque (Lin et al., 2016). Use by pregnant women is shown to reduce transmission from mother to child up to age 6 (Köhler & Andréen, 1994; Köhler, Andréen, & Jonsson, 1984; Lin et al., 2016; Söderling, Isokangas, Pienihäkkinen, Tenovuo, & Alanen, 2001). Since the program's inception, the number of women prescribed xylitol grew from 5 in 2011 to 306 in 2016, an increase of 98%.

Preventing Early Childhood Caries

Early childhood caries (ECC) is one of the most prevalent chronic childhood conditions (Dye, Thornton-Evans, Li, & Iafolla, 2015; Schwendicke et al., 2015). Historically, less attention has been paid to preventing ECC and significant emphasis has been given to costly restorative and surgical interventions. This traditional approach to the treatment instead of the prevention of caries is sometimes referred to as the "drill and fill" paradigm. Advantage recognizes ECC is an infectious and almost entirely preventable disease (Ng, et al., 2014), and the model's aligned provider incentives and community outreach and engagement has enabled a shift away from "drill and fill." Focusing on prevention means less advanced disease, reduced pain, and fewer complications for patients. It also means lower costsfor the health care system.

ECC prevention begins with a risk assessment so providers can create individually tailored risk-based recare visit and prevention plans (Chaffee, Featherstone, Gansky, Cheng, & Zhan, 2016; Kanellis, 2001; Ng & Chase, 2013). In 2015, 20% of children enrolled with Advantage had a caries risk assessment, compared to only 0.1% of children in the national Medicaid sample.

The model's focus on prevention and overall better oral health is clear when comparing the distribution of services provided to Advantage patients with the distribution provided to a national sample of Medicaid-enrolled children. In 2015, 85% of services provided to Advantage children were preventive or diagnostic (Type 1, i.e., routine exams and cleaning, bitewing x-rays, or fluoride varnish). By comparison, only 77% of services provided to children in the national sample were preventive (Figure 1).

Sustaining prevention models of care is a challenge due to Medicaid expansion and increased demand by new enrollees, many of whom have not previously had access to care.

In 2015, 20% of children enrolled with Advantage had a caries risk assessment, compared to only 0.1% of children in the national Medicaid sample.

Figure 1: Percentage of Preventive and Diagnostic Dental Services among Children (Ages 20 and Under)

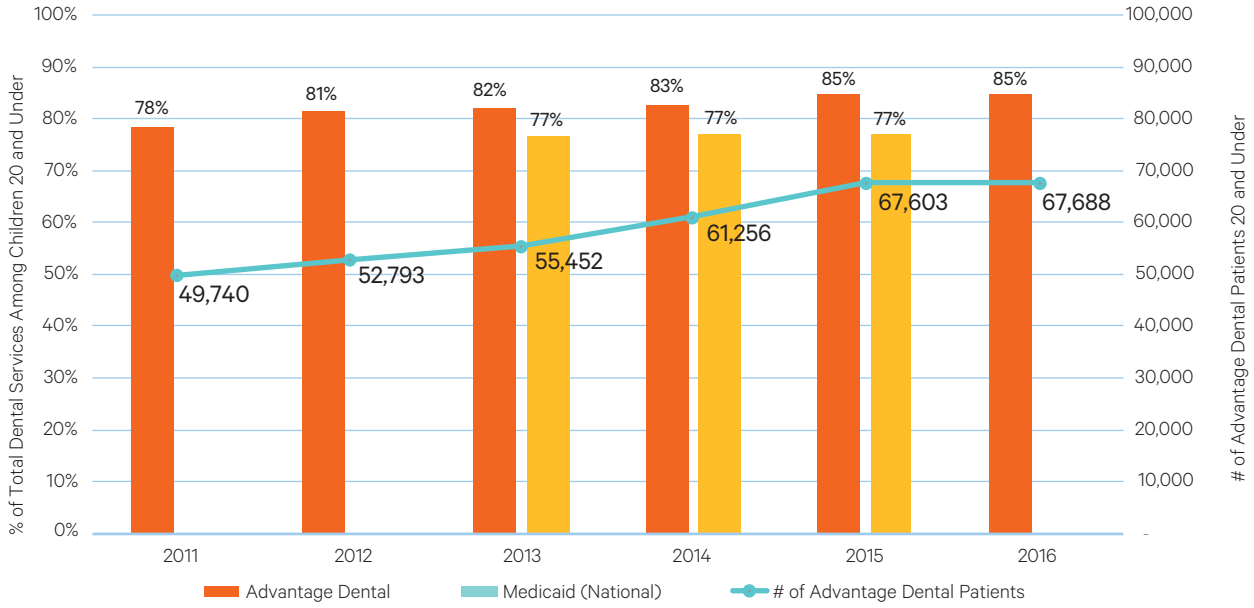
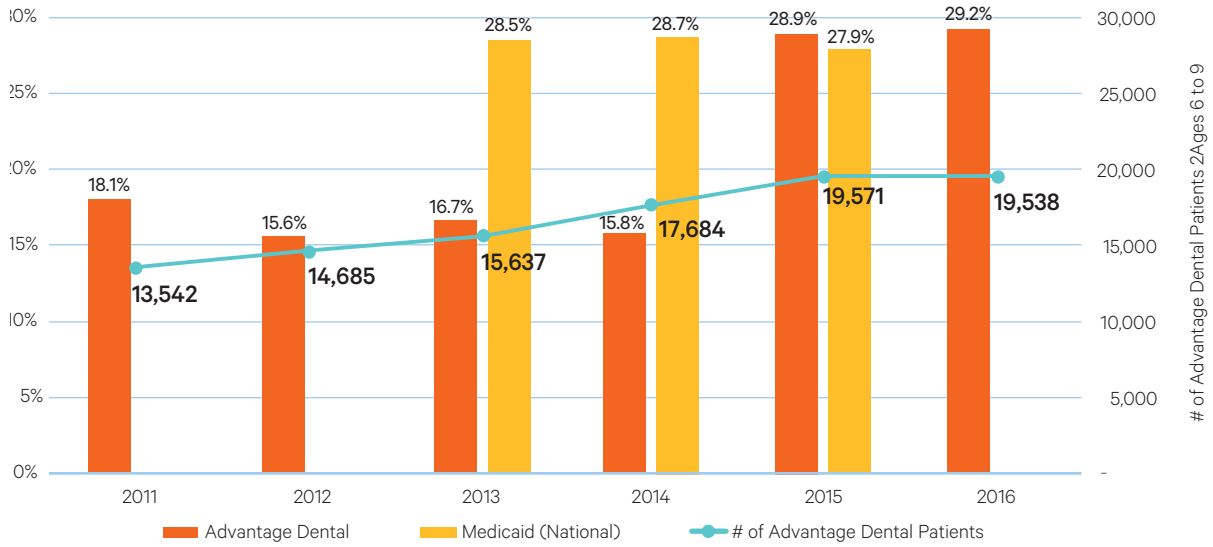


Figure 2: Percentage of Children Ages 6 to 9 Recieving Sealants



Especially notable is that following Medicaid expansion, Advantage Dental gained more patients but still increased the amount of preventive care delivered year over year. In fact, the number of children ages 20 and under who joined Advantage increased from 49,740 to 67,688. Advantage's population health-focused model absorbs new patients and maintains the same quality of care. By comparison, rates of preventive care for the national sample of Medicaid children held constant from one year to the next.

The Advantage model translates and implements the best available clinical evidence to guide their prevention focus. The use of pit-and-fissure sealants as a barrier against caries-causing bacteria is widespread and is a recommended clinical practice by the American Dental Association (ADA) and the American Academy of Pediatric Dentistry (AAPD) (Rethman et al., 2011; Wright et al., 2016).

The Advantage model translates and implements the best available clinical evidence to guide their prevention focus.

Prior to 2015, Advantage lagged significantly behind the national Medicaid sealant rate. In 2014, 16% of Advantage patient's ages 6 to 9 received at least one dental sealant, compared to 29% in the national Medicaid sample (Figure 2). But changes in reimbursement policy can significantly impact implementation (Oregon Health Authority, 2017b; McConnell, 2016). The State of Oregon's implementation of incentives for the application of sealants in 2015, together with the Advantage models' alignment of payment and quality outcomes, resulted in a significant increase in the percentage of patients receiving sealants — 29% of 6 to 9 year olds in 2015 — surpassing the national Medicaid sample. This improvement was achieved in the context of a 10% increase in patients in the same age group between 2014 and 2015.

In addition to sealants, Advantage has pioneered use of silver diamine fluoride (SDF) to arrest further development of caries. Existing clinical trials, including one with preschool children enrolled in Advantage, show that SDF is effective at arresting caries in both children and adults, is minimally invasive, and has little toxicity or fluorosis risk (Chu, Lo, & Lin, 2002; Fung, Duangthip, Wong, Lo, & Chu, 2016; Llodra et al., 2005; Mei et al., 2013; Milgrom et al., 2017; Yee et al., 2009). In 2016, the ADA introduced a dental procedure code for the

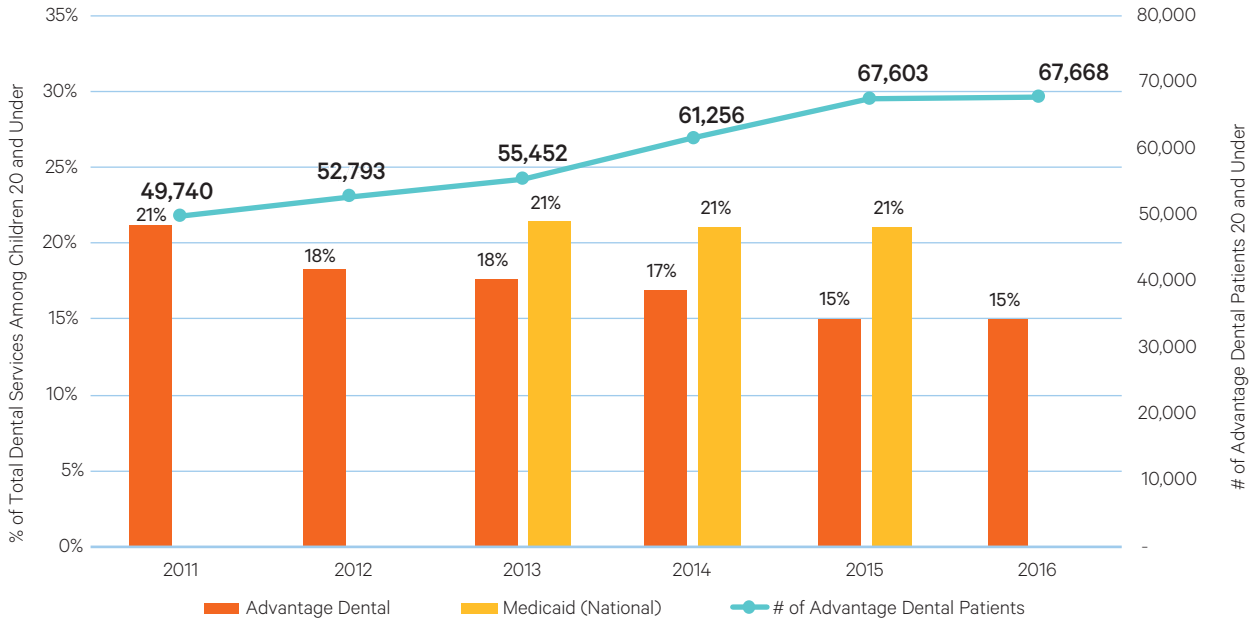
use of caries-arresting treatments that enabled standardized reporting for payment (CDT code D1354: Interim caries arresting medicament application). The code documents "conservative treatment of an active, non-symptomatic carious lesion by topical application of a caries arresting or inhibiting medicament and without mechanical removal of sound tooth structure." That year, 11% of all Advantage patients under age 21 were treated with SDF.

When prevention fails and disease develops, restorative services (Type 2, i.e., fillings, extractions, treatment of periodontal disease) are used to reflect the level of surgical care provided. Even with the large increase in child enrollees, Advantage performed fewer restorative services each year, dropping from 21% in 2011 to 15% in 2016, while Medicaid remained at 21% across the same years (Figure 3). The lack of change in the national sample is largely because access to care and provider participation remain challenges in the Medicaid space (Chalmers & Compton, 2017; Nasseh & Vujicic, 2015).

When there is an alignment between payment and quality of care, it is possible for Medicaid providers to increase the focus on prevention and move away from high frequency of restorative care.

When there is an alignment between payment and quality of care, it is possible for Medicaid providers to increase the focus on prevention.

Figure 3: Percentage of Restorative Dentistry Services among Children (Ages 20 and Under)



Dental Care in the Community

Since inception, the Advantage model has emphasized community involvement, providing care where it is needed most and reaching as many patients as possible. Its approach is built on the knowledge that visiting the dentist is not easy, especially for those who live in poor or rural areas. There is a paucity of dental providers in rural areas of Oregon and dental care is difficult to access with limited transportation (Oregon Health Authority, 2017a). Outreach efforts, like school-based dental programs, have been shown to improve oral health (Himida & Promise, 2017; Muller-Bolla, Pierre, Lupi-Pegurier, & Velly, 2016).

Its approach is built on the knowledge that visiting the dentist is not easy, especially for those who live in poor or rural areas.

Advantage employs 15 expanded practice dental hygienists (EPDHs), who provide community outreach services to organizations throughout the state in locations like schools and Early Head Start and Head Start programs, and for WIC enrollees. Under this model, EPDHs provide onsite dental services, including education, screenings, fluoride varnish, sealants, and referrals to a dental home (Bell & Coplen, 2015).

The number of services performed by an EPDH has increased dramatically over time. In 2012, only 1,317 services were provided to 1,042 children ages 20 and under; by 2016, that number had increased to 53,773 services provided to 11,160 patients. For Advantage, this accounts for 10% of all Type 1 services provided and 16% of all patients ages 20 and under.

Philanthropy, Innovation, and Advocacy

The Advantage model promotes the adoption of innovative practices to provide quality preventive dental care at lower cost. The company actively collaborates on a variety of research projects with these goals in mind. For example, the PREDICT partnership, if effective, is expected to substantially reduce disparities in dental care and oral health for low-income mothers and their children (Cunha-Cruz et al., 2015). Once Advantage has established a best practice, it advocates for implementation of that initiative to benefit patients in other practices.

Advantage has initiated philanthropic efforts to help patients most in need. Medicaid and CHIP only cover orthodontic care when a severe alignment problem threatens a child's health. So Advantage Dental's Advantage Smiles for Kids (ASK) program includes orthodontic care for at-risk youth beyond that which is covered by the state. This oral health program not only helps prevent tooth decay, gum disease, bone destruction, jaw problems, and tooth loss, but it also helps improve teens' overall health and self-esteem.

In addition, the Advantage model offers tobacco cessation counseling, caries prevention programs for high-risk patients, and specific protocols and educational services for pregnant women that emphasize the importance of dental care during pregnancy. All of this makes the Advantage model effective.

An Effective and Efficient Model for Adult Patients

The Advantage model's emphasis on prevention of dental disease and managing population health extends to its adult Medicaid enrollees. Between 2011 and 2016, more than 60% of the services Advantage adults received were preventive or diagnostic (Figure 4). By comparison, 53-54% of adults in the national Medicaid sample received a preventive or diagnostic dental service. Adult enrollment in Advantage increased by over 50%, from 25,447 to 52,572 between 2013 and 2014, and an additional 16% enrolled between 2014 and 2015. This increase is due to a combination of Medicaid expansion in Oregon and the enacted provision of comprehensive dental benefits for adult Medicaid enrollees in the state (Hinton & Paradise, 2016).

Growth in the proportion of patients receiving preventive and diagnostic care even in the face of such a colossal member uptick is profound evidence of the efficacy of the Advantage model. Advantage adults are less likely to need restorative dental services than the national Medicaid sample, with 36% of the restorative services provided to Advantage adults in 2015, compared to 44% in the national Medicaid sample (Figure 5).

Growth in the proportion of patients receiving preventive and diagnostic care even in the face of such a colossal member uptick is profound evidence of the efficacy of the Advantage model.

Figure 4: Percentage of Preventive and Diagnostic Dental Services among Adults (Ages 21 and Over)

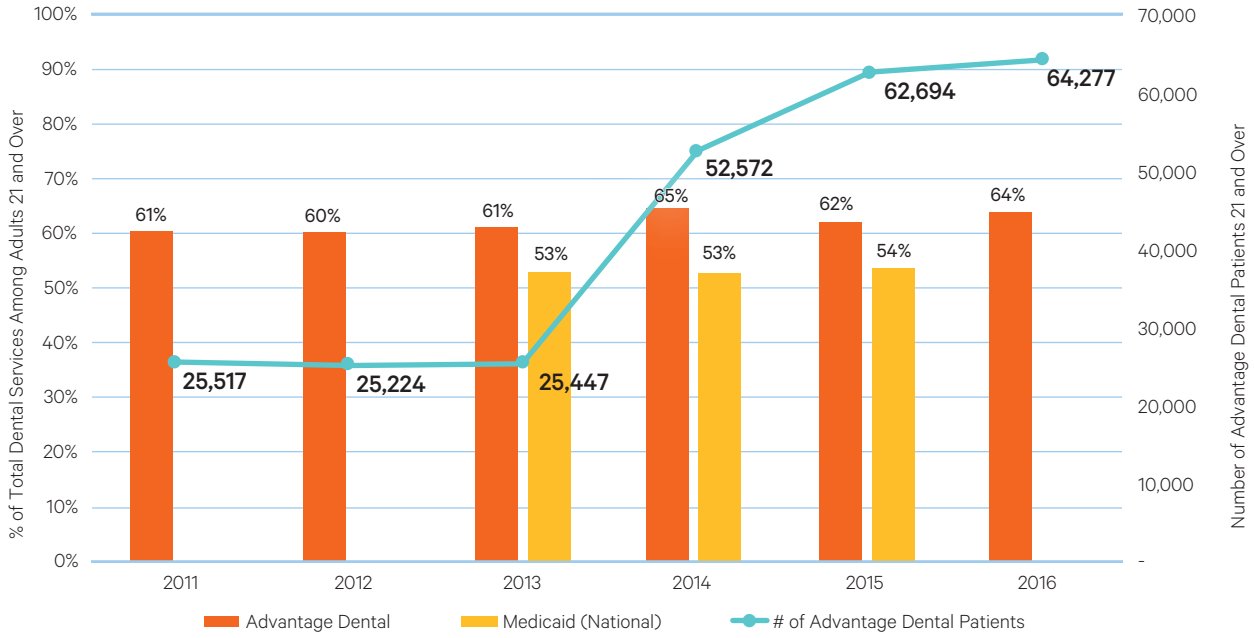
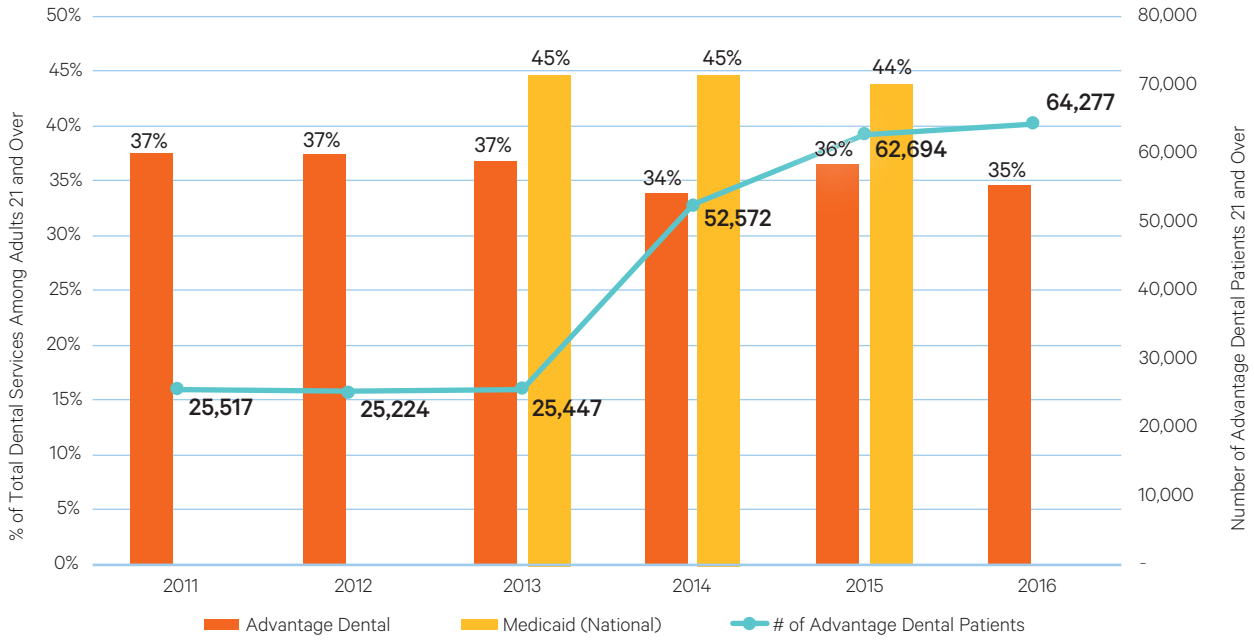


Figure 5: Percentage of Restorative Dentistry Services Among Adults (Ages 21 and Over)



When oral health needs go unmet, many adults seek care for dental issues in the emergency department (ED). In Oregon in 2010, non-traumatic dental conditions represented the second most common discharge diagnosis in adults under age 39 (Sun et al., 2015). In total, ED visits for dental conditions cost $11 million dollars and averaged $402 each (Sun et al., 2015). These findings are significant because EDs are poorly equipped to treat dental conditions. Specifically, the visits are palliative instead of curative, and many patients return to the ED repeatedly (Chalmers, Grover, & Compton, 2016).

To address avoidable costly visits to the ED for dental conditions, Advantage implemented innovative, evidence-based practices. The Advantage model includes a 24/7 emergency phone service to meet immediate needs of their patients and triage emergency cases. For non-emergent conditions, pain management needs are addressed appropriately and an appointment within 48 hours is scheduled at an Advantage clinic. Additionally, Advantage has established a direct connection to the state's Emergency Department Information Exchange (EDIE). This enables outreach to patients within two days of their ED visit to connect them to appropriate care.

The Bottom Line

Advantage has committed to achieving the Triple Aim of improving the care experience and population health outcomes while reducing per-capita costs (Berwick, Nolan, & Whittington, 2008). While this triple aim is more commonly adopted in medical care, and sits at the center of Oregon's entire public health care system, it is rarely implemented in dental care.

The Advantage model has evolved into an effective preventive care model that is person-centered and also reduces costs over time. In 2011, the median spent per patient per year was $132 for children and $179 for adults at Advantage. In 2016, that median had dropped to $118 and $167 for children and adults, respectively and adjusted for inflation (Figure 6). The median per patient per year cost increased in the national Medicaid sample, rising for children from $97 in 2013 to $153 in 2015 and for adults, from $173 in 2013 to $188 in 2015, adjusted for inflation.

The model's emphasis on prevention reduces the number of restorative services Advantage patients need and, thus, reduces spending. By 2015, Advantage spent substantially less on restorative services. To highlight this, the cost of care for 1,000 children and 1,000 adults was estimated using the median per patient, per year costs by service type and the distribution of services to those groups in 2015. In this example, Advantage would spend 84% on preventive and diagnostic services (Type 1) and 16% on restorative dentistry services (Type 2).In Medicaid, the total cost spent would be 16.5% more, or nearly $20,000 more, with 74% for preventive and diagnostic services and 26% for restorative dentistry services.

The Advantage model has evolved into an effective preventive care model that is person-centered and also reduces costs over time.

The differences are starker when estimating costs for treating adults. To treat 1,000 adults, Advantage is estimated to have spent $111,206 in 2015, with 49% ($54,637) of that for preventive and diagnostic services and 51% ($56,569) for restorative services. To treat the same 1,000 adults in the national Medicaid sample, the program is estimated to have spent 21% more at $141,547. In Medicaid, 66% or $93,656 of the total cost was spent on restorative care — 40% more than Advantage.

Figure 6: Median Per Patient, Per Year Cost of Care by Age

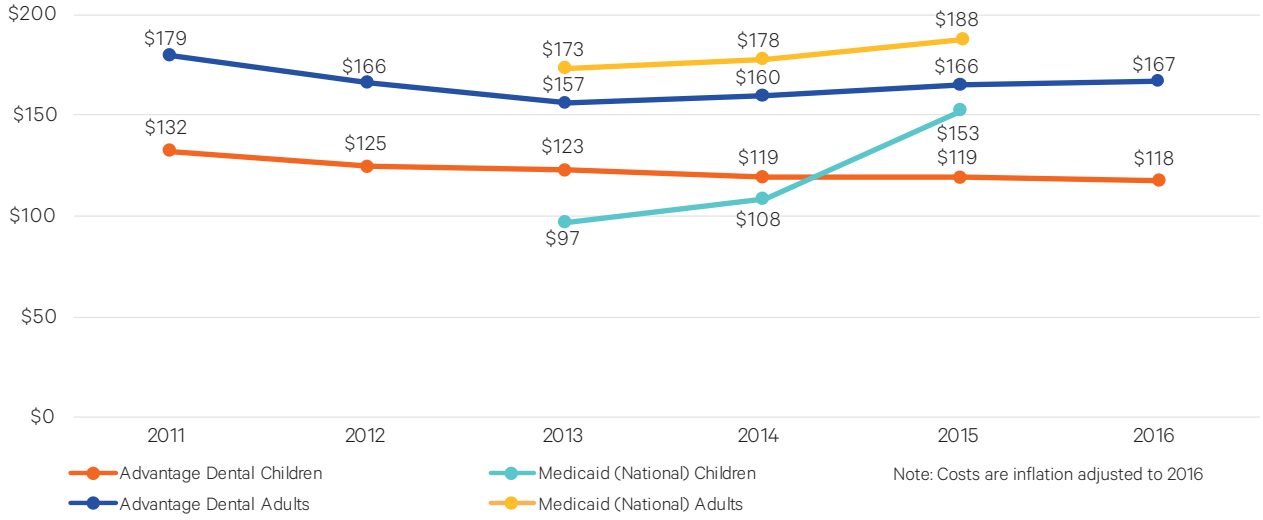


Figure 7a: Estimated Cost of Treating 1,000 Children (Ages 20 and Under) in 2016

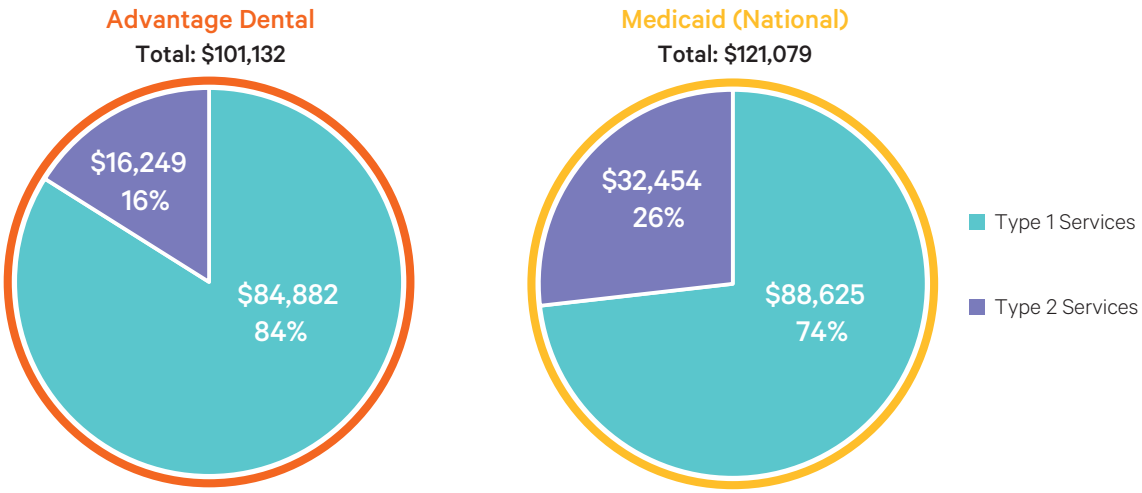
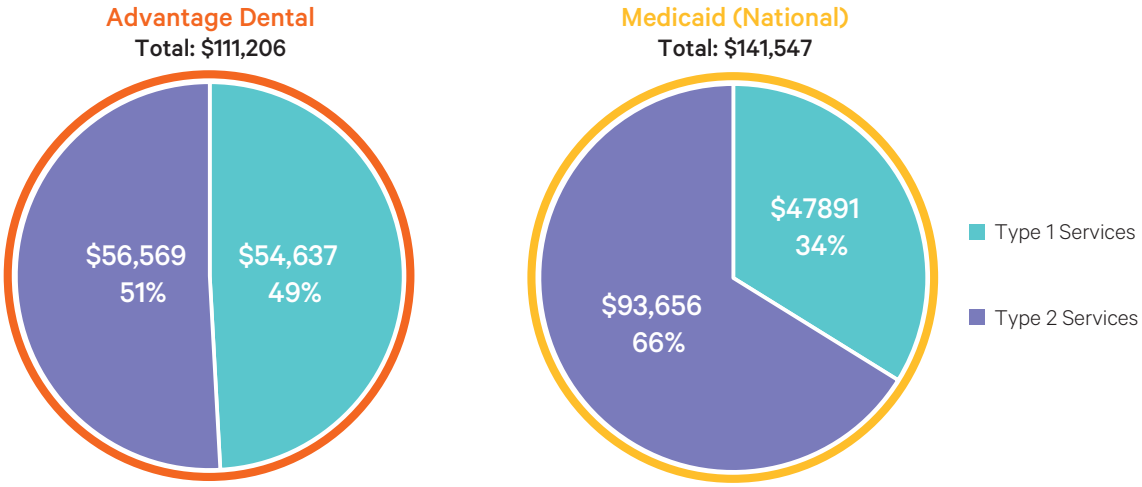


Figure 7b: Estimated Cost of Treating 1,000 Adults (Ages 21 and Over) in 2015



Conclusion

Advantage Dental built a model on the philosophy that no one in the community should miss work or school because of tooth pain or other dental problems and that everyone should have access to high-quality dental care delivered with respect and dignity. In an ACO model, preventing disease from ever occurring and addressing issues that do develop before they become serious or costly helps organizations improve outcomes and reduce costs. These powerful concepts together make up the Advantage model. The emphasis on prevention means better oral and overall health for its patients, and lower costs for the health care system and the state. In fact, Advantage has aligned the financial and care models, where dental providers are incentivized to achieve better outcomes.

The Advantage model has allowed the organization to do more with less. Advantage does more prevention, sees more patients, and provides better person-centered experiences while lowering health care costs.

The emphasis on prevention means better oral and overall health for its patients, and lower costs for the health care system and the state.

Appendix: Methodology

Data and IRB Approval

The data used for analysis comes from two sources. Advantage Dental provided de-identified patient level data, with basic demographics and procedures for 2011-2016. The second data is a collection of all Medicaid outpatient transactions in 13 states from 2013-2015 (referred to as "National Medicaid"). These de-identified data were acquired from Truven Marketscan. The study received IRB approval from the Western Institutional Review Board (study number: 1178682).

Percentage of Services among Children and Adults (Fig. 1, 3- 5)

For Figures 1 and 3, the percentages of children (ages 20 and under) receiving preventive or diagnostic (Fig. 1) or restorative (Fig. 3) dental services were calculated for each year. These numbers were calculated by dividing the number of children who had received at least one of these services by the number of children who had received any dental services that year. An identical approach was taken for calculating the percentage of adult (ages 21 and over) patients receiving dental services (Fig. 4-5).

Percentage of Children Ages 6-9 Receiving Sealants (Fig. 2)

The percentage of children (ages 6-9) who received sealants was calculated as the number of children who received at least one sealant divided by the number of children (ages 6-9) who had received one or more dental services that year.

Median Per Patient, Per Year Cost of Care by Age (Fig. 6)

The costs for all dental services were summed per patient for each year, and the median cost per patient was calculated. For the national Medicaid data, this estimate was based on the exact reimbursement costs per procedure. For Advantage Dental, paid through a capitated system, we used the Oregon Medicaid fee-for-service schedule to estimate costs. All per patient per year cost estimates were adjusted for inflation to 2016 dollars using Consumer Price Index data available from the US Department of Labor's Bureau of Labor Statistics.

Estimating Costs for 1,000 Patients (Fig. 7a-b)

We estimated the cost both for Advantage Dental and Medicaid, if 1,000 patients were treated for dental services under each model. We estimated the total cost for Type 1 (preventative or diagnostic) and Type 2 (restorative) services for adults and children separately. The median per patient per year costs was multiplied by the proportion of patients for each service to arrive at estimates of service type and total cost in 2015.

These estimates were adjusted for inflation to 2016 dollars using Consumer Price Index data available from the U.S. Department of Labor's Bureau of Labor Statistics.

References

Aravamudhan, K., Glick, M., & Crall, J. J. (2017). Making the shift to population health. The Journal of the American Dental Association, 148(9), 627-629.

Authority, O. H. (2017a). Oral Health in Oregon's CCOs: A Metrics Report. Retrieved from http://www.oregon.gov/oha/HPA/ANALYTICS/Documents/oral-health-ccos.pdf

Authority, O. H. (2017b). Oregon Health System Transformation: CCO Metrics 2016 Report. Retrieved from http://www.oregon.gov/oha/HPA/ANALYTICS-MTX/Documents/CCO-Metrics-2016-Final-Report.pdf

Baicker , K., Taubman , S. L., Allen , H. L., Bernstein , M., Gruber , J. H., Newhouse , J. P., . . . Finkelstein , A. N. (2013). The Oregon Experiment — Effects of Medicaid on Clinical Outcomes. New England Journal of Medicine, 368(18), 1713-1722. doi:10.1056/NEJMsa1212321

Bell, K. P., & Coplen, A. E. (2015). Evaluating the Impact of Expanded Practice Dental Hygienists in Oregon: An Outcomes Assessment. American Dental Hygienists Association, 89(1), 17-25.

Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: care, health, and cost. Health Affairs, 27(3), 759-769.

Chaffee, B. W., Featherstone, J. D. B., Gansky, S. A., Cheng, J., & Zhan, L. (2016). Caries Risk Assessment Item Importance: Risk Designation and Caries Status in Children under Age 6. JDR Clinical & Translational Research. doi:10.1177/2380084416648932

Chalmers, N., Grover, J., & Compton, R. (2016). After Medicaid Expansion In Kentucky, Use Of Hospital Emergency Departments For Dental Conditions Increased. Health Affairs, 35(12), 2268-2276.

Chalmers, N. I., & Compton, R. D. (2017). Children's Access to Dental Care Affected by Reimbursement Rates, Dentist Density, and Dentist Participation in Medicaid. American Journal of Public Health, 107(10), 1612-1614. doi:10.2105/ajph.2017.303962

Chu, C. H., Lo, E. C. M., & Lin, H. C. (2002). Effectiveness of Silver Diamine Fluoride and Sodium Fluoride Varnish in Arresting Dentin Caries in Chinese Pre-school Children. Journal of Dental Research, 81(11), 767-770. doi:10.1177/154405910208101109

Cunha-Cruz, J., Milgrom, P., Shirtcliff, R. M., Bailit, H. L., Huebner, C. E., Conrad, D., . . . Allen, G. (2015). Population-centered Risk-and Evidence-based Dental Interprofessional Care Team (PREDICT): study protocol for a randomized controlled trial. Trials, 16(1), 278.

DentaQuest. (2016). DentaQuest and Advantage Dental to Partner to Improve the Oral Health of All [Press release]. Retrieved from http://www.dentaquest.com/news-updates/press-releases/2016/dentaquest-and-advantage-dental-to-partner-to-impr/

Dye, B. A., Thornton-Evans, G., Li, X., & Iafolla, T. J. (2015). Dental caries and sealant prevalence in children and adolescents in the United States, 2011–2012. Retrieved from NCHS data brief, no 191.: http://fluoridealert.org/wp-content/uploads/cdc.dye-2015.pdf

Fraze, T., Colla, C., Harris, B., & Vujicic, M. (2015). Early Insights on Dental Care Services in Accountable Care Organizations. Retrieved from http://www.ada.org/~/media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0415_1.ashx

Fung, M. H. T., Duangthip, D., Wong, M. C. M., Lo, E. C. M., & Chu, C. H. (2016). Arresting Dentine Caries with Different Concentration and Periodicity of Silver Diamine Fluoride. JDR Clinical & Translational Research. doi:10.1177/2380084416649150

Himida, T., & Promise, U. (2017). School-based dental sealant programmes may be effective in caries prevention. Evid Based Dent, 18(1), 13-14. doi:10.1038/sj.ebd.6401218

Hinton, E., & Paradise, J. (2016). Access to Dental Care in Medicaid: Spotlight on Nonelderly Adults. Retrieved from http://www.kff.org/medicaid/issue-brief/access-to-dental-care-in-medicaid-spotlight-on-nonelderly-adults/

Kanellis, M. J. (2001). Caries risk assessment and prevention: strategies for Head Start, Early Head Start, and WIC. Journal of Public Health Dentistry, 60(3), 210-2017.

Köhler, B., & Andréen, I. (1994). Influence of caries-preventive measures in mothers on cariogenic bacteria and caries experience in their children. 39(10), 907-911.

Köhler, B., Andréen, I., & Jonsson, B. (1984). The effect of caries-preventive measures in mothers on dental caries and the oral presence of the bacteria Streptococcus mutans and lactobacilli in their children. Archives of Oral Biology, 29(11), 879-883.

Lin, H.-K., Fang, C.-E., Huang, M.-S., Cheng, H.-C., Huang, T.-W., Chang, H.-T., & Tam, K.-W. (2016). Effect of maternal use of chewing gums containing xylitol on transmission of mutans streptococci in children: a meta-analysis of randomized controlled trials. 26(1), 35-44.

Llodra, J. C., Rodriguez, A., Ferrer, B., Menardia, V., Ramos, T., & Morato, M. (2005). Efficacy of silver diamine fluoride for caries reduction in primary teeth and first permanent molars of schoolchildren: 36-month clinical trial. Journal of Dental Research, 84(8), 721-724. doi:10.1177/154405910508400807

McConnell, K. (2016). Oregon's medicaid coordinated care organizations. JAMA, 315(9), 869-870. doi:10.1001/jama.2016.0206

McConnell, K., Renfro, S., Lindrooth, R. C., Cohen, D. J., Wallace, N. T., & Chernew, M. E. (2017). Oregon's Medicaid Reform And Transition To Global Budgets Were Associated With Reductions In Expenditures. Health Affairs, 36(3), 451-459.

Mei, M. L., Ito, L., Cao, Y., Li, Q. L., Lo, E. C., & Chu, C. H. (2013). Inhibitory effect of silver diamine fluoride on dentine demineralisation and collagen degradation. Journal of Dentistry, 41(9), 809-817. doi:10.1016/j.jdent.2013.06.009

Meyer, B., & Tolleson-Rinehart, S. (2016). Making Dental Care A Part Of ACOs. Retrieved from http://healthaffairs.org/blog/2016/09/07/making-dental-care-a-part-of-acos/

Milgrom, P., Horst, J. A., Ludwig, S., Rothen, M., Chaffee, B. W., Lyalina, S., . . . Mancl, L. (2017). Topical Silver Diamine Fluoride For Dental Caries Arrest In Preschool Children: A Randomized Controlled Trial. bioRxiv. doi:10.1101/131870

Milgrom, P., Ludwig, S., Mike Shirtcliff, R., Smolen, D., Sutherland, M., Gates, P. A., & Weinstein, P. (2008). Providing a dental home for pregnant women: a community program to address dental care access. Journal of Public Health Dentistry, 68(3), 170-173.

Milgrom, P., Sutherland, M., Shirtcliff, R. M., Ludwig, S., & Smolen, D. (2010). Children's tooth decay in a public health program to encourage low-income pregnant women to utilize dental care. BMC Public Health, 10, 76-76. doi:10.1186/1471-2458-10-76

Muller-Bolla, M., Pierre, A., Lupi-Pegurier, L., & Velly, A. M. (2016). Effectiveness of school-based dental sealant programs among children from low-income backgrounds: a pragmatic randomized clinical trial with a follow-up of 3 years. Community Dentistry and Oral Epidemiology, 44(5), 504-511. doi:10.1111/cdoe.12241

Nasseh, K., & Vujicic, M. (2015). The Impact of Medicaid Reform on Children's Dental Care Utilization in Connecticut, Maryland, and Texas. Health Serv Res, 50(4), 1236-1249. doi:10.1111/1475-6773.12265

Ng, M. W., & Chase, I. (2013). Early childhood caries: risk-based disease prevention and management. Dental Clinics of North America, 57(1), 1-16. doi:10.1016/j.cden.2012.09.002

Ng, M. W., Ramos-Gomez, F., Lieberman, M., Lee, J. Y., Scoville, R., Hannon, C., & Maramaldi, P. (2014). Disease Management of Early Childhood Caries: ECC Collaborative Project. International Journal of Dentistry, 2014, 327801. doi:10.1155/2014/327801

Partners, L. (2015). Dental Care in Accountable Care Organizations: Insights from 5 Case Studies. Retrieved from http://www.ada.org/~/media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0615_1.pdf?la=en

Rethman, M. P., Beltrán-Aguilar, E. D., Billings, R. J., Burne, R. A., Clark, M., Donly, K. J., . . . for the American Dental Association Council on Scientific Affairs Expert Panel on Nonfluoride Caries-Preventive, A. (2011). Nonfluoride caries-preventive agents. 142(9), 1065-1071.

Schwendicke, F., Dörfer, C. E., Schlattmann, P., Page, L. F., Thomson, W. M., & Paris, S. (2015). Socioeconomic Inequality and Caries. Journal of Dental Research, 94(1). doi:10.1177/0022034514557546

Söderling, E., Isokangas, P., Pienihäkkinen, K., Tenovuo, J., & Alanen, P. (2001). Influence of maternal xylitol consumption on mother–child transmission of Mutans Streptococci: 6–year follow–up. Caries Research, 35(3), 173-177.

Stecker , E. C. (2013). The Oregon ACO Experiment — Bold Design, Challenging Execution. New England Journal of Medicine, 368(11), 982-985. doi:10.1056/NEJMp1214141

Sun, B. C., Chi, D. L., Schwarz, E., Milgrom, P., Yagapen, A., Malveau, S., . . . Lowe, R. A. (2015). Emergency Department Visits for Nontraumatic Dental Problems: A Mixed-Methods Study. American Journal of Public Health, 105(5), 947-955.

Vujicic, M., & Nasseh, K. (2013). Accountable care organizations present key opportunities for the dental profession. Retrieved from http://www.ada.org/~/media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0413_2.ashx

Wright, J. T., Crall, J. J., Fontana, M., Gillette, E. J., Novy, B. B., Dhar, V., . . . Carrasco-Labra, A. (2016). Evidence-based clinical practice guideline for the use of pit-and-fissure sealants: A report of the American Dental Association and the American Academy of Pediatric Dentistry. Journal of the American Dental Association, 147(8), 672-682 e612. doi:10.1016/j.adaj.2016.06.001

Yee, R., Holmgren, C., Mulder, J., Lama, D., Walker, D., & van Palenstein Helderman, W. (2009). Efficacy of silver diamine fluoride for Arresting Caries Treatment. Journal of Dental Research, 88(7), 644-647. doi:10.1177/0022034509338671

Yorkery, B. (2017). Accountable Care Communities Moving from Health Care Delivery Systems to Systems of Health. North Carolina Medical Journal, 78(4), 242-244.

CareQuest Institute for Oral Health

CareQuest Institute for Oral Health® is a national nonprofit championing a more equitable future where every person can reach their full potential through excellent health. We do this through our work in grantmaking, research, health improvement programs, policy and advocacy and education as well as our leadership in dental benefits, care delivery and innovation advancements. We collaborate with thought leaders, health care providers, patients and local, state and federal stakeholders, to accelerate oral health care transformation and create a system designed for everyone. To learn more, visit carequest.org.

This report and others are available at carequest.org.