

July 2017

# Oral Health Matters

Center for Oral and Systemic Health

Discover | Innovate | Translate

## *In the news*

### Center for Oral and Systemic Health

**Welcome** to the first issue of *Oral Health Matters*, the semi-annual newsletter to keep you updated on the latest research activities in the Center for Oral and Systemic Health (COSH) at Marshfield Clinic Research Institute (MCRI).

In this issue, we will present a brief overview of COSH and its unique infrastructure. COSH was established as the sixth research center in MCRI in April 2014 and is actively engaged in many exciting research projects selected for their translational potential as well as quality improvement and educational initiatives.

COSH's vision is to be the global leader in discovery, innovation and translation of cutting-edge research, education and best practices to bridge the chasm between medicine and dentistry.

To achieve its translational goals, COSH partners with Marshfield Clinic, its Division of Education as well as the Research Institute, Information Services and the Family Health Center of Marshfield and expert external collaborators with a focus on seamlessly merging oral-systemic research into clinical practice.

COSH accomplishes its vision by pursuing research in strategic domains including: oral health informatics, dental public health, oral biology and dental clinical research.



**Marshfield Clinic**

**Research Institute**

Center for Oral and Systemic Health

## *In this Issue:*

<b>Project Spotlight</b>	<b>2</b>
<b>The Research Team</b>	<b>3</b>
<b>IADR Conference In San Francisco</b>	<b>4</b>
<b>2017 Oral-Systemic Health Conference</b>	<b>5</b>
<b>Publications and Presentations</b>	<b>6</b>
<b>2017 COSH Summer Interns</b>	<b>7</b>





*Menomonie Dental Center: Meeting the needs of Dunn County*

Upcoming issues of *Oral Health Matters* will feature members of the COSH team and innovative research with potential to strategically implement improvements in healthcare through enhanced integrated care delivery and creation of innovative informatics and information technology tools to promote optimal, holistic patient care.

COSH is strategically positioned to contribute cutting-edge research as a natural extension of its rich, unique setting. Among the largest private practices in the nation, the Marshfield Clinic partnered with Family Health Center of Marshfield, Inc. to establish an infrastructure featuring an integrated system of more than 40 medical centers and 10 dental clinics providing care to residents of largely rural northern, western and central Wisconsin and additional counties outside of its extensive service area.

These Clinics are served by a premiere integrated, electronic medical-dental health record whose data are captured in a common enterprise data warehouse. These resources position COSH investigators to conduct research not easily achievable at other institutions internationally.

We expect that research outcomes will have a broader translational applicability, contributing substantive clinical value to both patients and practitioners, while informing other stakeholders including the public health sector and insurance industry. In this issue, we highlight just one of our exciting projects and COSH's Founding Director, Amit Acharya, BDS, MS, PhD.

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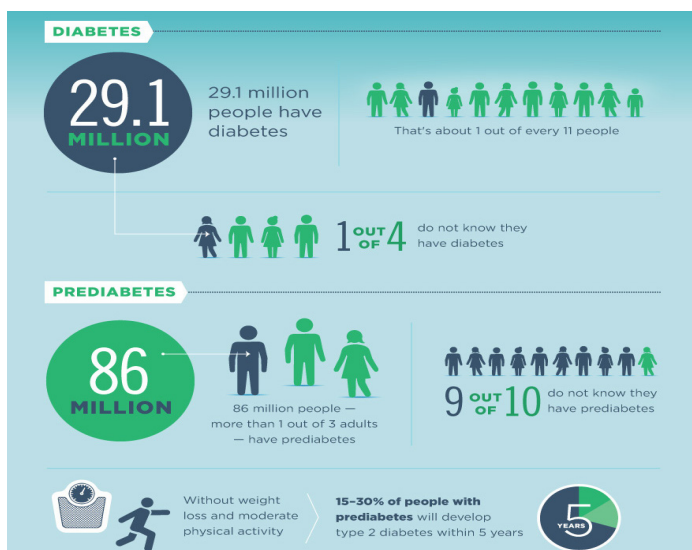
# Project Spotlight

## Integrated Models of Care for Diabetes and Oral Health

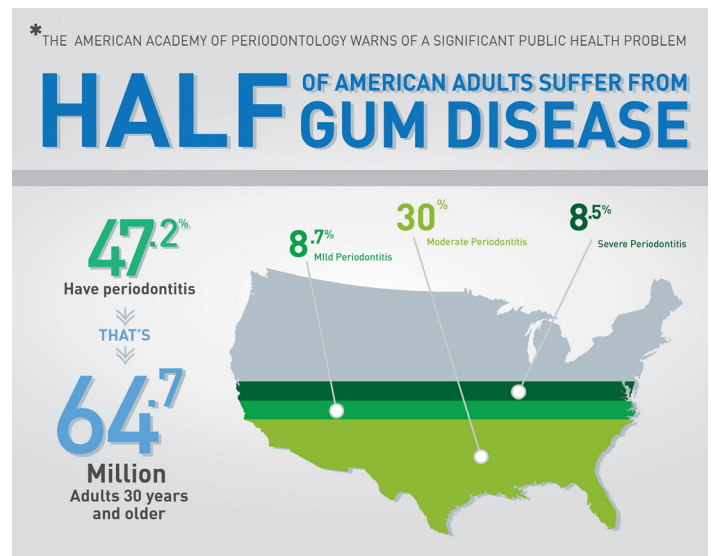
Inflammation of the gums associated with periodontal disease has been recognized as a complication of diabetes and the two conditions are known to mutually aggravate each other. Through generous research support from Delta Dental of Wisconsin, this initiative focuses on creation, promotion and delivery of improved integration of dental and medical care delivery models to holistically manage the rapidly expanding population of patients with prediabetes and diabetes. Strong emphasis is focused on achieving and maintaining oral health in order to promote optimal control of diabetic processes.

### The project has six important aims:

1. Assess the current state-of-the-art surrounding integration, knowledgeability, attitude and practice patterns of medical and dental providers surrounding the impact of oral health on diabetes and the impact of diabetes on gum health.
2. Apply informatics to develop clinical decision support tools that can assist providers in identifying and managing at-risk patients.
3. Promote health literacy among patients by designing materials and access to health information that will educate them about the relationships between gum health and diabetes. Educational training tools to enhance interdisciplinary cross training that will promote more integrated care delivery are also being created.
4. Establish quality dashboards that allow the healthcare professionals to see how effectively healthcare is being delivered in order to assess clinical outcomes and efficacy of current best practices.
5. Conduct clinical trials to test portability of dysglycemia screening in a dental setting and triage to medical settings for at-risk patients unaware of their diabetic status in order to determine utility of this approach in diverse clinical settings across WI.
6. Following implementation at a few test sites, the overarching goal is statewide translational dissemination of successful interventions and tools and implementation in other healthcare settings.



Source: Eke, Paul I., et al. "Prevalence of periodontitis in adults in the United States: 2009 and 2010."



Journal of dental research 91.10 (2012): 914-920. and Centers for Disease Control and Prevalence

## Featured COSH Team Member



*Dr. Amit Acharya*

COSH's founding director, Dr. Amit Acharya, first trained as a general dental surgeon, became attracted to biomedical and health informatics and its potential to more globally leverage improvements in patient care and health outcomes.

Melding his experience as a dental surgeon and a computer scientist with expertise in the field of biomedical informatics, his research focus has centered around integration of medical and dental data, images and clinical systems, architecture of electronic health records, information modeling, expert systems, machine learning, developing clinical decision support, ontologies and terminologies.

Dr. Acharya played a central role in the development, enhancement and usability evaluation of an integrated electronic dental record application within the Marshfield Clinic's medical EHR system. Dr. Acharya proactively founded COSH, recruited its expert research team and established an advisory committee of internationally-renowned experts to guide COSH's research efforts.

In addition to his leadership responsibilities, Dr. Acharya engages an active research program, leveraging his extensive research experience in secondary use of clinical data for studying the oral-systemic connections. Dr. Acharya places a strong emphasis on human-computer integration as a critical component in the design of clinical information systems and public health tools.

He thus conducts usability and user experience studies with a key focus on creating systems with user-centric design. Dr. Acharya is also proactively working with American Dental Association's Standard Committee for Dental Informatics on advancing development of national standards.

Dr. Acharya places a strong emphasis on education and the development of the future dental and informatics workforce. To this end, he leads the Oral Health Informatics Program at Marshfield Clinic. Since 2011, Dr. Acharya has mentored eight post-doctoral fellows and 22 students through various internship and assistantship programs sponsored by COSH.

Dr. Acharya also contributes to ensuring dental and biomedical informatics research excellence by participating in the peer review of grants and submitted manuscripts and has served on key national panels on topics surrounding oral health. He is a proud father to two girls (Anoushka and Mihira) and a black lab Labrador retriever (Olive). He enjoys traveling and cooking with his wife, Rohini.

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# COSH Scientists & Staff Present at the IADR Conference in San Francisco

Dr. Amit Acharya, Dr. Ingrid Glurich, Dr. Katie Overmyer, Dr. Adham Abdelrahim, Dr. Neel Shimpi, Harshad Hegde and Annie Steinmetz presented their research from Marshfield Clinic at the 9th Annual meeting of International Association of Dental Research (IADR) General Session & Exhibition in San Francisco, California, on March 22 – 25, 2017.

This cutting-edge international dental research conference was organized around exciting and diverse themes representing the major scientific topics in current dental, oral and craniofacial research findings from around the world. The conference attracted over 5,000 health care and research professionals globally.

## **The following are highlights of presentations by the COSH scientists and researchers:**

1. Dr. Amit Acharya gave an oral presentation on: "Patient Characteristics Readily Identified in Dental Clinics Can Detect Diabetes."
2. Dr. Ingrid Glurich presented a poster entitled: "Interdisciplinary Diabetes Management: Qualitative assessment of Medical/Dental Practitioners."
3. Dr. Katherine (Katie) Overmyer's poster focused on: "Multi-omic Analysis of Dental Plaque in Non-diabetic and Diabetic Patients."
4. Dr. Neel Shimpi's poster presentation was entitled: "Survey of Primary Care Providers' Oral Health Knowledge/Attitude/Practices."
5. Mr. Harshad Hegde presented a poster surrounding: "Community Awareness Towards Association of Diabetes and Oral Health."
6. Ms. Annie Steinmetz's poster presentation was entitled: "Dental Quality Analytics: Dental Measures and Provider Performance Dashboard."



*Harshad Hegde and Annie Steinmetz Presenting at IADR in San Francisco.*

Dr. Adham Abdelrahim presented a poster focused on: "Feasibility assessment of Tele-Dental approach to address emergency department non-traumatic dental conditions visits," during a special event for Research Trainees at the 2017 IADR Annual Meeting on March 22nd, which was sponsored by the National Institute of Dental and Craniofacial Research (NIDCR). The abstracts from this meeting will be published online as Special Issues of the Journal of Dental Research (JDR).

# 2017 Oral-Systemic Health Conference

## “The Importance of Integrating Medical and Dental Care for Patients with Diabetes”

The Center for Oral and System Health (COSH) at Marshfield Clinic Research Institute recently hosted the 2017 Oral-Systemic Health Conference at the Kalahari Convention Center in Wisconsin Dells, WI, on June 1st – 2nd.

The theme of the conference was “The Importance of Integrating Medical and Dental Care for Patients with Diabetes.” Over 100 healthcare professionals including medical and dental providers, scientists, and executive leaders throughout Wisconsin and surrounding states came together to network and learn more about this important topic.

This conference featured two keynote speakers, Dr. Jerry Brown and Dr. George Taylor, along with many other excellent providers and professionals. Strong attendance and positive feedback from attendees attested to the high clinical relevance of this topic and excellence of the program and presenters.

### **The conference had three main objectives:**

1. Discuss the importance of oral health among diabetic patients and the dental providers’ key role in screening for dysglycemia.
2. Discuss Wisconsin statewide pilot efforts geared towards integrating oral health management of patients with diabetes between medical and dental providers.
3. Discuss the potential cost savings and the economics of medical-dental care integration.



**Oral-Systemic Health Conference**  
**SAVE THE DATE**

**KEYNOTE SPEAKERS**

**Jerry Brown, DMD, CDE**, is a retired dental clinician and is the first health professional with a dental degree to earn board certification as a Certified Diabetes Educator from the National Certification Board for Diabetes Educators. Dr. Brown will be addressing the importance of screening for diabetes and other chronic medical conditions in the dental office and will also share a personal journey as a diabetic patient.

**George Taylor, DMD, MPH, DrPH**, is a professor and Associate Dean for Diversity and Inclusion at the University of California – San Francisco School of Dentistry. Dr. Taylor will be addressing the health economics of the potential medical health cost savings by integrating oral healthcare for individuals with chronic medical conditions like diabetes.

**“Importance of Integrating Medical and Dental Care for Patients with Diabetes”**

**June 2, 2017**  
with evening reception on June 1, 2017

**Kalahari Resorts & Conventions**  
1305 Kalahari Drive · Wisconsin Dells · Wisconsin

**Marshfield Clinic**  
Don't just live. Shine.

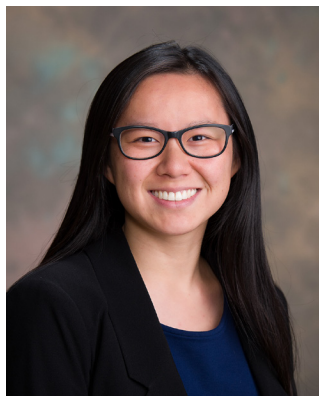
**DELTA DENTAL**

Dr. Amit Acharya and the COSH team were thankful for the important research grant support from Delta Dental of Wisconsin which made the conference and the COSH research presented at the conference possible.



*Top row from left: Dixie Schroeder, Dr. Neel Shimpi, Annie Steinmetz, Yvonne Cerné, Dr. Jeff VanWormer, Dr. Ingrid Glurich  
 Bottom row from left: Harshad Hegde, Dr. Amit Acharya, Dr. John O'Brien, Dr. Sanjay Shukla, Aloksagar Panny  
 Not Pictured: Dr. Adham Abdelrahim*

## Meet the 2017 COSH Summer Interns



*Katelyn Kleutsch*

COSH has the pleasure of hosting two interns this summer. Katelyn Kleutsch is currently a senior at the University of Wisconsin - Eau Claire majoring in biology and will be graduating in May of 2018. Katelyn is originally from China and grew up with her adoptive family in Winter, WI, near Ladysmith. Beginning in high school, she had the opportunity to work as a dental assistant, gaining experience working with multiple dentists. She enjoys singing, spending time with family and friends, cooking, traveling, and outdoor activities. Her goals include becoming a pediatric dentist, participating in The Amazing Race, and doing missionary work. Katelyn is working with Dr. Adham Abdelrahim on his teledental study.



*Callahan Katrak*

Callahan Katrak is currently a senior at Rollins College in Winter Park, FL, majoring in Chemistry and Biology. Since a young age, Callahan wanted to pursue a career in dentistry. While at Rollins College, she had the opportunity to participate in a research program which sparked her interest in research. Research gives her the opportunity to ask questions and find new answers. Once Callahan finishes college, she hopes to enter a dual degree, DMD/PhD or DDS/PhD, program in the Midwest to be closer to her family, including a twin brother. Her goals include doing research and becoming a professor. Callahan will be assisting Dr. Neel Shimpi with the Awareness of Patients Towards Association of Diabetes and Oral Health study.



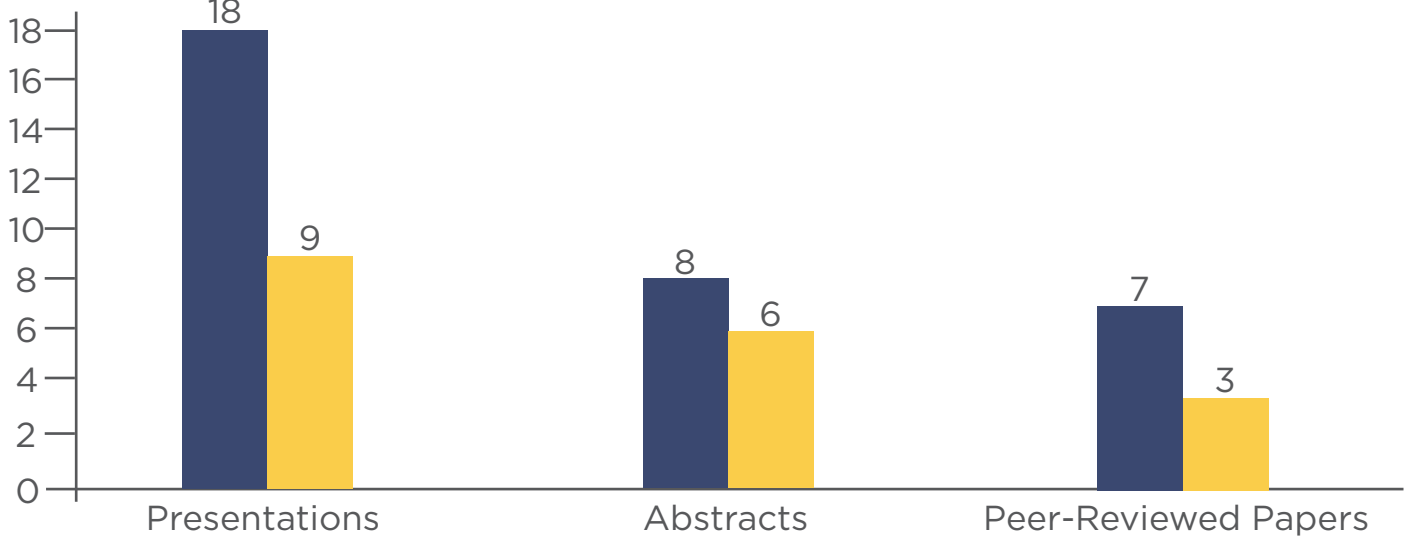
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## Publications and Presentations

2016 - 2017



Aloksagar Panny, a research assistant for COSH, recently published a manuscript titled “Oral and Craniofacial Anomalies of Bardet-Biedl Syndrome: Dental Management in the Context of a Rare Disease.” This manuscript was published with Dr. Robert Haws, Dr. Amit Acharya, and Dr. Ingrid Glurich as co-authors.

Dental anomalies are present in a majority of individuals affected by Bardet-Biedl Syndrome (BBS) due to abnormal embryonic orofacial and tooth development. This review evaluates genetic impact of BBS on the anatomic development of oral components and oral pathology encountered in the context of various BBS phenotypes and their associated comorbidities.

■ 2016 ■ 2017 (January - June)

Go to <https://www.marshfieldresearch.org/iosh/publications-and-presentations-2017> for more publications and presentations

For more information on COSH, its investigators, and ongoing, and historical research, please visit COSH at: <http://www.marshfieldresearch.org/COSH/oral-health-informatics>

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[cosh@marshfieldresearch.org](mailto:cosh@marshfieldresearch.org)



[www.facebook.com/COSH.Research/](http://www.facebook.com/COSH.Research/)

1000 North Oak Avenue - ML8 | Marshfield, WI 54449 | Phone: 715-389-4460