



Dental Professional Advisory Committee Newsletter

Volume XVI, Issue II

52nd ANNUAL USPHS SCIENTIFIC AND TRAINING SYMPOSIUM

by *CDR Brooks Horan and
LCDR Philip Clark*

*In this issue of the Dental
Professional Advisory Committee
Newsletter*

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52nd Annual USPHS Scientific and
Training Symposium

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The USPHS Dental Newsletter is published twice annually, and is distributed electronically through the USPHS Dental Bulletin Board, and agency distribution lists. The next issue of the Newsletter will be published in the winter of 2017-18. If you have suggestions or comments about the newsletter, or would like to submit an article, please contact the co-editors [CDR Lori Snidow](#) or [LCDR Thuc Ngo](#)



Group picture with Acting Surgeon General RADM Sylvia Trent-Adams, RADM Joan Hunter, and RADM Nick Makrides.

The 52nd Annual USPHS Scientific and Training Symposium was held in beautiful downtown Chattanooga, TN, on June 6-9, 2017. This year's symposium was not only a great opportunity for Corps Officers to meet USPHS and DHHS Leadership, but it also served as an opportunity for Corps Officers to display their accomplishments and research from the previous year and learn together through both Category specific and general public health education lectures and continuing education courses. [Continued on page 5.](#)

DENTAL PROFESSIONAL ADVISORY COMMITTEE

CHIEF PROFESSIONAL OFFICER COLUMN

RADM NICHOLAS MAKRIDES, DMD, MPH

FEDERAL BUREAU OF PRISONS

Summer has come to a close and 2017 is in full swing. We continue to work through the transition of the new Administration. To date, we do not have a confirmed Surgeon General or Assistant Secretary of Health (ASH). However, as many of you know, there has been some movement as it relates to a SG nomination.

The President has advanced Dr. Jerome Adams as a potential nominee. During this time, we are fortunate to have RADM Trent-Adams provide leadership to the Corps. As our Deputy Surgeon General, and now Acting Surgeon General, she has kept many initiatives alive and is focusing efforts on improved communication, executive leadership, and community engagement. I would like to say a few words about the latter.

Recently, the Public Health Service signed an MOU with Remote Area Medical (RAM). This has provided an opportunity for Dental and Dental Hygiene Officers (HSO Category) to deploy using their professional skill sets. The MOU provides officers tort coverage and deployment credit as they partner with community providers. These are high visibility events for the PHS and a wonderful opportunity to showcase the talent of our cadre.

During the last COF, we had 18 dental officers who deployed with RDF-3 to provide care at the Red Bank High School in Chattanooga. The impact made on this community was significant. According to CAPT Holly Williams (RDF 3 Team Commander) 641 patients were treated. Here is the breakdown: 410 received dental care, 127 medical care, and 260 vision evaluations. Some received more than one service. Dental services included 526 tooth extractions, 171 fillings, and 204 cleanings. The onsite mobile lab created 272 pairs of eyeglasses. More than \$275,000 worth of free services were provided.

Moving ahead, I have discussed future opportunities with Dr. Eric Allely, Director of Readiness and Deployment. It is anticipated that we will have 5 to 6 deployment opportunities annually with RAM and possibly through other partners. As I write this piece, I am aware that some of you will join me at the RAM event in Idabel, Oklahoma in August. If you have never deployed, I am encouraging each of you to consider this opportunity particularly if the event is in driving distance to your duty station. Information on future deployments will be made available through the Dental Bulletin Board.

The Summer Newsletter always is a pleasure to write because I get to see many of you at COA and it is the time that promotions are announced. This year 7 officers were promoted to Captain and 7 officers to Commander. Congratulations to all!!!!

Before I close, I want to thank the DePAC planning committee for a successful Category Day event. The presentations were outstanding. I think we were all moved by our Satcher Award winner, Stan Brock, as he recounted how he founded and grew RAM.

As always, thank you for the good work you do to "protect, promote and advance the health and safety of our nation." Enjoy the Fall!.



RADM Nicholas Makrides

DENTAL PROFESSIONAL ADVISORY COMMITTEE CHAIRPERSON COLUMN CAPT SHANI N. LEWINS UNITED STATES COAST GUARD

As the summer comes to an end and we welcome the changes that fall has to offer I would like to reflect on the year thus far. Our 2017 DePAC members have enthusiastically moved forward with a number of previous and new projects. Effective communication with the category through the Dental Bulletin Board, Facebook page, webpage, and newsletter continue to be a priority; please be sure to connect with DePAC if you have not done so already. DePAC members are in the process of individually contacting category members for feedback. Thank you very much to those officers who have already contributed to this grass roots project!



CAPT Shani Lewins

Readiness and deployment efforts and opportunities are ongoing; any officer who requires assistance with achieving basic readiness status is encouraged to contact our Readiness and Deployment Workgroup (R&D WG) Chairperson [CAPT Adrian Palmer](#). The R&D WG has been working closely with RedDOG to identify future deployment opportunities and capitalize on existing relationships. The RAM (Remote Area Medical) event in Chattanooga, TN, held the weekend before the 2017 USPHS Scientific and Training Symposium in June, was a tremendous success (be sure to check out the article in this issue). We look forward to coordinating additional deployment opportunities with RAM in the future.

Thanks to the hard work and dedication of the Category Day Planning Committee, Co-Chaired by CDR Brooks Horan and LCDR Philip Clark, Dental Category day at the Symposium was a big hit. The lineup of lectures was robust with topics from nutrition and opioid prescribing to infection prevention, FDA's roll in dentistry and an overview of the Monrovia Medical Unit Mission in Liberia. We were pleased to have an update from the ADA and a truly unique lecture from Mr. Stan Brock, Co-host of Mutual of Omaha's Wild Kingdom. Finally, the 2017 DePAC awards were presented and I would like to extend sincere congratulations to the deserving winners.

The Symposium offered all of the attendees a multitude of networking, educational and career building opportunities. I was honored to represent the Dental Category on a mentoring panel during the "Mentoring in the Commissioned Corps: Tools and Strategies for Success" pre-conference workshop. Sharing ideas with all of the categories through lectures and discussions offered a fresh outlook for the future of career development in the Commissioned Corps. A new and exciting, low cost, leadership training opportunity is being developed; interested officers are encouraged to contact me.

DePAC's work is never done! Recruiting, mentoring, and career development are ongoing and can often be challenging. Our category numbers have decreased and we are always looking to engage potential talent to proudly join our Commissioned Corps. Any officer can support recruitment activities through dental school or residency presentations, dental meeting recruitment efforts, or merely through community outreach. For more information on how you can help in the recruiting effort please contact our Recruitment WG Chair [LCDR Philip Clark](#).

New ideas are the seeds of the future, be sure to share shamelessly and often!

DENTAL PROFESSIONAL ADVISORY COMMITTEE

VICE-CHAIRPERSON COLUMN

CDR DANIEL T. BARCOMB UNITED STATES COAST GUARD

Hello everyone, I hope everyone has enjoyed some time off this Summer and has had a chance to get recharged and refreshed. I'd like to take the opportunity in this newsletter to continue discussing the importance of recruiting new PHS dental officers in order to maintain the strength of our category.

Currently there are 232 PHS Dental Officers and 101 PHS Dental Officer vacancies; nearly one third of our positions are vacant. This is not something new, our category has been steadily shrinking for many years. Agencies have been turning to civil service and contract dentists because they've had difficulty finding PHS dentists to fill their positions. Many of you are on the doorstep of retirement and we need to find new PHS dentists to take your place in order to keep the dental category strong.



CDR Daniel Barcomb

The DePAC Recruitment Workgroup, under the leadership of LCDR Phillip Clark and CDR Mandie Smith, is filled with a group of dedicated officers who have been working very hard to make this happen. They have come up with some great ideas and are in the process of having them implemented. There is one idea in particular that I'd like to share with you that is in its final stages and will expose a lot of dentists to the USPHS Commissioned Corps.

The Recruitment Workgroup is planning on reaching out to all of the AEGD, GPR, and Dental Public Health residency directors to ask them to pass along a letter to their residents that describes the PHS and the benefits of joining. Most of these residents will likely already have their dental licenses, so they will be eligible to apply to the PHS right away. DePAC will be working closely with DCCPR to see how we can expedite their applications.

This is only one example of someone's idea that has grown into something that should make a positive impact on our category. If you have any ideas about recruiting, or anything else that DePAC does, that you think could make our category better, please email them to CAPT Shani Lewins (shani.n.lewins@uscg.mil) or myself (daniel.t.barcomb@uscg.mil).

The best way to have a good idea is to have lots of ideas.

- Linus Pauling

Consider sharing your knowledge, experience, time, energy, and ideas by volunteering on one of DePAC's workgroups or subcommittees or applying as a voting member next year. With your help we can make the Dental Category stronger!

2017 Scientific and Training Symposium continued...

The event drew scores of attendees from federal agencies such as the Indian Health Service, the Office of Public Health Emergency Preparedness, the Bureau of Prisons, the Department of Homeland Security, the National Disaster Medical System, the Health Resources and Services Administration, the Centers for Disease Control and Prevention, the U.S. Food and Drug Administration, the Medical Reserve Corps, the National Institutes of Health, and other components of the Departments of Health and Human Services, Defense, Justice, Transportation, as well as numerous state and local agencies and public health institutions.

The theme for the 2017 COF Symposium was titled “Mobilizing a Culture of Healthy Living- Successes and Challenges.” Wednesday, June 7th, provided the opportunity for each of the USPHS Categories to host their own Category Day to gain category specific continuing education and present category specific awards. CAPT Shani Lewins started Dental Category Day with a call to order followed by opening remarks by RADM Nick Makrides.



CAPT Shani Lewins speaking during Category Day.



RADM Nick Makrides giving his remarks.

The Dental Category was able to incorporate 6.5 hours of continuing dental education (CE) on a broad range of topics focused on enhancing the attendees' skills as clinicians and public health administrators. This was just a portion of the 19.5 total hours of CE available during the entire Symposium.

The first presentation of the day was from CAPT Phillip Woods DDS, MPH, DAAP, who serves as a new products reviewer with the FDA Dental Devices Branch. CAPT Woods presented a brief history of the FDA, an explanation of what constitutes a "device" and a discussion of the scientific review process which ultimately determines what devices eventually enter the U.S. market place. Recently cleared devices were reviewed and the presentation highlighted the lesser know role that USPHS dental officers play in protecting the nation's public health at the FDA.



Past and Present DePAC Chairs

The second lecture of the day was the David Satcher Keynote lecture presented by Mr. Stan Brock. Mr. Brock's storied career has involved co-hosting the Mutual of Omaha's Wild Kingdom, writing, producing, directing and starring in adventure movies, flying commercial air transport and founding Remote Area Medical (RAM). Mr. Brock's fascinating lecture detailed how a high school dropout living on a ranch in Guyana eventually came to create our nation's largest provider of free mobile healthcare. Mr. Brock also discussed the growing collaboration between the USPHS and Remote Area Medical and provided a look towards the future of disaster preparedness and Remote Area Medical services in America.



Mr. Stan Brock giving the keynote speech.

Before breaking for lunch LCDR Patrick Moore, Pharm D, was kind enough to lend his talents to Dental Category Day with a presentation on the opioid abuse crisis gripping the nation. He detailed what state and national agencies are doing to combat the current opioid epidemic in the U.S. LCDR Moore also discussed the CDC's 2016 guidelines for prescribing opioids for chronic pain and dental pain management, emphasizing specific principals of pain management and how they affect the staff and inmates within the BOP.

During lunch CAPT Steve Geiermann (Retired), the Senior Manager for Access Community Oral Health Infrastructure and Capacity Council on Access Prevention and Interprofessional Relations at the ADA, gave a short presentation on current hot topics in organized dentistry. The lunch session always provides a wonderful opportunity to socialize and network with fellow Dental Officers from other agencies and areas of the country. The awards presentation followed CAPT Geiermann's update. RADM Makrides was honored to present the DePAC Awards and CPO Exemplary Service Awards while also recognizing their recipients (see list of recipients at the end of the article)

During the awards presentation the Dental Category Officers and guests were honored to meet acting Surgeon General of the United States, RADM Silvia Trent-Adams PhD, RN, FAAN. She gave a very pointed and motivational talk about her vision of the Corps moving forward and our role in advancing the public health of the Nation. She was very complementary to the members of the dental category, recognizing their hard work and ongoing commitment to the health of the nation.

After the lunch and awards ceremony, Michele Junger, DDS, MPH, with the National Center for Chronic Disease Prevention and Health Promotion at the CDC, talked about their role in developing infection prevention guidelines with recommendations and investigations of disease transmissions in the dental setting. Recent episodes of the transmission of infectious diseases in the dental setting were discussed as well as lessons learned. Information was provided on CDC resources that were developed to improve the understanding of the principals of prevention and the implementation of standard precautions.

Next we were fortunate enough to hear Dr. Heidi Silver PhD, MS, RD, from Vanderbilt University Medical Center present on how food and nutrient intake can affect the development of the dentition. She detailed how the

significant increase of calorie dense foods and high sugar diets are related to the increasing rates of dental caries, obesity, and diabetes. Additionally Dr. Silver spoke about how diet and nutrition can exacerbate oral symptoms of chronic disease states and how therapeutic diets can be used to treat these while promoting healing and overall health.

The final lecture of the day was from CAPT Dean Coppola, DDS, MPH, Director, FDA Commissioned Corps Affairs. CAPT Coppola served as the officer in charge of the Monrovia Medical Unit Team 3 in Liberia. The Monrovia Medical Unit was the only U.S. government asset directly treating Ebola positive patients in West Africa. CAPT Coppola shared his experiences and challenges as the officer in charge and unique insight from the perspective of team leadership.

RADM Makrides provided closing remarks and the educational portion of Category Day concluded. He thanked all of the Category Day Coordinators for doing a fantastic job of organizing the day's events and in coordinating the dental social. Dental officers met at St. John's Meeting Place the evening prior for a wonderful night of food and socializing.

The 2018 USPHS Scientific and Training Symposium will be held in Dallas, Texas in June 2018. Please visit the Symposium website (<http://symposium.phscof.org/>) for updates on the upcoming 53rd Annual Symposium.



RADM Makrides with the 2017 Dental Category Day Planning Committee.

L-R Back Row: LCDR Scott Eckhart, LCDR Jason Single, CAPT Leira Vargas, CAPT Shani Lewins, CDR Brooks Horan, LCDR Tiffany Smith

L-R Front Row: CDR Vicky Ottmers, RADM Nick Makrides, LCDR Philip Clark

The following awards were presented at the 2017 USPHS Scientific and Training Symposium. Congratulations to all!



Ernest Eugene Buell Award - LCDR Carol Wong



*Ruth Lashley USPHS Dental Award -
CDR Sarah Shoffstall-Cone*



Senior Clinician Dental Award - CAPT Sandra Aretino



*Herschel S. Horowitz Oral Health Research and Policy Award
CAPT Christine Heng*



Jack D. Robertson Award - CAPT Dean Coppola



*Chief Professional Officer Exemplary Service Award
CAPT Daniel Hickey and CDR Vicky Ottmers*

Please keep in mind that all nominations for next year's DePAC awards are due no later than 15 September 2017. For more information, please visit the DePAC Awards website at <https://dcp.psc.gov/osg/dentist/awards.aspx>.

JUNE 27 RAM DEPLOYMENT CHATTANOOGA, TN

CDR KEVIN ZIMMERMAN

INDIAN HEALTH SERVICE

I was fortunate enough to be able to deploy to the Remote Area Medical (RAM) event in Chattanooga, TN. One hundred fifteen USPHS Commissioned Corps officers participated in the first RAM event under the new MOU June 3-4, 2017 at Red Bank High School in Chattanooga. Officers worked with 64 RAM volunteers to provide care to 641 patients from eight states over the two day clinic period. Of these 641 patients, 410 received dental care, 127 medical care, and 260 vision evaluations, with some receiving more than one service. Dental care included 526 tooth extractions, 171 fillings, and 204 cleanings. The on-site mobile lab created 272 pairs of eyeglasses. A group of thirty USPHS dentists and dental hygienists worked seamlessly with other RAM volunteers to provide outstanding patient care. Seventy percent of the services rendered were provided by USPHS officers, including RADM Makrides (Chief Professional Dental Officer), with the effort being led by CDR Vicki Ottmers.

I arrived at 5:00 AM on Saturday morning after spending all day and night in airports and hitching a 2 hour car ride with a former army officer. I was exhausted and frustrated and had no sleeping bag or toiletries. But my mood changed almost immediately upon entering Red Bank High School. The PHS officers welcomed me with open arms and there was so much positive energy in the air, it gave me an immediate recharge. One person in particular that was exuding this energy was CDR Ottmers. She showed an amazing passion for her work and had the dental team chomping at the bit to get started. Not only was she inspiring, but it was also inspiring to see senior ranking dentists like CAPT Palmertree, CAPT Vargas, and especially RADM Makrides, standing with me in the 4 rows of dental chairs stretching half the length of the gymnasium. But the real reason I was able to make it through the day was the constant stream of appreciative patients that I was honored to treat. Not a single patient left my chair without thanking me profusely for my time and for giving them the dental care they so desperately needed. It carried me through until the end of the day, but then I was thoroughly exhausted.



RADM Nick Makrides providing dental care to a RAM patient

I was so exhausted that I leaned up against my backpack in the hallway and figured this is how I was going to spend the night. But the giving and generous spirit of the Corps again showed itself when RDF#3 Team Commander CAPT Holly Williams and CDR Ottmers learned of my situation. Within minutes they had received donations from other officers of a mat, sleeping bag, pillow, and one officer even volunteered to go and purchase toiletries for me. I wish I could remember all the officers' names to properly acknowledge them but unfortunately I was in a sleepy haze at the time. One thing I do remember is that RADM Makrides billeted right alongside all the other officers on the floor. What an amazing morale builder!

After finally getting much needed sleep, thanks to the generous donations of fellow officers, I was able to start the next day in a fantastic mood. Again, I was bolstered by the sense of cooperation and teamwork displayed by everyone there. There were physicians, nurses, and pharmacists assisting dentists, and when it came time to tear down everyone pitched in, I think I even saw RADM Makrides wiping down chairs. The day finished with a visit from Acting Surgeon General RADM Sylvia Trent-Adams, who filled the group up with justified pride, not just in the amazing service that we provided at the school, but also the amazing service we provide on a daily basis. Even though my body was tired and worn down, my spirit was recharged and soaring. This is why I joined the USPHS, to be part of a unified force that works and strives to improve the health of not only individuals but also the health and welfare of the nation. Hopefully, there will be many more RAM events and I encourage every officer to volunteer and get recharged with the spirit of the USPHS.



USPHS dentists and dental hygienists who participated in this year's RAM event in Chattanooga, TN with CDR Vicky Ottmers, RADM Sylvia Trent-Adams, RADM Nicholas Makrides, RADM Joan Hunter and CDR Valarie Wilson.

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AGENCY UPDATES: INDIAN HEALTH SERVICE DIVISION OF ORAL HEALTH HOLDS HISTORIC MEETING CAPT TIM RICKS

Over 65 internal and external stakeholders of the IHS Division of Oral Health participated in the first-of-its-kind American Indian/Alaska Native (AI/AN) Oral Health Disparities Strategic Planning Meeting held August 15-16, 2017 at 5600 Fishers Lane in Rockville, Maryland. The goals of the meeting were to provide a forum to share results of recent IHS oral health initiatives, strengthen existing, and forging new, partnerships and collaborations, and developing a long-range strategic plan to address oral health disparities in 0-5, 6-9, and 13-15 year-old AI/AN children and youth. The coordinator/facilitator of the meeting was CAPT Tim Ricks, Deputy Director of the IHS Division of Oral Health.

Participants of this meeting included federal agencies such as the Centers for Disease Control and Prevention Division of Oral Health and the National Institute of Dental and Craniofacial Research; tribal organizations such as the National Congress of American Indians, Society of American Indian Dentists, and National Indian Health Board, among many others; academic institutions including Harvard, the University of Maryland, the University of California, San Francisco, the University of Colorado, Johns Hopkins University, and others; dental organizations including the American Dental Association, the American Association of Public Health Dentistry, and the Academy of General Dentistry; and public health organizations including the Pew Charitable Trust, W.K. Kellogg Foundation, DentaQuest Foundation, and the Children's Dental Health Project, among others. It was also noteworthy in that four former Chief Professional Officers of the Dental Category were in attendance as well as the former director of the Indian Health Service, and the

first dentist to hold that position, RADM (Ret.) Chuck Grim.

Based on survey data collected over the past few years, the oral health in the AI/AN population has improved significantly in the past 17 years in both the 6-9 year-old and 13-15 year-old age groups, and has improved slightly in the past 7 years in the 0-5 year-old age group. However, oral health disparities still exist, with AI/AN children and youth having twice the caries experience and untreated decay rates as the next highest ethnic group, U.S. Hispanics, and four times that of U.S. white children. During the two-day meeting, which was highlighted by presentations from Drs. Norman Tinanoff and Jeremy Horst on evidence-based prevention strategies, the group developed innovative strategies and ideas to address these oral health disparities. Using these ideas, a strategic plan will be drafted and additional feedback and comments will be sought from additional internal and external stakeholders.



Participants in the American Indian/Alaska Native (AI/AN) Oral Health Disparities Strategic Planning Meeting held in August, 2017

AGENCY UPDATES: UNITED STATES COAST GUARD CAPT DAVID LUNDAHL

I hope everyone has had a relaxing and/or fun-filled summer! It's hard to believe that Labor Day is here again...but that also means the coming of Fall colors, and football season!

In this edition of the DePAC newsletter I would like to share a couple of important updates from RADM Schwartz regarding various healthcare initiatives that the Coast Guard is currently working on:

Acquisition of an Electronic Healthcare Record (EHR) Integrated Project Team (IPT) - CG-9 chartered an EHR IPT to work on the acquisition of an EHR for CG medical operations. CG-9 is exploring commercial and government EHR options to include DoD's MHS Genesis, which the VA recently announced they are adopting. In the interim, the CG has entered into an agreement with the DoD and the VA to allow CG medical providers to use the DoD/VA Joint Legacy Viewer (JLV). While JLV is not an EHR, it is a clinical application that provides an integrated, read-only display of health data from the DoD, VA and Tricare network providers in a common data viewer. By August 15, 2017, CG medical providers will be able to access real-time medical data in the treatment of their patients.



CAPT David Lundahl

Public Health Service (PHS) Officer Recruitment and Retention WG - RADM Schwartz chartered this WG to address current challenges to recruit and retain PHS Officers within the CG. She and RDML Kelly have had discussions with RADM Hunter (PHS Personnel Chief) on how to improve recruitment and retention of PHS Officers. With the pending revision of the MOA between the CG and PHS, CG legal has approved using CG funds to recruit PHS Officers (this was a significant barrier for the program). Additionally, PHS has offered to include the CG in its force management initiative to ensure CG equities are considered. Other initiatives that the WG is examining for PHS Officers detailed to the CG include: participation in PHS deployments, loan repayment opportunities, homesteading opportunities, billet rank restructuring, and improved recognition of officers with PHS awards.

These new initiatives will help to support the Coast Guard healthcare program. My sincere thanks to all the dedicated Coast Guard Dental Officers who provide exceptional care to our patients, and keep our mission moving forward every day!

CLINICAL ARTICLE: THE DIABETES-PERIODONTITIS INTERFACE CDR ERIC JEWELL DDS, MDS INDIAN HEALTH SERVICE



CDR Eric Jewell

CDR Eric Jewell graduated from the University of the Pacific (UOP) School of Dentistry in San Francisco, CA in 2002, then attended a 1 year AEGD residency at UOP. In 2004 CDR Jewell became an officer with the US Public Health Service, and worked both as a Staff Dental Officer and later as a Chief Dental Officer in the Tucson Area IHS (now Tohono O'odham Nation Health Care). In 2013 CDR Jewell attended a Periodontology residency at the University of Tennessee Health Science Center in Memphis, TN. Since returning to the Tucson in July 2016, CDR Jewell has worked as the Area Periodontal Consultant at the TON Sells Health Center and the TON San Xavier Health Center.

Introduction

Periodontal disease is a microbially induced inflammatory disease that causes destruction of the supporting structures of the teeth. Periodontal pathogens contain virulence factors that locally cause cells to produce inflammatory mediators – proinflammatory cytokines. Although these cytokines are produced at the gingival level, they enter the blood stream to disseminate throughout the body, thereby increasing systemic inflammation.¹ Approximately 30% of adults in the United States are afflicted with moderate, and 10% with severe forms of periodontal disease.²

Diabetes is a disease characterized by alterations in carbohydrate, protein, and lipid metabolism with the primary manifestations being abnormally high blood glucose levels and systemic inflammation. Insulin, the body's method of regulating blood sugar, is deficient or absent. The body may also become resistant to insulin, reducing its effect. Of the different types of diabetes, Type 2 accounts for over 90% of cases. Type 2 diabetes is an important public health issue, with approximately 347 million adults suffering its effects worldwide - that works out to about 10% of the world's adult population. In addition the World Health Organization estimates that the prevalence may double by the year 2030.³

Numerous classic studies demonstrate the link between diabetes and increased severity of periodontal disease. More recent evidence has also indicated that periodontal disease may in fact worsen glycemic control in people with diabetes. Both diseases are characterized by chronic inflammation and have common mechanisms and pathways. One exciting area of research involves intervention studies, trying to determine if periodontal therapy can improve metabolic control of diabetes.

Epidemiologic evidence linking severity of periodontal disease and severity of diabetes

There is an abundance of evidence implicating diabetes as a risk factor for periodontal disease. One of the early studies involving the Pima Indian Community in southern Arizona with 2273 subjects age 15 or older with type 2 diabetes, showed an incidence of periodontal disease 2.6 times higher than in non-diabetics.⁴ Tsai et al. illustrated that poor glycemic control in diabetic patients was correlated with the severity of periodontal disease. In this population study of subjects 45 years and older, those with poorly controlled type 2 diabetes were almost three times as likely to suffer from severe periodontal disease than non-diabetics.⁵ Other studies have shown that subjects suffering from diabetes had significantly more periodontal disease and tooth loss than non-diabetics, and that the periodontal disease was significantly more advanced.^{6,7} There are similar effects on periodontal disease severity associated with both type 1 and type 2 diabetes.^{8,9}

Over the past 15-20 years the idea has evolved that periodontal disease can negatively influence diabetes. Chronic systemic inflammation is the precursor to type 2 diabetes.^{10, 11} Periodontal disease contributes to this systemic inflammation which can impair glycemic control, and worsen diabetic complications. One of the first studies to show this looked at Native Americans from the Gila River community in Arizona. Severe periodontitis was associated with poor metabolic control in type 2 diabetes after 2 to 5 years.¹² Deep periodontal pockets were significantly associated with impaired glucose tolerance over 10 years in another study, and each millimeter gain in pocket depth corresponded to a 0.13% gain in HbA1c.¹³ Demmer et al. analyzed data from a population study in Germany. In non-diabetic participants, those with severe periodontal disease at baseline, and a decline in periodontal health over 5 years, experienced a 0.138% increase in HbA1c compared to participants without periodontal disease.¹⁴

Complications of diabetes become more severe during prolonged states of hyperglycemia due to the formation of advanced glycation end products (AGEs)¹⁵, which affect nearly every cell in the body and are implicated in many chronic diseases. In a study of diabetic complications in subjects with type 1 diabetes, those with severe periodontitis experienced an increased prevalence of renal disease (proteinuria), and cardiovascular complications (stroke, TIA, angina, MI, and intermittent claudication) compared to those with no/minor periodontitis.¹⁶ Saremi et al. showed that type 2 diabetics with periodontal disease not only had a higher rate of ischemic heart disease and diabetic nephropathy, but that those with severe periodontal disease were actually 3.2 times more likely to die from these complications.¹⁷ Other studies found associations with periodontal disease and diabetic foot ulcers¹⁸, and diabetic retinopathy.¹⁹ An excellent resource outlining evidence of the effect of periodontal disease on diabetes is a recent systematic review from the 2013 workshop held by the European Federation of Periodontology and the American Academy of Periodontology.²⁰

It has been shown that diabetes can negatively effect periodontal disease and that periodontal disease can negatively effect existing diabetes. The question arises whether chronic low-grade systemic inflammation due to periodontal disease, in addition to environmental factors, could play a role in the onset of metabolic syndrome or diabetes. Morita et al. found that over 4 years, subjects with periodontal pockets $\geq 3\text{mm}$ were 2.2 times more likely to have positive conversion of two or more components of metabolic syndrome. The components of metabolic syndrome most significantly associated with periodontal pockets were blood pressure and blood-lipid index.²¹ In a later study, Morita also found that the risk of developing HbA1c $\geq 6.5\%$ over 5 years was 2.47 times greater in subjects with 4-5mm periodontal pockets, and 3.45 times greater in subjects with pockets $\geq 6\text{mm}$.²² Another investigation using data from the first National Health and Nutrition Examination (NHANES I) and its epidemiologic follow-up study showed a positive, non-linear relationship between baseline periodontal disease and the incidence of type 2 diabetes.²³

Common pathogenic mechanisms and pathways

Periodontal disease is, at its core, a localized bacterial infection, yet it is the host's inflammatory response that triggers tissue destruction and determines the severity of the disease. Diabetes however, is a systemic disease leading to elevated levels of inflammatory markers such as tumor necrosis factor α (TNF α) and interleukin-6 (IL-6).²⁴ This chronic systemic inflammation alters physiology and impairs the host response by causing an exaggerated inflammatory state in the periodontal tissues in response to pathogens and bacterial endotoxins.^{25 26}

The relationship between diabetes and periodontal disease involves dysregulated secretion of host derived mediators of inflammation and tissue breakdown. Hyperglycemia increases cytokines such as TNF α , IL-6, and increases AGEs which lead to further upregulation of cytokine production. Diabetes also inhibits neutrophil function, decreasing their programmed cell death, and increasing the severity of periodontal destruction.²⁵ In turn, periodontal pathogens cause an increase in proinflammatory cytokines such as IL-6, TNF α , and C-reactive protein (CRP) which increase systemic inflammation, and may contribute to insulin resistance, and exacerbate the diabetes process.^{26, 27} Reducing circulating levels of these proinflammatory cytokines through periodontal therapy may help improve insulin sensitivity and thus metabolic control.²⁸

Intervention studies

One of the first groups to investigate the effects of periodontal therapy on metabolic control of diabetes was Grossi et al. They studied the outcome of periodontal therapy on poorly controlled diabetic patients, and found a transient yet significant reduction in HbA1c in those patients who were given systemic doxycycline compared to those not receiving the antibiotic following treatment.²⁹ Sukhdeep et al. found a significantly greater reduction in HbA1c when scaling and root planing (SRP) was done in conjunction with systemic doxycycline than with SRP alone.³⁰ Another investigation took a different approach and used locally delivered tetracycline-impregnated fibers in conjunction with mechanical periodontal therapy. Patients receiving SRP along with locally delivered tetracycline had a significantly greater reduction in HbA1c over the 3-month study than those who had SRP alone.³¹

The tetracycline class of drugs may have properties that deter protein glycation, and a sub-antimicrobial version of doxycycline is currently available for treatment of periodontal disease based on its ability to inhibit extracellular matrix degradation. Engebretson et al. compared a sub-antimicrobial dose of doxycycline plus SRP, an antimicrobial dose plus SRP, and SRP alone with diabetic patients. There was a significantly greater reduction in HbA1c with the sub-antimicrobial doxycycline when compared to both the control group and the antimicrobial doxycycline group.³²

Some authors felt that the use of antibiotics when studying the effect of periodontal therapy on glycosylated hemoglobin may complicate results regarding the effectiveness of periodontal therapy alone. Koromantzios showed that scaling and root planing alone significantly reduced HbA1c in moderate to poorly controlled diabetics compared to supragingival cleaning.³³ Other studies found similar drops in HbA1c with non-surgical periodontal therapy alone.^{34, 35}

Looking more closely at inflammatory mediators, Dag et al. illustrated that reducing periodontal pathogens lowers levels of circulating TNF α in both type 2 diabetic and non-diabetic patients with periodontal disease. Additionally, there was an improvement in glycosylated hemoglobin (HbA1c) with the diabetic patients.²⁸ Insulin resistance was linked to periodontal inflammation by Iwamoto when he showed that TNF α , insulin resistance, and HbA1c were significantly lowered with periodontal therapy.³⁶ Further evidence of this link was seen in another larger study with diabetic patients. Katagiri et al. found that CRP, HbA1c and body mass index (BMI) were correlated. Patients with a high BMI had a significant decrease in both CRP and HbA1c following periodontal therapy compared to those with low BMI, who had no significant change in CRP or HbA1c.³⁷ In another report, comprehensive periodontal therapy, including flap surgery when indicated, significantly decreased CRP, TNF α , IL-6, HbA1c, fasting insulin, and insulin resistance in diabetics compared to the control group who did not receive periodontal therapy.³⁸

Although many studies have indicated a significant improvement in glycemic control and inflammatory markers with periodontal therapy, there have been a number that have not shown a correlation. In a 2012 study by Chen et al., comparing effects of mechanical debridement versus no treatment with type 2 diabetic patients, there was no significant decrease in HbA1c associated with periodontal therapy. They did not see a decrease in circulating TNF α either, although there was a significant drop in CRP.³⁹ A similar result was found by Auyeung et al.²⁷ where

diabetic patients with mild periodontitis were compared to diabetic patients with moderate to severe periodontitis. There was no significant change in HbA1c for either group at any time during the study, but a significant drop in CRP was seen in the group with severe periodontal disease. A VA study comparing 'early treatment' (consisting of SRP, systemic doxycycline, and chlorohexadine rinse) to 'usual care' (routine care without alteration of usual medical or dental treatment) in type 2 diabetics did not find any significant change in HbA1c values⁴⁰.

One possibility for the lack of consensus in results could come from study designs. The vast majority of intervention studies were only 3 months long, and did not contain long-term followup. One possible flaw that Chen et al. pointed out in their study was that the participants did not have severe periodontal disease, which may be why there was not a significant change in HbA1c either between groups, or for the entire study population. A more recent multi-center RCT with 514 participants, compared periodontal therapy to no periodontal therapy in type 2 diabetics.⁴¹ Interestingly, they found a slight, but insignificant, increase in HbA1c at 6 months along with high levels of plaque and bleeding on probing. This paper was later analyzed by Borgnakke and colleagues who felt that the study results were invalid due to 1) baseline HbA1c levels were already close to the goal for good glycemic control, 2) the periodontal therapy provided failed to reach the standard of care, and 3) the pronounced obesity seen in the study would mask any improvements in systemic inflammation from periodontal therapy.⁴²

Conclusion

The association between periodontal disease and diabetes appears to be a two-way street, as both diseases share common pathways that lead to an increase in inflammation. Diabetes has a large effect on systemic inflammation that locally effects the periodontium, while periodontal disease, once thought to be a localized inflammatory disease, may well have a significant effect on systemic inflammation. There is increasing evidence that periodontal disease may exacerbate or even be a factor in the initiation of diabetes. Many studies have shown a modest improvement in glycemic control with diabetic patients who undergo periodontal therapy, however due to limitations in methodologies, and heterogeneity of studies, no firm conclusions can yet be drawn. It is clear that a well thought out, and well planned study design is of primary importance. The criteria for what constitutes mild, moderate, or severe periodontal disease, and the criteria for what constitutes well controlled versus poorly controlled diabetes must also be widely accepted. Additional randomized controlled trials, with longer periodontal maintenance follow-ups and adequate numbers are needed.⁴³

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SENIOR OFFICER SPOTLIGHT: CAPT RUBEN ACUNA INDIAN HEALTH SERVICE



CAPT Ruben Acuna

Can you provide a brief summary of your training and education?

I was born and raised in Southern California where I earned my Bachelor of Biology degree at California State University, Los Angeles. I then attended Marquette University School of Dentistry where I obtained my DDS. Later, through the Indian Health Service Long Term Training program, I earned my Pediatric Dental Certificate from the University of Rochester, Eastman Dental Center.

Can you tell our readers how long you've been a PHS officer and describe your duties at your present site?

I have been a PHS officer in the Indian Health Service since 1996.

My current duty station is in Tucson, AZ at the San Xavier Dental Clinic. I also travel 60 plus miles to the Sells, AZ Dental Clinic to provide services. In addition, I also serve as an attending pediatric dentist for Pediatric Dental Residents that rotate through our clinics.

What led you to consider a career in the PHS dental program?

One of the things that appealed to me was the flexibility to practice in different parts of the country without having to worry about regional board and license issues. Also the clinics I have been fortunate to work in have had several other providers for a group like setting which I enjoy. Another bonus is the flexibility for time off/annual leave which a PHS career can provide.

What did you find to be the most challenging aspect of your transition into the Public Health Service?

The most challenging aspect of this organization was gaining understanding of the administrative processes and policies involved in order to conduct business.

What has been the most rewarding aspect of your service thus far?

The most rewarding aspect is having the opportunity to have the luxury of time to treat those children with acute situational anxiety, talk them through their fears and in most cases successfully provide treatment to get them out of pain or render urgently needed care. Not always 100% obtainable, but often a rewarding experience.

Describe some of your hobbies and activities outside of the PHS?

Off roading! Both 2 and 4 wheeling! I enjoy taking the roads less traveled and enjoy the spectacular scenery off the beaten path. My wife and I also enjoy long distance motorcycling with friends. We've been on adventures from the Rockies to the Smokies and many places in between! By joining off road and motorcycling organizations, we have enjoyed supporting many local and national fund raising events for some great causes and making many new friends along the way!

JUNIOR OFFICER SPOTLIGHT

LCDR JASON SINGLE

BUREAU OF PRISONS



LCDR Jason Single

Can you provide a brief summary of your training and education?

I graduated from the University of North Dakota in 1994 with a BA in Psychology. I completed dental school at the University of Minnesota earning my DDS in 1998. Upon graduation, I was commissioned as a Lieutenant in the United States Navy Dental Corps. I completed a one year AEGD residency at the Naval Dental Center Norfolk, VA in 1999. After fulfilling my active duty commitment with the Navy in 2001, I worked in private practice until I started my position with the Federal Bureau of Prisons in 2016.

Can you tell our readers how long you've been a PHS officer and describe your duties at your present site?

I was commissioned with the USPHS in April of 2016. I am currently a Staff Dental Officer with the Federal Bureau of Prisons stationed at FCI Beckley in Beaver, WV. I provide routine and emergency dental services to over 1700 inmates at the facility. Our patient population has extensive dental disease requiring restorative, surgical, periodontal, endodontic, and prosthodontic treatment. Along with my duties as a Dental Officer, I also have the duties of a correctional officer to maintain the safety and security of the institution.

What led you to consider a career in the PHS dental program?

After owning and managing my private practice, I discovered that running my own business was not enjoyable for me. With the never ending battles with insurance companies and rising cost of health care coverage, I felt myself heading towards burn out. I knew I had to make a change. With the support and encouragement of my family, I had an opportunity to sell my practice and take a job with the BOP. While researching available opportunities, I spoke with a BOP Regional Dental Officer who happened to be a retired USPHS officer. She planted the seed in my head about becoming a PHS Officer. The more I researched the benefits and opportunities available with the USPHS, the more I knew this was what I was looking for.

What did you find to be the most challenging aspect of your transition into the Public Health Service?

The most challenging aspect of my transition into the Public Health Service was uprooting my family, moving to a new state, and realizing that they are the ones making the biggest sacrifice for me to make this change in my career.

What has been the most rewarding aspect of your service thus far?

The most rewarding aspect of my service thus far is getting back into an environment where Dentists treat each other as friends and colleagues instead of competition. The camaraderie and spirit shared among Officers is contagious and has inspired me to grow both personally and professionally.

Describe some of your hobbies and activities outside of the PHS?

I am a homebody and enjoy cooking meals together with my wife. I also enjoy playing video games with my son and having tea parties with my daughter. I keep active with regular exercise and spending time outdoors hunting and enjoying nature.

Has your experience in the PHS thus far lived up to your expectations?

My experience in the PHS has far exceeded my expectations. It is a rewarding experience to treat an underserved population and knowing that your work is making a difference. I am excited and optimistic about my future opportunities as I progress through my career as a PHS Officer.

HAILS AND FAREWELLS:

WELCOMING OUR NEWEST DENTAL OFFICERS AND CIVIL SERVANTS

LT Melissa Para

USCG

LT Maria Sipin

IHS

FAIR WINDS AND FOLLOWING SEAS

CAPT Aaron Means

IHS

“Sometimes your joy is the source of your smile, and sometimes your smile is the source of your joy.” – Thich Nhat Hanh

UPCOMING EVENTS 2017-2018

Agency/Organization	Web Link/Info	Meeting Date	Meeting Location
American Academy of Periodontology Annual Meeting	https://www.perio.org/meetings	Sept 9-12, 2017	Boston, MA
American Association of Women Dentists	https://aawd.org/events/index.php/register	Sept 22-23, 2017	Fernandina Beach, FL
American Dental Association Annual Meeting	http://www.ada.org/en/meeting	Oct 19-23, 2017	Atlanta, GA
Mid-Continent Dental Congress	http://www.greaterstlouisdentalsociety.org/meetings-events/attendee-main	Nov 9-10, 2017	St. Charles, MO
Greater New York Dental Meeting	http://www.gnydm.com/	Nov 26-29, 2017	New York, NY
Chicago Dental Society Midwinter Meeting	http://www.cds.org/meetings-events/midwinter-meeting	Feb 22-24, 2018	Chicago, IL
American Dental Education Association Annual Meeting	http://www.adea.org/2018/	Mar 17-20, 2018	Orlando, FL
American Association for Dental Research (AADR) Annual Meeting and Exhibition	http://www.iadr.org/2018aaam	Mar 21-24, 2018	Ft. Lauderdale, FL
Hinman Meeting	https://www.hinman.org/	Mar 22-24, 2018	Atlanta, GA
Western Regional Dental Convention	https://www.westernregional.org/2018/	Apr 12-14, 2018	Glendale, AZ
National Oral Health Conference	http://www.nationaloralhealthconference.com/index.php?page=main	Apr 16-18, 2018	Louisville, KY
American Academy of Cosmetic Dentistry	https://www.aacdconference.com/	Apr 18-21, 2018	Chicago, IL
American Association of Endodontists	http://www.aae.org/annualsession/	Apr 25-28, 2018	Denver, CO
Academy of Laser Dentistry	http://www.laserdentistry.org/index.cfm/conference	Apr 26-28, 2018	Orlando, FL
The Texas Meeting: Annual Session Texas Dental Association	https://tdameeting.com/	May 3-5, 2018	San Antonio, TX
Academy of Prosthodontics	http://www.academyofprosthodontics.org/cgi/page.cgi?id=5966	May 9-12, 2018	Chicago, IL
California Dental Association - Spring Scientific Session	https://www.cdapresents.com/	May 17-19, 2018	Anaheim, CA
American Academy of Pediatric Dentistry Annual Session	http://annual.aapd.org/	May 24-27, 2018	Honolulu, HI
USPHS Scientific & Training Symposium	http://symposium.phscof.org/?view=featured	June, 2018 (dates TBA)	Dallas, TX
Academy of General Dentistry	http://www.agd.org/agd-meeting	June 7-9, 2018	New Orleans, LA

Table Continue #

Agency/Organization	Web Link/Info	Meeting Date	Meeting Location
Pacific Northwest Dental Conference (WSDA)	http://www.wsda.org/future-pndc-dates/	June 21-23, 2018	Bellevue, WA
National Dental Association	http://www.ndaonline.org/2017-convention/	July 11-15, 2018	Orlando, FL
International Association for Dental Research (IADR)	http://www.iadr.org/	July 25-28, 2018	London, England
American Academy of Esthetic Dentistry	http://www.estheticacademy.org/?page=AAEDMeetings	Aug 2-4, 2018	Rancho Palos Verdes, CA

ONLINE ORAL HEALTH RESOURCES & CONTINUING EDUCATION OPPORTUNITIES

Agency/Organization	Description	Web Link
American College of Dentists	CE - Dental Ethics Course	www.dentalethics.org
ADA	CE – online continuing education opportunities	http://ebusiness.ada.org/education/default.aspx
Centers for Disease Control and Prevention (CDC)	Resource - Oral Health Resources	http://www.cdc.gov/oralhealth/
Colgate	CE – Free Live and On-Demand Webinars for continuing education	http://www.colgateoralhealthnetwork.com/Dental-CE-Course/
Health Resources and Services Administration (HRSA)	Resource - HRSA Home page	http://www.hrsa.gov/publichealth/clinical/oralhealth/
Hu-Friedy	CE – online continuing education opportunities	https://www.hu-friedy.com/education/continuing_education_classes
IHS Division of Oral Health	Resource - Early Childhood Caries Initiative	http://www.doh.ihs.gov/ecc/
Inside Dentistry	CE - online continuing education opportunities	https://id.cdeworld.com/courses
National Institute of Dental and Craniofacial Research	CE - Practical oral health care for patients w/ developmental disabilities	http://www.nidcr.nih.gov/EducationalResources/HealthCareProviders/POCPDD.htm
National Institute of Dental and Craniofacial Research	Resource - Dental Providers Oncology Pocket Guide. Reference on treating pts before, during and after cancer treatment	http://www.nidcr.nih.gov/oralhealth/Topics/CancerTreatment/ReferenceGuideforOncologyPatients.htm
National Maternal & Child Oral Health Resource Center	Resource – OH Resource Center	https://www.mchoralhealth.org/
Naval Postgraduate Dental School	Resource - Clinical updates archives	http://www.wrnmcc.capmed.mil/ResearchEducation/NPDS/SitePages/Research/ClinicalUpdatesIndex.aspx
Naval Postgraduate Dental School	CE - Correspondence Course Program	https://www.wrnmcc.capmed.mil/ResearchEducation/NPDS/Shared%20Documents/Correspondence%20Course%20Brochure.pdf
Northwest Center for Public Health Practice	CE - Basic Public Health principles study modules	http://www.nwcpnp.org/training/opportunities
Ohio Department of Health, the Indian Health Service, and the Association of State and Territorial Dental Directors	Resource - Safety Net Dental Clinic Manual	https://www.dentalclinicmanual.com/
Proctor & Gamble	CE – online continuing education courses	https://www.dentalcare.com/en-us/professional-education/ce-courses
The University of Iowa	Resource - Oral Pathology Photos	http://guides.lib.uiowa.edu/c.php?g=131885&p=864394

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