PREVENTIVE DENTISTRY UPDATE #22

22 April 2007

MEMORANDUM FOR USAF Preventive Dentistry Officers

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SUBJECT: Preventive Dentistry Update # 22

At long last, there is something new to report from the world of AF Preventive Dentistry.

1. **Management of Patients at High Risk for Dental Caries.** In the way of background for those of you who are new to the Preventive Dentistry Officer position, the USAF Dental Service has been assessing the caries risk of all active duty personnel since 1999. The guidelines that we used from June 1999 through December 2004 can be found in the ALMAJCOM Information Letter Dated 7 June 1999, entitled, "Implementation of Dental Population Health Metrics". These guidelines were based on those published in the JADA Special Supplement, "Caries Diagnosis and Risk Assessment", Vol. 126, June 1995. As of 1 January 2005, key factors for determining risk for dental caries as found in the ALMAJCOM June 1999 implementation letter were modified in the revised guidelines entitled **Population-Based Dental Health Metrics; Revised, January 2005**. Under the heading of High Caries Risk… the finding of ... "*two or more carious lesions **in the past three years"*** … <u>was changed to read</u> … "*two or more **cavitated** carious lesions **diagnosed during the current dental exam."*** Under the heading Moderate Caries Risk… the finding of … "*At least one carious lesion in the **last three years**"*… <u>was changed to read</u>… "*At least one carious lesion in the **last year***."

As well, other factors were clarified: (1) the definition of a cavitated carious lesion was added and (2) the criteria of white spots and/or incipient interproximal radiolucencies was divided between the Moderate and High Caries Risk categories using the terms *Localized* and *Generalized.*

Since some criteria in the 1995 ADA ***Child/Adolescent Age*** Category also applied to many first-term Airmen, the AF criteria are a combination of these with the 1995 ADA ***Adult*** criteria.

As stated in the new **Evidenced-Based Clinical Recommendations: Professionally Applied Topical Fluoride; Report of the Council on Scientific Affairs; American Dental Association; May 2006,** "… there is no single system for caries risk assessment that has been shown to be valid and reliable. However, there is evidence that dentists can use simple clinical indicators to classify caries risk status that is predictive of future caries experience. [Any] system …offered for guidance …***must be balanced with the practitioner's professional expertise ...and the individual patient's preferences."***

The ADA guidelines allow the provider to err on the side of bringing patients in more frequently which may not be the best model for an already overburdened military dental care

system and many organizations, including the US Navy Dental Service and the Indian Health Service have modified these criteria for defining the high caries risk patient. A working group of experts from the Army, Air Force and Navy Dental Corps have come to a consensus on guidelines that will be used with the new AHLTA Computerized Dental Health Record.

What is most important is that the dental provider is using a recommended guidance of some kind. Therefore, upon review of the 2006 ADA's caries risk assessment guidance, the USAF Dental Service has chosen to remain with their present system at this time. This will allow completion of data collection using the same case definitions and allow for a comparison of longitudinal analyses with the four years of data collected using the previous caries risk assessment guidelines case definitions.

It is paramount that patient dental health and dental readiness not be compromised, therefore, to avoid confusion about when or in what category to classify a patient with regards to low, moderate or high caries risk and consequently which subsequent preventive treatment protocol to use, it is important to remember that caries risk is not an exact science and necessitates the use of sound professional judgment. If there is any doubt, as to which risk category the patient should be assigned, place them in the higher risk category. The approved revised guidelines adopted by the USAF DC are attached. Please note that they are *adapted* from the ADA guidelines. Therefore, although they are similar they are not exactly the same. Changes have been made to minimize workload burden on clinics and to enable each Dental Treatment Facility (DTF) to improve the management of their high caries risk patients while still providing appropriate, optimal dental care for their patients.

These guidelines attempt to help the providers as much as possible to diagnose the appropriate caries risk category for all of their patients. Providers will need to use their clinical judgment and discretion in the diagnoses of cavitated lesions based upon clinical exam with an explorer, a sharp eye, reference radiographs of the area in question and, of course, accepted clinical criteria. Although these are guidelines not rules, this is not to mean that providers have carte blanche to make up their own rules, to have the freedom to choose not to assess patients for their appropriate risk category, or to make up their own categories, e.g., very high caries risk.

Since all AF patients are expected to have "periodic" dental examinations, clinicians should give greater weight to objective signs and history/evidence of carious lesions than to frequency of dental visits. If in doubt as to which caries risk number (1=Low, 2=Moderate, 3=High) is appropriate, use the higher number. The criteria listed for each risk category are not "all or none". A patient may not exhibit all of the risk factors for a specific category. If a patient displays some risk factors from more than one category, the provider must choose the appropriate category in which to place the patient. Document the caries risk as "low", "moderate" or "high" in the "Treatment Narrative" section on the AF 644. When using an overprinted AF 644 or a stamp for exam entries, add a space for the caries risk assessment so that the information gets transferred from the AF 644 onto the SF 603/603A. The Population Health metrics of Tobacco Use Status and Periodontal Screening Record scores serve as additional information that will help the provider to assess the patient with the most appropriate caries risk category. For example, a higher caries risk category is warranted if the patient meets many of the criteria in two or more categories and they use tobacco and/or have PSR 4 scores in any of their 6 sextants.

The history of dental caries continues to be a significant factor for assessing risk for this chronic infectious disease. Patients don't always fall neatly into one category or another, e.g., a patient with one carious lesion in the last two years. Noted caries researcher from NIH, Dr. Al Kingman, says one carious lesion is officially low to moderate risk and it depends upon other factors in which category to place the patient. Therefore, it would be appropriate to place the patient in Low Caries Risk as long as they do not have any other caries risk factors/behaviors, e.g., tobacco use/periodontal disease/diet high in sugar (soda sippers)/sub-optimal fluoride exposure/xerostomia/etc. or any of those listed below from the current 2006 ADA guidelines. Any other additional risk factors would elevate them into the Moderate Caries Risk category unless those risk factors include sub-optimal fluoride exposure or xerostomia in which case they would be placed in the High Caries Risk category as per the current 2006 ADA guidelines.

2006 ADA short listing of factors that may increase the risk for dental caries:

1. High titers of cariogenic bacteria
2. Poor oral hygiene
3. Prolonged nursing (bottle or breast) [*N/A for the USAF Dental Caries Risk Program*]
4. Poor family dental health
5. Developmental or acquired enamel defects
6. Genetic abnormality of teeth
7. Many multi-surface restorations
8. Chemo/radiation therapy
9. Eating disorders
10. Drug/alcohol abuse
11. Irregular dental care
12. Cariogenic diet [*with more than 3 servings daily of a sugary or starchy food or drink*]
13. Active orthodontic treatment
14. Presence of exposed root surfaces
15. Restoration overhangs and open margins
16. Physical or mental disability with inability to perform or get proper oral hygiene or care

Given that a good intervention program is presented with enthusiasm and confidence, most high caries risk patients will probably elect to actively participate if their schedules allow it. If any member of the dental team is not convinced of the effectiveness of the program, encourage them to review the scientific evidence and discuss their concerns with other dental providers and/or the current AF/SG Consultant for Dental Public Health. Patients need to be informed of the risk factors for their disease and encouraged, not threatened or coerced, to modify their behavior to reduce this risk. Remember **we can not force individuals into oral health** and the success of the program for high caries risk patients is dependent upon the patient's commitment to follow the recommendations. For patients who do not wish to participate in your DTF's **High Caries Risk Program**; document the non-compliance or the "refusal of treatment" in the patient's dental health record on the SF 603/603A, and continue to treat all cavitated lesions, encourage their use of fluoride toothpaste/fluoride rinse at least twice per day, and recommend diet modifications to include reducing consumption of fermentable carbohydrates. Since USAF resources are quite limited, they are best used to assist those individuals who are interested and actively participating in reducing their caries risk factors. That being said, with the review and permission of the current AF/SG Consultant for Dental Public Health, protocols can be modified somewhat to be less appointment intensive to better suit the needs of the mission

based upon the particular circumstances of certain clinics, e.g., limited provider or patient availability due to deployments, etc.

Please refer to the new **Evidenced-Based Clinical Recommendations: Professionally Applied Topical Fluoride; Report of the Council on Scientific Affairs; American Dental Association; May 2006**
JADA, Vol 137, August 2006, pp 1151-9. At http://jada.ada.org; **[http://www.ada.org/prof/resources/pubs/jada/reports/report_fluoride.pdf]** and **[http://www.ada.org/prof/resources/pubs/jada/reports/report_fluoride_exec.pdf]** for treatment protocol recommendations for patients *younger than 18* years of age.

[The following recommendations are for patients *18 years and older.*]

The treatment protocol recommendations for **High Caries Risk** category patients can be found in the **Preventive Dentistry** section of the **31 March 2006 Air Force Medical Service Dental Clinical Practice Guidelines**. However, please note there is a major change of the guidance for the **minimum** treatment protocol for **High Caries Risk** category patients from giving *fluoride treatments at every operative appointment* to the fluoride treatment frequency discussed below. [Providers may still follow the previous protocol if they determine the patient's situation and desires warrant a more aggressive treatment regimen, however present evidenced-based guidelines do not support this professional fluoride treatment frequency.]

Current evidenced-based clinical recommendations place greater emphasis on the use of fluoride varnishes than gels and the addition of **prescribed remineralization pastes** for adjunctive home use. And although, either professional applications of varnish *or* gel can be used at 3 *or* 6 month intervals for High Caries Risk patients as per "*Evidenced-Based Clinical Recommendations: Professionally Applied Topical Fluoride; Report of the Council on Scientific Affairs; American Dental Association; May 2006*," it is strongly recommended that **varnish be used, when available, instead of gel** and that **professional fluoride applications be given every 3 months versus every 6 months**.

Home fluoride:

- Fluoride dentifrice 2 or 3 times daily
- 1.1% neutral sodium fluoride gel applied in custom fluoride carrier tray for 5 minutes at bedtime

Xylitol chewing gum: chew 2 pieces of gum for 5 minutes, 3 times per day

Suggested protocols for **Moderate** and **Low Caries Risk** category patients are as follows:

Moderate Caries Risk category

- Professional topical fluoride applications (at 6 month intervals)
- Home fluoride (dentifrice, fluoride rinses (ACT, Fluoriguard) recommend at least 3 fluoride exposures per day)
- Xylitol chewing gum - chew 2 pieces of gum for 5 minutes, 3 times per day

Low Caries Risk category

- No professional topical fluoride applications
- Home fluoride (fluoridated dentifrice 2 or 3 times daily)

Bottom Line: AF providers must use the AF approved guidelines attached (also available on the TSCOHS website and in the January 2005, Volume 1, SGDetails' attachment on Population-Based Dental Health Metrics - Revised, January 2005 guidelines) for caries risk assessment of their patients during performance of Type 1 and 2 examinations in conjunction with the provider's clinical judgment.

A word of advice about laminated placards for treatment protocols:
We must keep in mind that there are lots of treatment regimens available depending on the patient's needs, expectations and acceptance. My issue with clinics buying laminated "recipe" cards is that regimens change as new studies come out and folks are less likely to change with the latest evidenced based guidelines if they have bought nice laminated signage. For example: if the laminated sign says to use CHX and new studies come out saying that its not proven to be any more effective then fluoride, then folks end up still using the CHX inappropriately. This wastes time and funds and is not the best care for our patients. I prefer a more easily changed solution that may also not present the possibility of inadvertently promoting a regimen that recommends use of products that the placard company may also happen to sell. Manufacturers often want to advertise that they had collaborated with the AF or that their products are AF approved and we cannot legally do that. I will be putting recommended low, moderate and high caries risk treatment regimens on the KX site and the TSCOHS website in the near future but the newest ADA Fluoride Protocol Guidelines are pretty clear and still allow for necessary variation of treatment choices.

2. Population Health Metrics. Please take the time to visit the Dental Population Health website at: https://kx.afms.mil/ctb/groups/dotmil/documents/afms/knowledgejunction.hcst?functionalarea=DentalPopHealth&checkinform=AFMS&doctype=home. This website contains excellent examples of short presentations that can be used at Commanders Call to educate our personnel on how to prevent oral disease and improve their overall health and readiness. Although Col Bartoloni is now the new Director for Dental Processing Services, he will continue to provide each base with a monthly update of the population health metrics for their active duty personnel. This information can be used to target prevention efforts by identifying which squadrons have the largest numbers of individuals at high risk for dental caries, periodontal disease and tobacco use. This information can also be used as individual patient action lists to streamline intervention efforts at the patient level. Each DTF can use the data to manage their high caries risk program and to ensure that all patients with at least one sextant that is PSR 4 receive a complete periodontal evaluation within 30 days. If you have any questions on how to use these metrics, please contact Col Joseph A. Bartoloni at (210) 671-2343 (3616), DSN 473-2343 (X3616) or Joseph.Bartoloni@lackland.af.mil .

3. **2008 Preventive Dentistry Course.** The Preventive Dentistry Course will be held at the Dunn Dental Clinic; Lackland AFB, Texas, from 7-11 April 2008. Topics to be covered at the course include: caries risk assessment; management of the high caries risk patient; periodontal risk factors; oral cancer screening exams; minimally invasive dentistry; responsibilities of the preventive dentistry officer; fluoride and new techniques for caries diagnosis; dentistry in a deployed environment; smokeless tobacco use; prophy technician training; tobacco cessation; dental population health metrics; and prevention in pediatric dentistry. There are 15 funded quotas that have been distributed to the commands. There are a limited number of locally funded slots (10) available for this course which will be given on a first come, first serve basis. Those individuals interested in attending using local funds

should contact Major Robert Bogart, Dental Education Officer, HQ AFPC/DPAMD at DSN: 665-0645 or robert.bogart@randolph.af.mil.

4. **Water Fluoridation Issues.** All Preventive Dentistry Officers must closely monitor their base water fluoridation program, especially if their base is adding fluoride to the water. Please review the daily levels as reported by the water testing personnel (civil engineers and bioenvironmental engineers) to ensure that optimal levels of fluoride are being maintained. As a cautionary note regarding the implications of the CDC's water fluoridation guidelines with reference to regional temperature variations, it is important to remember the historical context of these guidelines and the "halo effect" of other fluoride sources when we use our best professional judgment in making recommendations to our civil engineer and dental colleagues as well as to our patients [Please refer to http://www.cdc.gov/mmwr/PDF/rr/rr5014.pdf].

> *"Current federal fluoridation guidelines, maintained by the PHS since 1962, state that community drinking water should contain 0.7–1.2 ppm fluoride, depending on the average maximum daily air temperature of the area. These temperature-related guidelines are based on epidemiologic studies conducted during the 1950s that led to the development of an algebraic formula for determining optimal fluoride concentrations (67, 90 – 92). This formula determined that a lower fluoride concentration was appropriate for communities in warmer climates because persons living in warmer climates drank more tap water. However, social and environmental changes since 1962 (e.g., increased use of air conditioning and more sedentary lifestyles) have reduced the likelihood that persons in warmer regions drink more tap water than persons in cooler regions (7)."*

Another issue that will require your attention is if your base is purchasing their water supply from a nearby town/city and they threaten to stop water fluoridation of that water supply. This will not only affect your on-base military members but most likely your beneficiaries living off-base in the local community as well. You will need to bring the matter to the attention of your Medical Group Commander and the Base Commander and have someone on your local Health Promotions Working Group or higher (the more clout, the better) write a letter to or contact directly the City Counsel, who may have voted to stop fluoridating their water, asking them to reconsider their decision in light of the fact that they serve your AFB, a community of population size "x," not including the family members living in their local area, who have a substantial financial impact on that area. Often decisions like this are made without adequate public notification to the community thus circumventing an opportunity to have a balanced viewpoint presented for rebuttal.

Please feel free to contact me as I will be happy to lend any support I can in countering anti-fluoridation actions with respect to CONUS USAF community water supplies.

Since there is no federal law mandating water fluoridation, it is always a local issue and therefore must be dealt with at the local level. Remember to attack at the grassroots! In OCONUS locations, we can only work to support maintenance of our base Civil Engineers' appropriate water fluoridation efforts, keeping in mind that they must ensure compliance with the sponsoring country's Final Governing Standard/Overseas Environmental Baseline Guidance Document.

United States EPA studies have found that one-half of all operating problems are due to inadequate water treatment plant operator's training or water fluoridation process understanding. These are issues we can rally our local commanders to help ameliorate.

5. **Tri-Service Center Oral Health Studies (TSCOHS).** Please take the time to visit the TSCOHS website at: http://www.usuhs.mil/tscohs/index.shtml using the username and password: <classone>. This website contains excellent examples of short presentations that can be used at Commanders Call to educate our personnel on how to prevent oral disease and improve their overall health and readiness. It also contains oral health promotion items for the day-to-day clinical treatment of our dental patients. Information to help combat anti-fluoridation efforts is also available. Preventive Dentistry Updates #10 through #21 are available, as well as this update, #22, at the following URL: http://www.usuhs.mil/tscohs/military/healthpromo.shtml. If you have any questions on how to find and/or use these materials, please contact TSgt Scott Beauchamp at DSN: 285-6950 or scott.beauchamp@usuhs.mil.

6. **Proper Protocol to Follow for Introduction of Proposals.** Many folks in the field show an interest in helping to further the health of our patients by volunteering to do studies and making proposals to Air Staff for changes in policy in the use of ear-marked funds, etc. We encourage fresh ideas and are proud that members of our corps are so caring and innovative. We would like to facilitate your success by helping everyone to understand how to navigate the appropriate channels properly. Col William J. Dunn, USAF DC, Program Director, AEGD-1 at Keesler AFB, MS, who is very knowledgeable and experienced in this area, has kindly laid out the following recommendations to guide interested parties through the process:

"If you are contemplating conducting dental research you must engage with an IRB (Institutional Review Board) so they can review your study proposal to ensure that all human subjects in your study are protected. It is a violation of federal law if appropriate protections are not followed. The IRB is your expert panel that can determine whether you have adequately addressed these protections. You may think that your area of study doesn't involve human subjects because you are dealing only with records but in some instances your project may not be considered exempt. Because of the high level of scrutiny of human subjects research, the potential legal ramifications, the potential damage to your institution's reputation and research funding, and most importantly for the welfare of your patients' health and privacy you should always have your IRB review all of your study proposals. It is in your best interest to have the IRB classify and assist you in designing your study so that your research question can be answered and that the study will yield meaningful results. Most IRBs have people who are knowledgeable in research design and statistics. Young researchers have often viewed IRBs as another obstacle to conducting research but that is simply not the case. The IRB is there to protect human subjects and promote sound scientific methods. If you are new to research you should find a research mentor to help you with the documents and protocol that an IRB requires. Your specialty consultants are probably the best source of information in this matter. The list of specialty consultants can be found at the end of the Dental World Wide Directory.

Now that you understand the importance of interacting with an IRB, you need to know where you can find one. Not all medical facilities will have an IRB. Most of the larger medical centers will have one: Wilford Hall Medical Center at Lackland AFB, Keesler AFB, Travis AFB, Wright-Patterson AFB, McChord AFB, US Air Force Academy, and Andrews AFB. If your base doesn't have an IRB a regional IRB can be used. LtCol Joe Narrigan, the

Director of Research Oversight and Compliance at AF/SGRC, can tell you which IRB can assist you. He can be contacted at joe.narrigan@pentagon.af.mil. All of your documents can be completed electronically and your proposal can meet the board from a geographically separated location. You would likely have to phone in and participate in a live teleconference, however. Prior to submitting a research protocol you will have to demonstrate some familiarity with human subjects protection. This can be accomplished and documented in several ways and the most common learning tool is the online CITI (Collaborative IRB Training Initiative) course sponsored by the University of Miami. The course includes 17 basic modules focused on biomedical research and can be used to satisfy instructional mandates in the protection of human subjects. I have never had to pay to take the course. Most Air Force Medical Centers are listed as participating network partners and therefore you don't have to pay for this training. After you have located an IRB that will help you they will tell you which online training they require and they will give you the appropriate website. The training can be completed in a few hours and will give you an appreciation of the ethics of human subjects research, and what protections are necessary. The IRB will send you a template of all the required information. You will need to develop a clear study question (hypothesis) and research plan. You will also need to accomplish a literature review on the topic of interest to get an idea of whether your research question has already been answered. Reviewing what others have done before you will also give you insight on the limitations of certain studies and how you might change them in your study.

You may have read in the latest issue of the Journal of the American Dental Association the emergence of Practice-based Research Networks (PBRNs). This push is backed by the National Institutes for Health (NIH) and brings the practitioner into the research network. The reality is that most of the dentistry in the world is done in dental offices, not at research institutions. Therefore, there is a plethora of important clinical information that can be gained from clinical providers with little research experience. For an overview log on to www.pearlnetwork.org and see what's going on. It's hard to imagine but many of the clinical decisions we make in dentistry (and were taught in dental school) are not based on any significant clinical research whatsoever. Research is not just for the egghead in the laboratory. There are many bright ideas that clinicians have in the field. If you have an idea or technique that you believe warrants investigation, please don't let that idea die of loneliness or because you feel uncomfortable with the research process.

Get a mentor and find an IRB. Your research may someday drive changes and improvements in clinical practice!"

If you have questions for Col Dunn, he may be reached at (228) 377-5116 or DSN: 597-5116 or by email at: William.Dunn@keesler.af.mil .

In matters dealing with Dental Public Health studies/proposals: First, please contact the DPH Consultant directly for guidance and input. The same steps as outlined above must be followed along with a review of final versions of your study proposals/protocols by the DPH Consultant. After thorough review/editing, the DPH Consultant will return the original proposal/protocol with recommended changes to the original investigator for study initiation. After the study is completed, please forward your final report to the DPH Consultant for final approval who will then forward the completed study to Air Staff if AF decision-making is required for policy changes. If you have any questions, please contact me at susan.mongeau@usuhs.mil or (301)319-6972 or DSN: 285-6972.

Population-Based Dental Health Metrics
Revised, January 2005

1. Record the following population-based health metrics at every periodic dental examination performed on an Active Duty Air Force patient. If providers elect to perform risk assessment on other patients who would benefit from implementation of risk-related preventive strategies (i.e. OCONUS family members, ARC, other Services), it should be noted, DDS-W will only track Active Duty Air Force.

2. All providers who perform periodic dental exams should read the Special Supplement on Caries Diagnosis and Risk Assessment in the *Journal of the American Dental Association,* Vol.126, June 1995.

Caries Risk Assessment

In the **"Caries"** block, enter the number that best describes that patient's caries risk:

1. Low Caries Risk:
   --No carious lesions in the last three years
   --Adequately restored surfaces and/or coalesced/sealed pits & fissures
   --Good oral hygiene
   --Regular dental visits

2. Moderate Caries Risk:
   - At least one carious lesion in the last year
   - Exposed roots and/or deep, uncoalesced, unsealed pits & fissures
   - Fair oral hygiene
   - Localized- White spots and/or incipient interproximal radiolucencies
   - Irregular dental visits
   - Orthodontic treatment
   - Inadequate fluoride exposure

3. High Caries Risk:
   - 2 or more cavitated carious lesions diagnosed during current exam. A cavitated carious lesion is a lesion that has penetrated the tooth's solid surface and is no longer considered reversible through remineralization.
   - Past root caries/large number of exposed roots
   - Deep pits and fissures
   - Poor oral hygiene
   - Frequent sugar intake
   - Inadequate or no systemic or topical fluoride exposure
   - Irregular dental visits
   - Inadequate salivary flow
   - Generalized- white spots and/or incipient interproximal radiolucencies

Since all AF patients are expected to have "periodic" dental examinations, clinicians should give greater weight to objective signs and history/evidence of carious lesions than to frequency of dental visits. If in doubt as to which caries risk number is appropriate, use the higher number. The criteria listed for each risk category are not "all or none". A patient may not exhibit all of the risk factors for a specific category. If a patient displays some risk factors

from more than one category, the provider must choose the appropriate category to place the patient in.

Document the caries risk as low, moderate or high in the “Treatment Narrative” section on the AF 644. When using an overprinted AF 644 or a stamp for exam entries, add a space for the caries risk assessment so that the information gets transferred onto the SF 603/603A.

Periodontal Screening

- In the **“PSR 0”** block, enter the number of sextants (0-6) for which the patient has a PSR score of 0
- In the **“PSR 4”** block, enter the number of sextants (0-6) for which the patient has a PSR score of 4

Tobacco Use Information

In the **“Other”** block enter the number that corresponds to the patient’s tobacco use:

- 0 = no tobacco use
- 1 = smokes tobacco products only
- 2 = uses smokeless tobacco products only
- 3 = uses both smoking and smokeless tobacco