

## **CAMBRA: Development and Incorporation into a Dental Hygiene Program**

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Caries Management by Risk Assessment (CAMBRA) is becoming the standard of care in the delivery of patient care. CAMBRA is a program for managing dental decay by assessing the patient's risk category and level of caries activity to determine the most effective treatment strategies. Dental caries is treated as an infectious disease that is curable and preventable. Emphasis is on changing the behavior and attitude of patients so that they take an active role in the management of their dental decay.

With 30 years of scientific research on dental caries, Dr. John Featherstone, along with colleagues, laid the foundation for the CAMBRA guidelines and protocols.<sup>1-3</sup> The first guidelines were published in 2003 and are continually being evaluated and revised.<sup>4</sup> A Western CAMBRA Coalition was initiated in 2002 for the purpose of exchanging information about how to incorporate CAMBRA into teaching and clinical practice with representatives from 5 California schools.<sup>5</sup> The Coalition is continually growing to include representatives from schools across the nation, the dental products industry, the dental insurance industry, government and state licensing boards, dental research and clinical practice.

Recently, a practice-based research project for CAMBRA has been initiated. This project will begin in 2011 with a network of 17 dentists who have been calibrated on the CAMBRA guidelines and protocols. The purpose is to measure patient and provider acceptance of incorporating CAMBRA into clinical practice. The ultimate goal is to gather data to determine if there is scientific evidence to support CAMBRA as the standard of care.

Incorporating CAMBRA into dental hygiene and dental programs can be beneficial for both patients and students. By learning the scientific rationale and gaining practical clinical experience with CAMBRA, students are prepared to practice CAMBRA upon graduation.

**CAMBRA Protocol Development:** At the Ostrow School of Dentistry of USC, the Dean requested that CAMBRA be incorporated into the clinical program. First, a committee of 1 dental hygiene and 4 dental faculty members was formed to develop a CAMBRA protocol for use in the dental hygiene and dental pro-

gram. The committee members individually read the scientific research related to CAMBRA and then met to discuss their findings. In addition, committee members attended various CAMBRA meetings and CAMBRA coalitions. Each member summarized key points that could be used to develop the school's protocol.

The committee members adopted the principle that conventional restorative treatment does little to treat the actual etiology of and risk factors leading to dental caries. The dental school will use CAMBRA to diagnose, treat and prevent dental caries from further developing. The diagnostic goals are to determine the risk level for each patient, the level of caries activity and the frequency of exams, radiographs and treatment strategies.

Once the philosophy and principle of CAMBRA were established, the next steps were to set the guidelines and protocol for incorporation into the curriculum and clinic. This included selecting the risk assessment form, determining the treatment strategies for each risk category, determining the products to be used by the patient at home and in the clinic, setting guidelines for recording the information into the computerized patient record, and guidelines for follow up.

The committee adopted a risk assessment form that is a slight variation of Featherstone's form.<sup>3</sup> The modifications include a different format for recording the risk factors and a very specific outline regarding the treatment strategies. Another form was developed to record patient compliance with treatment strategies. The committee made the decision to provide patients at high and extreme risk categories with a take home kit. This kit consists of 16 ounces of 0.12% chlorhexidine, 4 ounces of 1.1% NaF prescription paste, 120 xylitol gumballs, dental floss and a toothbrush. An instruction sheet is included in the kit. Patients with xerostomia are given a non-alcohol chlorhexidine rinse. For patients who have TMJ problems or inability to chew gum, xylitol mints are offered.

Another essential part of the CAMBRA program was establishing the fee, which was based on the patient population and expense of products. The CAMBRA fee includes the initial risk assessment appointment, a patient home care kit, one fluoride application, oral hygiene instructions, nutritional counseling and the first caries recall exam. Finally, the committee members determined how to educate the students and faculty.

**CAMBRA Implementation:** Education of the dental hygiene students included the principles and techniques for biofilm removal, nutritional counseling, fluoride and antimicrobial therapy, and patient motivation. This information is already incorporated

into the dental hygiene curriculum in various courses. In addition to these courses, the Dean, who outlined the scientific basis, provided a 1 hour lecture and general guidelines for CAMBRA and three additional hours were presented by a dental hygiene faculty member outlining the specific details of incorporation of CAMBRA into the clinical program. This education included a one-hour laboratory experience on how to conduct saliva tests.

Education of the dental hygiene faculty included 4 hours of education: a 2 hour presentation by the Dean explaining the importance, scientific evidence and an overview of the program's expectations. This was followed by a 2 hour lecture by the dental hygiene faculty committee member explaining the details of incorporating the program into the curriculum and clinic.

In addition to the educational sessions, the protocol for the program is outlined and given to each student and faculty member. Each patient treated in the dental hygiene clinic is assessed and assigned a risk category. The dental hygiene student conducts the initial assessment, which is then reviewed and approved by the faculty member. The information is recorded in the patient's electronic chart.

The following treatment strategies are followed based on the risk assessment level of the patient:

- Low Risk: oral hygiene education, biofilm control, nutritional counseling, and use of a fluoridated dentifrice 1 to 2 times per day
- Moderate Risk: all of the strategies in low risk PLUS using an over-the-counter (OTC) 0.05% NaF rinse daily, xylitol gum or mints (2 pieces 4 times per day for at least 5 minutes) and application of 5% NaF varnish (2 times per year)
- High Risk: oral hygiene education, nutritional counseling, xylitol gum, 0.12% chlorhexidine 1 time per day for 1 minute, 1 week per month, replace OTC dentifrice with a 1.1% NaF prescription dentifrice 2 times per day
- Extreme Risk: same as high risk except use of 0.12% chlorhexidine in water base, a calcium/phosphate paste and products for xerostomia, such as rinses and gels

Additional treatment strategies include saliva testing for the high and extreme high-risk categories. Initially, it was decided only to do pH testing and then eventually incorporate a saliva buffering test and bacterial culturing for use as criteria to determine the success of treatment strategies. Fluoride varnish for the high and extreme risk is recommended 3 to 4 times per year.

When needed, the patient is referred for restorative treatment after home care treatment and instructions have been provided. Radiographs are taken based on the risk assessment level: at 6 months for extreme risk, 12 months for high risk, 18 months for moderate risk and 24 months for low risk.

The goal is to move patients who are in a higher risk category to a lower risk category. Therefore, follow-up care is essential for evaluation of the patient's progress and to encourage patient compliance. For patients in the high or extreme risk category, the follow up includes a 2 to 4 week follow up appointment to evaluate compliance, a 4 month appointment to evaluate compliance and an 8 month caries recall (high risk) or 6 month caries recall (extreme risk).

Incorporating CAMBRA into a dental hygiene program does have its challenges. Key factors to success include support of the Dean, education of the students and faculty, and a patient tracking system. The biggest challenge in our program has been the follow-up care due to lack of follow through appointments with the patients. This problem is due both to patients not keeping the follow-up appointments and to students not scheduling the follow-up appointments. The committee members are meeting on a regular basis to address some of the concerns and determine solutions. Although the scientific evidence for CAMBRA is very compelling, more research on patient compliance and motivation is needed to help insure the success of CAMBRA, especially in the dental school environment.

## References

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