THE CHALLENGE IS CARIES CONTROL
Are you still playing it safe or calculating the risks?

Goals of this program:

- Acceptance of a changing paradigm in oral healthcare in prevention of dental caries for all patient demographics
- Understanding the role of the emerging technologies in caries prevention that include: detection, risk assessment and remineralization therapies
- Gain confidence in implementing a form of CAMBRA risk assessment tool in your current practice to guide a team-approach to treatment delivery
- Classify your patients by low, medium, high and extreme high risk for caries
- Improve your practice model to educate and motivate your patients at greatest risk for oral disease
- Discuss cases that address various treatment modalities based on risk level and age

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Course Outline

I. **The New Paradigm in Preventive Dentistry**
   a. Shift from a "*repair model*" to a "*health-oriented model*"
   b. Why do we resist change? How can we accomplish new protocols and gain staff acceptance?
   c. Improving quality of life for our patients
   d. Ethical decisions in treatment decisions and consideration to Third-Party Payment systems
      i. ADA center for evidence-based decisions: www.ebd.ada.org/about.aspx
   e. Achieving the goals set by "*Healthy People 2010*" – U.S. Surgeon General Report

II. **CAMBRA** (Caries Management by Risk Assessment) - *copies in your course handouts**
   Defined: A **ca**ries **m**anagement **b**y **r**isk **a**ssessment represents an evidence-based approach to preventing, reversing and treating dental caries. It is an <u>estimation</u> or prediction of an event that may occur in the future.
   CAMBRA forms available by download from *www.premusa.com/dental/seminars*

   A Collection of articles in the October 2007 CDA Journal:
   http://www.cdafoundation.org/who_we_are/publications/cda_journal_october_2007
   Assessment tool for ages 0 – 5:
   http://www.cdafoundation.org/library/docs/jour1007/ramos.pdf
   Assessment tool for ages 6 – adult:
   http://www.cdafoundation.org/library/docs/jour1007/featherstone.pdf
   <u>CAMBRA from ADA website</u>:   http://www.ada.org/2752.aspx?currentTab=2

   a. **The CARIES BALANCE CHART**
   Proposed by Featherstone in 1999 - Recognized the caries process as:
   - Multifactorial
   - Balance between factors (BAD) **Pathological** and (SAFE) **Protective** factors
   - Balance is delicate and swings either way several times daily in most people
   - If Pathological factors outweigh the Protective factors, the risk is greater that caries will initiate/progress
   - The **RISK FACTORS** tell us "<u>HOW</u>" it happened?

b. *What clinicians <u>NEED</u> to know:*
    i. Creating an individualized risk assessment on every patient
    ii. Evaluate early enamel changes using non-invasive detection
    iii. Becoming more proactive in reversing demineralized or carious lesions
    iv. Utilizing an evidence-based approach in selecting effective remineralization plans
    v. Building a "staff approach" in caries management for your practice setting

c. **Implementation of CAMBRA is a systematic approach to treatment conducted at:**
    i. Initial patient visit – correlate to health/dental history documentation
    ii. Update on periodic visits to reassess current state of risk level

d. **Minimally-invasive technology**
    i. Diagnostics: Laser, infra-red fluorescence or light-induced fluorescence
    ii. Chairside tests: saliva, bacteria, oral cancer screening tools
    iii. Home-applied or in-office remineralization therapies
    iv. Anti-bacterial agents

e. **When are diagnostic tests required?**
    i. Bacterial:
        - Radiographic cavities in enamel/dentin
        - Radiographic proximal lesions
        - White spots on enamel surface
        - Restorations in past 3 years
    ii. Saliva tests:
        - Visually inadequate salivary flow
        - Patient reports of dry mouth
        - Stimulated salivary rate below 1ml/in 1minute

f. **Caries is a multi-factorial disease "process" that involves:**
    i. Time, Microflora, Host and Diet
        - Current attention focused on **3** other dynamics in this model: **Salivary flow, saliva buffering capacity** *and* **fluoride exposure**

    ii. **Role of Saliva:**
        - Buffering capacity
        - Preserves integrity of dental and oral tissues
        - Antimicrobial activity
        - Immune surveillance
        - Natural reservoir for fluoride, calcium and phosphate ions
        - Fluoride is LESS effective in the absence of CA and P ions in saliva

    iii. **Impact of Fluoride:**
        - Supports natural remineralization
        - Inhibits bacterial metabolism
        - Inhibits demineralization
        - Promotes remineralization
        - Fluoridated drinking water adds a strong "protective value" on CAMBRA
        - Some bottled waters now contain fluoride – check bottles for labeling

        - **JADA Topical Fluoride Recommendations** *(in your course handouts*)*
            a. Recommendations based on patient risk level
            b. Patients classified as "low risk" receive no additional benefit with routine 2x/year fluoride applications (in-office)

c. 4 Minute fluoride application is only acceptable therapy when gel/foam is used (1 minute is NOT recommended any longer)

d. Fluoride varnish is highly effective in caries prevention and suggested every 6 months (or less) for higher risk children

CASE STUDY – Review of young, adolescent and adult cases:

Review patient profile: medical history, familial information and CAMBRA assessment

- Identify risk scores by reviewing all questions on CAMBRA
- Past history of caries is strongest factor in activating a bacterial test at initial visit
- *Treatment decisions will be guided by*
  - o Age appropriate products
  - o Patient compliance
  - o Risk level determination and specific risks
  - o Results of diagnostic tests: bacterial, salivary etc...
  - o Maintenance intervals, need for radiographic survey frequency, remineralization agents

ICDAS (International Caries Detection & Assessment System   ADA – Caries Classification System

I	Visible only after drying	No enamel breakdown	1 Caries with Or
II	Visible wet	No enamel breakdown	Without Drying
III	Breakdown into dentine	Dentine initial caries	2 Moderate Enamel
IV	Gray area showing through	Dentine involved Only 5%	Caries
V	Cavitation into dentine	Dentinal caries	3 Distinct Cavitation
IV	Cavitation and breakdown	Severe breakdown	Extensive

III.   **Visual Detection of Enamel and Dentin Changes:**
a. International Caries Detection and Assessment System (ICDAS)
   i. See above as the chart outlines changes that classify by I.– IV.
b. ADA Caries Classification System – an alternative system for classifying changes that differentiate early to late stages of the carious process

c. **Visual inspection** of coronal aspect of the tooth
    i. Sound surface
    ii. Initial or Primary
        - No clinically detectable loss of surface
        - Pits/fissures: discoloration and rough spots but no "catch" – subsurface loss
        - Smooth surface: white or opaque area
        - TREATMENT: Remineralization!

d. **Use** of Explorers for caries detection:
    i. 62% sensitivity,
    ii. Eliminates the potential for lesion reversal by disrupting the intact surface layer
    iii. **Recommended use of explorers:**
        - Clean debris from fissures, along gingival margins and interproximal spaces
        - Confirm and assess cavitations
        - Feel margins and defects
        - Feel texture (roughness) of a white spot lesion
        - Evaluate previously-placed dental sealants

e. **Diagnostic Technology:**
    i. Laser fluorescence (**Diagnodent**)
        - Detects up to 2mm/occlusal with 80 sensitivity
        - Requires a dry field; calibrated to a healthy tooth
        - Quantifies results from 0-99
    ii. Red-infrared Reflectance (**Midwest Caries ID**)
        - Detects occlusal and interproximal lesions up to 3mm. depth
        - 80% sensitivity for interproximal
        - 92% sensitivity for occlusal
        - Can be used in slightly wet field
        - Calibrates against established component
        - Visible and audible signals: GREEN/sound structure; RED/demineralized structure

    iii. Quantitative Light Fluorescence (**Inspector**)
        - 61% sensitivity with detection on occlusal surfaces only
        - Can monitor progression due to bacterial tracking patterns
        - Useful for research and not as practical for clinical use

    iv. Digital Fiber Optic Transillumination (**DIFOTI**)
        - Detects occlusal, interproximal, smooth surface and recurrent lesions
        - 69% sensitivity for proximal lesions
        - 80% sensitivity for occlusal lesions

    v. AC Impedance Spectroscopy Technology – ACIST (**CarieScan PRO**) *NEW!*
        - First diagnostic device to measure changes in tooth mineral density
        - Can bypass false readings created by stains or discolorations
        - User – friendly in day to day practice with supplied disposable tips & barriers
        - Can be recorded directly to software for printed documentation

Notes on CASE STUDIES