CURRENT TRENDS IN PEDIATRIC DENTISTRY

Robert Pesun
Dentistry is a field that is constantly evolving. We are perpetually being exposed to new products, therapies, and marketing. This presentation will be a brief overview of some of the products and therapies that we have been exposed to and asked about by patients and other practitioners. The use of, research, and clinical relevance will be discussed.
PROBIOTICS

• Definition

• The World Health Organization's 2001 definition of probiotics is "live microorganisms which, when administered in adequate amounts, confer a health benefit on the host"
The 2002 FAO/WHO guidelines recommend that, though bacteria may be Generally Recognized as Safe (GRAS), the safety of the potential probiotic should be assessed by the minimum required tests:

- Determination of antibiotic resistance patterns
- Assessment of certain metabolic activities (e.g., D-lactate production, bile salt deconjugation)
- Assessment of side-effects during human studies
- Epidemiological surveillance of adverse incidents in consumers (post-market)
- If the strain under evaluation belongs to a species that is a known mammalian toxin producer, it must be tested for toxin production. One possible scheme for testing toxin production has been recommended by the EU Scientific Committee on Animal Nutrition (SCAN, 2000)
- If the strain under evaluation belongs to a species with known hemolytic potential, determination of hemolytic activity is required
"GOOD BACTERIA"

• Available as dietary supplements
• Intended to change the proportions of the different bacteria that make up the oral flora
• Oragenics ProBiora3
• S. oralis, S. uberis, and S. rattus

• Shown to decrease salivary levels of SM in high risk children. Studies needed to see these effects translate over to caries level

• Claim that uberis and oralis decrease safe levels of hydrogen peroxide that will help with caries, periodontal disease and whiten teeth
• BioGaia
• *Lactobacillus reuteri*

• Early studies show that it can lower caries risk in those age 9 if used consistently over the first year of life
• Decreased oral Strep Mutans counts
• Post CHx impeded SM reappearance in one not another
SAFETY

• Most studies are showing a high level of safety associated with probiotic use.
• There is a lack of assessment and systematic reporting of adverse events within the available studies.
• However safety should be evaluated
  • on a strain by strain basis
  • Overall health of the patient it is prescribed to.
    • Immunocompromised (illness/infants/elderly) have more potential for complications such as a bacteremia.
• Research is minimal
• 2 review articles Haukioja and Bizzini et al
  • Neither advocates the use of probiotics at this early stage of research
• Most investigations are pilot studies

• Still quite a while before these can be proven
RESIN INFILTRATION

• Icon by DMG

• A resin material that is used to infiltrate:
  • interproximal incipiences
  • Smooth surface white spot lesions
  • Possible replacement for sealant material
INTERPROXIMAL LESIONS

• Indications
  • Radiographic extension up to the outer third of the dentin
  • No detectable cavitation
  • Dry working field achievable
  • The lesion is likely to progress
The first treatment to bridge the gap between prevention and restoration…

Prevent (Fluoride Therapy)  Infiltrate (Icon)  Restore (Drill & Fill)

E1  E2  D1  D2  D3
DIAGNOSIS
WEDGING
ETCH
INFILTRATE
LIGHT CURE
ISSUES

• Very technique sensitive
• The infiltrant does not have any filler in it so the lesions remain radioopaque
  • Good documentation is required
  • Changing dental practices would require exchange of documentation

• Expensive
SMOOTH SURFACE

• Similar procedure
• Multiple etch periods might be required
• Can be used on decalcifications as well as non carious white spots
  • Ie fluorosis
• Has greater effectiveness on more mild and shallow lesions

• “Air and water entrapments in the tooth have a lower refractive index than intact tooth structure. This leads to unesthetic discolorations. Icon balances out this difference and the appearance blends in with the healthy enamel.”
SEALANT

• No information at this time on their website
• One research article comparing it to the conventional acid etch sealant
GC America

- Active ingredient is Recaldent
  - CPP = Casein Phosphopeptide
  - ACP = Amorphous Calcium Phosphate

- Milk derived proteins that are suppose to bind to the pellicle, plaque and hydroxyapatite

- MI paste plus has Fl-
• FDA approved as a desensitizing agent
• Caries prevention/management:  
  • It is used to remineralize teeth

• Especially for:  
  • Xerostomic patients  
  • Orthodontic patients  
  • Patients with high oral acid levels (pregnancy, GERD, etc.)  
  • Rampant caries; Early childhood caries
• **To apply at home:**
  • Brush with a fluoride toothpaste in the morning and at night. Apply a pea-sized amount of MI Paste to your teeth's surface using a cotton swab or gloved finger. Leave undisturbed for 3 minutes. Expectorate (spit) but do not rinse; leave the excess to slowly dissolve.

• **To apply professionally:**
  • Custom tray
  • Prophy cup application
MECHANISM OF ACTION

• More calcium and phosphate are delivered to teeth
• These elements are usually supersaturated in saliva at a resting pH in the average person
RECOMMENDATION

- Effectiveness is variable through numerous studies
- Its effectiveness in preventing caries is inconsistent depending on the study
- The same for preventing white spot lesions in orthodontic patients
- More research is necessary to provide a definitive recommendation
SILVER COMPOUNDS

- Silver Diamine Fluoride SDF
- Silver Nitrate + Fluoride SNF
- Nano Silver Fluoride NSF

- Silver has been shown to have anti-bacterial properties
- Shown to be effective at arresting caries
- Mechanism on bacteria is unclear
SILVER DIAMINE FLUORIDE SDF
SILVER NITRATE + FLUORIDE SNF

- Both have been shown in clinical trials to be very effective in arresting dentinal caries.
- Easy application
- Can stain hands/clothes
- Can irritate gingival tissues for a few days post procedure
- Arrested caries turn black
- Tertiary dentin builds up
  - Most follow up restorations are without local
- Few studies and unknown mechanism
- Not FDA approved
NANO SILVER FLUORIDE NSF

• Also successful in arresting caries
• Early trials show effectiveness without the black staining
• Toxicity needs further evaluation
  • Some compounds that are labelled as safe change properties as nanoparticles
    • A biologically inert particle like titanium dioxide can cause damage to DNA when in a nano form.
SELF ETCHING SEALANTS

- **Self-etching**: eliminates acid-etch, stops gagging from etch taste and saves time
- **One Step**: improves results by reducing the chance of site contamination
- **Fluoride-release formula**
- **Low viscosity**: provides excellent flow characteristics for optimal wetting of pits and fissures
- **Filled resin**: resists daily wear for long-lasting protection
- **Proven adhesion to unetched enamel**: 21MPa (1)
• One of the few cases where a newer product has the researchers in agreement
• Its use on adult teeth is sub par to that of a conventional sealant
  • Decreased bond strength
  • Increased microleakage

• Factors which overall lead to decreased success
• These are products that may end up being a part of our future as practitioners
• Some are available to use now
• The most important part of new products is not what the advertisers are showing us
• But what the research does
• A simple pubmed search has potential to save you a lot of headaches in the office