Treating the New Geriatric Patient in your Dental Practice

Scott County Dental Society
Davenport, IA
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The mission of the Lifelong Smiles Coalition is to assure optimal oral health for aging Iowans.

LIFELONG SMILES
Oral Health Access for Aging Iowans

Coalition Partners
17 Organizations as of April 2016

Iowa CareGivers
Iowa Public Health Association
Iowa Health Care Association
Iowa Department on Aging
Iowa Dental Hygienists' Association
LeadingAge Iowa
Iowa Department of Public Health
Delta Dental of Iowa Foundation
Iowa Medicaid Enterprise
Iowa Primary Care Association/Safety Net Collaborative
Iowa Association of Area Agencies on Aging
The University of Iowa College of Dentistry and Dental Clinics
The University of Iowa College of Nursing
Des Moines Health Center
Mid Iowa Community Action, Inc.
Visiting Nurses Services of Iowa
Principal Financial Group
I Smile Silver

Links Iowa seniors with oral health resources, education and dental care, including residents of nursing facilities, clients of the Medicaid Elderly Waiver program, and those receiving home and community-based services:

- Develop referral systems with local dentists
- Link dental professionals with training opportunities
- Provide training for nursing facility staff and direct care workers about oral health
- Distribute oral hygiene aids
- Provide care coordination and facilitate access to dental care

LIFELONG SMILES
Oral Health Access for Aging Iowans

PEOPLE

PRACTICE IMPLICATIONS

• The population is getting older and more diverse, leading to different disease patterns, care-seeking behavior and ability to pay

  Utilization trends from 2000 to 2011
  - Adults 19-64 → % of population with a dental visit decreased 2.2%
  - Adults ≥ 65 → % of population with a dental visit increased 4.1%

• Consumers are becoming more astute purchasers of health care and seeking value for their spending.

WHY GOOD ORAL HEALTH IS IMPORTANT

• Appearance and social interactions—smiling and laughing
• Ability to eat and the pleasure eating
• Diet type and nutrition
• Weight changes
• Speech and swallowing
• Hydration
• Behavior
• General health
A larger proportion of the elderly population are keeping more of their teeth for a longer period of time

...is this a good thing?

WHAT IS THE RISK OF: NO TREATMENT

• Pain
• Infection
• Systemic disease complications
  - blood sugar control (especially if diabetic)
  - increased risk of cardiac complications, stroke,
  - increased risk of aspiration pneumonia
  - increased risk of earlier death

INTRAORAL FINDINGS IN THE ELDERLY

• Brittle teeth
• Tooth surface loss
• Xerostomia
• Loss of tissue elasticity; thinning mucosa
• Maxillary sinus pneumatization
• Bone resorption
• Candida infections
• Loss of elasticity in tissue; thinning mucosa
  • may not be due to aging, but rather disease, nutritional deficiencies, pharmacological considerations.
  • No evidence of age-related changes in gingival epithelium or underlying CT

• Periodontal fibers become more irregular.
  • No evidence that susceptibility to progressive periodontal disease in healthy older adults—also dependent on manual dexterity, eyesight, xerostomia, gingival recession.
    (medical—defective neutrophil function or leukemias, diabetes, periodontal disease)

XEROSTOMIA

• CAUSE:
  • Medications
  • Systemic disease

• EFFECT:
  • Increased caries risk
  • Increased risk of salivary gland infection (ascending parotitis)
  • Increased risk of dysphagia
  • Poor retention/tolerability with removable prosthetics

TOOTH SURFACE LOSS → LOSS OF VDO

• High prevalence of attrition/erosion
  • men > women
  • occlusal changes (tooth loss)
  • muscle hyperfunction
  • parafunction (bruxism)
  • GI disturbances
  • environmental conditions
EXODONTIA CONSIDERATIONS

- Maxillary sinus draping over roots of maxillary posterior teeth
- Risk of oro-antral communication and possible fistula formation

FACTOR’S WHEN DECIDING APPROPRIATE TREATMENT FOR THE GERIATRIC PATIENT

- The patient’s desires and expectations
- The type and severity of the patient’s dental needs
- How the patient’s dental problems affect his or her quality of life
- The patient’s ability to tolerate the stress of treatment (his or her mental and medical statuses as well as mobility)
- The patient’s ability to maintain oral health independently
- The probability of positive treatment outcomes
- The availability of reasonable and less-extensive treatment alternatives
- The patient’s financial status
- The dentist’s ability to deliver the care needed (skills and available equipment)
- Other issues (for example, the patient’s lifespan, family influences and expectations and bioethical issues)

Adapted from Berkey, Ettinger and others

CONSIDERATIONS

- Consider person first principals in the planning of all oral health care.
- Consider that aging could be a constellation of acquired disabilities that impact this human organism
- Consider planning realistically and practically.
THE CHALLENGE

• Our challenge is to listen to what a person wishes for himself, evaluate the oral status (dental, medical, function, pharmaceutical, social, psychological —constellation of impacts, etc.), explore realistic probabilities, advise the person as to short term and long term prognosis, guide the person through options and generate a seamless plan of oral health care for the person.

THE NEW GERIATRIC PATIENT

• Older
• More Systemic Diseases
• More Medications
• More Intellectual Disabilities
• More Functional Disabilities
• More Teeth

More Difficult

TRADITIONAL ORAL DISEASE MANAGEMENT BY “DENTAL SURGEON”

GV Black Class I-V: extension for prevention

• traditional surgical approach
• cavity design for each lesion and material
• replacement extends cavity outline
• 75% dentists’ time spent replacing restorations

Ettinger, 1990; Hewlett and Mount, 2003; Abrania, 2005
TRADITIONAL ORAL DISEASE MANAGEMENT BY “DENTAL SURGEON”

- limited focus on control of caries and periodontal diseases
- mechanical/surgical professional approach
- oral hygiene and dietary focus on ‘behavior change’ using dominating role of dental professional

Ettinger, 1990; Hewlett and Mount, 2003; Abrams, 2005

CARIES RISK FACTORS

Destructive Factors:

- Plaque
- Microorganism (types & concentration)
- Frequency & amount of fermentable carbohydrate consumption
- Tooth position/ anatomy overlap
- Restoration defects (overhang, tight or rough approximal contacts)

Protective Factors:

- Saliva flow rate & buffering capacity
- Fluoride exposure
- Chlorhexidine exposure

Anusavice, K.J., Operative Dentistry; 6:22,2001

CARIES RISK

* The probability that a specific number of lesions will develop and/or a specific number of existing lesions will progress over a specific period of time.

Anusavice, K.J., Operative Dentistry; 6:22,2001
RATIONALE FOR CARIES RISK ASSESSMENT

Anusavice...

1. To direct individually-based preventive measures to the highest risk persons who benefit most from prevention
2. To identify low-risk patients in order to delay restorations and prevent unnecessary surgical intervention

GERIATRIC RESTORATIVE DENTISTRY

- Increasing geriatric restorative challenges — due to many modifying/risk factors
  - erosion
  - abrasion
  - demineralization
  - rampant coronal and root caries
  - sound and decayed retained roots
  - subgingival caries
  - recurrent caries, (crowns, repairs)
  - dry oral environments
  - Poor access to care
  - patient disruptive behaviors
  - poor compliance with preventive care
  - high plaque levels
  - financial and other restrictions on care
WHAT IS THE EVIDENCE?

Evidence Based Dentistry (EBD)

Definition (ADA)

Evidence-based dentistry is an approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient's oral and medical condition and history, with the dentist's clinical expertise and the patient's treatment needs and preferences.

(Trans. 2001:462)

EVIDENCE BASED DENTISTRY

Other Definitions

• “the integration of the best research evidence with clinical expertise and patient values”

• “Evidence-based dentistry is the practice of dentistry that integrates the best available evidence with clinical experience and patient preference in making clinical decisions.”
  (New Zealand Dental Association)

ADA CENTER FOR EVIDENCE-BASED DENTISTRY

HTTP://EBD.ADA.ORG

Presentation on J:/share/presentations/09-20
WHAT’S THE PROBLEM
WITH EVIDENCE BASED DENTISTRY?

The problem is:
The Evidence is Confusing

- What is: “clinically relevant scientific evidence”
- What is: “the best available evidence”
- What is: “the best research evidence”
- How long does it take to substantiate the evidence?

“It is estimated that only 14% of new science enters daily clinical practice, and that process takes an estimated average of...

17 years!
THE PROBLEM FOR THE CLINICIAN IS:

How do you determine the “best, scientific, research based, evidence?

• Read an article?
• Go to a CE course?
• Talk to a colleague?
• Go to the ADA website:  http://ebd.ada.org/SystematicReviews.aspx
  - review the systematic reviews and follow recommendations?
• Depend on your own experience?

FLUORIDE-RELEASING RESTORATIVE MATERIALS

<table>
<thead>
<tr>
<th>GI Sealant</th>
<th>Glass Ionomer Cement</th>
<th>RM Glass Ionomer Cements</th>
<th>Compomer (Composite)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC Fugi XII (Triage)</td>
<td>Alpha Fil</td>
<td>GC Fugi II LC</td>
<td>Compoglass</td>
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<tr>
<td></td>
<td>Miracle Mix</td>
<td>Photos-Fil</td>
<td>Dyraact</td>
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<tr>
<td></td>
<td>Ketac Silver</td>
<td>3M Vitrimer</td>
<td>3M F-2000</td>
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<td></td>
<td>Ketac Molar</td>
<td>Vitrabond</td>
<td>FREEDOM</td>
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<td></td>
<td>Ketac-Fil</td>
<td>Ketac Nano</td>
<td>Ionost Fil</td>
</tr>
<tr>
<td></td>
<td>GC Fugi IX</td>
<td>Riva LC (HV)</td>
<td></td>
</tr>
</tbody>
</table>

RESTORATIVE OPTIONS

• Amalgam
• Composites
  • Anterior, Posterior, Hybrid, Nanofill, etc.
  • Compomers (Dyract)
• Modified Glass Ionomer (Fugi II LC)
• Glass Ionomer Cements
• Glass Ionomer Sealant
CHARACTERISTICS OF RESTORATIVE MATERIALS

<table>
<thead>
<tr>
<th>Esthetics</th>
<th>Fluoride</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest</td>
<td>Lowest</td>
</tr>
<tr>
<td>Lowest</td>
<td>Highest</td>
</tr>
</tbody>
</table>

- Composite
- Compomer
- Modified Glass Ionomer
- Glass Ionomer Cement
- Glass Ionomer Sealant


MAJOR ADVANTAGES OF GLASS IONOMERS

- Chemical adhesion – not bonded
- Stronger bond to dentin
- Closer adaption to underlying structure
  - dentin (unaffected, affected, or infected)
  - cementum
- Ability to re-mineralize affected and infected dentin due to high fluoride release
- Easy placement for interim restorations (faster set/bonded)


GLASS IONOMER SEALANT

FUJI TRIAGE

- Highest fluoride release (6x more than any other sealant)
- Chemical bonding - no etching, no bonding
- Highest likelihood of remineralization
- Fluoride release for up to 24 months
- Command cure (pink only)
  - or self cure (white)
GLASS Ionomer Sealant
(Indications for Use)

- Sealants
- Hypersensitivity
- Temporary Endo seal
- Intermediate Restorative for rampant caries
- Incomplete Excavation

Reinforced GICS

- Fuji IX GP (regular or fast set), Fuji IX GP Extra (GC America)
  - Extra equals: Extra strong, fluoride, translucency, fast
- Ketac Molar and Ketac Molar Quick (ESPE)
- ChemFlex (Dentsply)

↓ Calcium content
∴ less moisture sensitive

Smaller glass particles
∴ Stronger

Can absorb Fluoride and "recharge"

Glass Ionomer Based Bulk-Fill

GC America – EQUIA Forte Fil

- Bulk-fill
- Easy and quick to use
- Not technique sensitive
- Non sticky and packable
- No polymerization shrinkage or shrinkage stress
- Optimal marginal seal that offers long-term resistance to microleakage and discoloration
- High fluoride release at tooth restorative interface with recharge capability
- Outstanding resistance to wear and acid erosion
- Available in 8 aesthetic shades
GLASS IONOMER BASED
BULK-FILL
GC America – EQUIA Forte Fil
• Class I, II (stress bearing) and V restorations
• Amalgam alternative
• Composite alternative
• Pediatric restorations
• Geriatric restorations
• Special needs patients
• High caries risk patients
• High strength and wear resistance
  - when “GC coat” applied (lasts 6 months)
  - but loses ability to “recharge” with fluoride

RESIN MODIFIED GLASS IONOMERS
RMGI
• Light Cured
• Chemical adhesion
• Better Esthetics
• Class III and V
• Cervical erosion/abfraction lesions
• Root caries
• Liner/base

MINIMAL INVASIVE DENTISTRY (MID)
INCOMPLETE EXCAVATION
TRANSITIONAL OR FINAL???
• Remove Gross/Rampant Caries with high and low speed handpiece
  - Do Not confuse with ART (Atraumatic Restorative Technique):
    - Remove Gross/Rampant Caries with hand instrumentation
• Be conservative in decay removal – do not expose the pulp
• Stepwise Excavation (2 step excavation) – expectation to replace restoration later: TRANSITIONAL
• Incomplete caries excavation – no expectation to replace: FINAL
  - No caries remain within 2 mm of cavosurface margin!
  - base with glass ionomer sealant/glass ionomer cement

NO MORE INDIRECT PULP CAPPING!
ADVANTAGES OF TRANSITIONAL RESTORATIONS FOR PATIENTS

- Patient confidence, motivation, self-esteem
- Efficient, minimal discomfort
- Cost-effective
- 1-2 surface restorations proven effective
- Gain field control for final restorations
- Lower caries risk
- Simplify treatment planning
- Treatment for those who don’t get treatment
- Two-step excavation to maintain pulp vitality fits into treatment plan/ treatment sequencing

ADVANTAGES OF PERMANENT (FINAL) GI RESTORATIONS

- Preserve tooth structure
- Prevent pulpal exposure
- Longer tooth retention
- Lower lifetime costs
  - Incomplete excavation was found to retain teeth for a mean of four years (8%) longer than complete excavation at significantly (mean 33%) lower lifetime costs.
  
  (Schwendicke et al 2013, JDR)
MINIMAL INVASIVE DENTISTRY (MID)
• Remove Gross/Rampant Caries with high and low speed handpiece
• Remove Gross/Rampant Caries with hand instrumentation(?)
• Be conservative in decay removal – do not expose the pulp
• Stepwise Excavation (2 step excavation) – expectation to replace restoration later
• Incomplete caries excavation – no expectation to replace

NO MORE INDIRECT PULP CAPPING!

“SANDWICH” RESTORATIVE TECHNIQUE
• Closed Sandwich – use of multiple restorative materials with only 1 restorative material at the cavosurface margins of the restoration
• Open Sandwich – use of multiple restorative materials with more than 1 restorative material at the cavosurface margins (most likely 2)

“SANDWICH” RESTORATIVE TECHNIQUE
• Materials
  - amalgam
  - composite
  - RMGI
  - GI
  - GI sealant
• Use combinations of materials for Restorations
  1) GI, RMGI
  2) GI, Amalgam
  3) RMGI, Comp
  4) GI, Comp
  5) GI sealant – GI, RMGI

Any combination – as long most “long term” material is placed on outer layer
GLASS Ionomers
TRANSITIONAL OR PERMANENT?

• How long is the restoration intended to last?
• Where is the restoration being placed?
  - anterior vs posterior?
  - surface?
• What is the patient's oral environment?
  - high caries risk?
  - xerostomic?

LONG TERM OUTCOME:
1) ONE-STEP INCOMPLETE EXCAVATION
2) TWO-STEP INCOMPLETE EXCAVATION
3) COMPLETE EXCAVATION

• One-step incomplete excavation resulted in longer-retained teeth and their vitality
• One-step incomplete means: retained teeth - 53.5 years
  pulp vitality - 41 years
• Two-step incomplete means: retained teeth - 52.5 years
  pulp vitality - 37.5 yrs
• Complete excavations means: retained teeth - 49.5 yrs
  pulp vitality - 31.0 yrs,

COCHRANE SYSTEMATIC REVIEW
OPERATIVE CARIES MANAGEMENT IN ADULTS
(UPDATED 2013)

• Stepwise caries removal resulted in a 56% reduction in incidence of pulp exposure compared to complete caries removal.
• Partial caries removal resulted in a 37% reduction in incidence of pulp exposure compared to complete caries removal.

Conclusion: "These techniques show clinical advantage over complete caries removal in the management of clinical caries."
CONCLUSION:
Understand the Evidence
Understand your Patient
Decide on the Most Appropriate Treatment

Questions?

“PATCHWORK” DENTISTRY

-Repair is not well accepted by practitioners – considered “patchwork dentistry” (Tyas et al. 2000)
-50 – 71% of dental practitioners activity is replacement of restorations (Tyas et al. 2000)
-Minimally invasive...what's ideal for the patient?
- Repair of RBC vs. repair of Amalgam
  -repair of RBC more common
  -repair of Amalgam?
    -Amalgam – results poor at amalgam/amalgam interface
    -RBC with acid/etch adhesives – better
    -RM-GIC with conditioner – even better
    -GIC – best bond strength to Amalgam (Hickel et al. 2012)

ADVANTAGES OF REPAIR

- Less loss and more preservation of tooth structure.
- Reduction of potentially harmful effects to the dental pulp.
- Reduction of pain, mostly no need for local anesthesia (repair not extensive).
- Often less risk of iatrogenic damage to adjacent teeth.
- Reduction of treatment time.
- Reduced costs to the patient.
- Good patient acceptance, patient centered treatment.
- Increased longevity of the restoration. (Hickel et al. 2012)
CONDITIONS SUITABLE FOR REPAIR

- marginal opening/ditching
- severe (localized) marginal staining, which is esthetically unacceptable,
- secondary caries (=caries adjacent to restorations) without deep undermining caries
  (which can be controlled after carefully opening),
- marginal fracture of restorative material,
- chipping or partial fracture of restorative material,
- marginal breakdown of enamel,
- erosive/abrasive loss of tooth structure at restoration margin,
- wear of restoration,
- minor cusp fracture and filling of access cavity after endodontic treatment

LONGEVITY AND PROGNOSIS OF REPAIR

- Seven year clinical study of 88 repaired RBC restorations demonstrated validity of all nonreplacement restoration strategies

A long-term evaluation of alternative treatments to replacement of resin-based composite restorations
Results of a seven-year study

Gordian, V. V. et al. (Journal of the American Dental Association 2009, 140(12):1476-1484.)

Julie Kim
MEDICAL MANAGEMENT
OF
DENTAL CARIES

3 FDA APPROVED AGENTS

- All 3 are approved for tooth sensitivity
- All 3 are used off-label for caries prevention/reduction

- Fluoride Varnish
- Chlorhexidine Varnish
- Silver Nitrate(SN) / Silver Diamine Fluoride(SDF)
FLUORIDE VARNISH

- Are all Fluoride varnishes equal?
- All are 25,000 ppm (5%)
- ADA analysis

<table>
<thead>
<tr>
<th>Varnish (Manufacturer)</th>
<th>22 °C (%)</th>
<th>37 °C (%)</th>
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</thead>
<tbody>
<tr>
<td>Hexas, Ga-Enner (Colgate)</td>
<td>20.1</td>
<td>19.6</td>
</tr>
<tr>
<td>Hexas, Shica (GC)</td>
<td>50.2</td>
<td>48.5</td>
</tr>
<tr>
<td>Scheumann, Sirona</td>
<td>49</td>
<td>48.1</td>
</tr>
<tr>
<td>Biocell, Thuasne (Medicaments)</td>
<td>37.9</td>
<td>36</td>
</tr>
<tr>
<td>Spector, Gutta Percha</td>
<td>16.2</td>
<td>18.7</td>
</tr>
<tr>
<td>Paris, CH (10)</td>
<td>20.3</td>
<td>40.1</td>
</tr>
</tbody>
</table>

CHLORHEXIDINE VARNISH

- Cervitec Plus – 1% CHX and 1% Thymol
  - colorless transparent liquid
  - once dried its therapeutic level of CHX is 10%
  - decreases dentin permeability up to 6 months
  - reduces antibacterial activity
  - CHX destroys cell membranes
  - Thymol is an essential oil that is bacteriostatic and fungistatic
  - significant reduction in S Mutans, S Siprinus, Actin naaaulndi and candida
  - many studies showing significant caries reduction

THE SILVER BULLET

- Silver Nitrate
- Silver Diamine Fluoride (SDF)
History of Silver in Dentistry

- Silver Nitrate used globally for >1000 years.
  - Caries arrest case series & protocols in 1800s.
  - 1891: 87 of 142 treated lesions were arrested.
- AgF used in Japan for ~900 years.
  - Cosmetic blackening of teeth
  - Known to prevent caries.
- NH₃ added >80 years ago = SDF.
  - Approved & monitored by Japan.
- Available in Australia, Brazil, Argentina, Cuba, China since 1980s or before...

SILVER NITRATE FELL OUT OF FAVOR BY 1960'S

- Turns teeth black
- Stains clothes, skin, countertops, etc

RENEWED INTEREST IN SILVER NITRATE

- Dr Steve Duffin – using silver nitrate since 2011 in primary dentition
- 25% Silver Nitrate
- Fluoride Varnish
- Other dentists in Oregon have largely stopped restoring caries in the primary dentition
- Protocol: every month for 3 months
- Caries arrested
SILVER DIAMINE FLUORIDE

Advantage Arrest - Elevate Oral Care

SILVER DIAMINE FLUORIDE

- FDA approved in August, 2014 – became available in April, 2015
- Silver acts as a strong antimicrobial, fluoride promotes remineralization, and ammonia stabilizes the pH
- The treated lesion gains in mineral density and hardness while the lesion depth decreases
- When SDF was applied to carious lesions, impressive prevention was seen for other surfaces
- Annual application prevented caries more than 4x/year
- Suggested application: every 6 months for 2 years (if a restoration is not placed)
- No adverse pulpal effects. Minimize tissue contact.
- SSKI can be used to minimize black stain
PROTOCOL FOR USE OF SDF

1. 1 drop of SDF into the deep end of a glass or plastic dappen dish.
2. Remove bulk saliva with saliva ejector.
3. Isolate tongue and cheek from affected teeth with “2x2” gauze or cotton rolls.
4. Apply petroleum jelly to gingiva near affected areas with a cotton applicator.
5. Dry affected tooth surfaces with air syringe, or if not feasible dry with cotton.
6. Bend microsponge, immerse into SDF, remove excess on side of dappen dish.
7. Apply directly onto the affected tooth surface(s) with microsponge.
8. Allow to absorb for 1-3 minutes, then remove excess with gauze or cotton roll.
9. Rinse with water.
10. Apply every 6 mos – year, for 2 years
11. For decreased darkening, apply SSKI after drying

EVIDENCE?

• 9 RCTs with 1,493 patients.
• 6 on caries arrest.
  – ~90% arrest with 2/year application.
  – 40-80% arrest with 1/year application.
  – more effective in young children.
  – Only 1 study on older adults – not as effective (1x/yr)
• 6 on caries prevention (3 overlap).
  - 70-80% prevention of new lesions in kids by application only to lesions.

How often should you apply it?

– It needs to be re-applied.
– Twice per year, or more often.
– Where? To carious lesions, without excavation.
– How long? For at least the first 2 years...
SILVER DOCUMENTATION AND BILLING

- D1354
- Interim caries arresting medication application
- Code is effective January 1, 2016
- Code definition: Conservative treatment of an active, non-symptomatic carious lesion by topical application of a caries arresting or inhibiting medicament and without mechanical removal of sound tooth structure.

INDICATIONS FOR USE IN THE ELDERLY

- Rampant Caries
  - large caries which need multiple visits for treatment
- Treatment challenged by behavioral or medical management
- Difficult to treat carious lesions
- Patients with limited or no access to dental care

SUMMARY

- Another tool for our tool box.
- Safe, effective, painless, inexpensive.
- Implications: - improving quality of care,
  - improving access to care.
WHY ARE ELDERLY AT INCREASED RISK OF ORAL DISEASE

- Functional Deficits – Arthritis, stroke, sight
- Cognitive Deficits – Alzheimer’s, Parkinson’s, depression
- Multiple medical considerations
- Polypharmacy – side effects
- Access to Care
- More teeth with more exposed root surfaces

Risk of Rapid Oral Health Deterioration: The ROHD concept

Risk factors:
- General health conditions
- Social support
- Oral conditions
Assessing patients’ risk for ROHD

- What are the data?
- What data is the most important/influential in regards to the treatment plan?
- What will happen if we do nothing?
- What is the patient’s risk for oral condition deterioration?
- What are the treatment alternatives?

1. Risk factors for ROHD have not presented.
2. Risk factors XYZ are presenting for ROHD.
3. Beginning ROHD with immediate risk for further ROHD.
4. ROHD has happened – What risk factors led to ROHD?

CONSIDERATIONS FOR PROVIDING DENTAL TREATMENT TO THE NEW GERIATRIC PATIENT:

PREVENTIVE STRATEGIES

- Mechanical
- Chemotherapeutic
- Diet

MECHANICAL VS ELECTRIC??
CHEMOTHERAPEUTIC AGENTS

• In Office Fluoride
  • Fluoride gels
  • Fluoride varnish – Vanish (vi-calcium phosphate)
    - MI Varnish (Recaldent – CPP-ACP)
• Home Fluoride
  • Dentifrices, gels, rinses
    - Prevident 5000+ / Clinpro 5000
• Antibacterial
  • Chlorhexidine Gluconate 0.12%
  • Chlorhexidine Varnish (Cervitec) - 1%
  • Chlorhexidine Gel (compounded) – 2%
• Xylitol gum or candy
HOW DO YOU DECIDE WHAT TO RX?

- What are you trying to prevent?
- What is the most effective for the patient?
- Is the patient able to comply?

- Rx Dentifrice (5,000 ppm) - caries reduction
- Fluoride Varnish (25,000 ppm) - caries reduction
- CHX rinse/Gel/Varnish - gingivitis/perio
- Both?

CARIES AND GINGIVITIS

Fluoride and Chlorhexidine

- Commercial products containing both are not available in the US
- Using them together has an additive protective effect
- An inhibitory effect on acid production and plaque formation by CHX may reduce the cariogenic challenge enough for fluoride to act more effectively
- It appears that there is more damage to the outer structures of S. mutans by the combination of CHX and fluoride than by each agent alone
- Numerous studies showing that used in combination
  - S Mutans (plaque) significantly more reduced
  - Significantly greater reduction in caries
  - Significantly greater reduction in gingival inflammation

COMPLIANCE ISSUES

(ESPECIALLY WHEN RX’S BOTH)

VERY IMPORTANT!!

- NPO for 30 minutes after use
- Cannot use within 30 minutes of each other?
  - True Only if using a toothpaste with MFP or SLS (CHX reacts with MFP and SLS)
  - CHX does NOT react with NaF (5000 ppm Rx toothpaste)
- Generally thought to use CHX first, then fluoridated toothpaste
- If applying CHX with a toothbrush, suggest using a different toothbrush if using a toothpaste with MFP or SLS
NEW TOOTHPASTE

- breaks the molecular bond between plaque and tooth
- 2.5x less plaque
- Gingival tissue 2x more healthy

XEROSTOMIA / HYPOSALIVATION

Effects on Quality of Life?

- Increased risk of infections (candida, salivary gland)
- Increased caries/periodontal disease
- Decreased nutritional intake
- Decreased denture wearing
- Discomfort—burning mouth/generalized soreness
- Decreased compliance with medications

HYPOSALIVATION—CAUSES

Medications (80% of the most commonly prescribed meds cause xerostomia)

- Anticholinergics & Antiparkinsonian agents
  - Methantheline bromide (Banthine), dicyclomine (Bentyl), troxerutin (Dexil), ethopropazine (Diprop)
- Antidepressants
  - SSRI’s, MAOI’s, and all TCAs, amitriptyline (Elavil), trazodone (Desyrel), buproprion (Wellbutrin)
- Antipsychotics
  - Chlorpromazine (Thorazine), haloperidol (Haldol), thioridazine (Mellaril), thiothixene (Navane), prochlorperazine (Compazine), trifluoperazine (Stelazine)
- CNS stimulants
  - Caffeine/methamphetamine, methyldopa, methyldopa (Ritalin, Concerta), phenotiramines (Parocort), pemoline (Dextroamphetamine (Dextramethasone))
- Others: sedatives, antihistamines, antihypertensives (β blockers, diuretics, CCBs, ACE inhibitors)

HYPOSALIVATION—CAUSES

- Sjogren’s syndrome
- Diabetes
- Conditions affecting the CNS (Alzheimer’s disease)
- Psychogenic disorders (interference with neural transmission (depression, anxiety)
- Dehydration
  - Impaired water intake, water loss through tissue, blood loss, renal water loss, emesis, diarrhea
- Post-radiation therapy (unless total dose is <25 Gy)
  - Within one week of radiation tx, permanent salivary hypofunction (salivary gland tissues atrophy and become fibrotic)
  - Apoptosis of serous-producing salivary cells

XEROSTOMIA / HYPOSALIVATION TREATMENT

- OTC Saliva substitutes
  - Mouthkote—Parnell (xylitol, sorbitol)
  - Pump spray
  - Oasis Mouthwash and Mouth spray (glycerin, sorbitol)
  - GC Dry Mouth-Gel (sodium carboxy methyl cellulose)
  - Oral Balance Moisturizing gel or liquid (glucose oxidase enzyme, sorbitol)
  - Bioline spray, rinse, or gel
  - Salivart Synthetic Saliva (NaCMC, sorbitol)
  - Stoppers4 Dry Mouth Spray (glycerin, xylitol)

***consider spray or gel for cognitively impaired patients
XEROSTOMIA / HYPOSALIVATION

TREATMENT

• Saliva enhancement/mineralizing products:
  • OTC: sugar-free chewing gum/candy
  • Novamin (calcium sodium phosphosilicate/bioactive glass) - raises pH of the oral environment
  • Recaldent (Amorphous Calcium Phosphate stabilized by casein phosphopeptides (CPP-ACP))
    • Mi Paste Plus (10%)
    • Trident chewing gum (0.6%)

MI PASTE PLUS / REMIN PRO

• US FDA – hypersensitivity
• Other uses - caries prevention prevention/removal of white spots, and to reduce feeling of xerostomia
• Application -
  • Apply with finger, toothbrush, or prophylaxis cup
  • Use tongue to disperse
  • Do not rinse for 30 min

Mi Paste Plus: Recaldent (CPP-ACP), fluoride
Remin Pro: Hydroxyapatite, xylitol, and fluoride

XEROSTOMIA / HYPOSALIVATION

• Other remedies
  • Humidifier
  • Increase water intake, and rinse prior to eating
  • Avoid whitening toothpastes with peroxide
  • Systemic cholinergic agents
    • **Pilocarpine (5mg qid) ($$$)
    • **Cevimeline (30mg tid) fewer adverse cardiac and pulmonary effects ($$$)
      Avoid in patients with COPD, pulmonary/cardiovascular problems, multiple sclerosis or GI ulcers
CAN WE PREVENT THIS?

IOWA (MARYLAND) BRIDGE
- Disadvantages:
  - Debonding
  - Discoloration of adjacent teeth

ALL CERAMIC IPS EMPRESS RBFPD
- Luted with a dual polymerizing composite
U-BEAM BRIDGE – FIBER REINFORCED COMPOSITE RESIN

What about single tooth replacement

Flexible Partial

• Valplast
• Duraplast
• DuraFlex
PROPERTIES / VALPLAST

- Valplast: flexible, semi-translucent nylon based thermoplastic resin.

PROPERTIES / DURAFLEX

- A new line of thermoplastic nylon, acetal acrylic, and polycarbonate materials are taking a new surge in dental applications. Various commercially available nylon flexible denture base materials are now in use – Duraplast, Duraflex

  - Advantages of Duraplast/Duraflex
    - much easier to adjust (can use regular acrylic burs)
    - can add teeth to base
    - can have base fabricated for try-in
    - can repair or reline


FLEXIBLE DENTURE INDICATIONS

- soft tissue and bony undercuts
- Interferences
- various paths of insertion
- deranged occlusion
- Esthetics a major concern

- Additional applications for Flexible partials include cosmetic gum veneers, bruxism appliances, implant retained overdentures and full dentures for patients with protuberant bony structures or large undercuts.
ADVANTAGES OF FLEXIBLE DENTURES

• Less expensive than conventional RPDs
• Managing significant undercuts without surgery
• Esthetics- no metal clasps, transparent material allows for good gingival blending
• No alteration of natural teeth needed (ie: rest preps, guide planes)
• Option for elderly with thin mucoperiosteum, poor blood supply, ulcerations
• Dentures made of flexible materials prevent peak forces and, thereby, preserve more regenerates osseseous tissue than hard acrylic resin dentures.
• Alternative for patients with allergies–allergic symptoms can occur for restorative components that contain mercury, nickel, titanium and certain types of synthetic properties commonly found in conventional denture partials

DISADVANTAGES OF FLEXIBLE DENTURES

Valplast only
• Difficult to adjust
• Difficulty using trial bases to mount
• Debonding of teeth - The polyamide denture base material does not chemically bond with any of the acrylic resin / porcelain--mechanical bonding is the only mode
• Repair and relining difficult (rebase similar to conventional denture)

Valplast/Durolast/Duraflex
• Chewing efficiency?
• Discoloration – gradual fading of denture base color over a period of 12-24 months.
• Definitive prosthesis - Flexible dentures generally are not used for long-term restorations.
• Porosity of the soft acrylic allows slightly more plaque build up, bacteria retention, odor

ZEST ANCHORS

Drill and counter sink
Zest anchor
Locator housing and retentive inserts
Locator abutment analogs
ROOT RETAINED OVER DENTURE

- Zest Locator Root Attachment System

RADIOGRAPHS

Zest Anchors

ZEST ANCHORS
ZEST ANCHORS

Locator housing with processing insert
Locator housing with retention insert

INDIRECT TOOTH COLORED BONDED RESTORATIONS.

- Materials
  - Sinfony: Heat/light cured microhybrid
  - IPS Empress I & II: Leucite-reinforced glass ceramic
  - Lava: Zirconia milled core with ceramic build-up
  - EMax: Lithium disilicate pressed ceramic system

RELYX ULTIMATE

- Simple and fast!
- Optional selective etching
CLINICAL LONG-TERM EVALUATION AND FAILURE CHARACTERISTICS OF 1,335 ALL-CERAMIC RESTORATIONS

• Conclusion: All-ceramic restorations offer a predictable and successful restoration with an estimated survival probability of 93.5% over 10 years. Significantly increased failure rates are associated with bruxism, nonvital teeth, and specific cementation agents.


A SYSTEMATIC REVIEW OF CERAMIC INLAYS IN POSTERIOR TEETH: AN UPDATE.

• Current ceramic materials in inlay/onlay restorations seem to perform as well as other restorative options for selected properties during the first years after placement (with regards to esthetics, longevity, and comfort).