RESTORATIVE DENTISTRY

An Evidence-Based Update for Practitioners

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Learning Objectives

1. Discuss the techniques and materials for Class I, II and V restorations
2. Discuss the difference between glass ionomers and composite resin
3. Review the principles of esthetics
4. Review the current usage of amalgam
5. Discuss the various bleaching techniques
Evidence-Based Dentistry

- Definition –
- A systematic practice of dentistry in which the dentist finds, assesses, and implements methods of diagnosis and treatment on the basis of the best available current research, their clinical expertise, and the needs and preferences of the patient.

Mosby’s Medical Dictionary, 8th edition, 2009, Elsevier

WHO IS YOUR CLIENTELE AND HOW CAN EVIDENCE-BASED DENTISTRY APPLY TO COMMUNITY HEALTH CENTERS?
PRIVATE PRACTICE AND COMMUNITY HEALTH DENTISTRY DIFFER ON FINANCIAL AND CLINICAL CHALLENGES

THE MISSIONS AND THE PRIORITIES ARE NOT THE SAME
Priorities in a Primary Care Dental Program

- Private practice patients pay for services while health centers are financed through a budget approved by public and private funding.
- Service and treatment priorities are based on availability of resources, service prioritization, target population size and a reasonable definition of dental health verses ideal health.

- Resource: "Growing and Sustaining a Dental Clinic within the Primary Care "Safety Net" presented by Bob Russell, DDS, MPH
- Iowa Department of Public Health

**TABLE 2: SERVICES OFFERED AND DELIVERY METHOD**

<table>
<thead>
<tr>
<th>SERVICE TYPE</th>
<th>DELIVERY METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROVIDED BY GRANTEE (a)</td>
</tr>
<tr>
<td>21. Directly observed TB Therapy</td>
<td>25.7%</td>
</tr>
<tr>
<td>22. Nonsite Care</td>
<td>5.5%</td>
</tr>
<tr>
<td>23. Other Specialty Care</td>
<td>30.1%</td>
</tr>
</tbody>
</table>

National Summary for 2007
1067 Grantees
Challenge for the Community Health Clinician

- Satisfying the health administrators under financial pressure while exploring the quality of life in the totality of oral health or the new found potential association between periodontal infection and general health problems.

Resource: “Community dentistry and public health dentistry-roles and current discipline issues:”
Eli Schwarz, KOD, DDS, MPH, PhD, FHKAM, FCDHK, FACD

Service Priorities in the Health Centers

- Level One: Emergency Care
- Level Two: Primary Care (preventive)
- Level Three: Secondary Preventive and Restorative Care

Resource: Growing and Sustaining a Dental Clinic within the Primary Care “Safety Net”
FQHC Dental Clinic Operations in a Changing Environment: Bob Russell, DDS, MPH, Iowa Department of Public Health
Goal of dental in a Community Health Center

- Assured that quality dental services are available to the service population regardless of the health status of the patient or the method of payment.

Resource: Growing and Sustaining a Dental Clinic within the Primary Care “Safety Net” FQHC Dental Clinic Operations in a Changing Environment: Bob Russell, DDS, MPH,

Who belong to our service population?
Check those caries risk factors present and enter assigned weigh in box(es) at far right column.

<table>
<thead>
<tr>
<th>CRA Scoring</th>
<th>Enter Weight of (x) of items here ↓</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Weights ↓</td>
</tr>
</tbody>
</table>

1. Frank carious lesions are present in mouth
2. Frank carious teeth = 3 or more
3. Incipient carious surface = 3 or more
4. Number of filled surfaces = 5 or more
5. Patient does not use fluoride-containing products (toothpaste, gel or rinse)
6. Last filling was placed less than 1 year ago
7. Sugar/diet history suggests caries prone diet-from dietary assessment below
8. Patient reports xerostomia and/or mouth appears dry
9. Patient takes xerotic medications or has had head and neck radiation therapy
10. Patient has orthodontic appliances or removable partial denture

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>Moderate Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk presumed when CRA score = 0-3</td>
<td>Moderate Risk presumed when CRA score = 4-8</td>
<td>High Risk presumed when CRA score = 8 or more</td>
</tr>
</tbody>
</table>

CRA Score = Total all weights

Low Risk presumed when CRA score = 0-3
Moderate Risk presumed when CRA score = 4-8
High Risk presumed when CRA score = 8 or more
# GUIDELINES: Caries Treatment Modalities for Adults by Risk Category

<table>
<thead>
<tr>
<th>Recall Interval</th>
<th>Low Risk</th>
<th>Moderate Risk</th>
<th>High Risk</th>
<th>Moderate Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 month</td>
<td>Evaluate CRA and sealants; radiographs as needed</td>
<td>6 month Evaluate CRA and sealants; radiographs as needed</td>
<td>3-6 month Evaluate CRA and sealants; radiographs as needed</td>
<td>6 month Evaluate CRA and sealants; radiographs as needed</td>
</tr>
<tr>
<td>Education</td>
<td>Reinforce OHI</td>
<td>OHI</td>
<td>OHI</td>
<td>OHI</td>
</tr>
<tr>
<td>Fluoride</td>
<td>Brush and fluoride dentifrice</td>
<td>Brush with fluoride dentifrice; professional topical fluoride; home fluoride treatment; fluoride varnish</td>
<td>Brush with fluoride dentifrice; professional topical fluoride; home fluoride treatment</td>
<td>Brush with fluoride dentifrice; professional topical fluoride; home fluoride treatment</td>
</tr>
<tr>
<td>Deep Pits and Fissures</td>
<td>Monitor</td>
<td>Preventive sealants</td>
<td>Preventive sealants</td>
<td>Preventive sealants</td>
</tr>
<tr>
<td>Incipient caries F/L smooth surfaces</td>
<td>Preventive and/or therapeutic sealants/PRR</td>
<td>Preventive and/or therapeutic sealants/PRR</td>
<td>Preventive and/or therapeutic sealants/PRR</td>
<td>Preventive and/or therapeutic sealants/PRR</td>
</tr>
<tr>
<td>Incipient Caries-proximal smooth surface</td>
<td>Monitor and treat with fluoride</td>
<td>Monitor and treat with fluoride</td>
<td>Monitor and treat with fluoride</td>
<td>Monitor and treat with fluoride</td>
</tr>
<tr>
<td>Cavitated and/or frank caries</td>
<td>Place permanent restoration</td>
<td>Prompt removal and placement of temporary or permanent restorations</td>
<td>Prompt removal and placement of temporary or permanent restorations</td>
<td>Prompt removal and placement of temporary or permanent restorations</td>
</tr>
<tr>
<td>Defective Margins</td>
<td>Monitor, recany or seal</td>
<td>Recountor, seal or replace</td>
<td>Recountor, seal or replace</td>
<td>Recountor, seal or replace</td>
</tr>
<tr>
<td>Adjunctive therapies</td>
<td>None</td>
<td>Xyliol gum</td>
<td>Xyliol gum</td>
<td>Xyliol gum</td>
</tr>
<tr>
<td>Advanced restorative treatment</td>
<td>Proceed</td>
<td>Proceed, however, advise patient of continued risk for caries</td>
<td>Proceed, however, advise patient of continued risk for caries</td>
<td>Withheld until caries risk has been lowered to at least a moderate level</td>
</tr>
<tr>
<td>Perio surgery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Resource: Adapted from Dodds, JDE 1995, 59:10, 945-956
Sequencing the Dental Treatment

1. Systemic Treatment
2. Acute Treatment
3. Disease Control
4. Definitive Treatment

Systemic Treatment

- 1. Consult with patient’s physician
- 2. Premedication
- 3. Stress/Fear Management
- Any necessary treatment consideration for systemic disease

Acute Treatment

- 1. Emergency treatment for pain or infection
- 2. Treatment of the urgent chief complaint when possible


Disease Control

- A. Caries removal to determine restorability of questionable teeth
- B. Extraction of hopeless or problematic teeth
  - 1. Possible temporary replacement of teeth
- C. Periodontal disease control
  - 1. Oral hygiene instruction
  - 2. Initial therapy
- D. Caries Control
- E. Replacement of defective restorations
- F. Endodontic Therapy
- G. Stabilization of teeth with temporary or foundation restorations
- H. Post treatment assessment

**Definitive Treatment**

- 1. Advanced periodontal treatment
- 2. Stabilize occlusion
- 3. Orthodontic, orthognatic surgical treatment
- 4. Occlusal adjustment
- 5. Definitive restoration of individual teeth
- 6. Esthetic dentistry
- 7. Elective extraction of asymptomatic teeth
- 8. Prosthodontic replacement of missing teeth
- 9. Post treatment assessment
- 10. Maintenance therapy

*Resource: Stefanac, Stephen, Nesbit, Samuel: Treatment Planning in Dentistry, 2001*

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**Improving Patient Acceptance of Treatment Plans**

- Patient must believe:
  - That they are susceptible to the disease
  - The disease has serious consequences
  - Disease can be prevented or limited if patient makes changes in nutrition, oral hygiene, etc.

*Resource: Stefanac, Stephen, Nesbit, Samuel: Treatment Planning in Dentistry, 2001*
Selection of a Dental Restorative Material

- 1. Physical and mechanical properties of the material
- Technical features of the material from the perspective of the dental professional
- Patient factors of acceptability
- Other clinical aspects that contribute to the material’s effectiveness


Longevity - Life Expectancy of a Dental Restoration

<table>
<thead>
<tr>
<th>Clinical Condition</th>
<th>Preferred Treatment Options</th>
<th>Dental Material Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionable caries—smooth surface, pit, or fissure sticking</td>
<td>Fluoride treatment, oral hygiene instruction; seal pits and fissures and/or observe and re-evaluate at recall appointments</td>
<td>Sealant</td>
</tr>
<tr>
<td>Incipient (early) caries</td>
<td>Preventive resin/sealant</td>
<td>Preventive resin/sealant, composite, glass ionomer</td>
</tr>
<tr>
<td>Moderate to extensive caries</td>
<td>Restore or extract if tooth destruction is extensive</td>
<td>Amalgam, cast metal, ceramic, metal ceramic</td>
</tr>
<tr>
<td>Defective or failed restoration</td>
<td>Repair or replacement</td>
<td>Depends on whether restoration is being replaced or repaired</td>
</tr>
<tr>
<td>Tooth Fracture</td>
<td>Restore or extract depending on severity</td>
<td>Amalgam, composite, cast alloys, metal-ceramic, ceramics</td>
</tr>
</tbody>
</table>

Ideal Composite Material

- 1. Excellent physical properties
- 2. High-gloss polish ability
- 3. Fracture resistance
- 4. Color stability
- 5. Universal usage
- 6. Radiopacity
- 7. Extensive shade range
- 8. Ease of handling
- 9. High viscosity
- 10. Clinically proven

Direct Anterior Restorations

- 1. Composites
  - a. Microfilled resins
  - b. Hybrid resins
  - c. Compomers
  - d. Nanofil
Composite: a dental material composed of four components. These are

1. Polymer
2. Filler particles
3. A coupling agent
4. An initiator

Microfilled Resin

- A submicron inorganic filler particles composite which can be polished to a high luster. This composite has the smoothest surface of all composites.

- Best used in Class V esthetic areas, composite veneers and in areas where esthetic is a premium concern.

- Should not be used in a Class IV situation

Hybrid Resin

- Contains a mix of submicron and small particles filler.
- Usually the choice for Class III, IV and posterior teeth

Glass Ionomer Restorative Material

- Used under composites in the “sandwich” techniques in patients with a high caries index
- Combined with composite resins to form
  - “compomers”
Nanofills

- Universal usage
- 30 colors available

Indications for Resin Restorations

- 1. Class III lesions on anterior teeth
- Class V lesions on anterior teeth (facial)
- Class IV lesions on anterior teeth
- Fractured anterior teeth
- As core build up for castings
- Esthetics Class I and II lesions on posterior teeth, depending on limitations of size, location, and occlusal wear pattern

Advantages of Posterior Resin Composite Restorations

- Esthetics
- Conservation of tooth structure
- Adhesion to tooth structure
- Low thermal conductivity
- No galvanic currents
- Radiopaque restorative material
- Alternate restorative material to amalgam

Disadvantages of Posterior Composite Restorations

- Polymerization shrinkage
- Secondary Caries
- Post Operative Sensitivity (improved with newer binding materials)
- Decreased wear resistance

Fractured Tooth

Tooth Bleaching

Animated-Teeth.com
Four Bleaching Categories

- Professionally applied
- Dentist-prescribed/dispensed
- Consumer-purchased/ over-the-counter
- Non-dental options ( mall kiosks, cruise ships and spa settings

Amalgam

- Used for centuries and is very safe and sound
- Severe damage to teeth
- Patient’s commitment to oral and personal hygiene is very poor
- Moisture control is a problem
- Cost is a major concern for the patient

Resource: DHHS,CDC
Meth Mouth

Oral Health of Meth Users

- 1. Xerostomia
- 2. Rampant caries
- 3. Bruxism

Resource: US Dept of Justice Archive
Sharlee Shirley, RDH, MPH
Jim Cecil, DDS, MPH, Univ of Kentucky, School of Dentistry
RESTORATIVE DENTISTRY HAS CHANGED!