CLINICAL ALGORITHMS FOR SDF, PVP-I, FLUORIDE VARNISH AND GIC IN MOBILE SCHOOL PROGRAMS

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Sharity Ludwig is an employee of Advantage Dental from DentaQuest.

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LEARNING OBJECTIVES

1) Gain an understanding of the use of clinical algorithms in dental mobile care of children.

2) Understand the evidence base for the clinical algorithms and the use of SDF, PVP-I, Fluoride Varnish, and GIC.

3) Explain impact on community outreach care.

4) Describe how the algorithm-based care has been integrated into the electronic record and care systems.

5) Understand the associated clinical and administrative issues.
OUR MOTIVATION FOR THE USE OF CLINICAL ALGORITHMS IN MOBILE AND CLINIC CARE

External motivation
- Current methods are not reducing disparities in access and oral health
- Novel evidence-based caries prevention and arrest treatments are available
- Integration of primary care and oral health: e.g. Managed Care Organizations in Oregon (CMS State Innovation Models)
- Stakeholders are demanding it

Internal motivation
- Being effective and efficient is necessary for survival
- Achieving company’s mission
- Decrease inequalities in oral health
EVIDENCE BASE FOR CLINICAL ALGORITHMS AND TREATMENTS FOR DENTAL CARIES

Joana Cunha-Cruz
PREVENTIVE TREATMENTS FOR DENTAL CARIES

F varnish + Iodine
Daily Self-Flossing
F toothpaste
Daily Pro-Flossing
Vitamin D / UV
SDF
Prophies
F varnish
Sealants

What are the top 3?
What is the worst?
Evidence-base for Fluoride Toothpaste

Caries prevention in primary teeth (n=5 studies)

Preventive Fraction (DMFS) = 31%

Number Needed to Treat (NNT):
Number of children that need to use F toothpaste to avoid caries in 1 child in a community with
High caries (70%) = 11
Moderate caries (50%) = 15
Low caries (20%) = 37

Dos Santos et al, 2013. Community Dent Oral Epidemiol; 41; 1–12.
Evidence-base for Fluoride Varnish

Caries prevention in primary teeth (n=15 studies)

PF (DMFT) = 30%

Number Needed to Treat (NNT):
Number of children that need to use F Varnish to avoid caries in 1 child in a community with
High caries (70%) = 13
Moderate caries (50%) = 18
Low caries (20%) = 30

Dos Santos et al, 2018, submitted.
Evidence-base for Fluoride Varnish + Povidone Iodine

Caries prevention in primary teeth (n=1 studies)

Number Needed to Treat (NNT):
Number of children that need to use F Varnish + PI (instead of FV alone) to avoid caries in 1 child in a community with
High caries (70%) = 6
Moderate caries (50%) = 8
Low caries (20%) = 13

Evidence-base for Silver Diamine Fluoride (SDF)
Caries prevention in primary teeth (n= 4 studies)

PF (DMFT)
SDF vs Placebo = 77.5%
SDF vs Fluoride Varnish = 54%
SDF vs GIC = no difference

RR or NNT not reported

Evidence-base for Sealants

Caries prevention in permanent molars (n=6 studies)

71% prevention on treated surfaces

Number Needed to Treat (NNT):
Number of children that need to use Sealant (instead of placebo) to avoid caries in 1 child in a community with

High caries (70%) = 2
Moderate caries (50%) = 2
Low caries (20%) = 4

Ahovuo-Saloranta et al. (2013) Cochrane Database Syst Rev 3:CD001830
Evidence-base for Resin Sealants vs Glass Ionomer Sealants

Caries prevention in permanent molars

Resin = HVGI

Advantages of HVGI
Less need for moisture control (use in erupting teeth and wiggly kids)
Fewer caries recurrence (even when not retained)

--- Only if there is fluoride!

Does a sealant on occlusal prevent caries elsewhere?

Cagetti J Dent Res 2014
WHICH WOULD YOU USE?

1. Silver Diamine Fluoride  70%
2. Sealants (Resin or HVGI) 70%
3. Vitamin D / UV  50%
4. F varnish + Iodine  50%
5. Daily Pro-Flossing  40%
6. F toothpaste  31%
7. F varnish  31%
8. Prophies  00%
9. Daily Self-Flossing  00%
Evidence-base for Silver Diamine Fluoride (SDF)

Caries arrest (n= 2 studies)

% arrest once a year = 66%
% arrest twice a year = 74% - 91%
PF = 96%

Number Needed to Treat (NNT): 1
Number of children that need to use SDF to avoid caries in 1 child.

Photos courtesy of Dr. Jeanette MacLean
Glass ionomer cement with or without excavation

Caries arrest and restoration

2-yr survival = 80% - 93%

Expert opinions suggest to combine ART/IRT and SDF (known as SMART fillings).
Evidence-base for Risk-Assessment and Tailored Care using Clinical Algorithms

Visual signs of tooth decay is a better predictor of new caries than the current systems that include poverty and tests (microbiology and salivary)

Well-trained non-dentist dental workforce is as good as dentists in detecting dental caries

Unknown if risk assessment will decrease tooth decay

Unknown if tailored care based on risk will decrease tooth decay

Gao (2013) J Dent. 41(9):787-95
Macey (2015) J Dent Res. 2015;94(3 Suppl):70s-8s
ARE YOU USING SDF?

SDF sales in the United States
PRACTICAL CONSIDERATIONS TO PROVIDING COMMUNITY CARE

Sharity Ludwig
Objectives

• Present clinical algorithms
• Describe how the algorithm-based care has been integrated into the electronic record.
• Describe how the algorithm-based care has been integrated into the care systems. – community care to practice based care.
• Lesson’s Learned
  • Clinical
  • Administrative
  • Political
WORKFORCE

Taking the Care to the Community
Community Team in Action
CALIBRATION & ALGORITHMS
Team Calibration
Low (CDT D0601)
- No Previous Caries
- No Visual Changes in Tooth Structure
- No Breakdown or Cavitation

Moderate (CDT D0602)
- Previous Caries Experience
- Visual Changes in Tooth Structure (i.e. opacity, white/brown/grey shadowing)

High (CDT D0603)
- Cavitated Lesion (i.e. hole in the tooth)
Risk Based Clinical Algorithms

- Are there existing signs of an infection or any current cavitated lesions?
  - NO
  - Are there any visual changes in tooth structure or has the patient ever had a cavity?
    - NO
    - Patient is LOW RISK
    - YES
    - Patient is MODERATE RISK
  - YES
    - Patient is HIGH RISK
Oral Health Promotion Guidelines

- Low, Moderate and High Risk
  - Provide **fluoride toothpaste and toothbrush** with the targeted messaging.
  - Annual exam with dentists unless otherwise indicated by dentists.

**Everybody Brush!**
# Caries Active Treatments

## Moderate Caries Risk

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SDF (D1208) @ 6 &amp; 12 months</td>
</tr>
</tbody>
</table>

## High Caries Risk

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SDF (D1354) or SMART (D1354 &amp; D2940) (w/in 1 week)</td>
</tr>
<tr>
<td>2</td>
<td>PVP-Iodine + FV (D1206) @ 3 &amp; 9 months</td>
</tr>
<tr>
<td>3</td>
<td>SDF (D1208) @ 6 &amp; 12 months</td>
</tr>
<tr>
<td>Screening</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>Absent:</td>
<td></td>
</tr>
<tr>
<td>Refused screening:</td>
<td></td>
</tr>
<tr>
<td>1) Are there any existing signs of an infection:</td>
<td>No</td>
</tr>
<tr>
<td>2) Are there any current cavitated lesions:</td>
<td>No</td>
</tr>
<tr>
<td>2a) Is this isolated to the occlusal surface:</td>
<td>No</td>
</tr>
<tr>
<td>3) Are there any visual changes in tooth structure or has the patient had a cavity in the past 2 years:</td>
<td>No</td>
</tr>
<tr>
<td>ASTDD:</td>
<td>No Obvious Problem (0A)</td>
</tr>
</tbody>
</table>

Caries Risk:
- Not Specified
- Low Caries Risk
- Moderate Caries Risk
- High Caries Risk
Connecting the Community

1. **Patient seen in community setting**
   - Clinical findings and risk assessment entered in Electronic Health Record
2. **Electronic notification sent to Primary Care Dentist and Case Management**
3. **Community based prevention and treatment provided**
4. **Case Management assists in triaging to care**
5. **Community teams engaged if necessary**
LESSON’S LEARNED

Clinical, administrative, political
Clinical

- Silver Fluoride vs Sealants
  - Cost, time and comfort
  - Primary prevention
- Protective restoration without excavation for stabilization
- Consent to screen and treat
  - Passive vs Active
  - Paper vs eConsent
- Community to Clinic
  - Advantage University
Administrative

• Leadership – commitment and mission-alignment
• IT department – heavy lift
• Case management – Care coordination
Political

- Conflicting metrics: Risk-based sealants
- Resin vs GI sealants
- Silver Diamine Fluoride in Community Settings
  - Patient / Caregivers: high acceptance
  - Community stakeholders: acceptance of novel models
PRACTICAL CONSIDERATIONS TO PROVIDING CARE IN A COMMUNITY CLINIC

Tina Sopiwnik, Northlakes Community Clinic
LESSON’S LEARNED

Clinical, administrative, political
Clinical

- Clinic culture
- Evidence
  - https://ebd.ada.org
- Change agent/ PDSA team
- Documentation
  - NNOHA Dashboard Users Guide
  - UDS Sealant Measure Details
Administrative

• Adequate training and calibration

• Practice setting and integration

• Quality Improvement
Administrative
An example of a clinical algorithm for SDF and GI sealants

- **Low Risk No Caries**
  - Motivational Interviewing/ Self Management Goals, No home care challenge
  - Sealants, Fluoride, 6-12 mo recare

- **Moderate to High Risk Active Caries**
  - Reversible Risk **Non cavitated lesions:**
    - Motivational Interviewing/ Self Management Goals
  - Risk Factor Challenge: **Cavitated lesions**, Poor saliva quantity, Compliance barriers, Poor plaque control, etc
  - SDF, GI sealants, 3 mo prevention, 6 mo recare
  - Case management, Restorations, SDoH intervention, SMG

- **Moderate Risk Active Caries**
  - Sealants, Fluoride, School-based prevention, 6 mo recare
  - Patient training in plaque control
  - Nutrition education

*An example of a clinical algorithm for SDF and GI sealants*
Case Example
Case Example
Political

- Check your State statutes (who is placing sealants? do you need a Dr. exam to place sealants? can a hygienist place SDF?)

- Informed Consent

- How are you sharing your data (demonstrate process improvement, improve health outcomes)
CONCLUSIONS

Implementation of mobile school programs are feasible and acceptable by the community.

Use of clinical algorithms to tailor treatments based on risk results on better allocation of resources.

Use of silver diamine fluoride to both prevent and arrest decay is promising.

Our experience is that the strategies presented here result on better patient outcomes.
THANK YOU!

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