Caries Risk Assessment in the Medical Office

Identifying Common Risk Factors toward a More Effective Screening Tool

Interprofessional Study of Oral Health in Primary Care
We would like to express a special thank you to our advisory group.

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A happy, healthy smile is vital to children – and invaluable to their parents.

Unfortunately, poor oral health negatively affects many children, disrupting their physical and emotional development, school performance and behavior.

In extreme cases, poor dental health and lack of treatment leads to serious disability and potentially life-threatening complications.
Background

Year 1

Exploration of pediatric medical providers’ perceptions and practices surrounding oral health through focus groups and practice observations

- Pediatric providers considered oral health screening and education an integral part of children’s overall health

- Adoption of available formalized caries-risk assessment tools was low
  - Competing time demands at the well-child visit
  - Minimal financial reimbursement
  - Limited availability of caries-risk assessment as part of electronic health records
  - Scarce clinical dental experience/education
Common Risk Factor Approach

Primary risk factors for some chronic diseases frequently cluster in the same individual. Dental disease shares common risk factors with major pediatric diseases such as obesity, infectious and atopic illnesses, asthma, allergies and developmental/behavioral conditions.

The common risk factor approach supports the promotion of general health by controlling small numbers of risk factors, thus potentially impacting a large number of diseases.
Year 2
Project Questions

∗ Are there key predictive risk factors for dental caries that are routinely collected in the EHR during well-child pediatric care?
∗ What is the feasibility of an EHR-based caries screening tool using available variables from the well-child visit?

Project Objectives

∗ Identify global (common) risk factors from EHR that correlate to dental caries risk
∗ If significant factors are found, develop a prototype for a new, evidenced-based standardized CRA
∗ Conduct a survey of medical providers to assess the feasibility of integrating a new medically oriented CRA into well-child visit templates
1700+ children with *Well Child Visit at a Primary Care Clinic at the site at 12 months and/or 15 months & *Most recent Dental Hygiene Visit at minimum 48-60 months of age

I. Development of a Dental Caries Prediction Model based on Medical Variables
   • Dataset will include internal validation testing
II. Diagnostics and Goodness of Fit testing
**Epic Data Analysis Preliminary Results**

<table>
<thead>
<tr>
<th>Significant Variables using Lifetime Caries Experience as the Outcome Variable</th>
<th>p-value</th>
<th>Significant Variables using Caries Risk Status assigned at the most recent dental encounter as the Outcome Variable</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Being Hispanic</td>
<td>0.0338</td>
<td>1 ZIP code with high poverty &gt;20% of population</td>
<td>0.0034</td>
</tr>
<tr>
<td>2 Referral to MD specialist at 12 months</td>
<td>&lt;.0001</td>
<td>2 Drinking at nap/sleep times</td>
<td>0.0414</td>
</tr>
<tr>
<td>3 Immunizations not up to date at 15 months</td>
<td>&lt;.0001</td>
<td>3 Mothers have untreated caries*</td>
<td>0.0152</td>
</tr>
<tr>
<td>4 Breast milk at 15 months</td>
<td>0.0095</td>
<td>4 Breast milk at 12 &amp; 15 months</td>
<td>0.0296 &amp; 0.0331</td>
</tr>
<tr>
<td>5 History of broken appointments</td>
<td>0.0007</td>
<td>5 Immunizations not up to date</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>6 History of broken appointments</td>
<td></td>
<td>6 History of broken appointments</td>
<td>0.0002</td>
</tr>
<tr>
<td>7 Medicaid Insurance at 15 months</td>
<td></td>
<td>7 Medicaid Insurance at 15 months</td>
<td>0.0484</td>
</tr>
</tbody>
</table>

*This variable was collected from dental electronic health records*
Semi-Structured Interviews
**Objective:**
To gain feedback on the most useful and feasible construction of an electronic health records-based caries risk assessment tool for medical provider use.

**Methods:**
Moderators conducted approximately 1-hour semi-structured telephone interviews with site selected oral health champions and/or liaisons from five of the Year 1 project practice observations sites.
Summary

* High level of provider interest in building such a medically-specific caries-risk assessment tool

* Supported theory that these significant variables already existed in providers’ electronic health records

* Most providers indicated that they collect this information and it is searchable
  -“Point and click” data fields in the EHR
Impact Statement
This Study:

* Supports the growing consensus of health research that different diseases share common risk factors

* Encourages an interprofessional approach to health care and collaboration between pediatric care providers

* Carries the potential to engage primary care medical providers in oral health and encourage needed referrals for dental care

* Promotes better overall health and well-being for young children, as well as healthier smiles for children most at risk
Next Steps
Year 3
Further validation of significant variables from Nationwide Children’s Hospital (NCH)

Analyze retrospective EHR data from a secondary test site

Pilot test Medically Oriented Caries-Prediction Tool at NCH

Widespread efforts to promote an EHR based caries-risk assessment tool to oral health network partners
Ideas for future development of such a tool have implications not only for this study, but for the protection of the oral health of young children.
Resources
Fact:
All children, especially those at high risk for dental issues, should establish a dental home by age 1.
Guide for Integrating Oral Health Into Primary Care

Oral Health: An Essential Component of Primary Care

White Paper

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