Evidence-based Emphasis on Prevention in a High Risk Population: The VA Experience

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Moving towards the medical model of dental care – the loooooong road

- Dental caries is an infectious disease process and historically dental has been more effective at the surgical treatment of the lesions, rather than treating the disease
- Our Veteran patients are more medically and dentally impaired than the general population (Jones 01, Boehmer 03)

Moving towards the medical model of dental care – the loooooong road

- We initially chose 3 areas of preventive focus and look at this as a system wide long term change
  - Appropriate periodic recall and evaluation scheduling
  - Appropriate fluoride use for high caries risk patients
  - Appropriate recall intervals for scale and polish and periodontal maintenance therapy
Periodic Recall and Evaluation Scheduling

- The longest interval between oral health reviews for patients aged 18 years and older should be 24 months.


• Because the evidence rating was not as solid as hoped, the committee used the longer time frame of 24 months, instead of 12.

• In hopes that eventually this could be reduced, since many VA Dental patients would fall into the higher risk categories.

Periodic Recall and Evaluation Scheduling

Veterans in denominator who received a follow-up dental/oral assessment within 24 months of their previous evaluation.

All eligible Veterans who had a comprehensive oral evaluation performed or paid for (i.e., Fee Basis cases) by VHA during the three month period ending twenty-four months prior to the quarter being reported.

Periodic Recall and Evaluation Scheduling

Findings from Best Practices Interviews:

- There was a general consensus that meeting the exam monitor was not difficult once they established and refined a recall system.
- Denture patients are put into the recall system upon delivery of dentures.

Voted Most Useful Tool in meeting the Monitor

Appropriate Fluoride Use for High Caries Risk Patients

- All aspects of treatment: patient education, frequency and timing of sugar and carbohydrate intake, adequate oral hygiene, surgical elimination of all bacterial retention sites and reduction of bacterial load through use of antimicrobials such as chlorhexidine and fluoride are required to fully address the medical approach to caries infection.
- Our first focus in this preventive realm will be the use of fluorides for the remineralization and protection of tooth structure.
Systematic Review of the Literature

- Question:
  x What research supports the use of professional and/or supplemental self-applied fluoride for preventing and remineralizing caries in moderate and high risk adult patients.

- 98 full text articles reviewed to identify clinical trials
- 52 clinical trials evaluated for inclusion in the final review
- 18 clinical trials fully reviewed with CONSORT protocol

Appropriate Fluoride Use for High Caries Risk Patients

- Conclusion: Strongest studies demonstrated the following modalities as moderately effective in higher risk adults:
  x Low strength NaF rinses;
  x 1.1% NaF pastes/gels;
  x fluoride varnishes.
  x Evidence regarding 1.1% NaF and 5% NaF varnish related primarily to root caries in older adults.

- IL 10-2008-013: Recommendations for the Use of Fluoride in the Medical Management of Dental Caries
- Presentation of this information to dental teams across the VA
- Publication of the systematic review to share outside the VA

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Professionally Applied Fluoride</th>
<th>Supplemental Fluoride</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td></td>
<td>Baseline for everyone!</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ Water fluoridation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ Fluoride dentifrice</td>
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<tr>
<td></td>
<td></td>
<td>~1100 ppm</td>
</tr>
<tr>
<td>Moderate</td>
<td>5% NaF varnish - q 3-6mo</td>
<td>0.05% NaF rinse - 1-2x /day</td>
</tr>
<tr>
<td></td>
<td>2% NaF - q 3-6 mo</td>
<td>1.1% NaF paste - 1-2x /day</td>
</tr>
<tr>
<td></td>
<td>1.23% APF - q 3-6 mo</td>
<td>1.1% NaF gel x 5 min in custom tray daily</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1% NaF paste - 1-2 x / day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.1% NaF gel brushed on at bedtime after brushing with OTC toothpaste</td>
</tr>
<tr>
<td>High</td>
<td>5% NaF varnish - q 3-4mo</td>
<td>1.1% NaF gel x 5 min in custom tray daily</td>
</tr>
<tr>
<td></td>
<td>2% NaF - q 3-4 mo</td>
<td>1.1% NaF paste - 1-2 x / day</td>
</tr>
<tr>
<td></td>
<td>1.23% APF - q 3-4 mo</td>
<td>1.1% NaF gel brushed on at bedtime after brushing with OTC toothpaste</td>
</tr>
</tbody>
</table>

1.1% Neutral sodium fluoride paste (cream)

1.1% NaF cream
Disp: 1 tube (51 g)
Sig: Use thin ribbon on toothbrush at bedtime to brush teeth. Spit, but do not rinse after brushing

- Manufacturer states that 1 tube has ~100 doses.
- Used once daily---this is approximately a 3 month supply

1.1% Neutral sodium fluoride gel

1.1% NaF gel
Disp: 1 tube (56 g)
Sig: Use thin ribbon on toothbrush at bedtime and spread on teeth after brushing with a regular toothpaste. Spit, but do not rinse.

- Manufacturer states that 1 tube has ~130 doses.
- Used once daily---this is approximately a 4 month supply
1.1% Neutral sodium fluoride gel

1.1% NaF gel
Disp: 1 tube (56 g)
Sig: Place small ribbon in fluoride trays and wear for 5 minutes daily. Spit, but do not rinse after use.
- Manufacturer states that 1 tube has ~ 130 doses.
- Used once daily in upper and lower trays---this is approximately a 3 month supply

Application of 5% NaF Varnish
q3-6 months for moderate risk
q3-4 months for high risk

Appropriate Fluoride Use of High Caries Risk Patients

- Based on the systematic review findings, the following products were placed on the national formulary for availability to all VA dental clinics:
  - 1.1% NaF paste
  - 1.1% NaF gel
  - 5% NaF varnish
Appropriate Fluoride Use for High Caries Risk Patients

Beginning FY09 the Fluoride Monitor was introduced. A monitor is intended to guide an organization towards improvement of a process that will lead to a positive outcome.

Fluoride Monitor FY09 through FY11 QTR 3

Met=60%  Exceeded=75%

Met=75%  Exceeded=90%

Agency for Healthcare Research and Quality grant:
1 R21 HS019527-01

Fluoride Effectiveness in Prevention of Dental Caries in High Caries Risk Adults

Aim 1. Examine the effectiveness of fluoride in the prevention of caries in medically compromised veterans who are at high risk for caries.

Aim 2. Examine whether multiple exposures to fluoride will be more effective than a single exposure.

Aim 3. Examine the effectiveness of the introduction of this fluoride monitor in reducing the rate of restorations in medically compromised veterans at high risk for caries.

Interim Data

- Number of patients considered high risk in our study (at least 2 restorations in a 1 year period): 145,376
- How many had new restorations in the next year?

| No new restorations | 72% |
| 1 new restoration   | 10% |
| 2 new restorations  | 7%  |
| 3+ new restorations | 11% |

- When we used fluoride, what types did we most use?

| Office Appl (rinse, gel, foam) | 37% |
| Office Appl & RX              | 18% |
| Office appl & varnish          | 13% |
| Office appl, varnish & RX      | 10% |
| Varnish                        | 9%  |

Interim Data
Appropriate Recall Intervals for Routine Scale and Polish and Perio Maintenance

WHAT WE KNEW:

- Provision of routine scale and polish and maintenance care was a strategy in overall oral disease prevention.
- We started by looking at our provision of this care, compared to a commercial benchmark and we were at about 83%.

Defining the Prevalence of Periodontal Disease in Veteran Dental Patients

WHAT WE KNEW

-Mean CPITN: 2.09*
+66.04% of all teeth extracted in VA population had a perio diagnostic code.
Mild: 30.52%
Moderate: 13.3%
Severe: 4.34%
Total: 48.34%#

Risk factor: Diabetes
16% (2004)
8.3% (2011)

Risk factor: former/current smoker
77% ever smoked (1997)
33% current (2003)
49% ever smoked (1997)
23% current (2003)

Risk factor: Age
Ave age: 60 (2007)
Ave age: 36
Over 65: 12% of pop

Male Gender
94% of pop (2000)


Our PICO Question:

- Population: Adults with a verified periodontal diagnosis
- Intervention Exposure: Periodontal maintenance
  Adult prophylaxis
- Comparison: Varying intervention frequencies
- Outcomes: Maintenance of attachment
  Tooth retention
  Pt based assessments of periodontal health
**Appropriate Recall Intervals for Routine Scale and Polish and Perio Maintenance**

- **Routine Scale and Polish Frequency**
  - Beirne P, Worthington HV, Clarkson JE. *Routine scale and polish for periodontal health in adults*. Cochrane Database of Systematic Reviews, 2007;(4)

- **Periodontal Maintenance**
  - Two library searches yielded 506 titles/abstracts for review
  - 18 articles for phase 1 assessment for inclusion
  - 5 articles included in the systematic review

**FINDING:** Subjects with a higher level of compliance with a 3–4 mo recall schedule had FEWER teeth extracted.

**FINDING:** Subjects with a higher level of compliance with a 3–4 mo recall schedule had MORE teeth extracted.

**FINDING:** Subjects who DID NOT ATTEND PMT had more teeth extracted than those who attended PMT at least every 6.7 months.

**FINDING:** UNABLE TO ASSESS

Checchi et al. Patients who attended recall LESS THAN EVERY 3–5 MO were 5.6 x more likely to lose teeth (CI 1.90–16.3).

Tsami et al. Compliance with PMT was a significant factor in determining tooth loss in the population (r=0.25, p<.01), with tooth prognosis and type of tooth ranking higher in the model.

Miyamoto et al. Patients who were attended at least 70% of expected visits (q 3–4 mo) were significantly MORE likely to LOSE TEETH than those who attended less than 70% of their PMT visits.

Ng et al. Tooth loss in Non-compliers was 3X higher than for ANY patients who attended PMT over the years.

Wood et al. The outcome of tooth extraction was used as one of the variables. This negated the ability to assess this article for the outcome of tooth loss.

**Appropriate Recall Intervals for Routine Scale and Polish**

- Dental patients who do not have active periodontal disease and do not have a history of treatment for periodontal disease should be provided a routine scale and polish at a minimum of once yearly, until better data becomes available.
Appropriate Recall Intervals for Routine Periodontal Maintenance

- Dental patients who have active and untreated periodontal disease should receive periodontal therapy as appropriate. Patients who have undergone periodontal therapy and require periodontal maintenance should be seen 2-3 times/year.

Quality Indicator: Periodontal Preventive or Maintenance Recall for Eligible Patients

- All Class I, IIC and IV veterans who have had a subsequent periodontal preventive or maintenance visit (index procedure) between 75 and 365 days following the index procedure.
- All Class I, IIC and IV veterans who received a periodontal preventive or maintenance visit (index procedure) during a specific 3-month period (Fiscal Quarter).

Lessons Learned

- You cannot perform too much education
- It is important to remind everyone WHY we utilize quality indicators
- Recognize the limitations of the data, but utilize what you collect
- If the point is to work towards a change in a process to affect an outcome – share examples of success and add new tools to enable success