

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

**Principal Investigator:** Judith Jones, DScD, DDS, MPH  
**Institution/Partners:** Boston University School of Dental Medicine; Department of Veterans Affairs

**Project Period:** 09/30/10 – 09/29/12  
**Grant Number:** R21 HS19527-01

### Description

Despite dramatic gains in oral health and dental care in the United States in the past 50 years, dental decay remains a problem for the elderly, especially the oldest and most vulnerable. Significant gaps remain in knowledge about preventing caries in adults. This study examined the effects of fluoride treatments in preventing dental decay in medically compromised adults at high risk for caries. In addition, this study examined the effectiveness of a program at the Department of Veterans Affairs to monitor fluoride treatments to reduce the rate of restorations in Veterans at high risk for caries. The results of this study will potentially help shift the focus of dental care in older adults from restoration to prevention.

### Specific Aims

1. Examine the effectiveness of prescription-strength, self-applied fluoride and professionally applied fluoride in medically compromised veterans who are at high risk for caries. (Veterans are defined as at risk if they have had two or more restorations in the previous year.)
2. Examine whether multiple exposures to fluoride are more effective than a single exposure.
3. Examine the effectiveness of the VA's program to monitor fluoride treatments to reduce the rate of restorations in veterans at high risk for caries.

### Findings

- The study sample included 140,114 high caries risk Veterans with a mean age of 60, a mean of 3.4 physical co-morbidities, 1.2 mental comorbidities, and 11 medication groups per patient. Patients that received clinical fluoride treatments had 17-20% decreased odds of requiring a restoration during the follow up period.

### Main Objective

Examine the effects of fluoride treatments in preventing dental decay in medically compromised older adults at high risk for caries.

### Chronic Conditions Considered

Dental Decay/Dental Caries  
Dementia  
Depression and Bipolar Disorder  
Diabetes  
HIV/AIDS  
Alcohol Dependence

### Study Design & Methods

Analytic epidemiologic study  
Regression analyses

### Data Sources & Sample Size

More than 146,000 veterans who received two or more restorations in one year between October 1, 2004, and September 30, 2009. Data from four primary sources: VA Dental Encounter System, the VA Outpatient Files, the Patient Treatment File, and the Decision Support Services Pharmacy Database.

### Strategies Addressed from the HHS Strategic Framework on Multiple Chronic Conditions

- 1.F. Evaluation of health system intervention
- 3.A. Identify best practices and tools
- 4.C. Increase clinical research

## Fluoride Effectiveness in Prevention of Dental Caries in High Caries Risk Adults (continued)

- More modes (professional or prescription) and/or exposures of fluoride in the year before the index year decreased risk of a new restoration by 17 to 47%, whereas more modes/exposures of fluoride during and after the index year were associated with an increased risk of a new restoration by 44 to 292%.
- Increased use of fluoride treatment after a dental restoration may indicate the dental caries risk level of patients rather than the effectiveness of fluoride treatment, whereas increased fluoride treatment provided before a restoration likely represents effective preventive care.

### Implications

Use of a quality measure increased the provision of fluoride and resulted in reductions in the number of surfaces restored and in the percentage of high-risk patients who needed new restorations.

### Publications (as of September 2013)

Gibson G, Jurasic M, Wehler C, Jones J. Supplemental fluoride use for moderate and high caries risk adults: A systematic review. *J Pub Health Dent*. 2011 Summer; 71(3): 171–184.

(Additional publications currently under review).

### Posters and Presentations

Gibson, G, Jurasic M, Wehler C, Nunn M, Orner M, Nunez E, O'Toole T, and Jones J. Decreased restoration rates following use of a fluoride quality indicator. Abstract accepted for 91st General Session & Exhibition of the International Association for Dental Research; 2013 March 20-23; Seattle, WA.

Jurasic M, Gibson G, Wehler C, Nunn M, Orner M, Nunez E, O'Toole T, and Jones J. Measuring fluoride effectiveness: not as easy as measuring efficacy. Abstract accepted for 91st General Session & Exhibition of the International Association for Dental Research; 2013 March 20-23; Seattle, WA.

Nunn M, Jurasic M, Gibson G, Orner M, Wehler C, Nunez E, O'Toole T, and Jones J. Greater prior fluoride intensity decreases caries in high risk veterans. Abstract accepted for 91st General Session & Exhibition of the International Association for Dental Research; 2013 March 20-23; Seattle, WA.

Wehler C, Gibson G, Jurasic M, Orner M, Ward T, O'Toole T, and Jones J. Monitoring Fluoride Use to Improve Caries Prevention in High Caries Risk Veterans. Poster presented at: 2011 National Oral Health Conference; 2011 Apr 11-13; Pittsburgh, PA.

Gibson G, Jurasic M, Wehler C, Orner M, Ward T, O'Toole T, and Jones J. Monitoring fluoride use improves prevention in high caries risk veterans. Poster presented at: 89th General Session and Exhibition of the International Association for Dental Research; 2011 Mar 16-19; San Diego, CA.