

## **Fluoride Delays Eruption – Delays Diagnosis:Fluoride Bombs**

by Carole Clinch BA, BPHE  
Research Coordinator  
People for Safe Drinking Water

**Delaying the development or detection of cavities is no solution.  
Preventing cavities is the only solution.**

Dental exams are error prone, with error rates exceeding 40% for both false positive diagnoses and false negative diagnoses (Fracaro et al 2001). Fluoride use leads to 3 additional sources of error:

1. **Delayed Eruption** of Teeth/Development of Caries (70+ studies)
2. **Delayed Diagnosis/Fluoride Bombs** of Caries due to Fluoride's ability to remineralize surface enamel, disguising caries development in dentin and deeper tooth layers (Osmunson 2007).
3. **Misdiagnosis** of caries due to demineralization of enamel (fluorosis) which looks similar to cavities (Hirasuna et al 2008)

The recent paper by Fracaro et al. demonstrates how error prone dental exams truly are, with error rates exceeding 40% for both false positive diagnoses and false negative diagnoses:

- Clinical exams by dentists missed 43% of all cavities - **False Negatives.**
- Xrays missed 42% of all cavities - **False Positives.**

### **Delayed Eruption of Teeth & Time at Risk for Cavities**

An important confounding variable that requires attention is the issue of delayed eruption of teeth potentially caused by fluoride. According to the 2000 York Review: 'no (fluoridation) study used an analysis that would control for...the number of erupted teeth'.

A recent analysis by Komarek et al. 2007 reports that, "since the emergence of permanent teeth might be delayed by fluoride-intake, evaluating the impact of fluoride-intake should take into account the time at risk for caries. Hence, in our analysis, the response will be the time between emergence and the onset of caries development." "Our analysis shows no convincing effect of fluoride-intake on caries development."

A significant [body of research evidence](#) (70+ studies) available since the 1940s (Short et al. 1944) suggests that fluoride delays the eruption of teeth, thereby merely delaying the development of cavities. This delay has been reported to be

anywhere from several months (Tseng et al, 1989) to 2 years (Campagna et al, 1995).

Proposed mechanisms for this delayed tooth eruption include:

1. Delayed eruption may be due to thickening of the bone around the emerging teeth (Kunzel 1976)
2. Delayed eruption may be due to thyroid hormone suppression by fluoride. Fluoride is well-known to mimic TSH (Thyroid Stimulating Hormone) via activation of G-proteins (proteins located on cell membranes to relay/amplify signals from outside cells to inside cells). (Strunecka et al 2007)

### **Delayed Diagnosis of Cavities – Fluoride Bombs**

Evidence also suggests that fluoride temporarily hides cavities by causing only surface remineralization which “covers up” underlying cavities. (([Osmunson 2007](#), [FAQ Australia](#))) Delays in the diagnosis of cavities may also lead to larger fillings, hence higher financial costs to the patient and increased fragility of the tooth. Increased fragility of the tooth generally leads to a shortened life span for a tooth.

### **Misdiagnosis of Cavities with Dental Fluorosis**

The potential for fluorosis, especially the mild, highly prevalent form\*, to further confuse the diagnosis of caries, because of its cloudy, demineralized appearance, similar to caries, has been proposed. [Hirasuna et al. 2008](#) state; “the more common mild fluorosis can be easily mistaken for early enamel demineralization due to caries.”

These research papers suggest that the use of fluoride may simply delay the development and/or diagnosis of cavities, or lead to misdiagnoses of cavities due to the presence of fluorosis. This does not assist in the public health goal to prevent cavities.

\*25-70% in artificially fluoridated communities according to Locker et al 1999; US CDC report 1/3 of children in the US with fluorosis; Halton Region, Ontario reports 48% incidence from 2007 survey data.

## Citations

Diesendorf M. 1986 The mystery of declining tooth decay. *Nature*. Jul 10-16; 322(6075): 125-129.

FAQ page of the Dental Sense (Perth) website the question 'What are fluoride bombs?<http://www.dentistmidland.com.au/faqs-cosmetic-dentist-in-midland-wa.php#19>)

Fracaro MS, Seow WK, McAllan LH, Purdie DM. The sensitivity and specificity of clinical assessment compared with bitewing radiography for detection of occlusal dentin caries. *Pediatr Dent*. 2001 May-Jun;23(3):204-10.

Hirasuna K, Fried D, Darling DL. Near-Infrared Imaging of Developmental Defects in Dental Enamel. *J Biomed Opt* 2008 13(4):044011.

Komarek A, Lesaffre E, Harkanen T, Declerck D, Virtanen JI. A Bayesian analysis of multivariate doubly-interval-censored dental data. *Biostatistics* 2005;6:145-55.

Limeback, H. (2002). Systemic Fluoride: Delayed Tooth Eruption and DMFT vs Age Profiles. abstract presented at IADR/AADR/CADR 80th General Session. San Diego, California. March 6-9.

Osmunson B. Editorial Water fluoridation intervention: dentistry's crown jewel or dark hour? *Fluoride* 2007;40(4):214-221.

[http://www.fluoridresearch.org/404/files/FJ2007\\_v40\\_n4\\_p214-221.pdf](http://www.fluoridresearch.org/404/files/FJ2007_v40_n4_p214-221.pdf)

Short EM. (1944). Domestic water and dental caries. VI. The relation of fluoride domestic waters to permanent tooth eruption. *Journal of Dental Research* 23:247-255.

Strunecka A, Patocka J, Blaylock RL, Chinoy N. 2007 Fluoride Interactions: From Molecules to Disease. *Current Signal Transduction Therapy* 2: 190-213.

Tseng CC, Chen RS, Guo MK, Hsieh CC, Hong YC - "Influence of water fluoridation on the eruption of permanent teeth in Chung-Hsing New Village, Taiwan" *Taiwan I Hsueh Hui Tsa Chih* 1989;88(3):272-7.

Ziegelbecker R. 1970 A critical review on the fluorine caries problem. *Fluoride* 3: 71-79.