

Dr. David McKeown

Medical Officer of Health

Dr. Elizabeth Geller

Dentist, Toronto Public Health

April 4, 2011

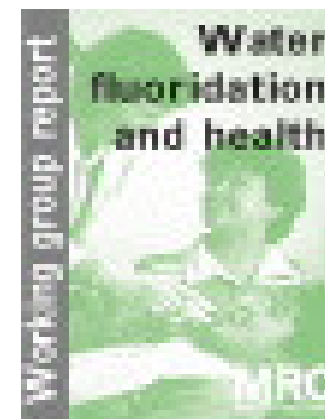
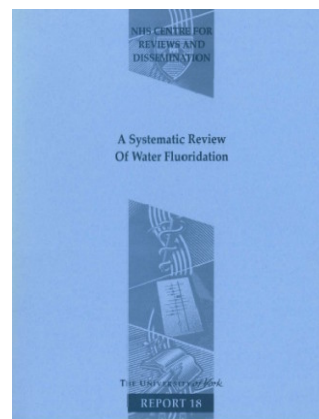
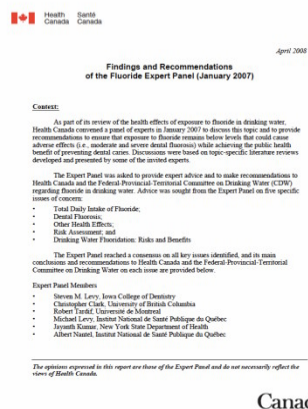
- Fluoride – naturally occurring mineral found in rocks, soil, air and water sources at varying levels
- 1930s and 1940s – protective effects of fluoride against tooth decay discovered
- Fluoride can be delivered in various ways – water, milk, salt, fluoride dental application, dental products
- Water fluoridation is adjusting level to achieve dental benefits while avoiding adverse effects

- Municipalities – decision making authority with respect to fluoridation of drinking water supplies (Ontario’s Fluoridation Act)
- Standards for fluoridated water:
 - MAC: 1.5 mg/L (Health Canada and Ontario Ministry of the Environment)
 - Optimal target concentration of fluoride for dental benefits: 0.5 – 0.8 mg/L (Ontario Ministry of the Environment)
- Toronto’s water has been fluoridated since 1963 – current concentration 0.6 mg/L

- Evidence of both effectiveness and risks of water fluoridation have been extensively reviewed
- Many factors need to be considered when reviewing the evidence
 - Underlying dental health
 - Naturally occurring fluoride in local water sources
 - Socio economic status
 - Access to dental care
 - Nutrition
 - Impact of fluoride from other municipalities – Halo effect

- Systematic reviews:

Critical assessment and evaluation of all research studies that address a specific issue



- Systematic Review Results: Effectiveness
 - Water fluoridation significantly increases the proportion of caries-free children – benefits extend to seniors
 - Tooth decay increases in a population after fluoridation is discontinued

- Equity and Efficiency:
 - Water fluoridation provides broader access to fluoride for disadvantaged

Preventive Measure	Annual Cost/ person
Topical fluoride application 2 times/year to all high risk individuals by Public Health Services	\$44.50
Topical fluoride application twice per year to all high risk individuals by Private Dentists	\$96.12
Distribution of tooth pastes and tooth brushes to all members of the population	\$8.50
Water fluoridation (Toronto)	\$0.77

4.1 Studies in which fluoridation was initiated

Figure 4.1 shows the mean difference of the change in the proportion (%) of caries-free children in the exposed (fluoride) group compared with the control group (low fluoride), for all ages extracted (colour coded by age), for studies in which fluoridation was initiated after the baseline survey.

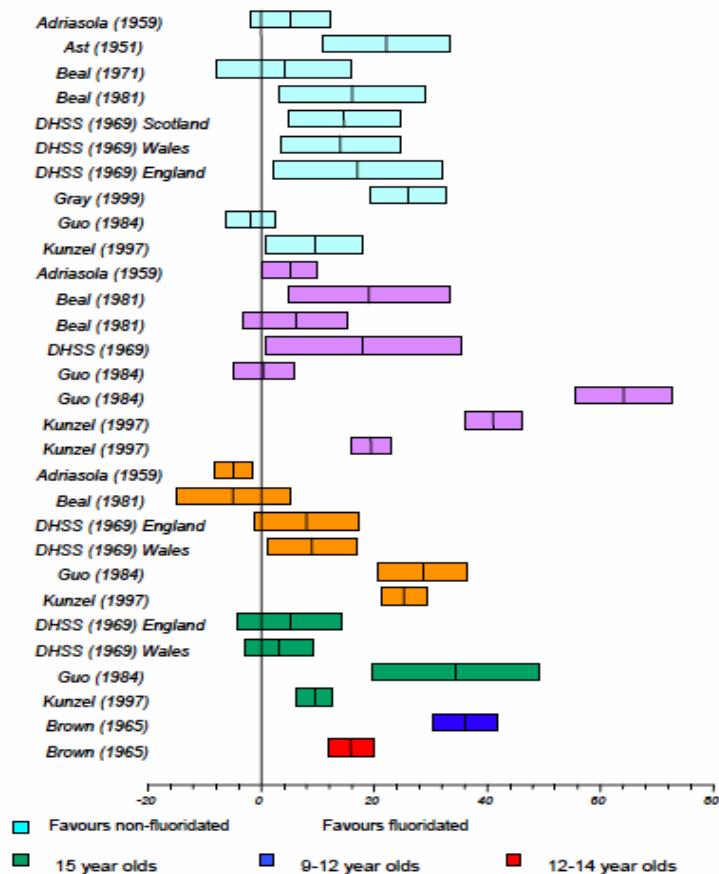


Figure 4.1: Increase in proportion (%) of caries-free children in fluoridated compared to non-fluoridated areas (mean difference and 95% CI)

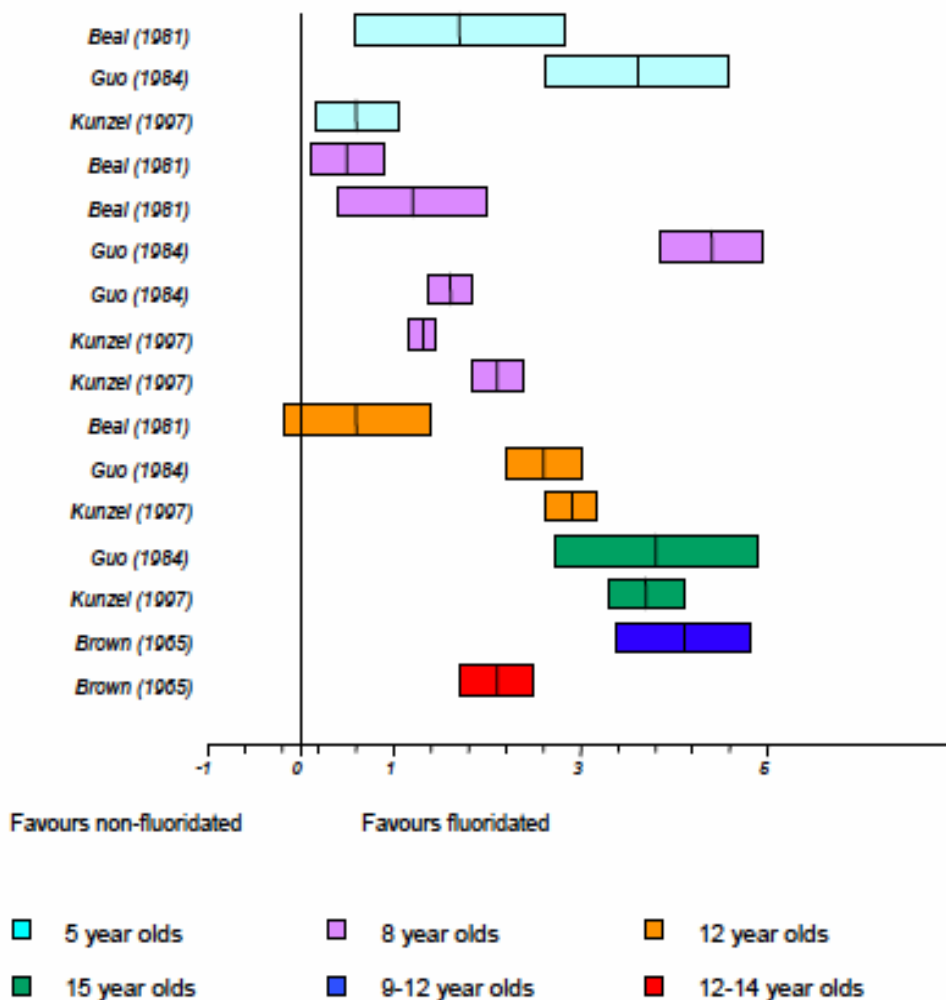


Figure 4.2: Change in dmft/DMFT Score (mean difference and 95% CI)

- Systematic Review Results:
 - Excessive exposure to fluoride can lead to dental and skeletal fluorosis
 - But: Recommended levels for water fluoridation do not lead to skeletal fluorosis or cosmetically important dental fluorosis
 - Important to monitor and educate about overall fluoride exposure (eg. Children's toothpaste use)

- Based on systematic reviews of scientific evidence for the safety, effectiveness and efficiency of water fluoridation
- Reaffirm support for water fluoridation in Toronto



“Veronica” 7 years old



“Adam” 7 years old



“Marco” 9.5 years old



“Mary” 6 years old



“Kasia” 6 years old

