



**THE REGIONAL MUNICIPALITY OF PEEL
COMMUNITY WATER FLUORIDATION COMMITTEE**

AGENDA

CWFC - 2/2017

DATE: Thursday, February 23, 2017

TIME: 8:30 AM – 9:30 AM

LOCATION: Regional Council Chamber, 5th Floor
Regional Administrative Headquarters
10 Peel Centre Drive, Suite A
Brampton, Ontario

MEMBERS: F. Dale; J. Downey; A. Groves; M. Palleschi; C. Parrish; K. Ras;
J. Sprovieri; J. Tovey

Chaired by Councillor C. Parrish or Vice-Chair Councillor J. Sprovieri

- 1. DECLARATIONS OF CONFLICTS OF INTEREST**
- 2. APPROVAL OF AGENDA**
- 3. DELEGATIONS**
- 4. REPORTS**
 - 4.1. Alternative Approaches to the Current Practice of Community Water Fluoridation in the Region of Peel (For information)
- 5. COMMUNICATIONS**
- 6. IN CAMERA MATTERS**
- 7. OTHER BUSINESS**
- 8. NEXT MEETING**

To be determined
- 9. ADJOURNMENT**

For Information

DATE: February 16, 2017

REPORT TITLE: **ALTERNATIVE APPROACHES TO THE CURRENT PRACTICE OF COMMUNITY WATER FLUORIDATION IN THE REGION OF PEEL**

FROM: Nancy Polsinelli, Commissioner of Health Services
Eileen de Villa, MD MBA MHScc CCFP FRCPC
Medical Officer of Health

OBJECTIVE

To provide a summary of alternative approaches to community water fluoridation in the Region of Peel.

REPORT HIGHLIGHTS

- The Community Water Fluoridation Committee mandate is to make recommendations to Regional Council on community water fluoridation in Peel.
- To assist the Committee in making an informed recommendation to Regional Council, staff were requested to present alternative approaches to community water fluoridation as it is currently practiced in Peel.
- The Region of Peel water supplies have been fluoridated for almost 50 years, as part of a comprehensive approach to prevent tooth decay and support public health obligations under the Ontario Public Health Standards to provide preventive oral health services.
- Peel's water supply is fluoridated, monitored and complies with the *Safe Drinking Water Act, 2002*. The level of naturally-occurring fluoride in Peel's lake-based municipal water supply is adjusted to an optimal concentration range of 0.5 to 0.8 mg/L.
- In considering the totality of evidence to date, both health research and authorities continue to support the practice of community water fluoridation as a safe and effective population approach to prevent cavities.
- Alternative approaches to the current practice of community water fluoridation include changing the fluoride additive, discontinuing community water fluoridation and/or implementing a fluoride varnish program.
- Based on the evidence and given the obligation to protect and promote the health and well-being of Peel residents, Peel Public Health and the Medical Officer of Health support continuation of water fluoridation in the Region of Peel.

DISCUSSION

1. Background

The Community Water Fluoridation Committee (Committee) was established on February 11, 2016. The mandate of the Committee is to make recommendations to Regional Council on community water fluoridation in Peel. Over the course of 2016, to support the Committee

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in making an informed recommendation, Regional staff provided the Committee with the following information:

- History of fluoridation, including the World Health Organization data;
- Mechanism of action;
- Legislative framework (e.g., *Safe Drinking Water Act* and other regulations);
- Water fluoridation process (e.g., current additive and alternatives);
- Sources of fluoride (e.g., toothpaste);
- Evidence on the effectiveness, dental fluorosis and safety of fluoride; and
- Responses to Committee questions on related topics (e.g., questions regarding specific research/studies).

At the February 02, 2017 meeting, the Committee recommended advocating to the provincial government related to the provincial role in community water fluoridation. Regional Council approved this recommendation on February 09, 2017.

2. Current Practice: Community Water Fluoridation in Peel

Community water fluoridation has been practiced in Peel Region for almost 50 years as part of a comprehensive approach to prevent tooth decay. Approximately 67.3 per cent of Ontarians live in a community with a fluoridated water system. The Region monitors water quality to ensure drinking water is safe for consumption based on all regulatory standards under the *Safe Drinking Water Act, 2002*.

The practice of community water fluoridation as a population level strategy to prevent cavities is supported by over 100 national and international organizations. Community water fluoridation is a population health approach that is safe, effective, equitable and cost-effective. It provides protective benefits against tooth decay to all residents, regardless of age, income level, or immigration status.

In addition to population level community water fluoridation, Peel Public Health also protects the oral health of Peel's residents at the individual and community level (as described in the "2016 Peel Oral Health Status report", February 09, 2017). At the individual level, dental screening is provided to children and youth in schools and community clinics. Children and youth identified as having an oral health preventive or treatment need are referred to available programs and services. There are also specific programs for adults (e.g., Smile with Confidence Pilot Adult Dental program) and seniors (i.e., the Seniors' Dental Program) in need of treatment.

At the community level, oral health promotion, such as outreach activities in collaboration with community partners (e.g., location of mobile dental clinics to reach at risk groups), and promoting good oral health practices, help decrease the risk of poor oral health outcomes among priority populations.

The combination of population, community and individual level services and programs are particularly important in helping to address oral health needs of vulnerable residents in Peel.

Peel Public Health also continues to monitor local level oral and population health data, available through program delivery and other data sources, as well as the scientific literature

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on community water fluoridation. This is in an effort to better inform program and service delivery with respect to oral health.

3. Options related to Community Water Fluoridation

The benefits, risks and costs outlined for each of the options below are intended to assist the Committee in making an informed recommendation to Regional Council on community water fluoridation in Peel.

Option 1: Maintain Current Practice of Community Water Fluoridation

Currently, the level of naturally-occurring fluoride in Peel's lake-based municipal water supply is adjusted to an optimal concentration range to protect against tooth decay (i.e., 0.5 to 0.8 mg/L), as recommended by the Ministry of the Environment and Climate Change's Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines. The optimal concentration of fluoride in drinking water to promote dental health has been determined by Health Canada to be 0.7 mg/L. The fluoridation additive used is hydrofluorosilicic acid (HFSA) from phosphorite rock.

Considerations:

- Currently all Peel residents using the public water supply as well as the portion of York Region residents receiving their water supply from the Region of Peel have access to fluoridated drinking water.
- Community water fluoridation is effective in reducing the rates and severity of tooth decay in children and adults.
- The benefits of community water fluoridation are equally distributed across socio-economic groups, with some benefits being more pronounced in children of low-income families.
- Community water fluoridation is safe, as evidence does not support a link between fluoride in drinking water at the optimal concentration of 0.7 mg/L and any adverse health effects.
- There is a small increased risk of fluorosis of aesthetic concern (e.g., visible white specks on teeth).
- The current cost to run the program is approximately \$451,000 (includes an additive cost of \$321,000, and annual operation and maintenance cost of \$130,000).
- The current practice is recommended by Peel Public Health and the Medical Officer of Health as a safe, effective, equitable and cost-effective measure to provide Peel residents with protective benefits against tooth decay.

Option 2: Change Fluoridation Additive Used In Peel

- To date, the fluoridation additive used at the Region has been a liquid hydrofluorosilicic acid (HFSA), manufactured from phosphorite rock. The current additive is NSF International certified and residual component levels (lead and arsenic) are well below the maximum concentration levels established under the *Safe Drinking Water Act, 2002*. As reported in the June 9, 2016 CWFC report titled "Fluoridation of Drinking Water in the Region of Peel", other fluoridation additives are available. For example, as noted in Table 1 below, HFSA manufactured from calcium fluoride and used as an additive to

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fluoridate water supplies contains lower residual component levels in concentrated form. As part of the water fluoridation process, the Region would modify its fluoride additive contract specifications to reduce the residual component levels.

Table 1. Concentrations of residuals in the two different sources of HFSA.

Residual Component	Concentration in HFSA (from Phosphorite Rock) (mg/L)	Concentration in HFSA (from Calcium Fluoride) (mg/L)
Arsenic	12.10	<3
Lead	1.70	<1

Considerations:

- Health benefits of community water fluoridation as outlined in option one are maintained.
- Ensures the Region is using a fluoridation additive with lower levels of residual components.
- Provided a liquid fluoridation additive continues to be used, there will be minimum need for different equipment.
- Higher costs may result from sourcing a different fluoridation additive (e.g., changing to an additive derived from calcium fluoride would cost approximately \$40,000 in additional operational costs) and/or imposing more strict specifications related to residual components.
- Other local municipalities such as Toronto, Durham Region, Region of Norfolk and Smith Falls are currently using HFSA manufactured from calcium fluoride.
- Peel Public Health supports this option, as it maintains the population level oral health protection provided by community water fluoridation.

Option 3: Discontinue Community Water Fluoridation

Under the *Fluoridation Act*, Regional Council has the authority to establish, continue, or discontinue community water fluoridation. Under the Ontario Public Health Standards, Council, in its role as the Board of Health, has the responsibility to provide various oral health strategies to improve oral health outcomes of Peel residents.

Considerations:

- Peel residents (as well as the portion of York Region residents receiving their water supply from the Region of Peel) would no longer have access to the protective benefits against tooth decay provided by community water fluoridation. This would be particularly significant for low-income and immigrant families and seniors with limited or no access to dental care.
- Although exact quantification of the implications of discontinuation is difficult, as there are few studies following cessation of community water fluoridation, available information from Canadian jurisdictions that have discontinued water fluoridation in recent years suggests observations of increases in incidence of tooth decay. These observations continue to be monitored.

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- Increases in tooth decay would lead to increased demands for Peel Public Health prevention and treatment programs, as well as health care system costs including physician/emergency department visits for oral health conditions.
- Given public health obligations under the Ontario Public Health Standards to ensure access to fluoride for all children in Peel who are at risk of tooth decay, an alternative population level intervention would be needed to fill the gap in service. See Option 4 below.
- In addition to the public health and health care system costs, the operational cost of removing fluoride from Peel's water supply is \$100,000 - \$300,000, depending on whether the tanks, pumps and piping are decommissioned or completely removed.
- Given the expected negative health, social and economic consequences, Peel Public Health and the Medical Officer of Health do not recommend the discontinuation of community water fluoridation.

Option 4: Fluoride Varnish Program

A fluoride varnish program would provide application (twice a year) of fluoride varnish as a protective measure against tooth decay.

Considerations:

- Fluoride varnish programs have demonstrated to be effective in reducing cavities among children and youth.
- Although there is limited reported evidence on adverse effects of fluoride varnish, it is generally considered safe and is commonly practiced as part of oral health care.
- The population that benefits from this intervention will depend on how it's delivered (e.g., whether the program specifically targets high risk groups or the population in general).
- Reaching high risk groups may be a challenge as a fluoride varnish program requires adherence, a time commitment and relies upon clients attending appointments (i.e., parents must bring in children).
- The estimated cost to run this program could range from approximately \$13,123,675 to \$107,498,393 depending on the population segment targeted (see Appendix I).
- Peel Public Health recognizes professional fluoride varnish application as an effective part of cavity prevention. Careful consideration is needed regarding the costs of a fluoride varnish program relative to other cost effective measures that ensure access to fluoride such as community water fluoridation.

CONCLUSION

Under the *Fluoridation Act*, Regional Council has the authority to establish, continue, or discontinue community water fluoridation. Under the Ontario Public Health Standards, Council, in its role as the Board of Health, has the responsibility to provide various oral health strategies to improve oral health outcomes of Peel residents.

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Decisions regarding community water fluoridation are influenced by various factors, including safety, effectiveness, technical feasibility, cost, and resident/community input. As part of a comprehensive approach to oral health, Peel Public Health supports the continued practice of community water fluoridation as a safe, effective, equitable, and cost-effective measure to provide Peel residents with protective benefits against tooth decay.



Nancy Polsinelli, Commissioner of Health Services



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Medical Officer of Health

Approved for Submission:



Stephen VanOfwegen for D. Szwarc, Chief Administrative Officer

APPENDICES

1. Appendix I: Estimated Costs of Professionally Applied Fluoride Provided by Peel Public Health

For further information regarding this report, please contact Olha Dobush, Director, Chronic Disease and Injury Prevention Ext. 2617

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APPENDIX I ALTERNATIVE APPROACHES TO THE CURRENT PRACTICE OF COMMUNITY WATER FLUORIDATION IN THE REGION OF PEEL

Estimated Costs of Professionally Applied Topical Fluoride Provided by Peel Public Health

Population Segment Description	Population Targeted ³	Topical Fluoride ⁴ Cost (\$)	Number of Additional Clinics ⁵	Clinic - Capital Costs ^{6,7} (\$)	Annual Budget (incl. new FTEs) ⁸ (\$)	Total Costs (\$)
Children Only (Ages 0-17)	318,431	1,311,936	91	4,540,900	19,235,067	23,775,967
Seniors Only (Ages 65+)	174,813	720,230	50	2,495,000	10,628,675	13,123,675
Children + Seniors	493,244	2,032,165	141	7,035,900	29,731,258	36,767,158
All High Risk Individuals^{1,2}	607,475	2,502,797	174	8,682,600	36,555,651	45,238,251
Entire Peel Population	1,443,635	5,947,776	413	20,608,700	86,889,693	107,498,393

1. All High Risk Individuals include all children and all seniors, as well as those adults 18-64 who are below the low-income measure after-tax cut-off as defined by Statistics Canada.
2. The percentage of adults 18-64 who were below the low-income measure after-tax cut-off (LIM-AT) in 2010 was obtained from the 2011 National Household Survey and this was multiplied by the 2015 population projection for adults 18-64 for the Region of Peel in order to obtain the number of adults 18-64 who were below the LIM-AT in 2015.
3. Population sizes are derived from population projections for 2015 for the Region of Peel.
4. The cost for topical fluoride per person per application is \$2.06 in 2015. To calculate the numbers in this column, it was assumed that each individual would require two applications of topical fluoride per year.
5. To calculate the number of additional clinics required, it was assumed that the time required for an appointment to provide one application of topical fluoride to one individual would be 15 minutes, and that one clinic would be able to accommodate 140 such appointments per week based on a 35-hour work week.
6. It was assumed that 25 per cent of the clinics would be portable clinics costing \$10,000 per clinic per year (the cost per portable clinic was a best guess), and 75 per cent of the clinics would be fixed clinics, with a conservative estimated capital cost of \$63,200 per clinic per year (\$63,200 was obtained by using the conservative estimated capital cost that was used when this exercise was done in 2011, which was \$59,000, and accounting for inflation using the Consumer Price Index as defined by Statistics Canada.
7. Capital costs include items such as leasing cost, equipment, furnishing, utilities, etc.
8. The annual budget is the sum of the cost of the topical fluoride and the cost of the employees (Full Time Equivalents (FTEs): Hygienists/Assistants/Case Aides/Admin/Supervisor) required to provide topical fluoride to the targeted population.