CDC TRAIN

Fluoridation Learning Online

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Fluoridation Learning Online (FLO) is a free resource designed to build the capability of state fluoridation programs, and to help increase knowledge and refine skills to implement and
CDC TRAIN

Learning Objectives

CDC TRAIN is experiencing unusually high number of users, which is causing courses and videos to load slowly.

Module 1 – Water Fluoridation Background

Lesson 1 – What is Community Water Fluoridation?
- Define community water fluoridation
- Describe the steps in the naturally occurring cycle of fluoride
- Identify the recommended level of fluoride in drinking water

Lesson 2 – Fluoride's Oral Health Benefits
- Define tooth decay
- Explain how fluoride reduces the incidence of tooth decay and helps prevent it
- Describe the general trend in the decrease of tooth decay in children since the 1970s

Lesson 3 – Dental Fluorosis
- Describe fluorosis, how it occurs and who it might affect

Lesson 4 – Community Water Fluoridation as a Public Health Measure
- Summarize factors that make community water fluoridation an ideal public health intervention
Module 2 – State Water Fluoridation Activities

Lesson 1 – Building Foundational Capacity
- Outline recommended practices for implementing state or community water fluoridation activities.
- Outline recommended practices for maintaining water fluoridation activities.

Lesson 2 – Measuring Water Fluoridation’s Impact
- Explain the process for reporting data on water fluoridation activities.

Lesson 3 – Communicating the Benefits of Community Water Fluoridation
- Summarize best practices for communicating risk with promoting fluoridation.
- Identify common myths about community water fluoridation.
Module 3 – Water Treatment Background

Lesson 1 – Overview of the Water Treatment Process
- List the four essential elements of a water system’s infrastructure
- Construct a simplified diagram of a water treatment system
- List the objective and method for each water treatment step

Lesson 2 – Water Fluoridation’s Objectives
- State the objective and summarize the methods for community water fluoridation
- Determine whether community water fluoridation is an appropriate intervention for a water system

Lesson 3 – Water Fluoridation System Design
- Construct a project checklist of factors and conditions that influence the design of a new water fluoridation system

Lesson 4 – Water Fluoridation System Selection Factors
- Distinguish between equipment requirements for water fluoridation and water treatment systems
- Summarize the trend in fluoride system selection with regards to water system size
- Apply water fluoridation best practices when choosing to add fluoridation to a water treatment system

Lesson 5 – De-Fluoridation of Naturally High Levels of Fluoride
- Select an appropriate target concentration for the de-fluoridation of water containing a high level of natural fluoride
Module 4 – Water Treatment Operations

Lesson 1 – Properties of Fluoride Additives
• Explain the difference between a chemical and an additive
• Compare the properties of natural fluoride minerals
• Identify the fluoride compounds that are approved for drinking water fluoridation in the United States

Lesson 2 – Fluoride Additive Standards
• Make use of information on the quality and grade standards of fluoride additives

Lesson 3 – Fluoride Additive Safety
• Identify the three elements of a safe practice
• Contrast the hazards associated with chronic and acute exposure to concentrated fluoride additives
• List the personal protective equipment required when handling concentrated fluoride additives

Lesson 4 – Water Fluoridation Process with the Fluorosilicic Acid Additive
• Outline a generic process for water fluoridation operations with the FSA additive
• Summarize best practices for water fluoridation operations with the FSA additive

Lesson 5 – Water Fluoridation Process with the Sodium Fluoride Additive
• Outline a generic process for water fluoridation operations with the Sodium Fluoride additive
• Summarize best practices for water fluoridation operations with the Sodium Fluoride additive

Lesson 6 – Water Fluoridation Process with the Sodium Fluorosilicate Additive
• Outline a generic process for water fluoridation operations with the Sodium Fluorosilicate additive
• Summarize best practices for water fluoridation operations with the Sodium Fluorosilicate additive

Lesson 7 – Additive Dosage and Feed Rate
• Modify the process control calculation for delivering a desired dosage of fluoride additive at a target fluoride additive feed rate

Lesson 8 – Operational Quality Management
• Construct a simplified process control scheme
• Compare methods for calibration water fluoridation system control points

Lesson 9 – Operational Troubleshooting and Maintenance
• Identify water fluoridation operational situations requiring the need for troubleshooting
• Summarize best practices for successful water fluoridation operational control
• Summarize best practices for periodic maintenance of water fluoridation equipment

Lesson 10 – Sampling and Analysis
• Summarize best practices for the testing and analysis of fluoride in water

Lesson 11 – Colorimetric Sampling Method
• Outline the steps in the colorimetric method of testing for fluoride in water
• Summarize the sources of error when conducting a lab analysis using the colorimetric method

Lesson 12 – Ion Specific Electrode Sampling Method
• Outline the steps in the ion specific electrode method of testing for fluoride in water
• Summarize the sources of error when conducting a lab analysis using the ion specific electrode method
Dear Howard Pollick,

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Community Water Fluoridation Background

Module 1

This introductory module will provide you with foundational knowledge on the science and rationale for using community water fluoridation as a public health intervention.

State and Community Water Fluoridation Activities

Module 2

This module reviews the core elements for successful state and community water fluoridation activities, including information on measurement and promotion impact of the intervention.
Recommended Level
0.7 mg/L

Natural Level of Fluoride in Water (mg/L) + Adjusted Level of Fluoride in Water (mg/L)
A surface water source has a natural fluoride concentration of 0.12 mg/L. What is the direction and level of adjustment required to meet the recommended level of fluoride in drinking water?

A. Adjust upward by .05 mg/L

B. Do not adjust

C. Adjust upward by 0.58 mg/L

D. Adjust upward by 0.5 mg/L

E. Adjust downward by .05 mg/L
Cost Savings of Community Water Fluoridation

Community water fluoridation is recognized as one of the most cost-effective, equitable, and safe measures communities can take to prevent cavities and improve oral health. That's why it was named 1 of 10 great public health achievements of the 20th century.¹

Various methods may be utilized for determining costs and benefits of community water fluoridation. Newer studies have been able to make use of actual costs from water systems rather than relying primarily on expert estimates. The fact that multiple studies using different methods reach the same conclusion increases confidence in the general finding that community water fluoridation can be cost saving for communities.
Economic Impact

Economic evaluations reaffirm the cost benefits of community water fluoridation. Studies continue to show that widespread community water fluoridation prevents cavities and saves money, both for families and the health care system.

An economic review of multiple studies found that savings for communities ranged from $1.10 to $135 for every $1 invested.² Per capita annual costs for community water fluoridation ranged from $0.11 to $24.38, while per capita annual benefits ranged from $5.49 to $93.19.²

A recent 2016 economic analysis found that for communities of 1,000 or more people, the savings associated with water fluoridation exceeded estimated program costs, with an average annual savings of $20 per dollar invested.³ Additionally, individuals in communities that fluoridate water save an average of $32 per person by avoiding treatment for dental caries.³

The 2016 study, “Costs and Savings Associated with Community Water Fluoridation in the United States,” used documented program costs to determine:

• The costs of installing and maintaining necessary equipment and operating water plants;
• the expected effectiveness of fluoridation; estimates of expected cavities in non-fluoridated communities;
• direct and indirect costs of treating cavities; and
• time lost visiting the dentist for initial and follow-up treatment over a lifetime to maintain a treated tooth.

Consistent with prior analyses, this study supports the finding that community water fluoridation remains one of the most cost-effective methods of delivering fluoride to all community members regardless of age, educational attainment, or income level.
Knowledge Check

Which of the following are measures of cost effectiveness in support of community water fluoridation? (Select all that apply)

A. Reduction in the cost associated with dental procedures to treat dental cavities.

B. Reduction of lost productivity and time due to dental appointments

C. Reduction in dental cavities

D. Reduction in the amount of money spent treating water with fluoride.

E. Reduction in the cost associated with traveling to dental appointments and procedures
Table of Contents

Executive Summary ............................................. 1
Introduction ................................................... 5
Benefits .......................................................... 13
  1. What is Fluoride? ........................................... 13
  2. Fluoride prevents tooth decay? ......................... 13
  3. Water fluoridation? ....................................... 14
  4. Fluoride in your water? ................................... 15
  5. Fluoride additives? ....................................... 16
  6. Natural vs. adjusted? ..................................... 16
  7. Effectiveness? ............................................. 17
  8. Still effective? ............................................ 20
  9. Dissolved? ................................................ 21
  10. Tooth decay problem? ................................... 22
  11. Adult benefits? .......................................... 24
  12. Fluoride supplements? ................................. 25
  15. Bottled water? .......................................... 31
  16. Home treatment systems? ............................ 32

Safety ............................................................ 37
  17. Harmful to humans? ..................................... 37
  18. More studies needed? ................................. 38
  19. Recommended level? .................................... 39
  20. EPA maximum? ......................................... 40
  21. EPA secondary level? ................................. 40
  22. Total intake? ............................................ 40
  23. Daily intake? ............................................ 44
  24. Prental dietary fluoride supplements?............... 46
  25. Body uptake? ............................................ 47
  26. Bone health? ............................................ 47
  27. Dental fluorosis? ........................................ 47
  28. Fluorinated water for infant formula? .............. 52
  29. Prevent fluorosis? ....................................... 52
  30. Warning label? .......................................... 54
  31. Anorexia and chronic toxicity? ....................... 55
  32. Cancer? ................................................. 56
  33. Otosclerosis? .......................................... 56
  34. Enzyme effects? ....................................... 58
  35. Thyroid? ............................................... 59
  36. Pree' rinse? ............................................ 60
  37. Allergies? ............................................... 60
  38. Emergency use? ....................................... 61
  39. Teratogenic? ........................................... 61
  40. Down Syndrome? ...................................... 82
  41. Neurological impairment? ......................... 82
  42. Lead poisoning? ...................................... 84
  43. Alzheimer's disease? ................................ 85
  44. Heart disease? ........................................ 86
  45. Kidney disease? ....................................... 87
  46. Excessive health claims? ............................ 88

Fluoridation Practice ......................................... 75
  47. Who regulates? ......................................... 75
  48. Standards for additives? ........................... 76
  49. Lead, arsenic and other contamination? ....... 77
  50. Additives safety? ...................................... 78
  51. Source of additives? .................................. 78
  52. System safety concerns? ............................. 79
  53. Engineering? .......................................... 80
  54. Corrosion of water pipes? ......................... 81
  55. Damage to water facilities? ....................... 81
  56. Environment? ........................................ 82

Public Policy .................................................... 85
  57. What is public health? ............................... 85
  58. Valuable measure? .................................... 86
  59. Reduce disparity? ..................................... 86
  60. Support for fluoridation? ......................... 89
  61. Courts of law? ....................................... 91
  62. Opposition? .......................................... 92
  63. Opposition tactics? ................................ 93
  64. Internets? ............................................. 96
  65. Public views? .......................................... 97
  66. International fluoridation? ....................... 101
  67. Banned in Europe? ................................ 102

Cost ............................................................ 106
  68. Cost-effective and cost-saving? .................. 106
  69. Practical? .............................................. 109

Figures
  1. Reviewing Research ................................. 6
  2. Tooth Decay and Dental Fluorosis Graph ......... 13
  3. EPA and IHPM Numbers .......................... 62
  4. Examples of Toothpaste for Children ............. 46
  5. Opposition Tactics ................................. 95
  6. ADA.org Fluoride and Fluoridation .......... 97
  7. Largest Fluoridized Cities ....................... 98
  8. States Meeting National Goals .................. 99
  9. State Fluoridation Status ......................... 100

Tables
  1. Dietary fluoride Supplements .................. 26
  2. Dietary Reference Intakes ......................... 65
  3. Categories of Dental Fluorosis ............... 51

4/30/19  Fluoridation Facts 3

Fluoridation Facts

ADA American Dental Association
Fluoridation Facts 2018

American Dental Association
Fluoridation Facts (2018)
American Dental Association
Fluoridation Facts (2018)
American Dental Association
Fluoridation Facts (2018)
American Dental Association
Fluoridation Facts (2018)
68. Is water fluoridation a cost-effective and cost-saving method of preventing tooth decay?
68. Is water fluoridation a cost-effective and cost-saving method of preventing tooth decay?

Answer

• Yes. When compared to the cost of other prevention programs, water fluoridation is the most cost-effective means of preventing tooth decay for both children and adults in the United States.

• A number of studies over the past 15 years have attempted to place a specific dollar value on the benefit of fluoridation. These studies, conducted in different years (and therefore using different dollar values), encompassing different communities/populations and different methodologies have two conclusions in common:

  1) for systems that serve more than 1,000 people, the economic benefit of fluoridation exceeds the cost and

  2) the benefit-cost ratios increased as the size of the populations increase largely due to economies of scale.
68. Is water fluoridation a cost-effective and cost-saving method of preventing tooth decay?

**Fact**

- The cost of community water fluoridation varies for each community depending on the following factors.

1. Size of the community (population and water usage)
2. Number of fluoride injection points where fluoride additives will be added to the water system
3. Amount and type of equipment used to add and monitor fluoride additives
4. Amount and type of fluoride additive needed to reach the target fluoride level of 0.7 mg/L, its price, cost of transportation and storage and
5. Expertise and preferences of personnel at the water plant.
68. Is water fluoridation a cost-effective and cost-saving method of preventing tooth decay?

Share Screen for details:

https://ebooks.ada.org/uu2d6g/107

Fluoridation Facts Page 106 (107 of 112)
American Dental Association
Fluoridation Facts (2018)

Figure 7. Largest Fluoridated Cities

Two cities (Jacksonville, Florida and El Paso, Texas) are naturally fluoridated.*

* Data compiled by the American Dental Association and Centers for Disease Control and Prevention/Division of Oral Health. Information current as of October 2017.
Figure 9. State Fluoridation Status

Percentage of population on community water systems receiving fluoridated water.*

Recent Issues – Dental Fluorosis

  - https://doi.org/10.1177/2380084419830957
Recent Issues – Dental Fluorosis


- Adjusted prevalence of mild or greater fluorosis in first permanent molars for the synthetic cohort was 9.5% in youth aged 6–9 years in 2001–2004 but 46.9% in youth aged 16–19 years in 2011–2014.
Recent Issues – Dental Fluorosis


• Adjusted prevalence of mild or greater fluorosis in first permanent molars for the synthetic cohort was 9.5% in youth aged 6–9 years in 2001–2004 but 46.9% in youth aged 16–19 years in 2011–2014.

• The observed increase in dental fluorosis prevalence with age between 2001–2004 and 2011–2014, based on the synthetic cohort analyses, is not biologically plausible.

• This suggests that there may have been some change in the way the examiners evaluated the level of fluorosis over time.
Questions?

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