Objectives for Today

• Attendees will be able to describe the benefits of Safe Drinking Water over bottled water
• Attendees will learn, understand, and be able to share with their patients the importance of oral health and fluoride
• Attendees will be able to address CWF and impact on dental disease
• Attendees will be able to address the status of fluoride and CWF in North Dakota
Safe Drinking Water

Bottled Water vs Tap Water

The Benefits of Safe Drinking Water

**Bottled Water**: Concerns
- Regulated by FDA - Food
- Doesn’t have strict controls which are applied to tap water
- Precautions by EPA¹:

  Some people may wish to take special precautions with the water they drink. In particular, people with immune systems that are weakened by AIDS, chemotherapy or transplant medications are more vulnerable to microbial contaminants in drinking water such as Cryptosporidium² *

¹ Source: Accessed May 1, 2021 [Water Health Series Bottled Water Basics (epa.gov)]
² Pregnant mothers
The Benefits of Safe Drinking Water

**Bottled Water**\(^1,2\): Concerns

- Distrust of tap water
- *Perceived* as more pure than tap
- Estimated by 2055 there will be more plastic bottles in oceans than fish
- Landfill nightmare
- No requirement to list background fluoride content – range from ND – double that in CWF\(^1\)
- **Mold – Kroger recall**\(^3\)

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**Tap Water**

- *Purest water available on planet – U.S.*
- Undergoes strict testing requirement of the EPA
- Constantly monitored for impurities (contaminants)
- Hesitancy to use, especially among immigrants whose tap water was not clean – were encouraged to drink bottled water

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1. Source: Accessed March 21, 2022: Information available by calling manufacturer or searching on website International Bottled Water Association [IBWA webpage](https://www.ibwa.org)
2. Source: Accessed March 21, 2022: Information on Fluoridated Bottled Water: [IBWA webpage](https://www.ibwa.org)
Fluoride and community water fluoridation (CWF)

Preventing the disease for which our profession began

CWF: Nature’s way to prevent tooth decay

- Fluoride is a natural mineral found in all bodies of water
  - It is found in lakes, rivers and groundwater.
  - Ocean water contains 0.8 to 1.4 mg/L of fluoride.
  - Optimal level for caries prevention is 0.7 mg/L (ppm)
- Nearly 3 in 4 U.S. residents (73%) who are served by a community water system receive water that is fluoridated.
- **CWF reduces cavities by 25% for adults and children over their lifetimes.**

To learn about the history of fluoridation

Read the Story of Fluoridation:

North Dakota leads the nation in CWF

- North Dakota ranks #5 in the U.S. of residents on community water systems having CWF
- 96.5% of residents receive CWF
- 688,710 out of 713,531 people in state
- Far exceeds the Healthy People 2030 Goal for CWF in the U.S. of 77.1%

(Source: CDC fluoridation statistics, 2018; https://www.cdc.gov/fluoridation/statistics/2018stats.htm
Healthy People 2030 Goal for CWF accessed 3-21-2022)
Both forms of fluoride are needed

Community Water Fluoridation

What is community water fluoridation? +

Does my public water system add fluoride to the water? +

If I am drinking water with fluoride, why do I also need to brush with toothpaste that contains fluoride? –

Both drinking water and toothpaste with fluoride provide important and complementary benefits. Fluoridated water keeps a low level of fluoride in saliva and dental plaque all day. The much higher concentration of fluoride in toothpaste offers additional benefit. Fluoride slows the activity of bacteria that cause decay and combines with enamel on the tooth surface to make it stronger and better able to resist decay. Together, the two sources offer more protection than using either one alone.

Dental cavities – a devastating disease

Dental cavities are the most common chronic disease for children and teens. It’s significantly more common than asthma, obesity, and diabetes. Infectious and Transmissible

- Severe pain (toothaches)
- Difficulty in chewing
- Poor weight gain
- Difficulty concentrating
- Predictor of cavities later in life
- Costly to treat
- Deaths
The head really is connected to the body

Oral Health – Systemic Health Implications
• Facial Cellulitis
• Systemic infection – Septicemia, brain abscess
• Diabetes – Strong evidence exists for a causal link between periodontal disease
• Obesity
• Coronary artery disease
• Metabolic syndrome
• Pregnancy outcomes/Preterm labor
• Oral health after menopause
• Rheumatoid Arthritis

(Source: Smiles for Life curriculum; "The Relationship of Oral and Systemic Health"; Personal photo courtesy Dr. Jay Kumar)

Clinical Case #1
Community Water Fluoridation

1. Cessation effects
2. Impact on Early Childhood Caries (ECC)
3. Sources of information on scientific-fictitious claims
1. What happens when a community ends fluoridation?

Two Canadian cities fluoridated their water

**STUDY:** What percentage of 2nd grade children had at least one decayed, extracted, missing or filled primary teeth?

Then Calgary ended water fluoridation

**STUDY:** What percentage of 2nd grade children had at least one decayed, extracted, missing or filled primary teeth?

[Graph showing percentage of children who had experienced at least one cavity after Calgary ended fluoridation.]


After Calgary ended fluoridation

**STUDY:** What percentage of 2nd grade children had at least one decayed, extracted, missing or filled primary teeth?

[Graph showing percentage of children who had experienced at least one cavity after Calgary ended fluoridation.]

After Calgary ended fluoridation

**STUDY:** What percentage of 2nd grade children had at least one decayed, extracted, missing or filled primary teeth?


After Calgary ended fluoridation

Community Water Fluoridation

1. Cessation effects
2. Impact on Early Childhood Caries (ECC)
3. Sources of information on scientific-fictitious claims

CWF impact on Early Childhood Caries

- U.S. and International studies confirm benefits for children – 66-75% drop in OR with GA for ECC
- Water Operators prevent more cavities by fluoridating the water than all of us can do in our lifetimes

Full mouth restorative care

Stages of ECC

(Source: Smiles for Life curriculum: Early Childhood Caries)
Community Water Fluoridation - Opponents

1. Cessation effects
2. Impact on Early Childhood Caries (ECC)
3. Sources of information on scientific-fictitious claims

Common claims by opponents - FALSE

- No toxicological testing has been conducted on fluoride
- The ADA says it shouldn’t be used in infant formula
- Fluorosis is a sign of toxic effects
- It causes ADHD
- It causes Alzheimer’s
- It harms the kidney, the immune system and other systems
- It’s a conspiracy — the phosphate fertilizer industry is disposing of its “hazardous waste”
- Cavities have fallen in all nations, so fluoridation must not matter
- Some people are allergic to fluoridated water
- It causes thyroid problems
- The only way fluoride works is by topical application
- This is “forced medication”
- The Cochrane Group says there’s no evidence behind fluoridation
- Water systems should use a pharmaceutical grade of fluoride
References for refuting false claims

**CDC:** Water Fluoridation Information: General and specific information on CWF

**American Fluoridation Society:**
- For the latest information on studies, explaining them, refutations, and scientific hyperlinks
- Frequently asked questions
- Refuting common claims

**American Dental Association:**
- Fluoridation Facts: Detailed information on common claims and charges made against CWF with answers and fully referenced
- Mouth Healthy: More information on Fluoridation from ADA

**American Academy of Pediatrics:**
- Campaign for Dental Health: Fluoridation Information and resources

Reading beyond the abstract

**Purpose:**
- To educate our own on how to ID good from poor studies
- A collaborative effort between the British Fluoridation Society and the American Fluoridation Society
- Addresses 9 key Suggestions for Assessing a Research Paper
- Goes through a recent paper on IQ
- Includes a “Spoof Paper” to apply your knowledge

(Source: “How to Read a Study about Fluoride or Fluoridation”)

(3/23/2022)
Clinical Case #2

North Dakota Fluoride and CWF

How to locate this information
CDC’s My Water’s Fluoride

“My Waters Fluoride” (MWF) – CDC public website for Reports¹ and County level fluoride data²

MWF Home Page

List of Counties
Select a county to view its public water systems.

|--------------|-------------------------------------------|---------------------------------------------------|

Average Fluoride Levels by Month Report

Report Options

Average Fluoride Levels by Month - North Dakota, 2021

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<tr>
<th>PHS ID</th>
<th>PHS Name</th>
<th>Jan</th>
<th>Feb</th>
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<th>Apr</th>
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¹ Source: My Water’s Fluoride: North Dakota
**Natural Fluoride Levels in water – NOT CWF!!**

**My Water’s Fluoride**
- **My Water’s Fluoride Home**
- About My Water’s Fluoride
- Community Water Fluoridation
- State Fluoridation Reports
- My Water’s Fluoride Glossary

**Natural Systems Report**
- **Average Fluoride Levels by Month Report**

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### Importance of knowing natural fluoride level

**Fluoride Supplements**

- When fluoride in water is suboptimal (<0.6ppm)
- For infants, children, and teens
- Prescribe fluoride supplements according to the ADA fluoride schedule
- Must take into account source of fluoride outside of the home: daycare, school

<table>
<thead>
<tr>
<th>Age</th>
<th>Fluoride Ion Level in Drinking Water (ppm)*</th>
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<tbody>
<tr>
<td></td>
<td>&lt;0.3</td>
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<tr>
<td>Birth-6 months</td>
<td>None</td>
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<tr>
<td>6 months-3 years</td>
<td>0.25 mg/day**</td>
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<tr>
<td>3-6 years</td>
<td>0.50 mg/day</td>
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<tr>
<td>6-16 years</td>
<td>1.0 mg/day</td>
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</tbody>
</table>

*1.0 part per million (ppm) = 1 milligram per liter (mg/L)
**2.2 mg sodium fluoride contains 1 mg fluoride ion
Summary:

What you have to do

Inoculate your community - CWF challenges

Chairside chats:

- Discuss fluoride and water fluoridation at every checkup
- If your community is not fluoridated, discuss with the patient/parent that they’re experiencing more cavities and more severe cavities than they would if their water was fluoridated
- If your community is fluoridated, discuss the healthiness of the teeth with the patient/parent and how fortunate we are to have fluoridated water
- If you are on well water, we will need to check it for fluoride level to see if it is adequate or not
Keep your community healthy and smiling

What questions do you have?

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