Oral Health in Underserved Populations: More Important Than You Think!

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The United States is currently in a dental health crisis

- 181 million US residents did not visit the dentist in 2010
- 1 in 2 US residents over the age of 30 suffer from some form of gum disease
- 1 in 4 children under 5 years of age already have at least one cavity
- Over 90% of adults have at least once cavity; 1 in 4 of them remain untreated

Response: Healthy People 2020 Oral Health Initiative

1. Reduce the proportion of adults with untreated dental decay by 15%
2. Reduce the number of children under 18 with untreated dental decay by 15%
3. Increase the proportion of low income children who received any preventive dental services during the past year by 15%

Amendments to the Public Health Service Act reauthorizes the award of grants dedicated to oral health initiatives aimed at preventing dental disease and reducing the barriers to accessing competent oral health services
Medicaid Adult Dental Coverage and Expansion Decision

Expansion States (32 including DC)

CT, DC, DE, MA, MD, NJ, NH, RI

Dental Coverage
- Excessive (16)
- Limited (19)
- Emergency (13)
- None (3)

Expansion States
- (14)
- (12)
- (5)
- (1)

1. Idaho provides extensive dental coverage to adults with disabilities and other special health care needs, all other adult members receive emergency only benefits. Virginia provides extensive benefits to pregnant women. Arizona will provide extensive benefits to persons with disabilities effective October 1, 2016.

The United States is currently in a dental health crisis: MA is not exempt!

- 57% of women did not have their teeth cleaned during their pregnancy
  - 17% of the state’s 3rd graders had untreated decay
- 90% of residents between ages 25 and 44 living in dental health professional shortage areas have lost at least one tooth
  - 59% of nursing home residents have untreated decay
- Massachusetts ranks 36th in the nation for water fluoridation status
- 66% of licensed dentists with a Massachusetts address are not MassHealth providers
What is fluoride?
What are its uses?

- Supplement
- Prevention of tooth decay
- Protect from bacteria
- Promotes new bone formation
- Prevents further bone loss
Topical vs. Systemic

- Use a tiny smear of fluoride toothpaste the size of a grain of rice, from the first tooth up to the third birthday.

- A pea for me at age 3...and always with fluoride!
Fluoride occurs naturally in water

Water fluoridation is the process of adjusting fluoride in public water supplies to achieve the optimal level of fluoride.

Holden Water Treatment Plant
Community Water Fluoridation Debate

Pros:

- Protection against dental caries, especially in children
- Well-documented safety at recommended level of 0.7 mg/L
- Cost effective
  - Annual per-person saving for those aged 6-65 ranges between $28.70-$35.90 depending on the size of the community
- Equitable and fair access to all members of a community regardless of age, education, or income

Cons:

- Fluoride is harmful in high doses
  - Dental fluorosis and skeletal fluorosis
- Difficult to control intake of fluoride
- Effectiveness of water fluoridation has not been validated with a randomized controlled trial
- Lack of autonomy

Aoun, Darwiche, Al Hayek, & Doumit (2018)
Fluoride in MA

- **Public water supply fluoridated**
- **Public water supply not fluoridated**
- **No public water supply**

**NOTE:** In a small number of communities, fluoridated water is occasionally purchased from outside agencies.

SOURCE: Massachusetts Department of Public Health Office of Oral Health

David Butler/Globe Staff
Attempts to fluoridate water has failed on 4 separate occasions (1956, 1963, 1996, 2001)

2001- Voters rejected fluoridation 56 percent to 44 percent.

$400,000 spent on pro-fluoridation campaign

Arguments against fluoride centered around consent, autonomy, and fluoride toxicity
New Changes in Worcester & Potential Impact on Water Fluoridation

- Worcester city counselor Konnie Lukes, who helped vote down fluoridation in the past, will not be seeking re-election after 2019 term ends.
- Worcester Board of Health, which has held an advisory role for many years, had its regulatory powers reinstated in 2014.
- Worcester BoH agrees that data on fluoridation that has been discussed at meetings has largely shown a net benefit to adding fluoride in water supply.
While previous attempts have failed, there is hope that with a strong argument fluoridation can happen in Worcester.

Toy (2017)
Who is involved in oral health Legislation?
What is currently under consideration in Massachusetts law?

1. An Act to Improve Oral Health for All Massachusetts Residents (S.1215, H.1916)

1. An Act Relative to the Restoration of MassHealth Adult Dental Benefits (S.1212, H.1917)

What can we do as health care professionals?

1. **Know how to find and contact your legislators!**

2. **Recognize the importance of good history taking and oral exams even if you are not a dental professional**

3. **Be aware of the resources in your community available to your patients!**
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https://malegislature.gov/Search/FindMyLegislator

https://www.masshealth-dental.net/

https://www.mass.gov/orgs/department-of-public-health


Origins of Water Fluoridation

- Early 1900’s, dentists discovered that there were patients with ‘mottled brown spots’ on their teeth, deemed Colorado Brown Stain due to original location
- After 30 years of research across the country with different populations who had this brown stain to their teeth, it was found to have an origin in the water supply directly related to fluoride concentration
- The fluoride levels in the water clearly caused the discoloration called fluorosis—however, there was also a benefit to this discoloration
- Researchers discovered that teeth of children and adults with mottled enamel were resistant to decay
- Grand Rapids, Michigan was the first city to add fluoride to the drinking water after determining an ideal amount to provide protection (1.0 ppm)
- Saw a 60% decrease in dental caries in 30,000 school children across a 15-year study

Who benefits from fluoride?

- Not only children, but also adults benefit from fluoride since it is absorbed more easily by demineralized enamel than sound enamel.
- Drinking water with an appropriate level of fluoride is also beneficial in decreasing the prevalence of dental caries—particularly root caries—in older adults.
- Fluoride works best when small amounts are constantly maintained in the mouth, therefore the easiest and most reliable way to do this would be through the water supply.
  - Most beneficial time for fluoride exposure is shown to be from 6 mo. to 6 years of age.
  - Since young children do not have the capacity to understand the benefits of fluoride use, the easiest and most effective way to ensure appropriate exposure is to do so through the water source.
  - Relying on fluoride supplementation of toothpastes and varnishes in young children cannot ensure that there is consistent and frequent use.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6195894/#b11-pnfs-23-171
Who has dental caries?

- Despite the advances in fluoridation, there is still a clear division of the prevalence of dental caries
  - Low SES, inadequate access to dental care, those without dental insurance, low levels of parental education, etc. are all risk factors for dental caries
  - The most accessible and proven method of ensuring fluoride exposure is through water sources - can reach everyone without regard for SES or accessibility to care
Is too much fluoride dangerous?

- Risk for enamel fluorosis is only present during certain stages of tooth eruption—after pre-eruptive maturation of teeth is complete, around age 8, enamel is no longer susceptible to enamel fluorosis.
- Despite having many forms of fluoride available, only the ingestible forms are going to increase overall fluoride concentration to a point where systemic effects may be seen.
  - This is not seen in the US because of the relatively low concentrations of fluoride in the water compared with other areas of the world.
- Enamel fluorosis in the US may be seen at a very low prevalence in its mildest form, which is purely a cosmetic concern.
- Cases of moderate and severe forms of fluorosis occurred in areas with both low and high fluoride concentrations in the water.
- Fluoride is a naturally occurring element which in excess can cause systemic problems just like many other naturally occurring elements (vitamin A, vitamin D, iron, sodium chloride, water, oxygen, etc.).

[https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm#top](https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm#top)

[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4851520/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4851520/)
Community water fluoridation is a safe, effective, and inexpensive way to prevent dental caries. This modality benefits persons in all age groups and of all SES, including those difficult to reach through other public health programs and private dental care.

Fluoride supplements can be prescribed for children at high risk for dental caries and whose primary drinking water has a low fluoride concentration.

For children aged <2 years, the dentist or other healthcare provider should consider the fluoride level in the community drinking water, other sources of fluoride, and factors likely to affect susceptibility to dental caries when weighing the risk and benefits of using fluoride toothpaste.

Routine use of professionally applied fluoride gel or foam likely provides little benefit to persons not at high risk for dental caries, especially those who drink fluoridated water and brush daily with fluoride toothpaste.
Slides to discuss:

- Fluoride background -- targeted population of children - topical vs systemic, fluoride rinse (Canary)
- Why we care/why it is a public health issue -- healthcare coverage/dentists vs HCPs (Abiola)
- Community water fluoridation debate: fluoridation plant (Kathryn)
  - Pros vs Cons
- Policies in the works/ maps of MA fluoridation particularly Worcester (status of it being voted down) (Sahil)
- What's already being done now for Worcester (Sabīha)
- What can we do now? Barriers? (Alex)