H2O - The More You Know!
PSE Strategies to Encourage Water Consumption

CDPH Project Directors’ Meeting
Sacramento
November 13 & 14, 2019

Christina Hecht, PhD, Laura Vollmer, MPH, RD
A change in health

“Our hospital has gone from treating infectious disease to treating diabetes and CVD.”

- 1 in 2 had HIV/AIDS
- Now 1 in 2 has type 2 diabetes

- Dr. Dean Schillinger, SF General Hospital
Presentation Overview

• Sugary beverages: Are we winning the battle?
• What does it take to drink water instead?
  ❖ Stretch break
• PSE strategies for school and childcare settings
  ❖ Stretch break
• Put it into practice!
Is sugary drink consumption down?

Trends in carbonated soft drink consumption in gallons per person per year

Source: NPD Group. 2015 estimate

Graph courtesy of Kristine Madsen, MD, University of California Berkeley

University of California
Agriculture and Natural Resources
Nutrition Policy Institute
Not really!

Trends in carbonated soft drink consumption in gallons per person per year

Graph courtesy of Kristine Madsen, MD, University of California Berkeley
SSB & water intake: US infants

<table>
<thead>
<tr>
<th>On any given day, % of age group consuming:</th>
<th>0-6 months</th>
<th>6-12 months</th>
<th>12-24 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar-sweetened beverages</td>
<td>--</td>
<td>5%</td>
<td>32%</td>
</tr>
<tr>
<td>Water</td>
<td>19%</td>
<td>61%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Based on NHANES 2005-2012 data from: Grimes et al., 2017
## SSB & water intake: US children

<table>
<thead>
<tr>
<th>On any given day, % of age group consuming:</th>
<th>2-5 years</th>
<th>6-11 years</th>
<th>12-19 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar-sweetened beverages</td>
<td>47%</td>
<td>63%</td>
<td>65%</td>
</tr>
<tr>
<td>Water</td>
<td>81%</td>
<td>82%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Based on NHANES 2013-2014 data from: Bleich et al., 2018
Disparities in beverage consumption

Herrick et al., 2018
SSBs are uniquely harmful

SSB consumption contributes to

– Obesity
– Dental caries
– Cardiovascular and coronary heart disease
– Type 2 diabetes, fatty liver disease
– Other metabolic disease
– Certain cancers
– Risk of mortality

Bleich et al., 2018; Chazelas et al., 2019; Chen et al., 2019; Chi & Scott, 2018; Collin et al., 2019; Huang et al., 2014; Imamura et al., 2015; Malik et al., 2010; Malik et al., 2020; Mullee et al., 2019; Narain, Kwok & Mamas, 2017; Seferidi, Millet & Laverty, 2018; Sohn, Burt & Sowers, 2006; Vos et al., 2017; Yang et al., 2014
What you are doing

• Building health literacy around Sugary Drinks
  – Sugar content
  – Other ingredients
  – Health impacts

• The ability to read, understand, and act

Schillinger et al., 2002
Policies to decrease SSB consumption

- Increase cost
- Decrease access
- Educate
SSB excise tax

• Most cost-effective approach

Philadelphia
SSB sales ↓ 38%
No change in jobs

Berkeley
SSB intake ↓ 52%
Water intake ↑ 29%

Mexico
Persistent SSB decrease
Largest decrease in low-income households

Gortmaker, et al., 2015;
Lee et al., 2019; Roberto et al., 2019;
Colchero et al., 2017;
What is preemption, anyway?

Sugary Beverage Taxes:
San Francisco, 2018
Seattle 2018
Philadelphia, 2017
Boulder 2017
Cook County, 2017
Albany, 2017
Oakland, 2017
Navajo Nation, 2015
Berkeley, 2015

Preemption already passed:
Michigan, Arizona, and California

Legislation introduced:
Alabama, Arkansas, Colorado,
Florida, Georgia, Kansas, Kentucky, Louisiana,
Maryland, Minnesota, Mississippi, New Mexico,
Ohio, Oklahoma, Oregon, Tennessee, Texas,
Utah, Washington, and Wisconsin
One more thing to know:
The excise tax
Research: Workplace policy

JAMA Internal Medicine | Original Investigation

Association of a Workplace Sales Ban on Sugar-Sweetened Beverages With Employee Consumption of Sugar-Sweetened Beverages and Health

Elissa S. Epel, PhD; Alison Hartman, BA; Laurie M. Jacobs, PhD; Cindy Leung, ScD, MPH; Michael A. Cohn, PhD; Leeane Jensen, MPH; Laura Ishkanian, MPH; Janet Wojcicki, PhD, MPH; Ashley E. Mason, PhD; Robert H. Lustig, MD, MSL; Kimber L. Stanhope, PhD, MS, RD; Laura A. Schmidt, PhD, MSW, MPH

- 48.6% decline in SSB consumption
- 69% saw a decrease in waist circumference (average decrease of 2.1 cm)
- Small beneficial change in HOMA-IR – especially in high-BMI group

Epel et al., 2019
Policy to decrease SSB access

- Default beverage
- Portion size
- Healthy beverage policies
- Procurement policies
Other policies to reduce SSB

– Warning labels

– Marketing restrictions
  • Misleading advertising & labeling
  • Store check-out
  • School environs

Roberto et al., 2016; Van Epps & Roberto, 2016; Grummon et al., 2019
Only milk and water, please!

New!

HealthyDrinksHealthyKids.org

Robert Wood Johnson Foundation  
Academy of Nutrition and Dietetics

American Academy of Pediatrics  
American Heart Association

American Academy of Pediatric Dentists

University of California  
Agriculture and Natural Resources  
Nutrition Policy Institute
Effective access to water

Safety
- Lead
- Other contaminants

Access
- Location
- Condition
- Vessels

Promotion
- Education
- Messaging

Policy

Kenney et al., 2015; Patel et al., 2014
Tap or bottled?

Adults drinking tap or bottled water by race

Rosinger et al., 2018
Why Tap Water?

Tap water has benefits over bottled water

- Lower cost
- Smaller environmental footprint
- More likely to be fluoridated to prevent cavities

Tap water has benefits over filtered water

- Lower cost
- Less maintenance
- Smaller environmental footprint
- Some filtration removes fluoride

Kregiel, 2015; Ercin et al., 2011
Effective access to water

Safety
- Lead
- Other contaminants

Policy

Kenney et al., 2015; Patel et al., 2014
Water 101
How lead can enter water

Potential for lead in drinking water:

- Presence of lead parts
- Corrosion control
- Stagnation time
- Action Level
- First draw sample
Sampling & testing for lead

• All sources unused (stagnant) for 8-18 hours

• 1 - 5 250mL sequential samples of cold water collected per outlet

• Sample ONLY food and drinking water sources

• Use trained samplers
  ▪ Learn plumbing system – locations, flow direction, use patterns
  ▪ Sample before any water use starts

Analysis by EPA-certified laboratory
Key Takeaways on Lead

- Most tap water is safe
- No region can assume that it has zero risk of lead exposure in tap water
- Water quality is a shared responsibility - government, water utility and the end-user share responsibility for tap water safety.
  - The end user has responsibility for lead testing
- Testing is not too complicated and not very expensive
- Best outcome: find and remove lead parts
- But - the many variables in water supply, water systems, premise characteristics and use patterns mean that there is no one solution
- Take advantage of resources and technical assistance
Lead in CA school DW

- 456 taps over 15ppb
  - Lead Sampling of Drinking Water in California Schools
  - https://www.arcgis.com/apps/MapJournal/index.html?appid=9d17731cae2c4452957fad5d8ee2d75
  - Grey = no exceedance
What about other contaminants?

- Teach how to read the Consumer Confidence Report
- Resources by EPA, CDC, CWC
- DrinkingWaterAlliance.org
Potable vs palatable

Potable = safe
  – Meets standards
  – Tested for lead

Palatable = taste
  – Odor
  – Flavor
  – Color
Do you need filtered water?

- Determine water quality

- Reasons to filter
  - Potability (safety: lead, other contaminants)
    - NSF 53: “Health Effects”
  - Palatability (odor, taste, color)
    - NSF 42: “Aesthetic Effects”
  - Simple appeal – more popular?

Water station with added filter box
Boston Latin School, MA
Filters - considerations

- Cost
  - Variable
- Timely replacement
  - Replacement: at least every 6 months
  - Shorter usable life in high volume areas
- Weather: high temperatures can result in filter breakdown
- Responsible disposal
What you can do

Build health literacy in tap water safety

• Potability vs palatability
  ➢ How to read the CCR
  ➢ Sampling for lead
  ➢ Use a certified lab (not a home test kit)

• Options to improve quality

• Daily safe water practices
All Drinking Water is not Created Equal
Effective access to water

Safety
- Lead
- Other contaminants

Access
- Location
- Condition
- Vessels

Promotion
- Education
- Messaging

Policy

Kenney et al., 2015; Patel et al., 2014
Effective Drinking Water Access

Ritchie et al., in review
Factors Associated with Effective Drinking Water Access

- Champions
- Community partnerships
- Environmentalism
- School policies & culture
- Coordination between groups
- Resources

Outstanding water culture

Cooper A, in press
Stretch break!
Water in Schools
Three Steps

1. Safety
2. Access
3. Education, Promotion

Water: “First for Thirst”

Policy
Healthy Hunger Free Kids Act of 2010: Require[s] that schools make potable water available and accessible without restriction to children at no charge in the place where lunches are served during the meal service.
Safety

Access

Education & Promotion

Water: “First for Thirst”
States with school drinking water lead testing programs as of February 2018

**Program**: an effort initiated by a state agency or department pursuant to an existing directive or grant of authority

**Policy**: a mechanism to establish a program via state statute, executive order, or funding appropriation

- **State policy**: 15 (60%)
- **State program**: 10 (40%)
Key findings from twelve state school drinking water testing programs

Testing was completed in

10,888 schools\(^1\)

of schools tested had one or more water samples with a lead concentration at or above the state’s action level

44%

first draw tests were completed

485,152

57,152 (12%)

of all tests were above the state specified action level

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1. In 12 states; these 12 were those with available data on the lead content found in drinking water in schools
Lead Sampling of Drinking Water in California Schools

• Testing was to be done by July 2019
• Summary information forthcoming
• Map up-to-date
Drinking Water in Schools Grant Program

- State program, administered by CA Water Board
- $9.5 million distributed to 76 school districts to date
- $6.8 million more allocated

[Link to Program Information](https://www.waterboards.ca.gov/water_issues/programs/grants_loans/schools/)
Components of Effective Access: Schools

EFFECTIVE ACCESS to Water in Schools

1. Drink more water!
2. Safe water
3. Water dispenser
4. Test for water safety
5. Water consumption
6. Water storage
7. Water distribution
8. Water consumption

Image of a school cafeteria with children and teachers discussing water access.
A better way to assess water access: PET

Systematically documents water access in schools or community settings
Can be used by students, staff, or community members
Ready-to-use package includes:
  • Intro and overview documents.
  • Training webinar and slides
  • Step by step photo-taking protocol
  • Scoring instructions to generate quantitative findings.
Project 4-H2O

• YPAR effort in Contra Costa county
• Advocated for hydration stations
• Suite of resources, incl tipsheets, water promotion messages, etc.
Education & Promotion

Access

Safety

Water: “First for Thirst”

WATER
Sugar Free
Calorie Free
Obesity Free

WARNING: Sodas, sports and juice drinks can lead to childhood obesity and type 2 diabetes.

Water: The healthiest choice
Access + Education = \( \uparrow \) Consumption

Muckelbauer

- Fountains, reusable bottles, teacher-led water education at German elementary schools
- Daily intake increased 220mL
- Reduction in risk of overweight (31%) in intervention vs. control schools

Kenney

- Water was promoted and cups were provided during school lunch
- More students drank water
- Students drank more water
- Fewer students were observed having sugary drinks

Sources: Muckelbauer et al., 2009; Kenney et al., 2015
Research Spotlight: Water First

School-based intervention:

– Improve water access
– Provide reusable bottles for use at home and school
– In-class nutrition education
– School-wide promotion
Three Steps

Water: “First for Thirst”

Safety
Access
Education, Promotion

Policy

University of California
Agriculture and Natural Resources
Nutrition Policy Institute
Policy Supports

• Local School Wellness Policy
  – Can address water beyond the classroom

• Kentucky state policy
  – Requires bottle filling stations in newly constructed or substantially renovated schools
  – Could be adapted to local/district level

• Forthcoming research: “Keys for Success” by Amada Cooper et al
Water in Early Care & Education
Three Steps

Safety

Access

Education & Promotion

Policy

Water: “First for Thirst”
Policy - Child and Adult Care Food Program

Regulation: “Potable water as an acceptable fluid for consumption must be available throughout the day, including at meal times.”

Guidance: Water must be OFFERED throughout the day with visual cues.
Policy – Healthy Beverages in Child Care Act (AB 2084)

• Water available to children at all times, including at meals and snacks
• Only 1% or nonfat unflavored milk served to children ages 2 and older
• No more than 1 daily serving (in age appropriate portion size) of 100% juice
• No beverage containing natural or artificial sweeteners
3 Steps

Water: “First for Thirst”

Safety
Access
Education & Promotion
AB 2370: Lead Testing in Childcare Centers

• Effective January 1, 2019, provide information to parents/guardians on lead
• Enhance curriculum for providers licensed on or after July 1, 2020
• Test water for lead contamination
Basic Water Safety Tips

• Only use water from the cold tap for drinking and cooking
• Avoid using hosebibs or laundry sinks for drinking water
• For taps with aerators, clean the aerators using best practices
• Fresher water is safer water
  – Flush all drinking and cooking water taps briefly (5-30 seconds) when they have not been used for 6 hours – overnight
3 Steps

Safety

Access

Education & Promotion

Water: “First for Thirst”
Effective Access to Water in Childcare
Make water easily available

- Cups with child’s name
- Kid-sized pitchers
- Reusable water bottles
- Indoors and out
- Water breaks
- After exercise
Water on the table: Allowed in CACFP
“Offer” Water

How about some water?
3 Steps

Education and Promotion

Build Consumption

Water: “First for Thirst”

Access

Education & Promotion

Safety
30 DAY WATER CHALLENGE: MAKE EVERY SIP COUNT!

Water: It's great for physical, oral, and cognitive health. The Child and Adult Care Food Program (CACFP) requires providers offering drinking water in addition to making it available. To promote the importance of drinking water, try these simple activities—one for every day of the week. How many can you do?

1. Enjoy a glass of water & then make sure a water-filled water bottle is in your bag.
2. Set a reminder to drink water & encourage your children to practice pacing.
3. Use a straw to drink water & encourage your children to practice pacing.
4. Sing "We're All in the Water" in the rain or "Ring a Bell in the Rain," "The Rain Keeps on Going" & "We're All in the Rain, Water, Rain, है वजीर, वजीर..."
5. Set a timer to drink water & encourage your children to practice pacing.
6. Offer water during all physical activity.
7. Teach American Sign Language for water: https://www.h2o.org/.
8. Share a water-themed video, story, or a musical video for your children to enjoy.
9. Play the Rainy Day Water Music Video by the band Big & handsome.
10. Set a reminder to drink water & encourage your children to practice pacing.
11. Watch and draw the "What Should Babies Do?" video. https://www.youtube.com/watch?v=UZf18kl8jMk
13. Assign tasks to children as "Rains for Water" to promote water-consciousness.
14. Put a cup of water & have children pour the water into small & medium-sized containers.
15. Safety First! Teach your children & ask them if they can make your own drinking water bottle everyday & wash their hands with soap & water at least once per week.
16. Turn off the water while brushing teeth & encourage your children to practice pacing.
18. Put a cup of water & have children pour the water into small & medium-sized containers.
20. Safety First! Teach your children & ask them if they can make your own drinking water bottle everyday & wash their hands with soap & water at least once per week.
21. Teach the word for "water" in another language. https://www.h2o.org/.
22. Be a role model for water by using water bottles, which shows people around the world that recycling is important.
23. Display posters promoting drinking water & encourage children to stay hydrated.
24. Sensory activities: Make water play with water & use water as a sensory activity for children to touch & play with.
25. Safety First! Make sure your water is safe, use filtered or bottled water, especially for young children.
26. Water drinking routines: Learn the safe addition of water to your diet regularly.
27. Read Water Safety tips: Be A Water Safety Heroes!
28. Would you like to see how water is made? Make your own local water activity at home.
29. Find more lessons & activities in the Centers for Drinking Water Activity Book: https://www.h2o.org/
30. Share a picture of your favorite activity at the challenge: https://www.h2o.org/.
For Providers – TA

Includes allowable cost information

Online Healthy Beverages Training

DrinkingWaterAlliance.org
For Parents & Families

Tips for Parents

1. Make water fun by serving it in a favorite cup or with a silly straw.
2. Decide not to buy sugary drinks or have them at home.
3. Make water tasty with sliced lemon or lime, berries or mint.
4. Keep pitchers of water or bottles of unsweetened bubbly water in the fridge.
5. Send your kids to child care or school with a refillable water bottle.

Posters, graphics, animated videos

Alaska DHHS “Play Every Day” Campaign

University of California
Agriculture and Natural Resources

Nutrition Policy Institute
Los cuerpos de los niños funcionan mejor cuando se hidratan de manera saludable – ¡con agua!

Beber agua en lugar de bebidas azucaradas previene que suba de peso y la diabetes tipo 2

 Mantenerse hidratado ayuda a los niños a pensar mejor

Beber agua en lugar de bebidas azucaradas ayuda a prevenir las caries dentales

NATIONAL DRINKING WATER ALLIANCE


Hidratarse niños de hoy para una vida saludable

NATIONAL DRINKING WATER ALLIANCE

drinkingwateralliance.org

For Parents & Families, cont.

healthydrinkshealthykids.org

University of California
Agriculture and Natural Resources

Nutrition Policy Institute
Mr. Water – Puppet Shows

Hispanic Health Council of Hartford

- Series of six interactive puppet shows
- Each show is 30-40 minutes
- Includes classroom follow-up activities for children and materials for their parents

https://www.youtube.com/watch?v=m0x3DxlRlzg
Stretch break!
Putting it into practice

Youth sports programs

Parks and playgrounds

WIC clinics

Farmworkers

Places of worship

Youth programs

Food pantries, banks, soup kitchens

Farmers’ markets

Healthy Stores

Garden programs

???
What does it take to enable people to drink water, not sugary drinks?
Community Assessment

- Cost of purchasing healthy drinks
- Oral health concerns
- Soda is everywhere and its inexpensive
- Water is boring
- Water safety
- SSBs are part of the culture
- Diabetes
- Norms at family gatherings
- Water tastes or smells bad
- Environmental concerns
Making water “First for Thirst”

- Safety
- Access
- Education, Promotion

Report out
- Challenge or barrier?
- Strengths?
- Most innovative?
One more thing …

Water should be on MyPlate

Take Action: https://www.drinkingwateralliance.org/submit-a-comment
Acknowledgements

- Kristine Madsen, MD, UCB
- Anisha Patel, MD, MSHS, Stanford University
- Robert Christlieb, LEED AP, Chicago Public Schools
We're a network of organizations and individuals across the country working to ensure that all children in the U.S. can drink safe water in the places where they live, learn and play.

Our website is the nationwide clearinghouse for essential drinking water research and resources.
Questions?

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EXTRA SLIDES
More on reducing lead in drinking water
What is the likelihood you’ll have a problem at the tap?

Triantafyllidou, 2011
1) Know your pipes and parts
2) Know your service lines
Best case: find source and fix it
“Flushing” to reduce lead exposure

Moving water is fresher water
Fresher water is safer water
Understand water flow and use

- DW = drinking water bubbler
- WC = water cooler (chiller unit)
- CF = classroom faucet
- KC = kitchen faucet, cold
- KH = kitchen faucet, hot
- EC = home economics room, cold
- EH = home economics room sink, hot
- BF = bathroom faucet
- NS = nurse's office sink
- SC = service connector
Innovation: Automated Drinking Fountain Flushing

- Developed at Chicago Public Schools
- Fits in the station, needs 110 power supply
- Flushes fixture and Riser
- Significantly reduces stagnation time at the fixture
- Using Building Hall lighting as control (occupied mode)
- Program to flush as needed
  - E.g., two stage Flushing - start of day for 10 mins, then 1 min per hour
- Simple install, 1 module can do multiple fixtures
- Biggest impact at Top of Riser
Further thoughts on water quality

• How do we maintain water quality between tests?
• How do we comfortably state the water is safe on a daily basis?
• Testing is just a snapshot in time.
• Potential Solutions Discussed
  – System Replacement
  – New Fixtures
  – Filters
  – Flushing
Summary

- Water access decisions are necessarily site-specific
- Make sure campus has resolved safety questions – and let community know!
- Perform a walk-through and select key locations to replace old fountains or add new bottle filling stations
- Cost: not only the appliance
  - Add on features, installation requirements, installation
- Don’t filter if you don’t need to
- Take advantage of resources and technical assistance