#flintwatercrisis

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Perfect storm for lead leaching
- Flint River water more corrosive
- Lack of corrosion control
- Aging infrastructure (up to 80% lead plumbing?)
- Decreased water use - population loss, high water rates

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Lead in Water

- Soluble metal (particulate and dissolved)
- Drinking and cooking risks
- Vehicle made for ingestion
- Impacts developmentally-vulnerable formula-fed infants and unborn

Not what used to
- Lead paint obsessed (CDC vs EPA)
- But “plumbing”…
Lead in Water

Lead testing results for water sampled by residents

FLINT HAS A VERY SERIOUS LEAD IN WATER PROBLEM

http://flintwaterstudy.org/
Research Methods

Data from all blood lead levels processed at Hurley Medical Center

Two periods of comparison (same seasons):

- WATER SWITCH APRIL 26, 2014
- POST-SWITCH: January 1, 2015 – September 15, 2015

• Analyzed % Elevated Blood Lead (EBLL)
  EBLL = Blood lead Levels $\geq 5$ ug/dL
**Flint Results:**
- PRE-SWITCH % EBLL: 2.4%
- POST-SWITCH % EBLL: 4.9%
- $p < 0.05$; STATISTICALLY SIGNIFICANT CHANGE

**High WLL Wards Results:**
- PRE-SWITCH % EBLL: 4.0%
- POST-SWITCH % EBLL: 10.6%
- $p < 0.05$; STATISTICALLY SIGNIFICANT CHANGE

**Ward 5 Results:**
- PRE-SWITCH % EBLL: 4.9%
- POST-SWITCH % EBLL: 15.7%
- $p < 0.05$; STATISTICALLY SIGNIFICANT CHANGE
Research results

- % of children with EBLL in Flint increased
  - Most striking increase in areas with highest water lead levels

**Results significantly underestimate exposure:**
- Infants not screened for lead
- Missed peaks

- Widened disparities
- Failure of primary prevention
Now

- Jan 2016 Federal State of Emergency
- Preventable potentially population-wide exposure
- Loss of trust in government and agencies
  - In 2016, in the middle of the great lakes, no guarantee of safe drinking water
- Task forces, federal investigation, lawsuits, resignations, international media, celebrities...
Now

Water still not safe

Moving Forward

Unique opportunity to be proactive, to build a model public health program to buffer impact of exposure
  - Focus on secondary prevention

Serve as a model for other communities
MSU/Hurley Pediatric Public Health Initiative

- Assess
- Monitor
- Intervene

Experts and community

http://humanmedicine.msu.edu/pphi/
Interventions: Education, Nutrition & Health

- Medical home access (developmental assessment)
- Nutrition access and education

Teen
(>13yr)
- Quality schools
- School health and behavioral health support
- Before/after school and summer programming

Schoolage
(5-12yr)
- Quality schools
- School health and behavioral health support
- Before/after school and summer programming

Preschool
(3-5yr)
- Universal quality preschool
- Early literacy support
- Positive parenting programs

Toddler
(1-3yr)
- Early literacy support
- Positive parenting programs
- Quality child care

Infant
(0-1yr)
- Breastfeeding support/education
- Early literacy support
- Positive parenting programs
- Quality child care

Prenatal
- Prenatal care
- Maternal infant support programs
- Breastfeeding education
Flint Summary

Ongoing public health emergency

Lessons from Flint
- Lead is not a problem of yesterday
- Failed water and public health protections
- Environmental injustice
- Opportunity to mitigate exposure
Thank you!