

Man-made disaster undermines impoverished school district: The Flint water crisis

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Abstract

In seeking an avenue to save money, an urban city made a choice to alter the drinking water for its residents and created a crisis, which all community stakeholders were unprepared to address. The Flint water crisis has been given national attention by celebrities and politicians, but the long-term issues related to families, children, and educational resources are far from being resolved. Resources have been provided to the community health and education providers, but more assistance is needed and will continue to be required for decades to come. Environmental hazards such as lead poisoning play a critical role in child development. It serves as a wake-up call to national and international communities to examine the water sources available to children.

Keywords: school district leaders, children, lead poisoning, poverty, Flint water crisis, urban schools

Introduction

Flint, Michigan, the principal city in the "Mid-Michigan" geographic area, is an older American city with high poverty levels and a large-scale minority community. The city has been struggling financially over the past decade and had been looking for ways to mitigate large expenses (CNN, 2016). Flint officials identified water as a major expense and began to explore water delivery options that would be more fiscally sound than their source from Detroit, Michigan. The Flint City Council consulted experts, and it was deemed that the most economical solution was to build a pipeline, which would connect to the Karegnondi Water Authority. The projected savings was an estimated \$200 million dollars over 25 years (CNN, 2016). However, the completion of the pipeline would not coincide with the city's

decision to end their contract with Detroit. There needed to be a solution for that potential two-year gap in water service. In April 2014, the city emergency manager decided that in the interim the city of Flint would deliver water to its citizens from the Flint River.

However, the Flint River holds an infamous reputation in the area, "best known as a graveyard for old refrigerators and grocery carts" (Osnos, 2016, para. 7). Even the largest area employer, General Motors refused to use water from the Flint River in their plants, as the water was thought to rust auto parts. However, city officials and Michigan DEQ officers continued to assure citizens that the water was safe to drink.

Beyond safety concerns, another major issue is the water stems from the service lines used to move the water, some of which were installed as early as 1901. Similar to other cities built in that time period, Flint water and sewer lines, which led to citizen homes, were constructed from lead, a cheap and easily transformed material. Typically, lead pipes can be treated to prevent leaching; however, if there are contaminants present in the water, lead leaching will occur (Young, 2016). This lead leaching is what occurred in Flint's water system.

The Problem with Lead

Lead is a potent neurotoxin, which can negatively impact child development and scholastic achievement. According to the World Health Organization (WHO, 2016), lead impacts the functioning ability of a child's brain and nervous system, reduces their intelligence quotient, and causes serious health risks. Children exposed to high doses of lead may suffer from conditions including comas, convulsions, or even death. Those who survive serious lead poisoning could be left with numerous developmental issues spanning from: anemia, hypertension, renal impairment, toxicity to reproductive organs, mental retardation, low attention spans, low reading and science scores, or even anti-social/violent behavior (Muennig, 2009; Needleman, 1979). The WHO has stated that the damage to lead-affected children is irreversible as there are no drugs to reverse developmental damage (Varkiani, 2016).

As Miranda et al (2007) found in their study on the relationship between early-childhood lead exposure and end-of-year grades, high lead blood levels in children are associated with lower test scores, or more specifically "a blood lead level of 5 µg/dL is associated with a decline in end-of-grade reading and mathematics scores that is roughly equal to 15% of the interquartile range". This dramatic drop in test scores illustrates a need for further education resources for impacted children. First, schools need to play a stronger role in screening every child for elevated lead levels as part of the enrollment process. Second, there could be an evaluation process for students who have high lead blood levels for eligibility for special education services. Third, schools need to employ additional school counselors to manage the behavioral and educational issues of impacted children. Finally, school psychologists and speech therapists are needed to address any mental health needs of students whose decision-making, moods, fine motor skills, and higher thought processes have been adversely impacted by lead poisoning (Chen, Cai, Dietrich, Radcliffe, & Rogan, 2007).

After the city switched to the Flint River as a source for drinking water, tests found that the lead levels were double the Environmental Protection Agency's requirements (Loftis, 2016). According to the Loftis (2016), the biggest impact of this rise in lead occurred in wards 5, 6, and 7. Federal law prohibits lead in water to exceed 15 parts per billion; however, in 2016, every ward in Flint exceeded that limit, ranging from 6 to 32 percent of water samples. In a small child weighing 18 pounds, it would only take 12 millionths of an ounce of lead (the same as a grain of salt) to exceed the appropriate level (Martinez, 2016).

Timeline of the Water Crisis

The lead poisoning in Flint actually began many months prior to April 2014 when the city began pumping water out of its own notoriously polluted river. Here is a short timeline of key dates of this man-made disaster:

- March 2013 - Flint city council voted to switch from Detroit water to KWA (even though the pipeline would not be finished).
- April 25, 2014 - Flint River water begins to flow through the city pipes without the anti-corrosive agent present in the Detroit water supply.
- March 2015 - Flint water consultant issues report that water meets state and federal standards.
- Early September 2015 - DEQ refutes conclusions of lead leaching into the water.
- Late September 2015 - DEQ and DHHS send communications to Governor Rick Snyder about the potential magnitude of the lead issue in Flint.
- December 2015 - Flint declares state of emergency two months after reconnecting to Detroit water.
- January 2016 - The National Guard is activated and President Obama signs the declaration of emergency and request for federal aid.
- December 2016 - Congress approves a wide-ranging bill to authorize water projects [infrastructure] across the country, including addressing lead in Flint's drinking water.

What about the children?

Over the past two years, parents of children residing in Flint, Michigan have gone to ask their doctors "are my children being poisoned?" There are almost 15,000 children under the age of ten in the Flint area, and almost 40% of them live below the poverty level (Martinez, 2016). As demonstrated in Figure 1, the highest concentrations of children living in poverty also live in the wards with the highest levels of lead (Flint Michigan Water Crisis Demographics, 2016).

Professors at Columbia University noted that there are elevated lead levels in more than 8,000 Flint children since 2014 (Sanborn, 2016). They estimated that this will lead to \$395 million in social costs because of the harmful impact of lead on IQ levels. Potential lower IQ levels in Flint citizens could also equal a loss of economic productivity, a reliance on welfare and costs, or an increase of citizens moving through the criminal justice system. A study conducted by the University of Pittsburgh in 2002, found that juveniles in detention centers had 10 times as much lead in their bodies as their non-delinquent peers in high school (Flannery, 2016). Frank Vandervort, clinical professor of law at the University of Michigan has stated,

“The kids who are likely to come in contact with the juvenile justice system tend to be kids who have had developmental disabilities, who have mental health problems” (Townes, 2016). Experts also estimate that high lead levels in children can lead to 18,000 fewer healthy years and \$50,000 in lifetime economic losses for every person exposed (Sanborn, 2016).

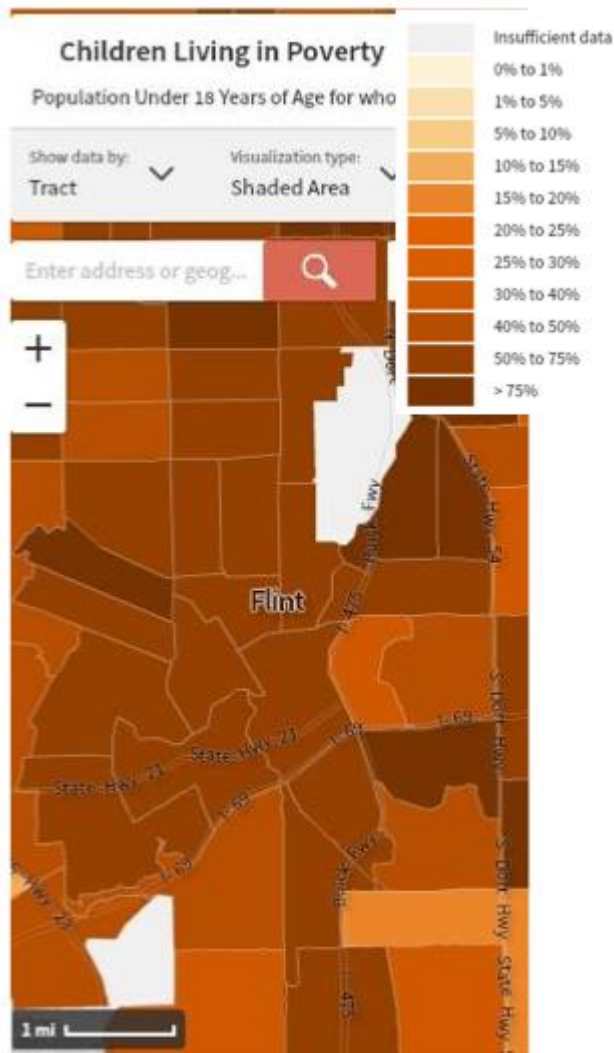


Figure 1. Poverty levels of children living in Flint, MI. Adapted from Flint Michigan Water Crisis Demographics, In Social Explorer, n.d., Retrieved January 25, 2016, from <http://www.socialexplorer.com/blog/post/flint-michigan-water-crisis-demographics-5>

Many people might think to simply turn off the water in their homes. Some might even stop paying their water bills; however, how does a family provide water for children to drink, eat, or bathe? The state did pay some water bills for residents. Families were even encouraged to run the water in order to rebuild the system, but already scared citizens were hesitant.

National Recognition

Although local assistance has been provided, the world media has been alerted. The impact of this attention is not immediately known. Many stories were highlighted across the United States via the New York Times, NPR, Boston Globe, Wall Street Journal, and CNN to name a few. There were numerous international spotlights from BBC, Al Jazeera, the Guardian UK, and local news outlets across the globe.

Celebrities spoke out in support of the Flint water crisis. Some commented on talk shows and interviewed environmental activists like Erin Brockovich. Other celebrities like Cher, Jimmy Fallon, Snoop Dogg and Madonna donated money and encouraged fans to donate as well. In fact, a debate between presidential candidates Hillary Clinton and Bernie Sanders was held in the Flint area, and

Donald Trump made a campaign stop in the city. However, that attention has waned while the problem persists.

Much attention has been provided and improvements have occurred within the city but the water in many homes remains unsafe. Pipes still need to be replaced. The assistance specifically for children and education is not highlighted in those political conversations. Dr. Hanna-Attisha, head of the pediatric resident’s program at the city-owned Hurley Medical Center and pediatrics and human development professor

at the Michigan State University College of Human Medicine noted frustration that so much emphasis has been on infrastructure and water and more focus should be on the children (Dolan & Spangler, 2016).

With any crisis, it can be confusing for people that wish to provide assistance. Those wishing to provide assistance may not know which organizations are connected to the relief efforts or which are legitimately focused on assisting with children and education. One option is the Child Health and Development Fund created by the Community Foundation of Greater Flint. The donations to this fund are slated for long-term needs of children who are currently 0-6 years old. This organization has been able to provide funds to other organizations like Edible Flint, Fair Food Network, the Genesee County Community Action Resource Department (GCCARD), and the Hurley Foundation. Links to these charities and community foundations can be found in appendix A.

Educational Resources

The educational leaders in the local school district, Flint Community Schools, are continually battling many more challenges related to the water crisis. Already not a resource-rich environment, the Flint Community Schools' leaders now deal with lower enrollments due to families leaving the Flint area. For those who stayed, the leaders must now address the daily educational leadership challenges in addition to knowing their students could have any number of water related issues at home including but not limited to meal preparation, bathing options, and washing clothes.

Teachers in the Flint Community School district are feeling the impact of lead on performance in the classroom. Teacher Darlene McClendon stated, "This year's students are less attentive than previous groups and when you ask them a question, it's gone like you didn't teach them anything" (Flannery, 2016, para. 15). In fall 2016, Flint kindergartners scored lower on readiness tests than in previous years. As Miranda et al found in their study on the relationship between early-childhood lead exposure and end-of-year grades, high lead blood levels in children are associated with lower test scores, or more specifically "a blood lead level of 5 µg/dL is associated with a decline in end-of-grade reading and mathematics scores that is roughly equal to 15% of the interquartile range" (2007, p. 1247). This dramatic drop in test scores illustrates a need for further education resources for impacted children.

In order to deal with the ramifications of the water crisis, schools will need to play a stronger role in screening every child for elevated lead levels as part of the enrollment process. Second, there will need to be evaluation of students who have high lead blood levels for eligibility for special education (Gould, 2009). Third, schools will need to employ additional school counselors to manage the behavioral and educational issues of impacted children. Finally, school psychologists and speech therapists will be needed to address mental health needs of students whose decision-making, moods, fine motor skills, and higher thought processes have been adversely impacted by lead poisoning (Chen, 2007).

The U.S. Department of Education's Office of Safe and Healthy Students provided a Project School Emergency Response to Violence (SERV) immediate services grant to

Flint Community Schools. This grant is specifically for restoring the learning environment following the water crisis that began two years ago. Above and beyond needing schools to have clean water, students with side effects from the lead will need far more educational resources. Flint educational leadership has implemented processes and hired staff to support impacted children. The school district is focusing the grant money toward attendance specialists to make home visits with the families of frequent absentees and their families. They are helping to coordinate interventions and alterations to education plans as needed. In addition to the specialists, more school counselors and psychologists are on staff to address mental health needs. Probably the most crucial addition is the additional speech therapy staff to handle the expected increase in special needs referrals. According to the US Department of Education (2016), the district is continuing to focus on improving the schools while delivering high-quality and effective teaching and learning.

Educational leaders in higher education did work to address water related issues, but the needs of their constituents were not like those in K-12 leadership. The University of Michigan-Flint created a free 8-week community education course. The Department of Public Health and Health Sciences course was offered to students as a 1-credit college course. Three other institutions with higher education students were affected by the water crisis. Relief efforts by Kettering University, Baker College, and Mott Community College included water distribution, frequent communications to students and parents, providing access to water filters, as well as frequent testing of campus drinking water.

Nutrition

Mitigating the impact of lead poisoning in children can be achieved with specific nutrition plans. The United States Department of Agriculture (USDA), Centers for Disease Control and Prevention (CDC), Environmental Protection Agency (EPA), and the Michigan Education Association (MEA) have made daily nutrition requirement recommendations in order to reduce the impact of lead exposure. The first recommendation of these agencies is to keep children's stomachs full to prevent easy absorption of lead into the body. These agencies also stress the importance of a diet, which includes food from the five food groups (breads/grains, vegetables, fruits, milk, and meat). They suggest ensuring that children receive food, which is rich in calcium, zinc and iron as these minerals will hinder lead absorption and reduce lead levels.

Most students in the Flint Community School District are enrolled in the free and reduced lunch program. In this type of poverty stricken area, fresh vegetables may be a rarity on the dinner table. There are numerous local companies, agencies, and foundations working with the school district to educate parents and provide proper nutrition to district children. The MEA is currently working the Flint Community School District to deliver fresh fruits and vegetables to the schools. The Crim Fitness Foundation is offering nutrition classes at Flint Northwestern High School for local families.

National Water Sources

The Flint water crisis has caused other cities from across the country to examine their own water. As infrastructure ages, this could cause environmental toxins to

become more prevalent in urban environments. Dr. Anne Marie Fine, Director of Education of the Naturopathic Academy of Environmental Medicine (NAEM) stated, "for the sake of our children's future, we need to ensure that swift action is undertaken when exposure to environmental toxicants is identified" (Yanez, 2016, para. 13). The data available shows that lead exposure is an area of concern all across the United States. Of the more than 1500 counties that reported lead poisoning data in 2014, there were nine counties with more than ten percent of children that tested positive for lead poisoning (Frostenson, 2016; CDC, 2014).

The Flint water crisis was a catalyst for exposing water quality issues across the entire United States. Since 2012, nearly 2,000 water systems across the U.S. have been found to contain elevated lead levels in tap water samples, a public health concern that requires community leaders to notify customers and take action (Kelly & Nichols, 2016). There are several informational drinking water tools available to those in the United States through the EPA including the Safe Drinking Water Information System database, Water Contamination Tool, and the Water Utility Response on the Go (Drinking Water Tools, 2016).

As knowledge of the water crisis has started to be reported on an international level, nations across the globe are starting to test water more thoroughly, provide information, and take action. Any citizen in the world should know what is in the local water supply and if there are any toxins that might affect children in the surrounding areas.

Discussion

The Flint water crisis has been given national attention by celebrities and politicians. A politician can use the tragedy for a platform close to an election, but will they stay as concerned and invested once elected? With rapid access to trending stories via social media, it is easy for those outside of the daily problem to focus on another story. Children could be forgotten when a new crisis takes the national spotlight. In order to prevent similar crises, administrators need to understand which preventive measures could be undertaken and action items needed if this type of tragedy occurred in other areas.

The first line of defense in the battle against lead poisoning is for administrators to provide quality and timely screening of potentially impacted students. Researchers have compiled data on blood lead levels, lead levels in drinking water, and mapped areas of possible concern. Recognizing that they might be in a potential danger zone is a key tool for district administrators. This is specifically important to administrators in urban areas that are as old as Flint, Michigan. The homes in similar urban centers could be built with the same materials that were affected and leaked lead into the drinking water. These screenings not only affect families living in these areas, but also the infrastructure of urban school district buildings that are built to serve children daily. Action should be taken by local communities to test local water sources and scrutinize the drinking water available to children in the schools.

Recognizing that nutrition is an essential deterrent to lead absorption, administrators in potential danger zones should plan to allocate resources to provide quality nutritional programs for their students. The political landscape has seen much discussion over school nutrition in the last decade. There are many districts with free breakfast programs and community summer lunch programs. Knowing that nutrition could assist in the fight against increased blood lead levels it would behoove administrators to review current district nutrition programs.

Lead poisoning can lead to developmental delays and other complications. Ongoing evaluation of the student population is necessary to determine the changes to nutrition programs, staffing, and available resources. After evaluation data is analyzed, administrators will be able to accurately assess which resources are needed in their districts. This may include staffing additional counselors, nurses, truancy staff, and special education teachers. Budget considerations would also need to be taken into account for future health needs.

Conclusion

It has been more than one year since the Flint residents were reconnected to the Detroit water system. Bottled water is still being distributed and delivered on a regular basis. Imagine what it might be like for a family to spend more than a year only using bottled water to drink, cook, clean, and bathe. Due to ever opposing political and social forces, people still have homes with pipes that need to be replaced. Schools are in a unique position to work with families in the community with their access to data, screening, nutrition programs, and educational resources. Administrators could leverage their skills in data-driven decision making to play an integral role in shaping the response to intervention and future public policy.

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Appendix A

Those wishing to provide assistance may wish to connect with one of the organizations listed below. The donations to the Child Health and Development Fund are slated for long-term needs of children who are currently 0-6 years old. This organization has been able to provide funds to other local organizations like Edible Flint, Fair Food Network, the Genesee County Community Action Resource Department (GCCARD), and the Hurley Foundation.

- [Community Foundation of Greater Flint](#)
- [Edible Flint](#)
- [Fair Food Network](#)
- [Genesee County Community Action Resource Department \(GCCARD\)](#)
- [Hurley Foundation](#).