

FROM THE EDITOR

Clinicians' Roles in Ensuring Access to Safe Water

The Flint, Michigan, water town hall was overwhelmed with the discordant sound of crinkling plastic water bottles, as Flint community members protested the information being presented. It was January 2017, approximately one year since the Flint water crisis had been declared a federal emergency, and bottled water was still being used as the city residents' primary clean water source [1]. However, the timeline for the replacement of the city's water service lines had been vaguely presented. The distrust and tension in the room as the community members demanded answers was palpable. According to a flyer distributed to attendees, the town hall aimed to provide Flint residents with "the most recent and up-to-date information ... regarding the status of the Flint water system and to answer residents' questions regarding water quality, filters, [and] health and medical resources" [2]. It was reported that levels of lead as well as other toxins and microbiological growths that had contaminated the water flowing from Flint taps was continuing to improve, although representatives from city, state, and federal government agencies were unable to reach consensus about whether the water was safe to drink [1, 3].

As a medical student training in Flint, Michigan, during the water crisis, I have witnessed firsthand the intersection of medical practice, public health advocacy, and medical ethics. Key physicians who pledged to "first, do no harm" in taking the Hippocratic Oath aligned their pledge with their practice to protect and advocate for the community they served daily. However, I spoke to a few clinicians who felt largely unprepared for a public health crisis of this magnitude, and some asserted that environmental health, specifically knowledge of water quality, was outside the scope of medical practice. The wide spectrum of viewpoints I encountered raises questions about the nature and scope of clinicians' obligations to identify, assess, and respond to harmful microbial and chemical levels in drinking water.

Understanding the scope of clinician practice is essential, especially since safe water access is an issue of domestic and international proportions. According to the Centers for Disease Control and Prevention (CDC), although international organizations regard providing safe drinking water as a measure of progress in alleviating poverty, disease, and mortality, billions worldwide still lack access to this resource [4]. The World Health Organization projects that by 2025, half of the world's populations will be living in water-stressed areas [5]. The Columbia Water Center contends that the "aging pipes and urban water infrastructure lead to increasing rates of main breaks and the potential for

contamination of treated water supplies" [6]. To avoid these problems, rehabilitation and replacement of water service lines is necessary, but such endeavors are expensive. The American Water Works Association estimates that restoring and expanding US water systems "will cost at least \$1 trillion over the next 25 years, if we are to maintain current levels of water service" [7].

This issue of the *AMA Journal of Ethics* explores ethical issues that cloud the attainment of safe water and questions the extent of clinicians' roles in ensuring this basic health right for their patients and the communities they serve. The contributors explore four main themes: (1) clinicians' professional roles and the need for interdisciplinary collaboration, (2) the ethical conduct of research, (3) medical education and the preparation of water-quality conscious physicians, and (4) an update on the aftermath of the Flint water crisis and a call to action.

Four articles examine regulatory history and clinicians' professional roles in safe water access. Richard Weinmeyer, Annalise Norling, Margaret Kawarski, and Estelle Higgins examine the effectiveness of the [Safe Drinking Water Act](#) of 1974. Bruce Jennings and Leslie Lyons Duncan highlight the disconnect between the Lead and Copper Rule, which sets regulatory standards for contaminants in drinking water, and toxic lead effects on health; they argue that clinicians should [advocate for patients' health](#) and collaborate with environmental engineers, basic scientists, and policymakers. Two articles focus on clinical practice. John R. Stone responds to the case of a physician unwilling to believe a patient's claim that her symptoms are due to water contamination. Through the physician's conversation with a student, Stone explores how [humility in interactions](#) with patients can help bridge differences and facilitate patient agency. And Jeremy Balch, Julia H. Schoen, and Payal K. Patel examine how physicians can weigh individual benefit against environmental or community harm in their [antibiotic prescribing practices](#).

Three contributors address the ethical challenges of conducting research in areas of water insecurity. Both a physician and a public health expert respond to a case in which a medical student considers the ethical implications of participating in highly specialized [research in a resource-poor community](#). Although both authors agree that specialized cardiac research does not maximize community benefit and that water insecurity should be addressed, they differ in their views of how researchers can contribute to relieving a family's or community's water insecurity. While Anwar D. Jackson emphasizes the importance of treating host families with dignity in offering to help, Harold W. Neighbors emphasizes taking a medicine-public health perspective that embraces community-based participatory research. Analyzing a case in which Flint residents oppose participating in research on health effects of changes in water composition, Kent D. Key argues that engaging [community members as research partners](#) can establish trust, community-level protections, and mutual benefit.

Two articles address how to train clinicians to be water-quality conscious. Steven S. Coughlin and Osman Yousufzai argue that the medical school curriculum should be expanded to adequately prepare future clinicians to better help patients [interpret water quality data](#) and its potential impacts on health. And Laura A. Carravallah, Lawrence A. Reynolds, and Susan J. Woolford detail the challenges faced by Flint-area clinicians during the water crisis—especially the disconnect between medicine and public health—arguing that training in [environmental health](#) might have enabled clinicians to recognize the health problems caused by the Flint water crisis more quickly.

Finally, three contributors provide an update on the Flint water crisis and a call to action. Photographer and cinematographer Kwesi Reynolds visually documents ongoing impediments to safe water access in the aftermath of the Flint water crisis, which speak to both [environmental injustice](#) and attempts to remediate it. In the [podcast](#), Mona Hanna-Attisha discusses her continued advocacy role in the aftermath of the Flint water crisis and provides advice for physicians and medical students who may want to advocate for safe water in their own communities. In another segment of the podcast, Camara P. Jones discusses barriers to health equity in the US and suggests strategies for responding to racial and ethnic health disparities in the context of the Flint water crisis.

The contributors to this themed issue, “Safe Water Access and the Roles of Clinicians,” challenge clinicians to address safe water access by engaging in community-based research initiatives, expanding the medical school curriculum to prepare environmentally and water-quality conscious physicians, and seeking interdisciplinary collaborations among basic scientists, engineers, and public health experts. I hope that this work will contribute to the ongoing conversation by challenging conventional thinking, eliciting additional conversation, and inspiring positive action.

References

1. Sanborn J. Flint’s water crisis still isn’t over. Here’s where things stand a year later. *Time*. January 18, 2017. <http://time.com/4634937/flint-water-crisis-criminal-charges-bottled-water/>. Accessed August 22, 2017.
2. Agenda: Flint water town hall. Flint, Michigan: University of Michigan North Bank Center; January 11, 2017:5.
3. Lynch J. Flint town hall leaves residents discouraged. *Detroit News*. January 11, 2017. <http://www.detroitnews.com/story/news/michigan/flint-water-crisis/2017/01/11/flint-water/96441578/>. Updated January 12, 2017. Accessed August 16, 2017.
4. Centers for Disease Control and Prevention. Assessing access to water and sanitation. <https://www.cdc.gov/healthywater/global/assessing.html#one>. Updated October 31, 2012. Accessed August 21, 2017.

5. World Health Organization. Drinking-water fact sheet.
<http://www.who.int/mediacentre/factsheets/fs391/en/>. Updated July 2017.
Accessed August 16, 2017.
6. Columbia Water Center. America's water: developing a road map for the future of our nation's infrastructure. http://water.columbia.edu/mwg-internal/de5fs23hu73ds/progress?id=OfBegw6Wz-JSPbWltbXvUbSVWSzPMVjmhKK_qHbc1G0,&dl. Published March 2016:2.
Accessed August 22, 2017.
7. American Water Works Association. Buried no longer: confronting America's water infrastructure challenge.
<http://www.awwa.org/Portals/0/files/legreg/documents/BuriedNoLonger.pdf>.
Published 2012:3. Accessed August 16, 2017.

Maseray Kamara

MS-4

*Michigan State University College of Human Medicine
East Lansing, Michigan*

The viewpoints expressed in this article are those of the author(s) and do not necessarily reflect the views and policies of the AMA.

**Copyright 2017 American Medical Association. All rights reserved.
ISSN 2376-6980**