COUNTING THE COST

LEAD POISONING EXACTS A HEAVY TOLL

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WITH REPORTING BY TIM PAUL
ACROSS AMERICA, OUR AGING INFRASTRUCTURE THREATENS TO CRUMBLE.
It’s seriously un-sexy stuff: local power grids on the brink of a brownout; sewage treatment systems overflowing into local waterways; bridges, highways, and dams on borrowed time. In its latest report, the American Society of Civil Engineers calculated the cost of infrastructure fixes required by 2020 at a jaw-dropping $3.6 trillion. It’s a price so high, it’s tempting to ignore—until disaster strikes.

Take, for example, the lead water lines of Flint, Michigan. In April 2014, officials intent on cutting costs opted to draw water from the highly corrosive Flint River. The resulting chemical reaction exposed thousands to neurotoxic levels of lead, doubling the percentage of kids with elevated levels of the heavy metal in their blood. They risk reduced cognitive ability and executive control, lower lifetime earnings and poorer health, and increased likelihood of criminal activity.

In August, Health Affairs published a letter by Peter Muennig, MD, MPH ’98, associate professor of Health Policy and Management, totaling the social costs incurred by Flint in the debacle. “The city’s decision to switch its water supply was penny wise and pound foolish,” says Muennig, who puts the total at nearly $400 million.

Muennig ran the numbers in response to an analysis of our nation’s haphazard drinking water infrastructure—also published in Health Affairs—penned by David Rosner, MPH, PhD, the Ronald H. Lauderstein Professor of Sociomedical Sciences and author of Lead Wars: The Politics of Science and the Fate of America’s Children. “Many policymakers consider the costs of action primarily in economic and financial terms,” Rosner writes, “and ignore the costs of inaction on human health and communities’ livelihoods.”

To promote an apples-to-apples comparison that weighs such costs, health economists have developed two tools known by their acronyms—the QALY and the DALY. The quality-adjusted life year reflects the expenses associated with lost productivity and medical expenditures for ill health, while disability-adjusted life years account for health gaps reflected by premature mortality and years lived with disability. Perfect health equals one QALY. Death clocks in at zero.

When Muennig ran the numbers in a 2009 paper for JAMA Pediatrics—using the same methodology that undergirds his Flint analysis—he calculated a savings of 2–4 million QALYs and more than $1 trillion in lifetime contributions by each cohort of children in the United States below the age of 6, if their lead exposure were aggressively reduced. The city of Flint has already spent $2 million to replace approximately 500 water lines; the cost of replacing all of the city’s hazardous lines is estimated at $55 million, a mere fraction of the costs of lost health and productivity of Flint’s children.

Running the numbers can help policymakers from China to Chile, says Muennig, whether accounting for increased physical activity related to a high-speed rail between Beijing and Shanghai or weighing the benefits of reduced air pollution due to an underground highway in Santiago. He argues for a similar approach in Flint and the dozens of other cities with aging water systems. “When you consider all of the costs, the price tag for replacing these pipes is a bargain.”

“In an effort that would have saved approximately $5 million, the city of Flint will suffer losses 80-fold greater.”

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