PUBLIC HEALTH

Wastewater disease indicators

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Credit: Chris Sattlberger/Blend Images/Getty

Infectious diseases caused by microbes, such as *Salmonella*, afflict millions of people and cause over 13 million deaths each year. Most surveillance relies on clinical data, which is collected from individuals and so is costly and may lag disease outbreaks. Although the use of ‘big data’ is gaining traction, there exists an unmet need for other indicators.

Tao Yan, of the University of Hawaii at Manoa, and colleagues tested municipal wastewater as an alternative source of information on infectious microbes. Municipal wastewater, or sewage, contains the gastrointestinal microbes of the entire human community served by a sewer system. Over 54 weeks in 2010–2011, the researchers tested samples of wastewater

from a treatment plant in Honolulu, Hawaii, for *Salmonella*. They isolated different strains and compared them with clinical collections for that period. *Salmonella* concentrations in sewage correlated positively with clinical disease cases, and the wastewater strains even included rare strains missed by clinical efforts. Such ‘microbial surveillance’ could complement traditional disease surveillance methods, providing a powerful ally in an urbanizing world of globalizing disease risks.

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