

# **Arsenic-contaminated water associated with antibiotic resistance in children, study finds**

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Woman and children in Bangladesh are collecting water from an arsenic contaminated tube well for drinking and other household purposes. Credit: Golam Mostafa Quadrey (CC-BY 4.0, [creativecommons.org/licenses/by/4.0/](https://creativecommons.org/licenses/by/4.0/))

In rural Bangladesh, areas with high levels of arsenic contamination in drinking water, compared to areas with less contamination, have a higher prevalence of antibiotic-resistant *Escherichia coli* in both water and child stool samples, according to a new study publishing December 8, 2022 in *PLOS Pathogens* by Mohammad Aminul Islam of Washington State University, and colleagues.

Antibiotic resistance is one of the leading causes of death and hospitalization worldwide. While the major drivers of antibiotic resistance are the overuse and misuse of antibiotics, [natural elements](#) such as heavy metals can also promote antibiotic resistance.

In the new study, researchers collected water and stool samples from both mothers and [young children](#) of 100 families in two rural subdistricts in Bangladesh. Families in the Hajiganj subdistrict use drinking water from shallow tube wells, which have a high concentration of arsenic, while Matlab families collect their drinking water from arsenic-free deep tube wells.

The median arsenic concentration in the 50 [water samples](#) from Hajiganj was 481  $\mu\text{g/L}$  while the median arsenic concentration in the 50 water samples from Matlab was 0  $\mu\text{g/L}$ . Overall, 84% of all water and [stool samples](#) across both sites were found to be positive for *E. coli*.

Prevalence of antibiotic resistant *E. coli* was significantly higher in water

in Hajiganj (48%) compared to water in Matlab (22%, p

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