

Superbug E. Coli Strains in Healthy Women Raise Risk of Resistant UTIs

By Marilyn Larkin

August 13, 2019

NEW YORK (Reuters Health) - Fluoroquinolone-resistant (FQR) strains of *Escherichia coli* may persist in the gut of healthy women and subsequently invade the urinary system, researchers say.

FQR *E. coli* were found in feces of 8.8% of healthy adult women, with most bacteria belonging to pandemic multi-drug resistant ST131-H30R or ST1193 clonal groups, note Dr. Evgeni Sokurenko of the University of Washington in Seattle and colleagues. "Moreover, these highly uropathogenic clonal groups demonstrate an especially prolonged gut persistence and high rate of bacteriuria without documented urinary tract infection (UTI)," the researchers write in *Clinical Infectious Diseases*, online July 4.

"Till now, we did not realize that the most common two multi-drug resistant strains of *E. coli* can reside 'peacefully' in the gut and bladder of healthy women for many months, possibly years, even without taking antibiotics - i.e., 'enemy is at the gates' and not going away," Dr. Sokurenko told Reuters Health by email.

"This means that if those bacteria are detected in the gut or urine without any symptoms, when time comes, they will likely be responsible for the infections in the same women even if the infection happens many months after the detection," he said.

The team collected fecal samples from 1,031 women (average age, 52) who had no documented UTI within last 12 months.

E. coli was identified in 916 (88.8%) samples; of those, 91 (8.8% of the total and 9.9% of the *E. coli* samples) yielded FQR isolates.

Seventy-four fecal FQR *E. coli* carriers provided follow-up urine samples. Twenty-six of those samples were positive for *E. coli*, and 20 (76.9%) contained FQR bacteria, all matching the same clonotype as in the original fecal sample.

"In summary," the authors state, "our study highlights the likely physiological basis of the recent pandemic spread of the fluoroquinolone-resistant *E. coli*, potential value of identifying the gut carriers to predict the resistant infections, and the need to reassess the clinical significance of asymptomatic bacteriuria at the time of recent pandemic of highly uropathogenic and multi-drug resistant *E. coli*."

Dr. Sokurenko said, "If clinicians were aware about the carriage, they could follow the carriers and, if infection happens, they at least would not 'shoot in the dark' with the empirical (pre-culture) antibiotic choice, but could tailor treatment to the carriage bug."

"In the case of those multi-drug resistant strains, the most popular antibiotics (like Cipro or Bactrim) will likely not work," he noted. "Ironically and fortunately, those resistant strains are still more sensitive to some older antibiotics, like nitrofurantoin or fosfomycin."

"Clinicians also should consider ordering the culture test for the antibiotic profile right away if an infection happens and they know the person was a carrier of the super-strain," he said.

"We know that these strains easily transmit and cause infection between family members and, thus, can spread within hospitals, nursing homes, etc., and clinicians should consider that too."

Dr. Bernard Camins, Medical Director for Infection Prevention at the Mount Sinai Health System in New York City, commented by email that while the findings are feasible, "the study is limited to only one geographical area. The findings will need to be confirmed in a larger population."

"These findings should guide future research to determine the implications of the persistent gut colonization as well as the asymptomatic bacteriuria observed with this clonotype," he told Reuters Health.

Infectious disease specialist Dr. Michael Satlin of Weill Cornell Medicine and NewYork-Presbyterian in New York City commented by email, "Unnecessary use of antibiotics - in this case fluoroquinolones - likely leads to the proliferation of these successful clones of FQR E. coli in the gastrointestinal and urinary tracts of these patients."

"This study...serves to reinforce current guidelines," he told Reuters Health. "For example, guidelines of the Infectious Diseases Society of America do not recommend treating patients with asymptomatic bacteriuria (positive urine culture but no symptoms or signs of a UTI) and do not recommend fluoroquinolones as first-line therapies for urinary tract infections."

The study was supported in part by ID Genomics. Two coauthors are employees and major shareholders of the company, and also have patent applications for detecting E. coli strains.

SOURCE: <http://bit.ly/33r2NYY>

Clin Infect Dis 2019.

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Cite this: Superbug E. Coli Strains in Healthy Women Raise Risk of Resistant UTIs - Medscape - Aug 12, 2019.