Analysis of Antibiotic and Disinfectant Resistance in E. coli Implicated UTIs

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Urinary tract infections are among the most common infections seen in clinics. Females are much more sensitive to UTIs compared to males. Antibiotic and disinfectant resistance patterns have been rising in the last decade. Escherichia coli is the number one bacteria cultured from UTIs. This research investigated UTI resistance in Escherichia coli, against antibiotics and disinfectants, correlation between gender, and whether a disinfectant agent provides bactericidal activity or bacteriostatic activity on isolates. All UTI cultures were collected from a local hospital where MicroScan gram negative urine panels with antibiotics were used to identify type of bacteria and antibiotic resistance. In the antibiotic testing, the overall greatest bacterial resistance was to ampicillin of 64%. The males had greater resistance percentages compared to the females with the exception of trimethoprim-sulfamethoxazole. The antibiotic with the greatest sensitivity was nitrofurantoin, which showed sensitivity to all bacteria cultures. Escherichia coli cultures were then tested against three different types of disinfectants: sodium hypochlorite, quaternary, and phenolic. In the recommended dilution of disinfectant testing, the cultures had 100% resistance overall to the phenolic disinfectant. The females had higher resistance in the quaternary and sodium hypochlorite. The negative tubes were swabbed onto LB agar and incubated to determine whether disinfectant had bacteriostatic or bactericidal effects. The females had 90% bactericidal, and the males had 86% bactericidal.

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