Dr. Aiello of the department of epidemiology at the University of Michigan, Ann Arbor.

In 2000, Dr. Aiello and her co-investigator provided 238 households with either antibacterial products (floor cleaner with 0.08% BZK, surface cleaner with 2.7% BZK, and liquid hand-washing soap with 0.2% triclosan) or no antibacterial agents. They cultured the hands of household members before the study started and then after 1 year. Isolates of bacteria from the cultures were tested to determine the minimum inhibitory concentrations (MICs) of BZK and triclosan on which bacteria can grow.

The investigators analyzed the general trends and changes over time in all bacteria combined because they could not compare the same isolates at baseline and at the end of the year.

In isolates from bacterial species that were tested for resistance between the groups in susceptibility to BZK at baseline or year 1.

Dr. Aiello and her colleagues then analyzed isolates of bacteria from all species with a high MIC for BZK. At baseline, these isolates from either group of households had similar rates of antibiotic resistance or high MICs for triclosan. But, after 1 year, isolates from households using antibacterial cleaning products had more than twice the odds of developing a high MIC for triclosan than did isolates from households that did not use products with antibacterial ingredients.

Potential selective pressure may result in coselection of resistance genes for other bactericides and antibiotics. Dr. Aiello concluded.

Dr. Aiello and her associates tested all gram-negative bacteria against gentamicin, imipenem, and ciprofloxacin. Certain bacterial species were tested against other types of antibiotics.

No covariates—such as use of a product before enrollment, child day care attendance, or antibiotic use—were associated with susceptibility to BZK or with household characteristics and products containing antibacterial ingredients.

Previous studies have shown that both quaternary ammonium compounds and triclosan can activate efflux pumps in bacteria that confer plasmids containing resistance genes.

The specific mechanisms of action of quaternary ammonium compounds are unclear, but they may increase the overall risk of acquiring gram-negative bacteria.

Dr. Aiello had no conflicts of interest to disclose.