



The Truth About Superbugs

E. Cole et al. "Investigation of antibiotic and antibacterial agent cross-resistance in target bacteria from homes of antibacterial product users and nonusers." *Journal of Applied Microbiology*. 2003; Volume 95, Issue 4: 664-76.

Abstract

Aim:

To describe the relationship between antibiotic and antibacterial resistance in environmental and clinical bacteria from home environments across geographical locations, relative to the use or nonuse of antibacterial products, with a focus on target organisms recognized as potential human pathogens.

Methods and Results:

In a randomized study, environmental and clinical samples were collected from the homes of antibacterial product users (n = 30) and nonusers (n = 30) for the isolation of target bacteria for antibiotic and antibacterial testing in three geographical areas (in USA and UK). Isolates were tested for antibiotic susceptibility, with selected antibiotic-resistant and antibiotic-susceptible isolates tested against four common antibacterial agents (triclosan, para-chloro-meta-xyleneol, pine oil and quaternary ammonium compound). Prequalified users and nonusers at each location were randomly selected after meeting exclusionary criteria.

Of 1238 isolates, more target bacteria were recovered from nonuser than user homes. Of *Staphylococcus aureus* isolates (n = 33), none showed resistance to oxacillin or vancomycin; for *Enterococcus* sp. (n = 149), none were resistant to ampicillin or vancomycin; and for *Klebsiella pneumoniae* (n = 54) and *Escherichia coli* (n = 24), none were resistant to third generation cephalosporins. Antibiotic resistance to one or more of the standard test panel drugs for Gram-positive and Gram-negative target bacteria was comparable between nonuser and user homes for both environmental and clinical isolates [e.g. resistance of environmental coagulase-negative (CN) *Staphylococcus* sp. was 73.8% (124/168) from nonuser homes and 73.0% (111/152) from user homes, and Enterobacteriaceae other than *E. coli*, 75.9% (186/245) from nonuser homes compared with 78.0% from user homes].

Of 524 Gram-negatives tested against preferred/alternative drugs, 97.1% (509/524) were susceptible to all antibiotics, across both groups. Isolates of *S. aureus*, *Enterococcus* sp. and CN *Staphylococcus* sp. susceptible to all preferred treatment drugs showed comparable antibacterial minimum inhibitory concentration (MIC) results between nonuser and user home isolates. For Gram-positives resistant to one or more preferred drugs, greatest resistance to antibacterial active ingredients was found in the nonuser group. For Gram-negatives, the antibacterial MIC data were comparable for isolates that were fully susceptible and resistant to one or more preferred/alternative treatment antibiotics.

Conclusions:

The results showed a lack of antibiotic and antibacterial agent cross-resistance in target bacteria from the homes of antibacterial product users and nonusers, as well as increased prevalence of potential pathogens in nonuser homes.

Significance and Impact of the Study:

It refutes widely publicized, yet unsupported, hypotheses that use of antibacterial products facilitates the development of antibiotic resistance in bacteria from the home environment.

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Caspar (WY) Star Tribune

Study finds anti-bacterial cleansers don't strengthen antibiotic resistance

http://www.trib.com/AP/wire_detail.php?wire_num=229336

Desert Morning News (Salt Lake City, Utah) 9/24/03

Antibacterial soap won't create 'super bugs'

BYU researcher finds no resistance risk with cleaners

<http://deseretnews.com/dn/view/0,1249,515033922,00.html>

Provo (UT) Herald-Banner

Study disproves antibacterial myth

<http://www.harktheherald.com/article.php?sid=95645&mode=thread&order=0>

Pubmed Link:

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12969278&dopt=Abstract

