

# 43rd Annual Scientific Meeting of the Society for Academic Primary Care

## ABSTRACT SUBMISSION

**Title: Antimicrobial resistance in urinary pathogens among Swedish nursing home residents remains low: a cross-sectional study comparing antimicrobial resistance from 2003 to 2012**

**Abstract No.** 0201

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### Abstract

#### The problem

There are several risk factors for the colonisation, infection and spreading of antibiotic resistant bacteria among elderly residents of nursing homes. An updated estimate of the native prevalence of antimicrobial resistance in uropathogens among Swedish nursing home residents is needed.

#### The approach

Urine specimens were collected for culture and antimicrobial susceptibility testing against mecillinam, ampicillin, cefadroxil, trimethoprim, nitrofurantoin and quinolones from the residents of 32 and 22 nursing homes, respectively. The residents were capable of providing a voided urine sample in 2003 and 2012. In 2012 urine specimens were also collected from residents with indwelling urinary catheters. Any antibiotic treatment during the previous month was registered in 2003 as well as hospitalisation and any antibiotic treatment during the previous six months in 2012.

#### Findings

The proportion of positive urine cultures was 32% (207/651) in voided urine specimens in 2003, 35% (147/421) in 2012, and 46% (27/59) in urine samples from catheters in 2012. There were growths of mixed bacterial flora in all but one of the cultures obtained from catheters, classified as negative. *Escherichia coli* (*E. coli*) was the most commonly occurring bacteria.

Resistance rates in *E. coli* (voided urine specimens) in 2012 were; ampicillin 21%, trimethoprim 12%, mecillinam 7.7%, ciprofloxacin 3.4%, cefadroxil 2.6% and nitrofurantoin 0.85%. There were no significant changes in the average resistance rates in *E. coli* for antibiotics tested 2003-2012. There was a trend towards higher resistance rates in *E. coli* in urine specimens from catheters compared to voided urine for ampicillin ( $p=0.079$ ) and ciprofloxacin ( $p=0.11$ ).

In 2012, two isolates of *E. coli* produced extended spectrum beta-lactamase enzymes (ESBL) and one with plasmid mediated AmpC production.

Any antibiotic treatment during the previous month increased the risk for resistance in *E. coli*, adjusted for age and gender; for mecillinam with an odds ratio (OR) of 7.1 (2.4-21;  $p=0.00049$ ), ampicillin OR 5.2 (2.4-11;  $p=0.000036$ ), nalidixic acid OR 4.6 (1.4-16;  $p=0.014$ ) and trimethoprim OR 3.9 (1.6-9.2;  $p=0.0023$ ). Hospitalisation during the previous six months increased the risk for antibiotic resistance in *E. coli* to ampicillin, ciprofloxacin and any antimicrobial tested, adjusted for age, gender and antibiotic treatments during the previous six months.

#### Consequences

There were still comparatively low levels of antimicrobial resistance in urinary pathogens among Swedish nursing home residents with no major

changes between 2003 and 2012. This may be partly due to successful efforts in Sweden to lower antibiotics usage and the choice of narrow spectrum antibiotics in favour of e.g. ciprofloxacin. Any antibiotic courses during the previous month predicted higher resistance rates in this study. It is important to use antibiotics properly and continue analysing antimicrobial resistance in nursing homes due to the potentially high risk for increasing antibiotic resistance in this population.

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