

## Local resistance profile of bacterial isolates in uncomplicated urinary tract infections (LORE study)

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Whereas microbiological tests are routinely performed in complicated urinary tract infections (UTI), only little is known on the antibiotic resistance in uncomplicated UTI in Germany since bacterial resistance testing is usually omitted. The German clinical guidelines for uncomplicated UTI recommend primarily the use of fosfomycin or nitrofurantoin and cotrimoxazole should rather be avoided.

The LORE study aimed in the determination of the local resistance profile to antibiotics in uncomplicated UTI. The main goal was to identify alternative drugs for the first-line treatment instead of fosfomycin, which should be rather limited to severe infections with multi-resistant bacteria, or instead of nitrofurantoin in order to avoid its side effects.

During the period of twenty-two months, twenty-nine practitioners and gynaecologists of the Kiel regions recruited female patients with uncomplicated UTI and the age of 16 to 65. Patients with gravidity, diabetes, or chronic diseases or after antibiotic therapy were excluded. The urine samples were tested by four local laboratories according to the EUCAST rules with regard to the bacterial load, the bacterial species, and the sensitivity to the common antibiotics ampicillin or amoxicillin without or with beta-lactamase inhibitors, piperacillin, ceftazidime, cefpodoxime, imipenem or meropenem, ciprofloxacin, cotrimoxazole, fosfomycin, and nitrofurantoin. The LORE study was performed in the Kiel region in close collaboration with general practitioners and gynaecologists from the local medical network Praxisnetz Kiel. This study was supported by the Robert Koch-Institute, Berlin.

Totally, 954 samples were collected and 896 patients were included into the study. A significant bacterial load of at least 100,000 colonies per ml were found in 491 samples (55%). Gram-negative bacteria were isolated in 521 cases. The most frequently isolated bacterium was *Escherichia coli* (N = 450; 70% of all samples with bacterial isolates). Other Gram-negative bacteria were *Klebsiella*, *Proteus*, *Citrobacter*, *Enterobacter*, and *Morganella* in descending order. Gram-positive bacteria were isolated in 216 cases. Fosfomycin reached a sensitivity of 98%, nitrofurantoin 94%, and cotrimoxazole 85% if all samples were included. However, regarding just the most relevant Gram-negative bacteria, fosfomycin reached 98%, nitrofurantoin 95%, cefpodoxime 95%, ciprofloxacin 96%, and cotrimoxazole 85%. The sensitivity rates for ampicillin or amoxicillin without or with beta-lactamase inhibitors or for piperacillin ranged between 37 and 67%.

The LORE study described the local bacterial resistance profile in uncomplicated UTI. The sensitivity rates of 95% for cefpodoxime and 86% for cotrimoxazole in Gram-negative bacteria suggest their use instead of the presently recommended drugs fosfomycin and nitrofurantoin.