

# **Over the counter antibiotics? Effects on Escherichia Coli incidence and resistance in uncomplicated urinary tract infections in Jordan**

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## **Introduction and Objective**

Antibiotics are readily available over the counter in Jordan and self-treatment of infections is a common practice. The effects of this health behavior on local microbial resistance and incidence of different microbes in uncomplicated Urinary Tract Infections (UTI) has not been investigated. Current American Urological Association (AUA) treatment guidelines for uncomplicated UTI recommend a 3-day course of Trimethoprim/Sulfamethoxazole (TMP/SMX) if resistance is less than 20% and the usage of a Fluoroquinolone if resistance is higher. We sought to evaluate how the availability of antibiotics over the counter has affected the incidence of E. coli and its resistance to recommended antibiotics in AUA guidelines.

## **Methods**

We conducted an electronic health record review of 27313 urine cultures submitted through the Jordanian national electronic health database “Hakeem” at three participating hospitals, between January 1<sup>st</sup> 2011 and April 30<sup>th</sup> 2015. The data was analyzed to determine positive cultures associated with a diagnosis of uncomplicated UTI, the incidence of E. coli and its resistance to antibiotics recommended in AUA guidelines.

## **Results**

Overall, 2307 samples grew bacterial isolates at  $>10^5$  colony forming units and were associated with a diagnosis of uncomplicated UTI. Of those, (1769, 76.7%) cultures grew E. coli. Resistance to TMP/SMX was (69.63%), Levofloxacin (47.35%), Ciprofloxacin (20.08%), and Nitrofurantoin (9.94%).

## **Conclusions**

The resistance of E. coli to TMP/SMX and Levofloxacin is much higher than reported international rates. This can be explained by their availability over the counter and the high rates of patient self-treatment in Jordan. E. coli exhibited the least resistance to Nitrofurantoin, making it an effective and cost-effective first choice antibiotic for uncomplicated UTI in Jordan. Our data emphasizes the urgent need for healthcare policy changes towards over the counter antibiotic marketing and the need for locally tailored guidelines for the management of uncomplicated UTIs.