

Children's drug-resistant bugs could render common antibiotics ineffective

February 6 2018, by Ryan O'hare



Rising levels of drug-resistance in bacteria that cause childhood infections could render common antibiotics ineffective, a study warns.

The research, led by the University of Bristol and Imperial College London, highlights high levels of resistance among *E. coli* in children, making the bugs resistant to several common [antibiotics](#).

According to the authors of the study, published in the *Journal of Antimicrobial Chemotherapy*, *E. coli* were found to be resistant to common treatments including amoxicillin, trimethoprim and co-amoxiclav, especially if a child had previously been prescribed antibiotics within the last three months.

They conclude that GPs should consider the impact of further antibiotic treatment as well as the patient's need, before prescribing the drugs.

E. coli is responsible for over 80% of all urinary tract infections (UTIs) in children, with the most effective first line treatment being a course of antibiotics.

Antibiotic resistance is a growing global issue, threatening health and food security around the world. Chief Medical Officer Dame Sally Davies has called for the growing threat to be treated as a national risk on the scale of pandemic flu, major flooding and terrorism.

It occurs when bacteria develop resistance to an antibiotic treatment, which may be caused by overuse of the drugs or improper prescribing – such as prescribing antibiotics for a viral infection. It has been estimated that by 2050, 10 million lives per year will be at risk from antibiotic-resistant infections.

Children are frequent consumers of antibiotics worldwide, and such routine use has been shown to increase the probability of [antibiotic resistance](#) in adults with urinary tract infections. Yet little is known about the prevalence of bacterial resistance in children or the risk factors of importance in this group.

Measuring resistance

In the study, researchers investigated the prevalence of drug-resistant *E. coli* from pre-school children. They also measured risk factors associated with resistant urinary *E. coli*, including previous exposure of the bugs to antibiotics.

Their analysis found a high prevalence of drug-resistant urinary *E. coli*, with resistance against several commonly prescribed antibiotics including amoxicillin, trimethoprim and co-amoxiclav.

Almost one third of all *E. coli* were multidrug resistant – resistant to three or more antibiotic groups. There was also an association between exposure to antibiotics within the previous three months and increased likelihood of a resistant urinary *E. coli*.

The research, published in the *Journal of Antimicrobial Chemotherapy*, involved secondary analysis of data from 824 children under five years old consulting in primary care for an acute illness. Children had previously been recruited to the Diagnosis of Urinary Tract infection in Young children (DUTY) study, which aimed to improve the diagnosis of UTIs in children.

Lead author, Dr Ashley Bryce, a Senior Research Associate at the Centre for Academic Primary Care, University of Bristol, said: "Our study shows that antibiotic resistance [in] this common bacteria found in children is high, especially when antibiotics have previously been recently prescribed.

"Frequent exposure to antibiotics can disrupt the normal balance of bacteria within the urinary tract and gut, which can lead to increased risk of bacterial infection. GPs should therefore consider the impact and necessity of further [antibiotic treatment](#) before prescribing."

Dr Céire Costelloe from the NIHR Health Protection Research Unit in Healthcare Associated Infection and Antimicrobial Resistance at Imperial College London, who co-led the research, said: "Future research must prioritise increasing our understanding of antibiotic resistance in bacteria that commonly cause infections, so that prescribing guidelines can be updated to improve patient outcomes."

This study follows on from the team's previous [systematic review](#) published in the *BMJ* in 2016 exploring the global prevalence of antibiotic [resistance](#) in [children's urinary tract infection](#) caused by *E. coli*.

More information: Ashley Bryce et al. Comparison of risk factors for, and prevalence of, antibiotic resistance in contaminating and pathogenic urinary *Escherichia coli* in children in primary care: prospective cohort study, *Journal of Antimicrobial Chemotherapy* (2018). [DOI: 10.1093/jac/dkx525](#)

Provided by Imperial College London

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