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# Uropathogen Resistance and Antibiotic Prophylaxis: A Meta-analysis

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## Abstract

**CONTEXT:** Limited data exist regarding uropathogen resistance in randomized controlled trials of urinary tract infection (UTI) prevention and antibiotic prophylaxis.

**OBJECTIVE:** To assess the effect of prophylaxis on developing a multidrug-resistant first recurrent UTI among children with vesicoureteral reflux.

**DATA SOURCES:** Cochrane Kidney and Transplant Specialized Register through May 25, 2017.

**STUDY SELECTION:** Randomized controlled trials of patients  $\leq 18$  years of age with a history of vesicoureteral reflux being treated with continuous antibiotic prophylaxis compared with no treatment or placebo with available antibiotic sensitivity profiles.

**DATA EXTRACTION:** Two independent observers abstracted data and assessed quality and validity per Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. Adjusted meta-analyses were performed by using a mixed-effects logistic regression model.

**RESULTS:** One thousand two hundred and ninety-nine patients contributed 224 UTIs. Patients treated with prophylaxis were more likely to have a multidrug-resistant infection (33% vs 6%,  $P < .001$ ) and were more likely to receive broad-spectrum antibiotics (68% vs 49%,  $P = .004$ ). Those receiving prophylaxis had 6.4 times the odds (95% confidence interval: 2.7–15.6) of developing a multidrug-resistant infection. One multidrug-resistant infection would develop for every 21 reflux patients treated with prophylaxis.

**LIMITATIONS:** Variables that may contribute to resistance such as medication adherence and antibiotic exposure for other illnesses could not be evaluated.

**CONCLUSIONS:** Prophylaxis increases the risk of multidrug resistance among recurrent infections. This has important implications in the risk-benefit assessment of prophylaxis as a management strategy and in the selection of empirical treatment of breakthrough infections in prophylaxis patients.

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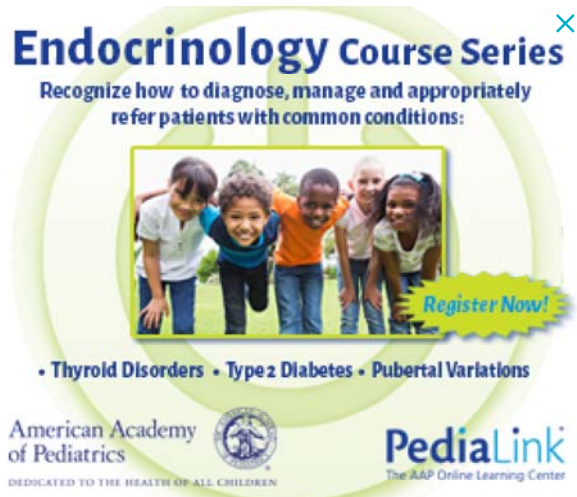
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