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## **Brief Correspondence**

## Benefits and Harms of Treatment of Asymptomatic Bacteriuria: A Systematic Review and Meta-analysis by the European Association of Urology Urological Infection Guidelines Panel

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### **Abstract**

People with asymptomatic bacteriuria (ABU) are often unnecessarily treated with antibiotics risking adverse effects and antimicrobial resistance. We performed a systematic review to determine any benefits and harms of treating ABU in particular patient groups. Relevant databases were searched and eligible trials were assessed for risk-of-bias and Grading of Recommendations, Assessment, Development and Education quality. Where possible, a meta-analysis of extracted data was performed or a narrative synthesis of the evidence was presented. After screening 3626 articles, 50 studies involving 7088 patients were included. Overall, quality of evidence ranged from very low to low. There was no evidence of benefit for patients with no risk factors, patients with diabetes mellitus, postmenopausal women, elderly institutionalised patients, patients with renal transplants, or patients prior to joint replacement, and treatment was harmful for patients with recurrent urinary tract infection (UTI). Treatment of ABU resulted in a lower risk of postoperative UTI after transurethral resection surgery. In pregnant women, we found evidence that treatment of ABU decreased risk of symptomatic UTI, low birthweight, and preterm delivery. ABU should be treated prior to transurethral resection surgery. In addition, current evidence also suggests that ABU treatment is required in pregnant women, although the results of a recent trial have challenged this view.

**Patient summary:** We reviewed available scientific studies to see if people with bacteria in their urine but without symptoms of urinary tract infection should be treated with antibiotics to eliminate bacteria. For most people, treatment was not beneficial and may be harmful. Antibiotic treatment did appear to benefit women in pregnancy and those about to undergo urological surgery.

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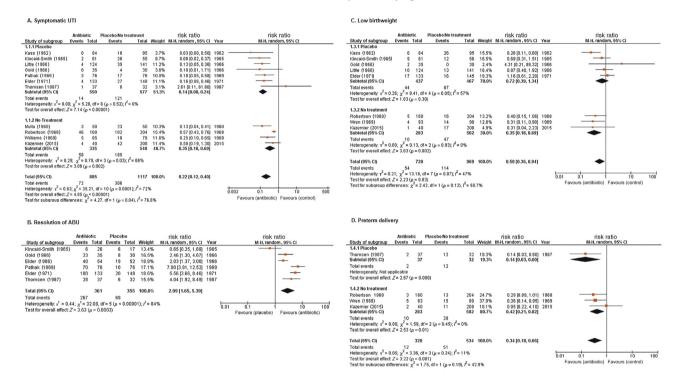
Clinical studies show that in most clinical situations, asymptomatic bacteriuria (ABU) has a low risk of progression to severe infection [1]. The benefit of treating ABU with antibiotics remains uncertain and requires clarification with the need for better antibiotic stewardship [2].

The aim of this systematic review was to synthesise evidence about benefits and harms of treating ABU in relevant patient groups. The review was undertaken as part of the European Association of Urology (EAU) Urological Infections Guideline 2017 update [3]. Data extraction, risk of bias (RoB) assessment using the Cochrane RoB Tool, and

quality assessment using the Grading of Recommendations, Assessment, Development and Education (GRADE) approach [4] were performed by two reviewers working independently. The detailed methods and additional results are described in the Supplementary material. Meta-analyses were performed on data extracted from 50 published trials recruiting 7088 patients (Supplementary Table 1).

A single prospective, nonrandomised comparative study investigated the effect of treating ABU in adult, nondiabetic, nonpregnant women, and found no difference in the rate of

#### ABU treatment vs. no treatment/placebo in pregnant women



#### Single-dose versus short-course treatment in pregnant women

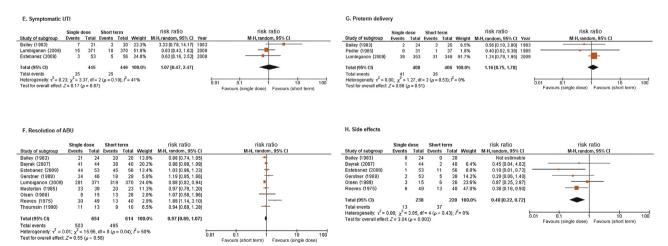


Fig. 1 – Forest plots on the effect of antibiotic treatment of ABU in pregnant women on (A) the rate of symptomatic UTI, (B) resolution of ABU, (C) rate of low birthweight, and (D) rate of preterm delivery; a comparison of single-dose versus short-term antibiotic treatment of ABU in pregnant women on (E) the rate of symptomatic UTI, (F) resolution of ABU, (G) rate of preterm delivery, and (H) rate of low birthweight. ABU = asymptomatic bacteriuria; CI = confidence interval; M-H = Mantel-Haenszel; UTI = urinary tract infection.

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