

Changes in surgery methods significantly reduces antibiotic resistance

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A new study shows how changing working methods in surgery can significantly reduce bacterial resistance to antibiotics, while maintaining protection against infection and reducing costs by up to 60%. This work is being presented at the European Association of Urology conference in Madrid.

Antibiotic resistance is one of the most important medical problems facing the 21st century, with the medical world acknowledging a lack of new antibiotics in development. In the absence of new drugs in the worldwide pharmacopeia and in the pharmaceutical pipelines, the only way to contain the development of resistance is by changing the way we use antibiotics. However, too often it is easier just to carry on using antibiotics as before. Now a new multi-centre study shows that adherence to guidelines can significantly reduce bacterial resistance in urology surgery.

Antibiotic use is common in urological surgery. In 2010 the European Association of Urology introduced new guidelines* on urological infection in the hope of containing some of the problems associated with antibiotic resistance. In early 2011 an international group of clinicians from Italy, Germany, Norway, and the UK began to work strictly to these new guidelines, with a view to testing just how effective the procedures might be.

Over a period of 33 months they measured outcomes of 3,529 urological procedures (including open, laparoscopic, endoscopic and robotic surgery) which took place under strict adherence to the EAU Guidelines. The results were compared with 2,619 similar procedures from 2006-8 carried out before the new guidelines were implemented. They found that the rate of infections was similar in the two periods. However, the costs of the antibiotic drugs, and other indirect costs, were significantly lower in the period the guidelines were followed. The antibiotic resistance rates also dropped significantly.

Lead researcher Dr Tommaso Cai (Santa Chiara Hospital, Trento, Italy), commented:

*“The changes we made were fairly significant, and required monthly audits to ensure that we were sticking to the new system. For example, under the old system it was standard practice to give a patient who was having an operation** for benign prostatic hyperplasia, the antibiotic ciprofloxacin both before surgery, and then for 7 days afterwards. But when we adhered to the guidelines we only gave the antibiotic prior to the surgery”.*

“We were pleased to find that infection rates did not change between the ‘before’ and ‘after’ periods. However, we also saw significant costs savings, and perhaps most importantly we were able to show a significant decrease in bacterial resistance. For example, E.Coli resistance to ciprofloxacin decreased by around 15% after we adopted rigorous adherence to the guidelines”.

The reduction in drug-related costs was highly significant: cost-per-procedure was €46.90 in the 'before guideline' period, but these dropped to €18.77 when working to the guidelines, a drop of 60%.

Professor Robert Pickard (Professor of Urology, Newcastle University, UK), Chair of the EAU Guideline Panel on Urological Infections (and a co-author of the study) said:

"The main bacterium that causes all types of urinary infection, Escherichia coli (E.coli), is becoming increasingly resistant to treatment using the antibiotics we have available in 2015. This antibiotic resistance is a major health threat, particularly to countries in the EAU community with our advanced healthcare systems. The only proven way to reduce the threat is by antibiotic stewardship to control the overuse and misuse of antibiotics in healthcare. This study shows that by following a few simple rules hospital usage of antibiotics can be dramatically reduced without affecting patient safety, and results in lower resistance and reduced costs".

*See current EAU guidelines <http://uroweb.org/guideline/urological-infections/>

**The example given is for a TURP (Transurethral resection of the prostate) operation for BHP. Standard procedure before guideline implementation would be to give 400 mg ciprofloxacin before the operation, then 2 tablets a day for 7 days afterwards. After guideline implementation this changed to only 400 mg ciprofloxacin before the operation.

ENDS

Notes for Editors

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The 15th European Association of Urology conference takes place in Madrid from 20-24th March. This is the largest and most important urology congress in Europe, with up to 13,000 expected to attend. Conference website <http://eaumadrid2015.uroweb.org/>

Abstract (Nr: 136)

Adherence to European Association of Urology guidelines on prophylactic antibiotics: An important step in antimicrobial stewardship

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Introduction & Objectives The evolution of resistant pathogens has developed into a worldwide health crisis and adherence to European Association of Urology (EAU) guidelines on antibiotic prophylaxis may be an important way to improve antibiotic stewardship and reduce costs. The aim of this study is to evaluate costs saving and the prevalence of

antibiotic resistant bacterial strains during a period of adherence to EAU guidelines in a tertiary referral urological institution.

Material & Methods In January 2011, we started a protocol of adherence to EAU guidelines for antibiotic prophylaxis in all urological procedures. From January 2011 to October 2013 (period "after"), data from 3,529 urological procedures have been collected and compared with 2,619 procedures obtained before agreeing on the recommendations for best practice between December 2008 and December 2010 (period "before"). Data about the prevalence of bacterial resistance after starting the protocol of adherence to EAU guidelines were compared between the two periods. The direct and indirect costs related to symptomatic post-operative infectious complications and the prevalence of antibiotic resistant bacterial strains were the outcome measurements. Chisquare or Fisher's exact tests were used.

Results The rate of symptomatic post-operative infectious complications was not significantly different between the two periods (117/2,619 (4.5%) vs 180/3,529 (5.1%); $p=0.27$). The costs in period "after", related to drugs amounted to 36,700 Euro and the indirect costs to 29,560 Euro, were statistically lower than those observed in period "before" (76,980 Euro and 45,870 Euro) ($p<0.001$). A total of 342 isolates from all patients with symptomatic post-operative infectious complications were reported and analyzed. The resistance rates of *E. coli* to piperacillin/tazobactam ($p=0.03$), gentamicin ($p=0.02$) and ciprofloxacin ($p=0.03$) decreased significantly during the after periods.

Conclusions The adherence to European Association of Urology guidelines on antibiotic prophylaxis reduced related costs and the prevalence of resistant bacteria.

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