



Complete Summary

GUIDELINE TITLE

Peri-operative antibacterial prophylaxis in urology. In: Guidelines on the management of urinary and male genital tract infections.

BIBLIOGRAPHIC SOURCE(S)

Peri-operative antibacterial prophylaxis in urology. In: Grabe M, Bishop MC, Bjerklund-Johansen TE, Botto H, Çek M, Lobel B, Naber KG, Palou J, Tenke P. Guidelines on the management of urinary and male genital tract infections. Arnhem, The Netherlands: European Association of Urology (EAU); 2008 Mar. p. 90-9. [39 references]

GUIDELINE STATUS

This is the current release of the guideline.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- [July 08, 2008 – Fluoroquinolones \(ciprofloxacin, norfloxacin, ofloxacin, levofloxacin, moxifloxacin, gemifloxacin\)](#): A BOXED WARNING and Medication Guide are to be added to the prescribing information to strengthen existing warnings about the increased risk of developing tendinitis and tendon rupture in patients taking fluoroquinolones for systemic use.

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SCOPE

DISEASE/CONDITION(S)

Conditions in which peri-operative antibacterial prophylaxis could prevent infective complications resulting from diagnostic and therapeutic procedures, such as:

- Transrectal biopsy of the prostate (TURP)
- Cystoscopy
- Urodynamic examination ureteroscopy
- Extracorporeal shockwave lithotripsy (ESWL)
- Transurethral resection of the prostate or of a bladder tumour
- Open urologic surgery (including implantation of prosthetic device)

GUIDELINE CATEGORY

Prevention
Risk Assessment

CLINICAL SPECIALTY

Infectious Diseases
Nephrology
Preventive Medicine
Surgery
Urology

INTENDED USERS

Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To assist urologists and physicians from other medical specialties in their daily practice
- To provide recommendations on peri-operative antibacterial prophylaxis in urological surgery
- To clarify the current state of knowledge and to propose practical recommendations based on clinical studies, expert opinions, and professional consensus

TARGET POPULATION

Patients at risk for peri-operative urologic infection

INTERVENTIONS AND PRACTICES CONSIDERED

1. Categorization of patients according to risk for infection
2. Urine culture prior to surgery

3. Consideration of principles of antibiotic prophylaxis including:
 - Timing
 - Route of administration
 - Duration of regimen
 - Choice of antibiotics
4. Use of antibiotic prophylaxis according to type of procedure and risk
 - Fluoroquinolones
 - Trimethoprim-sulfamethoxazole (TMP-SMZ)
 - Second- or third-generation cephalosporins
 - Aminopenicillin/beta-lactamase inhibitor
 - Penicillin
 - Metronidazole

MAJOR OUTCOMES CONSIDERED

- Risk of peri-operative infection
- Relative risk reduction for bacteriuria and septicemia
- Rate of antimicrobial resistance

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

General Search Strategy

Up until 2007, the main strategy was to rely on the guidelines group members' knowledge and expertise on the current literature assuming that all, or almost all, relevant information would be captured.

In updates produced from 2008 onwards, a structured literature search will be performed for all guidelines but this search will be limited to randomized controlled trials and meta-analyses, covering at least the past three years, or up until the date of the latest text update if this exceeds the three-year period. Other excellent sources to include are other high-level evidence, Cochrane review and available high-quality guidelines produced by other expert groups or organizations. If there are no high-level data available, the only option is to include lower-level data. The choice of literature will be guided by the expertise and knowledge of the Guidelines Working Group.

Specific Strategy for This Guideline

For literature review, PubMed was searched for published meta-analyses, which were used as far as available. Otherwise there was a non-structured literature review process by the group members. Each member was responsible for one chapter (reporter).

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Ia Evidence obtained from meta-analysis of randomized trials

Ib Evidence obtained from at least one randomized trial

IIa Evidence obtained from at least one well-designed controlled study without randomization

IIb Evidence obtained from at least one other type of well-designed quasi-experimental study

III Evidence obtained from well-designed non-experimental studies, such as comparative studies, correlation studies and case reports

IV Evidence obtained from expert committee reports or opinions or clinical experience of respected authorities

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Consensus Development Conference)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

General Methods Used to Formulate the Recommendations

- The first step in the European Association of Urology (EAU) guidelines procedure is to define the main topic.

- The second step is to establish a working group. The working groups comprise about 4-8 members, from several countries. Most of the working group members are academic urologists with a special interest in the topic. Specialists from other medical fields (radiotherapy, oncology, gynaecology, anaesthesiology etc.) are included as full members of the working groups as needed. In general, general practitioners or patient representatives are not part of the working groups. Each member is appointed for a four-year period, renewable once. A chairman leads each group.
- The third step is to collect and evaluate the underlying evidence from the published literature.
- The fourth step is to structure and present the information. All main recommendations are summarized in boxes and the strength of the recommendation is clearly marked in three grades (A-C), depending on the evidence source upon which the recommendation is based. Every possible effort is made to make the linkage between the level of evidence and grade of recommendation as transparent as possible.

Specific Methods Used for This Guideline

The members of the Urinary Tract Infection (UTI) Working Group of the European Association of Urologists (EAU) Health Care Office established the first version of these guidelines in several consensus conferences. The members of the current UTI Working Group of the EAU Guidelines Office updated the guidelines in several consensus conferences thereafter. The first draft of each chapter was sent to the committee members asking for comments, which were then considered, discussed and incorporated accordingly.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendation

- A. Based on clinical studies of good quality and consistency addressing the specific recommendations and including at least one randomized trial
- B. Based on well-conducted clinical studies, but without randomized clinical studies
- C. Made despite the absence of directly applicable clinical studies of good quality

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The formal agreement to each updated chapter was achieved by the European Association of Urology (EAU) working group at three plenary meetings: the first in Paris on 10 December 2004, the next in Istanbul on 15 March 2005, and finally in

Florence on 22 October 2005. Each chapter was reviewed by three committee members (editorial group) for consistency and compatibility in two editorial meetings: one meeting took place in Straubing, 22-24 April 2005, and one in Stavern, 9-11 Sept 2005, and the chapters were revised accordingly.

There is no formal external review prior to publication.

The Appraisal of Guidelines for Research and Evaluation (AGREE) instrument was used to analyse and assess a range of specific attributes contributing to the validity of a specific clinical guideline.

The AGREE instrument, to be used by two to four appraisers, was developed by the AGREE collaboration (www.agreecollaboration.org) using referenced sources for the evaluation of specific guidelines. (See the "Availability of Companion Documents" field for further methodology information).

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The following is a summary of the recommendations for peri-operative antibacterial prophylaxis in urology. Refer to the original guideline for more detailed recommendations and discussion.

The aim of antimicrobial prophylaxis in urological surgery is to prevent infective complications resulting from diagnostic and therapeutic procedures. However, the evidence on the best choice of antibiotics and prophylactic regimens is limited.

There is no evidence for any benefits of antibiotic prophylaxis in standard non-complicated endoscopic procedures and extracorporeal shockwave lithotripsy (ESWL), though it is recommended in complicated procedures and patients with identified risk factors.

For open surgery, the same rules as in abdominal surgery can be applied. No antibiotic prophylaxis is required for clean operations, while a single or 1-day dosage is recommended in clean-contaminated operations. Opening of the urinary tract should be considered as clean-contaminated surgery.

It is essential to categorize patients according to risk factors for infection. These include:

- History of genitourinary infection
- Previous instrumentation
- Assumed bacterial colonization
- Prolonged hospital or institutional stay
- Risk factors related to general health (e.g., diabetes mellitus, impaired immune system, malnutrition)

A single dose or a short course of antimicrobials can be given, either parenterally or orally. The administration route will depend on the type of intervention and patient characteristics. Oral administration requires drugs having good

bioavailability. In a case of continuous urinary drainage, prolongation of peri-operative antibiotic prophylaxis is not recommended.

Many antibiotics are suitable for peri-operative antibacterial prophylaxis (e.g., second-generation cephalosporins, co-trimoxazole-sulphamethoxazole [TMP-SMZ], fluoroquinolones, aminopenicillins plus a beta-lactam inhibitor [BLI], and aminoglycosides). Broader-spectrum antibiotics should be used sparingly and reserved for treatment. This applies also to the use of vancomycin.

The use of antimicrobials should be based on knowledge of the local pathogen profile and antibiotic susceptibility pattern. Best practice includes surveillance and an audit of infectious complications.

Table: Recommendations for Antibiotic Prophylaxis in Standard Urological Surgery

Procedure	Pathogens (Expected)	Prophylaxis	Antibiotics	Remarks
Diagnostic Procedures				
Transrectal biopsy of the prostate	Enterobacteriaceae Anaerobes?	All patients	Fluoroquinolones TMP ± SMX Metronidazole?	Short course (<72h)
Cystoscopy Urodynamic examination	Enterobacteriaceae Enterococci Staphylococci	No	Cephalosporin 2nd generation TMP ± SMX	Consider only in risk patients
Ureteroscopy	Enterobacteriaceae Enterococci Staphylococci	No	Cephalosporin 2nd generation TMP ± SMX	Consider in risk patients
Endourological Surgery and ESWL				
ESWL	Enterobacteriaceae Enterococci	No	Cephalosporin 2nd or 3rd generation TMP ± SMX Aminopenicillin/BLI	In patients with stent or nephrostomy tube Consider in risk patients
Ureteroscopy for uncomplicated distal stone	Enterobacteriaceae Enterococci Staphylococci	No	Cephalosporin 2nd or 3rd generation TMP ± SMX Aminopenicillin/BLI Fluoroquinolones	In patients with stent or nephrostomy tube Consider in risk patients
Ureteroscopy of proximal or impacted	Enterobacteriaceae Enterococci Staphylococci	All patients	Cephalosporin 2nd or 3rd generation TMP ± SMX	Short course Length to be determined

Procedure	Pathogens (Expected)	Prophylaxis	Antibiotics	Remarks
stone and percutaneous stone extraction			Aminopenicillin/BLI Fluoroquinolones	Intravenous suggested
TUR of the prostate	Enterobacteriaceae Enterococci	All patients	Cephalosporin 2nd or 3rd generation TMP ± SMX Aminopenicillin/BLI	Low-risk patients and small-size prostate require no prophylaxis
TUR of bladder tumour	Enterobacteriaceae Enterococci	No	Cephalosporin 2nd or 3rd generation TMP ± SMX Aminopenicillin/BLI	Consider in risk patients and large necrotic tumours
Open Urological Surgery				
Clean operations	Skin-related pathogens, e.g., staphylococci catheter-associated uropathogens	No		Consider in high-risk patients Short post-operative catheter treatment
Clean-contaminated (opening of urinary tract)	Enterobacteriaceae Enterococci Staphylococci	Recommended	Cephalosporin 2nd or 3rd generation TMP + SMX Aminopenicillin/BLI	Single peri-operative course
Clean-contaminated (use of bowel segments)	Enterobacteriaceae Enterococci Anaerobes Skin-related bacteria	All patients	Cephalosporin 2nd or 3rd generation Metronidazole	As for colonic surgery
Implant of prosthetic devices	Skin-related bacteria, e.g., staphylococci	All patients	Cephalosporin 2nd or 3rd generation Penicillin (penicillinase stable)	
Laparoscopic procedures				As for open surgery

*BLI = beta-lactamase inhibitor; ESWL = extracorporeal shockwave lithotripsy;
TMP ± SMX = trimethoprim with or without sulphamethoxazole (co-trimoxazole);
TUR = transurethral resection*

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting the recommendations is not specifically stated.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Prevention of urological infection

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The purpose of these texts is not to be proscriptive in the way a clinician should treat a patient but rather to provide access to the best contemporaneous consensus view on the most appropriate management currently available. European Association for Urology (EAU) guidelines are not meant to be legal documents but are produced with the ultimate aim to help urologists with their day-to-day practice.
- The EAU believe that producing validated best practice in the field of urology is a very powerful and efficient tool in improving patient care. It is, however, the expertise of the clinician which should determine the needs of their patients. Individual patients may require individualized approaches which take into account all circumstances and treatment decisions often have to be made on a case-by-case basis.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The European Association of Urology (EAU) Guidelines long version (containing all 19 guidelines) is reprinted annually in one book. Each text is dated. This means that if the latest edition of the book is read, one will know that this is the most updated version available. The same text is also made available on a CD (with

hyperlinks to PubMed for most references) and posted on the EAU websites Uroweb and Urosource (www.uroweb.org/professional-resources/guidelines/ & <http://www.urosource.com/diseases/>).

Condensed pocket versions, containing mainly flow-charts and summaries, are also printed annually. All these publications are distributed free of charge to all (more than 10,000) members of the Association. Abridged versions of the guidelines are published in European Urology as original papers. Furthermore, many important websites list links to the relevant EAU guidelines sections on the association websites and all, or individual, guidelines have been translated to some 15 languages.

IMPLEMENTATION TOOLS

Pocket Guide/Reference Cards

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Peri-operative antibacterial prophylaxis in urology. In: Grabe M, Bishop MC, Bjerklund-Johansen TE, Botto H, Çek M, Lobel B, Naber KG, Palou J, Tenke P. Guidelines on the management of urinary and male genital tract infections. Arnhem, The Netherlands: European Association of Urology (EAU); 2008 Mar. p. 90-9. [39 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2008 Mar

GUIDELINE DEVELOPER(S)

European Association of Urology - Medical Specialty Society

SOURCE(S) OF FUNDING

European Association of Urology

GUIDELINE COMMITTEE

Management of Urinary and Male Genital Tract Infections Guidelines Writing Panel

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: M. Grabe (*Chairman*); M.C. Bishop; T.E. Bjerklund-Johansen; H. Botto; M. Çek; B. Lobel; K.G. Naber; J. Palou; P. Tenke

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All members of the Management of Urinary and Male Genital Tract Infections guidelines writing panel have provided disclosure statements of all relationships which they have and which may be perceived as a potential source of conflict of interest. This information is kept on file in the European Association of Urology Central Office database. This guidelines document was developed with the financial support of the European Association of Urology (EAU). No external sources of funding and support have been involved. The EAU is a non-profit organisation and funding is limited to administrative assistance, travel, and meeting expenses. No honoraria or other reimbursements have been provided.

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [European Association of Urology Web site](#).

Print copies: Available from the European Association of Urology, PO Box 30016, NL-6803, AA ARNHEM, The Netherlands.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- EAU guidelines office template. Arnhem, The Netherlands: European Association of Urology (EAU); 2007. 4 p.
- The European Association of Urology (EAU) guidelines methodology: a critical evaluation. Arnhem, The Netherlands: European Association of Urology (EAU); 18 p.

The following is also available:

- Management of urinary and male genital tract infections. 2008, Ultra short pocket guidelines. Arnhem, The Netherlands: European Association of Urology (EAU); 2008 Mar. 17 p.

Print copies: Available from the European Association of Urology, PO Box 30016, NL-6803, AA ARNHEM, The Netherlands.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI Institute on September 9, 2008. The information was verified by the guideline developer on December 8, 2008.

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