Complete Summary

GUIDELINE TITLE

United Kingdom national guideline for the management of pelvic inflammatory disease.

BIBLIOGRAPHIC SOURCE(S)

United Kingdom national guideline for the management of pelvic inflammatory disease. London (England): British Association for Sexual Health and HIV (BASHH); 2005. 15 p. [34 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Association for Genitourinary Medicine (AGUM), Medical Society for the Study of Venereal Disease (MSSVD). 2002 national guidelines for the management of pelvic infection and perihepatitis. London (England): Association for Genitourinary Medicine (AGUM), Medical Society for the Study of Venereal Disease (MSSVD); 2002. Various p.

** 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.
- September 11, 2007, Rocephin (ceftriaxone sodium): Roche informed healthcare professionals about revisions made to the prescribing information for Rocephin to clarify the potential risk associated with concomitant use of Rocephin with calcium or calcium-containing solutions or products.

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SCOPE

DISEASE/CONDITION(S)

Pelvic inflammatory disease

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Infectious Diseases
Obstetrics and Gynecology
Urology

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To present a national guideline on the management of pelvic infection

TARGET POPULATION

Patients (primarily women aged 16 years and older) in the United Kingdom with pelvic inflammatory disease

INTERVENTIONS AND PRACTICES CONSIDERED

Assessment/Diagnosis

1. Assessment of clinical features
2. Diagnostic procedures
    - Testing for gonorrhea and chlamydia
    - Erythrocyte sedimentation rate or C reactive protein
    - Laparoscopy

    - Endometrial biopsy
    - Ultrasound scanning
3. Differential diagnosis of lower abdominal pain

Management/Treatment

1. Criteria for selecting a treatment regimen
2. General advice (e.g., rest, appropriate analgesia) and patient education
3. Screening for other sexually transmitted infections
4. Pregnancy test
5. Pharmacological intervention
    - Broad spectrum antibiotic therapy to cover *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, and anaerobic infection
        - Recommended regimens (outpatient, inpatient):
        - Alternative regimens

6. Sexual partner notification, evaluation, and treatment
7. Follow-up
8. Surgical management (laparoscopy)

MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of diagnostic instruments
- Long-term sequelae of pelvic inflammatory disease, such as ectopic pregnancy, infertility, and pelvic pain
- Clinical response to treatment
- Patient compliance with treatment

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

Five reference sources were used as the basis for the guidelines.

1. Medline and Embase Search
    - 1987 to February 2004: The search strategy comprised the following terms in the title or abstract: "pelvic inflammatory disease," "adnexitis," "oophoritis," "parametritis," "salpingitis," or "adnexal disease." 9,884 citations were identified.
    - 1963 to 1986: The search strategy comprised the following terms in the title or abstract: "pelvic inflammatory disease," "adnexitis," "oophoritis," "parametritis," "salpingitis," or "adnexal disease." The dataset was then limited to AIM journals and human subjects, identifying 2,321 citations.
2. 2002 Centers for Disease Control and Prevention Sexually Transmitted Disease Treatment Guidelines (www.cdc.gov/std/)

3. 2003 Royal College of Obstetrics and Gynaecology Green Top Guidelines -- Management of Acute Pelvic Inflammatory Disease (www.rcog.org.uk)
4. Royal College of Obstetrics and Gynaecology Working Group on Pelvic Inflammatory Disease Report 1992
5. Cochrane Collaboration Databases (www.cochrane.org)

Article titles and abstracts were reviewed and, if relevant, the full text article obtained. Priority was given to randomised controlled trial and systematic review evidence, and recommendations made and graded on the basis of best available evidence.

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 randomised controlled trials

Ib

- Evidence obtained from at least one randomised controlled trial

IIa

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

IIb

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

III

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

IV

- Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grading of Recommendations:

A (Evidence Levels Ia, Ib)

- Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation

B (Evidence Levels IIa, IIb, III)

- Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation

C (Evidence Level IV)

- Requires evidence from expert committee reports or opinions and/or clinical experience of respected authorities
- Indicates absence of directly applicable studies of good quality

COST ANALYSIS

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

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Prior to submission this guideline was distributed to three consultants in Genitourinary Medicine. They were asked to use the guideline as an aid to the management of patients presenting with pelvic inflammatory disease (PID). Their comments were noted and incorporated into the current document.

Prior to publication, the final draft of the guideline was placed on the British Association of Sexual Health and HIV (BASHH) Web site and copies circulated to the Genitourinary Medicine regional audit, Genitourinary Nurses Association (GUNA), and Society of Health Advisers in Sexually Transmitted Diseases (SASH) chairs for comment and peer review. After a period of three months any comments received were reviewed by the guideline authors and acted on appropriately, before final authorisation by the Clinical Effectiveness Group (CEG) was given and publication was undertaken.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Definitions of the levels of evidence (I-IV) and grades of recommendation (A-C) are repeated at the end of the "Major Recommendations" field.

Diagnosis

- Pelvic inflammatory disease (PID) may be symptomatic or asymptomatic. Even when present, clinical symptoms and signs lack sensitivity and specificity (the positive predictive value of a clinical diagnosis is 65 to 90% compared with laparoscopic diagnosis) (Bevan et al., 1995; "Sexually transmitted diseases treatment guidelines," 2002; Morcos et al., 1993).
- Testing for gonorrhoea and chlamydia in the lower genital tract is recommended since a positive result supports the diagnosis of PID. The absence of infection at this site does not exclude PID however (Bevan et al., 1995; "Sexually transmitted diseases treatment guidelines," 2002; Morcos et al., 1993).
- An elevated erythrocyte sedimentation rate (ESR) or C reactive protein also supports the diagnosis (Miettinen et al., 1993).
- Laparoscopy may strongly support a diagnosis of PID but is not justified routinely on the basis of cost and the potential difficulty in identifying mild intratubal inflammation or endometritis and high rates of intra- and inter-observer variation in diagnosing PID (Bevan et al., 1995; CDC, 1998; Morcos et al., 1993; Molander et al., 2003).
- Endometrial biopsy and ultrasound scanning may also be helpful when there is diagnostic difficulty, but there is insufficient evidence to support their routine use at present. The presence of histological endometritis is not associated with higher rates of infertility, chronic pelvic pain, or recurrent PID (Haggerty et al., 2003).
- The **absence** of endocervical or vaginal pus cells has a good negative predictive value (95%) for a diagnosis of PID, but their **presence** is non-specific (poor positive predictive value -- 17%) (Yudin et al., 2003).

The differential diagnosis of lower abdominal pain in a young woman includes:

- Ectopic pregnancy - pregnancy should be excluded in all women suspected of having PID.
- Acute appendicitis - nausea and vomiting occur in most patients with appendicitis but only 50% of those with PID. Cervical movement pain will occur in about a quarter of women with appendicitis (Bongard, Landers, & Lewis, 1985; Lewis et al., 1975).
- Endometriosis - the relationship between symptoms and the menstrual cycle may be helpful in establishing a diagnosis.
- Complications of an ovarian cyst- often of sudden onset
- Functional pain - may be associated with longstanding symptoms

Management

It is likely that delaying treatment increases the risk of long-term sequelae such as ectopic pregnancy, infertility, and pelvic pain ("Sexually transmitted diseases treatment guidelines," 2002; Hillis et al., 1993). Because of this, and the lack of definitive diagnostic criteria, a low threshold for empirical treatment of PID is recommended. Broad spectrum antibiotic therapy is required to cover *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, and a variety of aerobic and anaerobic bacteria commonly isolated from the upper genital tract in women with PID (Bevan et al., 1995; Templeton, 1996; "Sexually transmitted diseases treatment guidelines," 2002).

The choice of an appropriate treatment regimen may be influenced by:

- Robust evidence on local antimicrobial sensitivity patterns
- Robust evidence on the local epidemiology of specific infections in this setting
- Cost
- Patient preference and compliance
- Severity of disease

General Advice

- Rest is advised for those with severe disease (Evidence level IV, Grade C recommendation).
- Appropriate analgesia should be provided (Evidence level IV, Grade C recommendation).
- Intravenous therapy is recommended for patients with more severe clinical disease (Evidence level IV, Grade C recommendation), e.g., pyrexia >38 degrees C, clinical signs of tubo-ovarian abscess, signs of pelvic peritonitis
- Patients should be advised to avoid unprotected intercourse until they and their partner(s) have completed treatment and follow up (Evidence level IV, Grade C recommendation).
- A detailed explanation of their condition with particular emphasis on the long term implications for the health of themselves and their partner(s) should be provided, reinforced with clear and accurate written information (Evidence level IV, Grade C recommendation).

Outpatient therapy is as effective as inpatient treatment for patients with mild to moderate PID as assessed clinically (Ness et al., 2002). Admission for parenteral

therapy, observation, further investigation, and/or possible surgical intervention should be considered in the following situations ("Sexually transmitted diseases treatment guidelines," 2002; Ross & Stewart, 2003):

- A surgical emergency cannot be excluded.
- Lack of response to oral therapy
- Clinically severe disease
- Presence of a tubo-ovarian abscess
- Intolerance to oral therapy
- Pregnancy

Further Investigation

All patients should be offered:

- A pregnancy test when required to exclude pregnancy
- Screening for sexually transmitted infections

Treatment

The following antibiotic regimens are evidence based.

Intravenous therapy should be continued until 24 hours after clinical improvement and then switched to oral. Intravenous doxycycline is not currently licensed in the United Kingdom (UK) but is available from IDIS world medicines (0208 410 0700).

Recommended Regimens

All the recommended regimens are of similar efficacy.

<u>Outpatient Regimens</u>

- Intramuscular (i.m.) ceftriaxone 250mg immediately (stat) or i.m. cefoxitin 2g stat with oral probenecid 1g followed by oral doxycycline 100 mg twice daily (BD) plus metronidazole 400 mg twice daily (BD) for 14 days (Level of Evidence Ib, Grade A recommendation) ("Sexually transmitted diseases treatment guidelines," 2002; Ness et al., 2002; Arrendondo et al., 1997; Hemsell et al., 1994; Martens et al., 1993; The "Comparative evaluation," 1992; Walker et al., 1993)
- Oral ofloxacin 400 mg BD ***plus*** oral metronidazole 400 mg BD for 14 days (Level of evidence Ib, Grade A recommendation) ("Sexually transmitted diseases treatment guidelines," 2002; Martens et al., 1993; Walker et al., 1993; Wendel et al., 1991; Soper, Brockwell, & Dalton, 1992; Peipert et al., 1999).

In both recommended outpatient regimens metronidazole is included to improve coverage for anaerobic bacteria. Anaerobes are of relatively greater importance in patients with severe PID, and metronidazole may be discontinued in those patients with mild or moderate PID who are unable to tolerate it.

Ofloxacin should be avoided in patients who are at high risk of gonococcal PID because of increasing quinolone resistance in the UK (e.g., patient's partner has gonorrhoea, clinically severe disease, sexual contact abroad). Levofloxacin is the L isomer of ofloxacin (Isaacson et al., 1996) and has the advantage of once daily dosing (500 mg once a day [OD] for 14 days). It may provide a more convenient alternative to ofloxacin but no clinical trials in women with PID have been published for this agent ("Sexually transmitted diseases treatment guidelines," 2002).

Inpatient Regimens

- intravenous (i.v) cefoxitin 2 g three times daily (TID) plus i.v. doxycycline 100 mg BD (oral doxycycline may be used if tolerated) followed by oral doxycycline 100 mg BD plus oral metronidazole 400 mg BD for a total of 14 days (Level of evidence Ib, Grade A recommendation) ("Sexually transmitted diseases treatment guidelines," 2002; Ness et al., 2002; Hemsell et al., 1994; Martens et al., 1993; "Comparative evaluation," 1992; Walker et al., 1993)
- i.v. clindamycin 900 mg TID plus i.v. gentamicin (2 mg/kg loading dose followed by 1.5 mg/kg TID [a single daily dose of 7 mg/kg may be substituted]) followed by either oral clindamycin 450 mg four times daily (QID) for 14 days or oral doxycycline 100 mg BD plus oral metronidazole 400 mg BD for 14 days (Level of evidence Ib, Grade A recommendation) ("Sexually transmitted diseases treatment guidelines," 2002; Hemsell et al., 1994; "Comparative evaluation," 1992; Walker et al., 1993).

Gentamicin levels need to be monitored if this regimen is used.

Alternative Regimens

- i.v. ofloxacin 400 mg BD plus i.v. metronidazole 500 mg TID for 14 days (Level of evidence III, Grade B recommendation) ("Sexually transmitted diseases treatment guidelines," 2002; Martens et al., 1993; Walker et al., 1993; Wendel et al., 1991; Witte et al., 1993)
- i.v. ciprofloxacin 200 mg BD *plus* i.v. (or oral) doxycycline 100 mg BD *plus* i.v. metronidazole 500 mg TID for 14 days (Level of evidence III, Grade B recommendation) ("Sexually transmitted diseases treatment guidelines," 2002; Walker et al., 1993; Heinonen et al., 1989)

Allergy

There is no evidence of the superiority of any one of the suggested regimens over the others. Therefore patients known to be allergic to one of the suggested regimens should be treated with an alternative.

Pregnancy and Breast Feeding

- In pregnancy PID is associated with an increase in both maternal and fetal morbidity; therefore parenteral therapy is advised, although none of the suggested evidence-based regimens is of proven safety in this situation.
- There are insufficient data from clinical trials to recommend a specific regimen, and empirical therapy with agents effective against gonorrhoea,

chlamydial, and anaerobic infections should be considered, taking into account local antibiotic sensitivity patterns (for example, i.m. ceftriaxone plus oral/i.v. erythromycin, with the possible addition of i.v metronidazole 500 mg TID in clinically severe disease) (Level of evidence IV, Grade C recommendation).
- The risk of giving any of the recommended antibiotic regimens in very early pregnancy (prior to a positive pregnancy test) is low, with any significant drug toxicity resulting in failed implantation (personal communication, UK National Teratology Information Service).

Surgical Management

- Laparoscopy may help early resolution of the disease by division of adhesions and drainage of pelvic abscesses (Reich & McGlynn, 1987), but ultrasound guided aspiration of pelvic fluid collections is less invasive and may be equally effective. (Aboulghar, Mansour, & Serour, 1995; Corsi et al., 1999)
- It is also possible to perform adhesiolysis in cases of perihepatitis although there is no evidence whether this is superior to only using antibiotic therapy.

Sexual Partners

- Current male partners of women with PID should be contacted and offered health advice and screening for gonorrhoea and chlamydia. Other recent sexual partners may also be offered screening; tracing of contacts within a 6-month period of onset of symptoms is recommended but this time period may be influenced by the sexual history (Level of evidence IV, Grade C recommendation).
- Partners should be advised to avoid intercourse until they and the index patient have completed the treatment course (Level of evidence IV, Grade C recommendation).
- Gonorrhoea diagnosed in the male partner should be treated appropriately and concurrently with the index patient (Level of evidence IV, Grade C recommendation).
- Concurrent empirical treatment for chlamydia is recommended for all sexual contacts due to the variable sensitivity of currently available diagnostic tests (Level of evidence IV, Grade C recommendation).
- If adequate screening for gonorrhoea and chlamydia in the sexual partner(s) is not possible, empirical therapy for gonorrhoea and chlamydia should be given (Level of evidence IV, Grade C recommendation).

Follow-up

Review at 72 hours is recommended ("Sexually transmitted diseases treatment guidelines," 2002), particularly for those with a moderate or severe clinical presentation, and should show a substantial improvement in clinical symptoms and signs (Level of evidence IV, Grade C recommendation). Failure to do so suggests the need for further investigation, parenteral therapy, and/or surgical intervention.

Further review 4 weeks (Level of evidence IV, Grade C recommendation) after therapy may be useful to ensure:

- Adequate clinical response to treatment
- Compliance with oral antibiotics
- Screening and treatment of sexual contacts
- Awareness of the significance of PID and its sequelae

Repeat testing for gonorrhoea or chlamydia is appropriate in those in whom persisting symptoms, antibiotic resistance pattern (gonorrhoea only), compliance with antibiotics, and/or tracing of sexual contacts indicate the possibility of persisting or recurrent infection.

Definitions:

The following rating scheme was used for major management recommendations.

Levels of Evidence

Ia

- Evidence obtained from meta-analysis of randomised controlled trials

Ib

- Evidence obtained from at least one randomised controlled trial

IIa

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

IIb

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

III

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

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B (Evidence levels IIa, IIb, III)

- Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation

C (Evidence level IV)

- Requires evidence from expert committee reports or opinions and/or clinical experience of respected authorities
- Indicates absence of directly applicable studies of good quality

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is graded and identified for select recommendations (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate management of pelvic infection should show a substantial improvement in clinical symptoms and signs.

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The recommendations in this guideline may not be appropriate for use in all clinical situations. Decisions to follow these recommendations must be based on the professional judgement of the clinician and consideration of individual patient circumstances and available resources.

- All possible care has been undertaken to ensure the publication of the correct dosage of medication and route of administration. However, it remains the responsibility of the prescribing physician to ensure the accuracy and appropriateness of the medication they prescribe.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators

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

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

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

DATE RELEASED

1999 Aug (revised 2005)

GUIDELINE DEVELOPER(S)

British Association for Sexual Health and HIV - Medical Specialty Society

SOURCE(S) OF FUNDING

This guideline was commissioned and edited by the Clinical Effectiveness Group of the British Association of Sexual Health and HIV, without external funding being sought or obtained.

GUIDELINE COMMITTEE

Clinical Effectiveness Group (CEG)

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Authors: Jonathan D.C. Ross, MB ChB MD FRCP(Edin) FRCP (Lond), Whittall Street Clinic, Birmingham

Clinical Effectiveness Group (CEG) Members: Keith Radcliffe (Chairman); Imtyaz Ahmed-Jushuf; Mark Fitzgerald; Jan Welch; Guy Rooney; David Daniels

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The author has not declared any conflict of interest.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Association for Genitourinary Medicine (AGUM), Medical Society for the Study of Venereal Disease (MSSVD). 2002 national guidelines for the management of pelvic infection and perihepatitis. London (England): Association for Genitourinary Medicine (AGUM), Medical Society for the Study of Venereal Disease (MSSVD); 2002. Various p.

GUIDELINE AVAILABILITY

Electronic copies: Available from the British Association for Sexual Health and HIV Web site.

AVAILABILITY OF COMPANION DOCUMENTS

Audit Criteria are available in the original guideline document.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on December 8, 2000. The information was verified by the guideline developer on January 12, 2001. This summary was updated on August 5, 2002, and on November 1, 2005. The updated information

was verified by the guideline developer on January 19, 2006. This summary was updated by ECRI Institute on October 3, 2007 following the U.S. Food and Drug Administration (FDA) advisory on Rocephin (ceftriaxone sodium). This summary was updated by ECRI Institute on July 28, 2008 following the U.S. Food and Drug Administration advisory on fluoroquinolone antimicrobial drugs.

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