NHS NOTTINGHAM CITY
NOTTINGHAM UNIVERSITY HOSPITALS NHS TRUST

MATERNITY CLINICAL GUIDELINES

GUIDELINE FOR ANTIBIOTICS IN OBSTETRICS	
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Document Derivation: NICE/ RCOG guidelines Literature review Local microbiology sensitivity surveillance Recommended best practice based on clinical experience of guideline developers	Consultation Process: Nottingham antibiotic guideline committee members Senior midwives Senior obstetricians Consultant neonatologists Consultant anaesthetists
Ratified by: Nottingham Antibiotic Guidelines Committee Nottingham Maternity Guideline Group	Distribution: NUH Trust intranet Midwives Obstetric staff
Plans for training on/implementing guideline: No additional training required	Plans for audit of guideline:

This guideline has been registered with the Trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague or expert. Caution is advised when using the guidelines after the review date.

Objectives of the guideline

To summarise the antibiotic management of the common occurrences in Obstetric management where prescription of antimicrobial drugs is required. The guideline is not intended to deal with any condition in detail, and further information on the management of individual conditions can be found in other guidelines.

URINARY TRACT INFECTION (UTI) AND PYELONEPHRITIS IN PREGNANCY

UTI: uncomplicated lower urinary tract infection

Review the previous microbiology reports and discuss choice of agent if previous resistant organisms isolated.

Oral Cefalexin 500 mg tds for 7 days

Pyelonephritis:

If pyelonephritis is suspected then admission is required

IV Cefuroxime 1.5 g tds for 48hrs then if clinically improving oral cefalexin 500mg tds for 5 days

If severe penicillin allergy, seek medical microbiology advice.

If the patient has severe sepsis or hypotension which fails to respond to an initial fluid bolus, or if there is no clinical improvement after 24 hours, add IV gentamicin (See dosing advice and renal impairment appendix 1)

Check urine and blood culture results to adjust antibiotics.

If the patient does not improve discuss with a medical microbiologist.

POST PARTUM SEPSIS (ENDOMETRITIS)

If mild endometritis without signs of sepsis **oral co-amoxiclav 375mg tds**

if more unwell , signs of sepsis or unable to take oral medication
IV Co-amoxiclav 1.2g tds
Alternatively if non severe penicillin allergy
IV Cefuroxime 1.5g TDS + IV metronidazole 500mgs tds

If clinical improvement within 48 hrs (See protocol for switching iv to oral “COMS” see appendix 2) Switch to **oral co-amoxiclav 375mg tds + amoxicillin 250mg tds** for 5 days.

For mild penicillin allergy (rash only): **oral cefalexin 500 tds +metronidazole 400mg tds** for 5/7 instead of oral co-amoxiclav.

In severe penicillin allergic patient give **IV clindamycin 600mgs qds** for 24 to 48 hrs then switch to oral **clindamycin 300 to 450mgs qds** for 5 days. However, this regimen does not cover gram negatives and if the patient has severe sepsis i.e. hypotension which fails to respond to an initial fluid bolus, or if there is no clinical improvement after 24 hours, add IV gentamicin (See dosing advice and renal impairment appendix 1)

Check vaginal swab, urine and blood culture reports to adjust antibiotics.

If the patient does not respond, liaise with a medical microbiologist.

PYREXIA IN LABOUR

IV Amoxicillin 2g + IV metronidazole 500mgs initially
then **IV Amoxicillin1g TDS + IV metronidazole 500 mgs tds** until delivery.
If penicillin allergic give **IV clindamycin 900 mgs qds until delivery**.

Add **gentamicin** immediately if the patient has severe sepsis i.e. hypotension which fails to respond to an initial fluid bolus, if there is clinical deterioration or if there is no improvement after 24 hours (see appendix 1) and seek advice from medical microbiologist.

The continuation of antibiotics after the delivery depends on clinical status.

A maximum of 5 days of oral antibiotics is generally sufficient if additional antibiotics are needed after delivery (see table 1, Appendix 2)

INTRAPARTUM PROPHYLAXIS FOR GROUP B STREP (for indications and further details see separate Group B Strep Guideline)

Where antibiotic prophylaxis is offered and accepted, this should be commenced **as soon as labour is diagnosed** (antibiotics should be given **at least** 2 hours prior to delivery for maximum benefit).

Dose: **IV Benzylpenicillin** 3g initially then IV 1.2g four hourly until delivery
Or for penicillin allergic women **Clindamycin** 900mg (by intravenous infusion) every eight hours until delivery

NB This dosing has been agreed with the Microbiologists; it is acknowledged that this is at slight variance with the RCOG recommendations

ENDOCARDITIS PROPHYLAXIS

Prophylaxis is not routinely required unless the patient is at high-risk of endocarditis (see below) and antibiotics are already required e.g. for treatment of chorioamnionitis or Caesarean section (C/S) prophylaxis. These patients should have antibiotics which have activity against the organisms that can cause endocarditis (Streptococci, *Staphylococcus aureus* and enterococci), therefore these patients should receive co-amoxiclav which has enterococcal activity and not Cefuroxime which has no activity against enterococci.

High-risk patients are:

- Patients with a prosthetic cardiac valve
- Patients with previous Infective Endocarditis (IE)
- Congenital heart disease (CHD) – the following conditions only:
    - Unrepaired cyanotic CHD, including palliative shunts and conduits
    - Completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first 6 months after the procedure (i.e. pre-endothelialisation)
    - Repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or prosthetic device (which inhibit endothelialisation)
- Cardiac transplantation recipients who develop cardiac valvulopathy

CAESAREAN SECTION (C/S) PROPHYLAXIS

Elective C/S

First line: **IV Co-amoxiclav 1.2 g** following clamping the umbilical cord

If mild penicillin allergy (rash only)and not at risk of endocarditis**: IV Cefuroxime 1.5g** and **IV Metronidazole 500mg** following clamping the umbilical cord

If severe penicillin allergy**:IV Clindamycin 900mg** following clamping the umbilical cord

If penicillin allergy and high risk of endocarditis(see above): **IV Teicoplanin 400mg plus IV gentamicin 1.5mg/kg and IV metronidazole 500mg** following clamping the umbilical cord.

If previous MRSA infection or colonisation : **IV Teicoplanin 400mg plus IV gentamicin 1.5mg/kg and IV metronidazole 500mg** following clamping the umbilical cord.

Emergency C/S

Give the prophylaxis as for elective C/S detailed above, *except* in women who have a severe penicillin allergy and are already on clindamycin for pyrexia in labour. These women require additional **IV gentamicin 1.5mg/kg stat** to add gram negative cover. If the woman has already received gentamicin then do not give additional dose unless the last dose was given more than 8 hours previously.

INFECTED CAESAREAN WOUNDS/ PERINEAL TEAR OR EPISIOTOMY

If the patient has no history of MRSA infection or colonisation

First line: **Oral flucloxacillin 500 mg qds** for 7 days + **oral metronidazole 400mg tds**. (**IV flucloxacillin 1-2g qds** and **IV metronidazole 500mg tds** if more severe or failed adequate doses of oral flucloxacillin)

If penicillin allergy then use **oral clindamycin 300-450mg qds for 7 days**

Ensure that a swab is taken and the microbiology results are reviewed.

Discuss with the duty microbiologist if not responding to treatment or if there is rapidly spreading infection.

Appendix 1

Gentamicin dosing in pregnancy

- Once a day high dose dosing is contraindicated in pregnancy
- Conventional dosing 1-1.5mg/kg tds should be used in pregnancy (if normal renal function, see antibiotic website for dosing in renal impairment http://nuhnet/diagnostics_clinical_support/antibiotics
- The current renal function should be checked using the Cockcroft-Gault equation using a current creatinine result (see antibiotic website) which gives an estimate of creatinine clearance (renal function) for the purposes of drug dosing in renal impairment
- Pre and one hour post dose Gentamicin assays should be performed around the 3rd or 4th dose- see antibiotic website (http://nuhnet/diagnostics_clinical_support/antibiotics). Levels should be pre dose <2mg/L and post level of 5-10 mg/L
- Results will be available on the results reporting system on the day that the sample is received, deadline for levels is 3pm on weekdays and 10am at weekends and bank holidays
- Renal function should be checked at least three times a week and levels should be checked twice weekly during a treatment course
- If renal function deteriorates then renal function should be checked daily and gentamicin levels closely monitored. A dose reduction may be required
- All patients prescribed more than one dose of Gentamicin should have a fluid balance chart completed and urine output should be closely monitored

Appendix 2 IV TO ORAL SWITCH

Patients on IV antibiotics should be reviewed at 24-48 hours. When considering whether to switch from IV to oral then the following factors need to be taken into consideration:

COMS

Clinical improvement observed

Oral route is not compromised (vomiting, malabsorptive disorder, Nil by Mouth (NBM),
swallowing problems, unconscious, severe diarrhoea)
NB: if NG/PEG feeding then please consult your pharmacist
Suitable oral antibiotic option available (see table below)

Markers showing a trend towards normal: Patient should be apyrexial for the last 24 hours (Temp>36°C and <38°C) and **NOT** have more than one of the following, heart rate>90/min, resp rate>20/min, BP unstable, WCC<4 or>15. White cell count should show a trend towards normal; absence of such should not impede the switch if all other criteria are met and not neutropenic.

Specific indication/deep-seated infection

See definition, diagnosis, investigations and management of sepsis on http://intratemp/sepsis/index.htm and Obstetric Sepsis Guideline.

TABLE 1: Recommended oral alternatives
N.B. Check for allergy/interactions/microbiology results:

IV	ORAL
Co-amoxiclav 1.2g tds	**Co-amoxiclav 375mg plus Amoxicillin 250mg tds**
Amoxicillin 500mg-1g tds	**Amoxicillin 500mg-1g tds**
Cefuroxime 750mg-1.5g tds + Metronidazole 500mg tds	**Co-amoxiclav 375mg plus Amoxicillin 250mg tds** (if not penicillin allergic) **Or Cefalexin 500mg tds and Metronidazole 400mg tds**
Cefuroxime 750mg-1.5g tds	**Co-amoxiclav 375mg plus Amoxicillin 250mg tds** (if not penicillin allergic) **Or cefalexin 500mg tds**
Flucloxacillin 2g qds	**Flucloxacillin 1g qds**
Clindamycin 900mg qds	**Clindamycin 300-450mg qds maximum of 600mg qds if severe infection (please note unlicensed dose)**

References:

Dinsmoor MJ; Newton ER; Gibbs RS (1991) Randomized, double blind, placebo-controlled trial of oral antibiotic therapy following intravenous antibiotic therapy for post-partum endometritis
Obstet Gynecol 77(1): 60-2

DTB prophylaxis DTB Antibacterial prophylaxis in surgery:2 – Urogenital, obstetric and gynaecological surgery. Vol 42 No 2 February 2004

Edwards RK; Duff P (2003) Single additional dose post-partum therapy for women with chorioamnionitis Obstet Gynecol 102(5 Pt 1):957-61

NICE surgical site infection guidelines 2008
http://www.nice.org.uk/guidance/index.jsp?action=download&o=42378

NICE endocarditis guidelines
http://www.nice.org.uk/guidance/index.jsp?action=byID&o=11938

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