

# ANTIBIOTIC PROPHYLAXIS FOR CAESAREAN SECTION

## INTRODUCTION

The major objective of antibiotic prophylaxis is reduction in the incidence of endometritis and major wound infection.

Administration of prophylactic antibiotics prior to the skin incision compared to at the time of cord clamping has been shown to decrease postpartum endometritis.

## DEFINITION

The use of perioperative antibiotics to reduce the incidence of endometritis and major wound infections following caesarean section.

## BACKGROUND

Caesarean delivery is the single most important factor associated with postpartum infection and carries a 5 to 20 fold increased risk of infection compared to vaginal birth. Prophylactic antibiotics reduce the incidence of endometritis following both elective and non-elective caesarean section by two thirds to three quarters and the incidence of wound infection by up to three quarters. Postpartum febrile morbidity and the incidence of urinary tract infections are also decreased<sup>1</sup>.

The Cochrane review<sup>2</sup> found no significant differences in infection between elective and emergency caesarean sections or antibiotics administered before versus after cord clamping. However, the methodological quality of most of the trials was unclear and in only a few studies was it obvious that potential other sources of bias had been adequately addressed. A randomized blinded trial by Sullivan et.al<sup>3</sup> in 2007 compared the administration of cefazolin 15-60 minutes prior to surgery versus after cord clamping, demonstrated an 80% decrease in endometritis, 60% decrease in surgical site infection, 65% decrease in total infectious morbidity and no increased risks of neonatal sepsis, sepsis workup, or length of stay in the cefazolin prior to incision group. A subsequent meta-analysis by Costantine<sup>4</sup> in 2008 of three randomized controlled trials (including the study by Sullivan et al.) showed that pre-incision antibiotics decreased rates of endometritis and overall infectious morbidity with a trend toward lower risk of wound infection and no effect on neonatal outcomes.

## MANAGEMENT

### TYPE OF ANTIBIOTIC

Cefazolin is the agent of choice as is narrowly focused on the likely bacteria, relatively inexpensive and has a low incidence of adverse effects.

**Cefazolin 2 g intravenously** as a single dose is given to all women except those with a history of true hypersensitivity (eg. anaphylaxis or severe rash) to a penicillin or cephalosporin. Cefazolin may be used in women with mild allergy to penicillin (eg. mild rash). Check the history carefully as a penicillin 'allergy' is often accepted without properly identifying the reaction.

In women with a **true hypersensitivity** to penicillins or cephalosporins, clindamycin 900 mg intravenously should be administered as a single dose.

In cases of overt sepsis prior to caesarean section, antibiotic prophylaxis is inappropriate and such women require a therapeutic antibiotic regimen.

### Timing of antibiotic administration

- Prophylactic antibiotics, where possible, will be administered by the anaesthetist on arrival in theatre prior to skin incision.
- A single dose given 30 minutes or less before skin incision provides adequate tissue concentrations.
- If surgery is prolonged (> 2-3 hours) or if there is major blood loss, an additional dose is advisable.
- Postoperative dosing of antibiotics gives no additional benefit as 'prophylaxis'.

### PREPARATION

#### Cefazolin 2 g

- Reconstitute two 1 g vials with 2.5 mL of Water for Injection each (volume per reconstituted vial is ~ 3 mL). Shake well until all powder is dissolved.
- Further dilute the two reconstituted vials (~ 6 mL total) in at least 20 mL of Water for Injection.
- Inject slowly over at least 5 minutes (ideally 6–10 minutes).
- If a Y-type administration set is used, it is desirable to discontinue the other solution during the infusion of the solution containing cefazolin.

#### Clindamycin 900 mg

- Add 6 mL of clindamycin 600 mg in 4 mL solution (from two 4 mL ampoules) to 100 mL of compatible fluid (eg. sodium chloride 0.9% or glucose 5%)
- The rate should not exceed 30 mg/min (ie. 900 mg should be given over 30 minutes or longer) to minimise hypotension

**Refer to notes on Injectable Drugs (NOIDs) for further information.**

## COMPATIBILITY

**Clindamycin** – the following drugs are physically incompatible with clindamycin - ampicillin, phenytoin sodium, barbiturates, aminophylline, calcium gluconate, magnesium sulphate, ceftriaxone sodium and ciprofloxacin.

The prescriber must check compatibility of the antibiotic with other medicines.

## DOCUMENTATION

Antibiotic use to be recorded on Caesarean Section Operation Report (Ref.8934).

## REFERENCES

1. Bastu E, Gulmezoglu AM. Antibiotic prophylaxis versus no prophylaxis for preventing infection after caesarean section: RHL commentary (last revised: 1 December 2012). *The WHO Reproductive Health Library*; Geneva: World Health Organization.
2. Smaill FM, Gyte GML. Antibiotic prophylaxis versus no prophylaxis for preventing infection after caesarean section. *Cochrane Database of Systematic Reviews* 2010, Issue 1. Art. No.: CD007482. DOI: 10.1002/14651858.CD007482.pub2.
3. Sullivan SA, Smith T, Chang E, et al. Administration of cefazolin prior to skin incision is superior to cefazolin at cord clamping in preventing post caesarean infectious morbidity: a randomized, controlled trial. *Am J Obstet Gynecol.* 2007;196:455.e1-e5
4. Costantine MM, Rahman M, Ghulmiyah L, et al. Timing of perioperative antibiotics for caesarean delivery: a meta-analysis. *Am J Obstet Gynecol.* 2008 Sep;199(3):301.e1-6

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