Women who give birth by Caesarean section are exposed to the possibility of infection. It is vital to prevent infection by proper preparation of the skin before incision.

Review
This Cochrane review compared the effects of different forms and methods of pre-operative skin preparation for preventing post-Caesarean infection (Hadiati et al, 2012).

The review included five trials, with a total of 1,462 pregnant women who were undergoing elective or emergency Caesarean section. The trials dated from 1988 to 2001. Two trials were conducted in the US and the rest were conducted in Europe. Sample sizes ranged from 22 to 691 participants. Two trials compared the use of incisional plastic drapes with no drape. The following three trials compared different antiseptic agents:

- One-minute scrub with 70% isopropyl alcohol. This was followed by application of iodophor drape compared with a five-minute iodophor scrub and application of iodophor solution;
- Five-minute scrub with parachlorometaxylenol. This was followed by a povidone-iodine scrub compared with "standard" preparation, using a povidone-iodine scrub, followed by 10% povidone-iodine;
- Chlorhexidine 0.5% compared with 70% alcohol plus an antimicrobial surgical incise drape (Ioban 2).

Primary outcome measures were surgical site infection, metritis (inflammation of the uterus), or endometritis or both. The secondary measures were length of stay, maternal mortality, repeat surgery, re-admission resulting from infection, reduction of skin bacteria colony count and adverse events (maternal or neonatal).

Summary of key evidence
No differences were found in the primary outcomes of either wound infection or endometritis between interventions and control groups.

Two trials of 1,294 women, which compared drape with no drape (one trial using iodine and the other using chlorhexidine), found no significant difference in surgical site infection.

One trial of 79 women, which compared alcohol scrub and iodophor drape with iodophor scrub only, reported no wound infection in either group.

One trial of 50 women, which compared parachlorometaxylenol plus iodine with iodine alone, reported no significant difference in wound infection.

Two trials reported endometritis – one trial, which compared alcohol scrub and iodophor drape with iodophor scrub only, found no significant difference. The other trial of 50 women, which compared parachlorometaxylenol plus iodine with iodine alone, reported no significant difference in endometritis.

No differences were found in the secondary outcomes of length of stay (one trial) or reduction of skin bacteria colony count (one trial).

None of the trials reported other maternal outcomes, such as maternal mortality, repeat surgery and re-admission resulting from infection.

One trial, which was only available as an abstract, investigated the effect of skin preparation on neonatal adverse events. It found cord blood iodine concentration to be significantly higher in the iodine group.

Best practice recommendations
The studies included in this review suggest there is insufficient evidence to recommend one method of skin preparation before Caesarean section.

It is not clear what sort of skin preparation is most efficient at preventing post-Caesarean wound and surgical site infection. There is a need for high-quality, properly designed randomised controlled trials, with larger sample sizes, in this field. Future research questions include:

- Comparing types of antiseptic (especially iodine versus chlorhexidine);
- Timing and duration of applying the antiseptic (especially previous night versus day of surgery);
- Application methods (scrubbing, swabbing and draping).

Cresilda T Newsom is a clinical nurse in the Post Anesthesia Care Unit at UC San Diego Health System, Hillcrest, US

Reference