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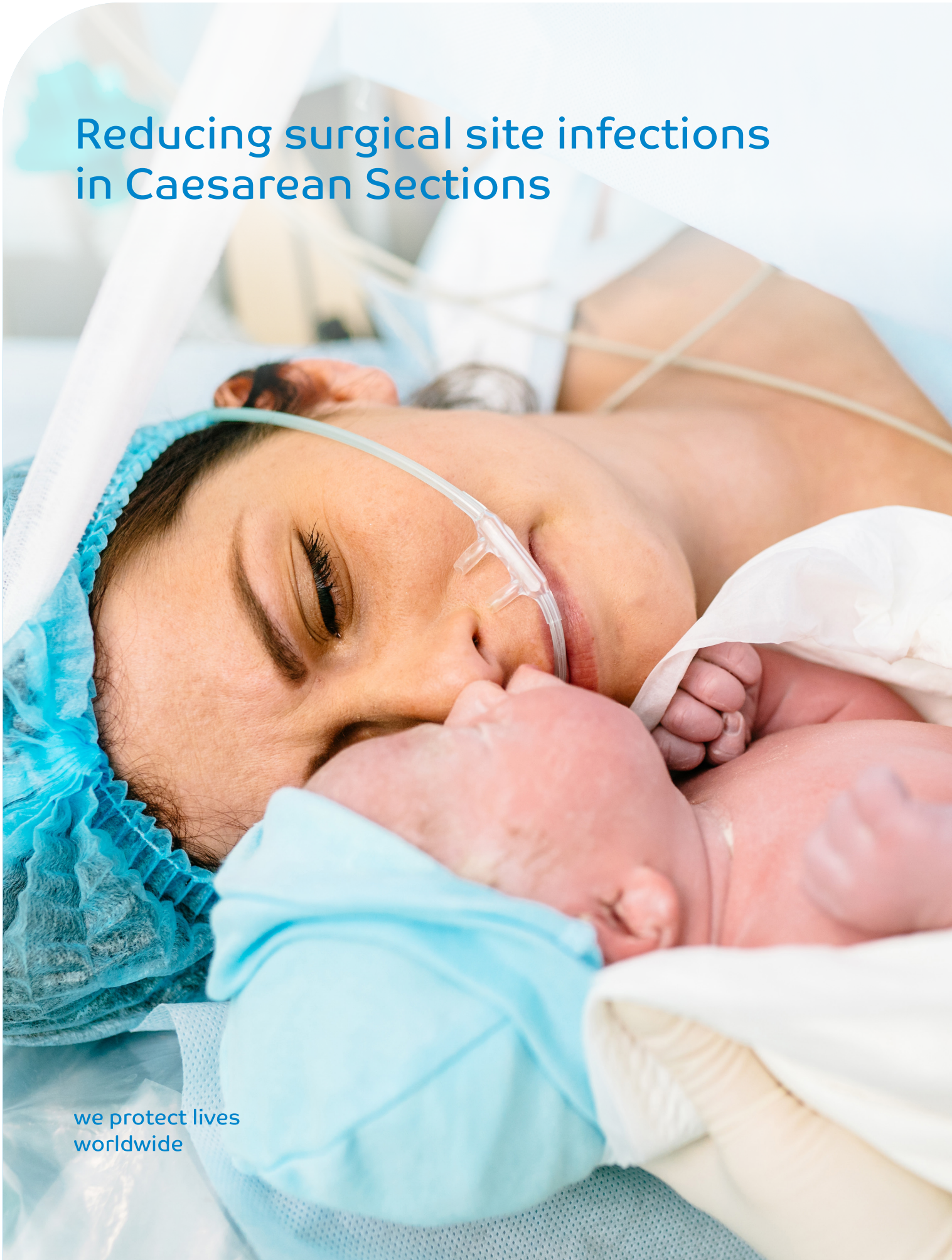
Reducing surgical site infections in Caesarean Sections



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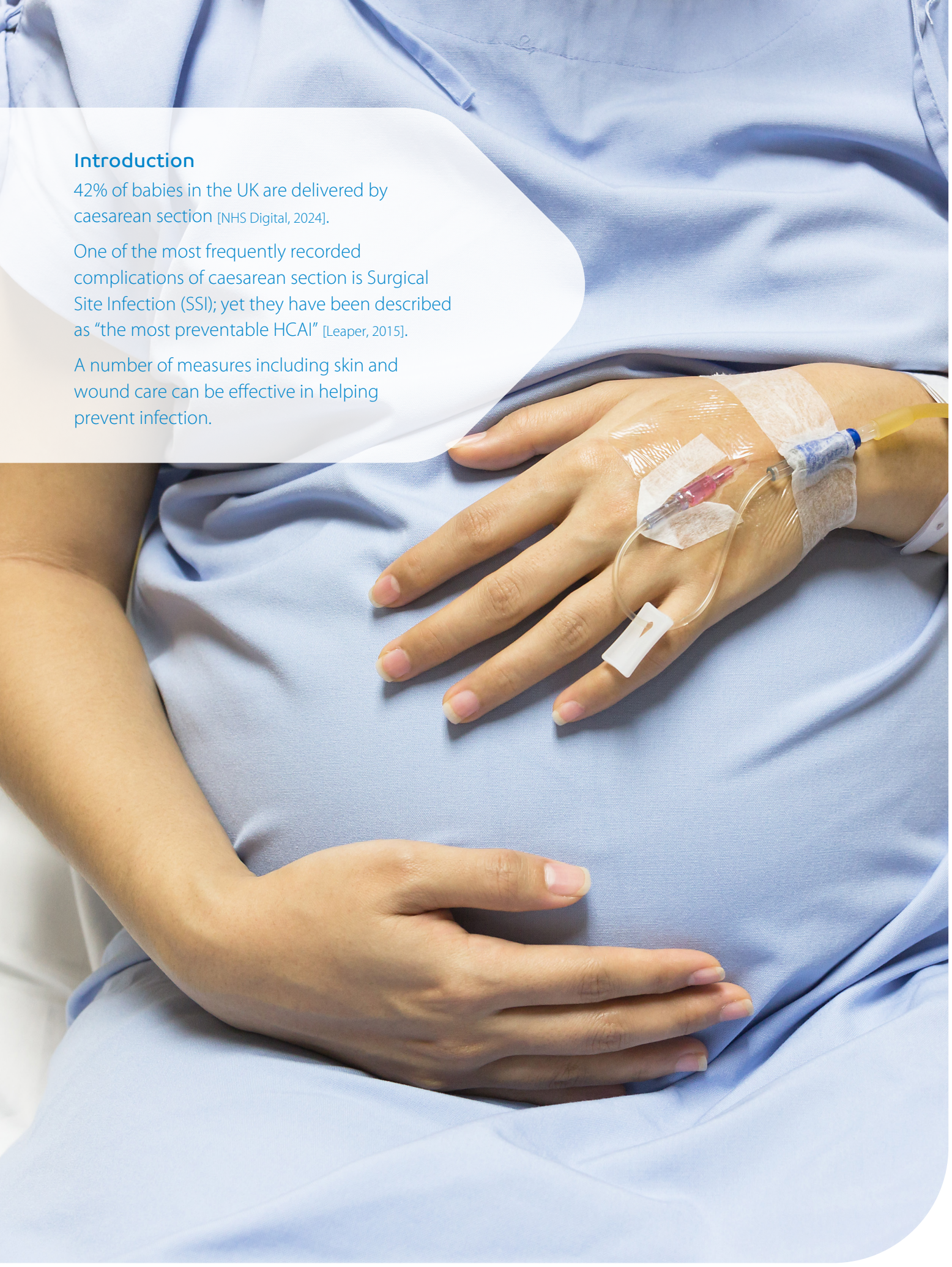
Introduction

42% of babies in the UK are delivered by caesarean section [NHS Digital, 2024].

One of the most frequently recorded complications of caesarean section is Surgical Site Infection (SSI); yet they have been described as "the most preventable HCAI" [Leaper, 2015].

A number of measures including skin and wound care can be effective in helping prevent infection.



Caesarean Section

Caesarean section is one of the most frequently performed surgical procedures [Stanirowski, 2016] and rates are increasing. In England in 1980, 9% of deliveries were by C-section, [Wloch, 2020] compared to 42% in 2023 [NHS digital, 2024].

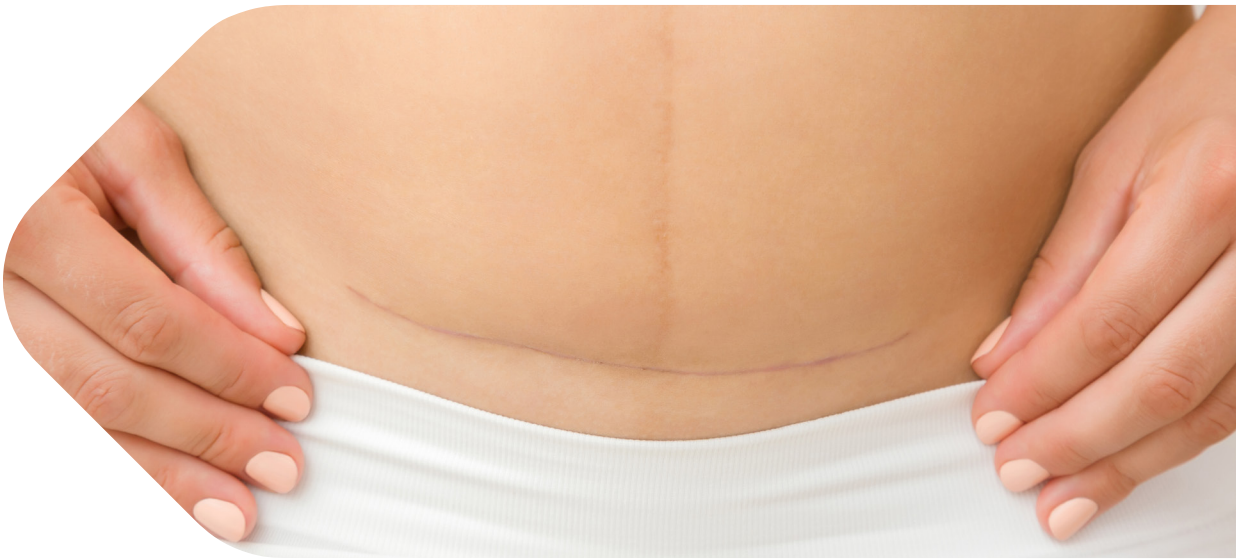
Caesarean section (CS) **9%** in 1980

Caesarean section (CS) **42%** in 2023

Caesarean section is usually recommended where a vaginal delivery (VD) can pose risks to either the mother or baby, or both, including:

- Prolonged or obstructed labour
- Foetal distress
- Elevated blood pressure
- Rais ed glucose levels
- Abnormal presentation/position of the baby [Angolile, 2023].

There has been a recent increase in planned 'Maternal Request Caesarean Sections' (MRCS), and NICE Guidance on Caesarean Birth (2024) recommends that women who request an MRCS should be able to give birth this way, if appropriate.



Surgical Site Infections

Surgical site infection (SSI) describes wound infections following invasive surgical procedures, usually within 30 days of surgery [Haque, 2018].

Accounts for **14.5%** of all Hospital acquired infections

Can be prevented in **60%** of cases

They are one of the most common healthcare adverse events, [Haque, 2018].

SSI:

- Accounts for 14.5% of all hospital-acquired infections in the UK [Health Innovation, W England, 2023]
- Leads to an estimated 34-226% increase in associated health costs, [Health Innovation, W England, 2023].
- Can be prevented in around 60% of cases, [Collins, 2019].

Caesarean Section Surgical Site Infections

Surgical Site Infection (SSI) is one of the most frequent complications following caesarean section with an estimated incidence of around 16% [Health Innovation, W England, 2023]. This is high compared to 8.6% for large bowel surgery and 9.7% for cholecystectomy, [UKHSA, 2022].

91%
of SSIs occur after discharge from hospital

Additional hospitalisation cost
£3,173
per patient

Given the short length of hospital stay, the overall rate of SSI following caesarean section could be significantly higher, as 91% of SSIs occur after discharge from hospital, [Public Health, Wales Report, 2018].

As well as causing anxiety and pain for the mother, post-caesarean SSI may extend the period of hospitalisation by 4 days, and cost an additional £3,173 per patient, [Stanirowski, 2016].

A BMI over 30 kg/m^2 [Wloch, 2012; Eritty,2022] and diabetes – gestational or pre-existing Type 1 diabetes [Wloch, 2012] are recognised risk factors for SSI.

Preventing Caesarean Section Surgical Site Infections

Staphylococcus aureus causes over
40%
SSI infections

Up to
30%
of people in UK carry Staphylococcus

Decontamination

Staphylococcus aureus is a known risk factor for developing SSI and has been identified as the causative organism in over 40% of post-caesarean wound infections, [Wloch, 2012].

Up to 30% of people in the UK carry *Staphylococcus*, [Jeans, 2018] and NICE Guidelines [2019] suggest the use of a body wash "before procedures in which *Staphylococcus aureus* is a likely cause of a surgical site infection" as it "may reduce SSIs". Evidence suggests "any additional costs incurred …. are likely to be more than recouped by savings associated with a lower incidence of surgical site infections." [NICE, 2019].

Research supports the efficacy of preoperative decontamination with an octenidine-based antimicrobial. A large scale trial reported a three-fold reduction in the MSSA infection rate, after a 5 day decontamination regime which included octenisan® wash lotion, [Jeans, 2018].

Skin preparation prior to Caesarean Section surgery

The skin is a major source of pathogens causing SSI and pre-surgery skin preparation with antiseptic agents has been shown to reduce the risk of infection, [Al Maqbali, 2013].

NICE (2024) recommends the use of an alcohol-based chlorhexidine skin preparation before caesarean birth to reduce the risk of wound infections.

Following abdominal surgery, a study showed

significant improvements

in scar appearance, pain, skin elasticity, and incidence of scar hypertrophy

Post-operative wound care

NICE: Caesarean Birth (2024) offers advice on post-operative wound care, which includes daily wound cleansing and monitoring for signs of infection.

Due to the improved formulation of existing antiseptics with fewer side effects, wound antisepsis is increasingly being considered as an essential factor in the prevention, treatment and management of wound infection, [Barrigah-Benissan, 2022].

A study of 543 women undergoing elective or emergency caesarean section included the use of wound irrigation with octenidine solution as part of an infection prevention strategy, [Stanirowski, 2016].

Following abdominal surgery, a study of 45 patients showed significant improvements in scar appearance, pain, skin elasticity, and incidence of scar hypertrophy following management with octenidine-based hydrogel compared to conventional dry wound dressings, [Matiasek, 2018].

Best practice guidelines recommend cleaning the

periwound

area thoroughly but gently, using a skin-friendly cleanser

Periwound care

The skin surrounding a wound (the periwound area) is particularly vulnerable and although it may appear healthy, periwound complications frequently occur, [Bianchi, 2012].

Periwound damage can contribute to delayed wound healing and increased wound size, [Woo, 2017]. Best practice guidelines recommend cleaning the periwound area thoroughly but gently, using a skin-friendly cleanser (pH v4–6), with disposable moistened cloths or cleansing pads, [LeBlanc, 2021].

Community evaluation found the use of these mitts led to a

reduction

in unwarranted infections

Post – discharge wound care

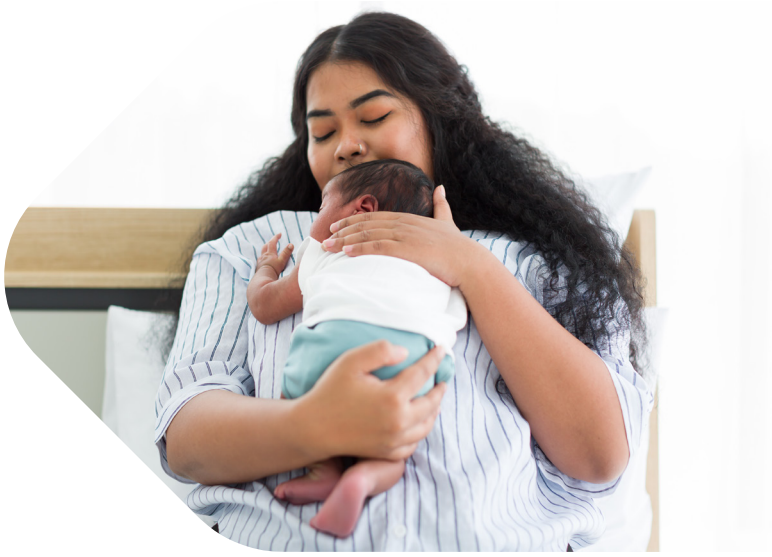
Many women are discharged 24 hours after a caesarean delivery [NHS UK, 2024], but most wound infections present in the community.

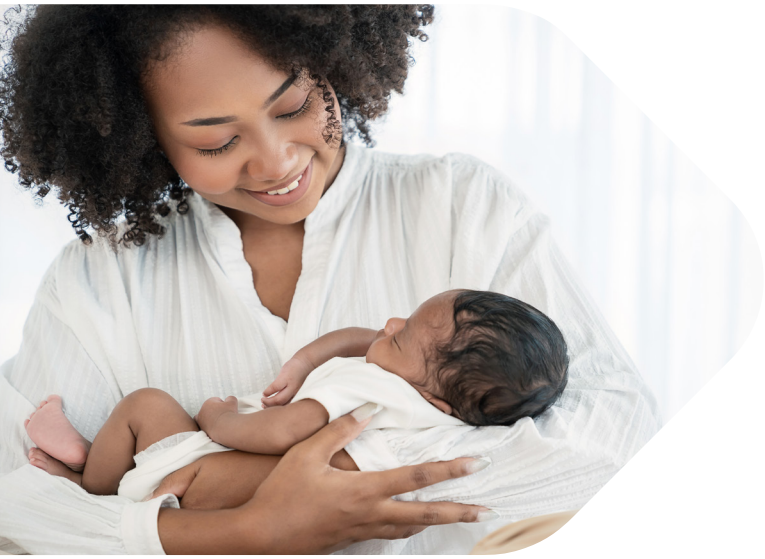
As part of periwound care, octenidine containing wash mitts could have a role, on intact skin, [Dhoonmoon, 2024]. A 12 month community evaluation found the use of these mitts led to a reduction in the prescription of antibiotics for wound infections, a reduction in unwarranted infections and improvements in the quality of care delivered, [Dhoonmoon, 2020].

Case Studies

Case Study 1

Expecting her first child, 32 year old Zoe was diagnosed as clinically obese with a BMI of 38, and therefore at increased risk of pregnancy complications. She was referred for Consultant-led care and closely monitored for pregnancy-related diabetes and hypertension. Zoe was advised to have an elective caesarean section at 40 weeks. Before admission, she followed a 5-day body-washing regime using octenisan® wash mitts. Following delivery of a baby boy, she was discharged home two days after surgery and continued using wash mitts as part of her periwound care. She found them easy to use, particularly in the skin folds around her caesarean wound site. Zoe and her baby did well and she is already following a gradual weight loss programme.





Case Study 2

Natasha went into spontaneous labour at 41 weeks with her second child. On admission, her baby was found to be in the breech position. Despite strong contractions, her labour progressed very slowly. Close monitoring indicated foetal distress; and the baby's heart rate fell below 100bpm. An emergency caesarean section was carried out within 30 minutes and a healthy baby girl was delivered. Daily woundcare included octenilin® irrigation solution and octenilin® wound gel. This regime continued after discharge and no post caesarean complications were recorded.

Case Study 3

Aisha, 28, had experienced difficulties with the vaginal delivery of her first two children. Whilst pregnant with her third child she requested a planned caesarean section, which her Trust agreed to. She used octenisan® body wash for 5 days before being admitted at 39 weeks. The caesarean section delivery of a baby boy was carried out under epidural anaesthetic. 24 hours later, Aisha returned home to the care of the community midwife. She used octenisan® wash mitts daily to keep the periwound skin clean.

Her scar healed quickly and Aisha regularly applied octenicare® repair creme to support skin regeneration and help reduce scarring.

Octenidine

Octenidine is a broad spectrum antimicrobial that is less susceptible to bacterial resistance [Spencer, 2013]; is effective in a short contact time at low concentrations, [Assadian, 2016]; and is the only antiseptic that remains active locally for up to 48 hours, [Malanovic 2020].

The octenidine-containing range

octenilin® wound irrigation solution removes wound coating and biofilm; and creates an ideal environment for wound healing.

octenilin® wound gel effectively moisturises and cleans wounds to support the natural healing process.

octenisan® wash lotion for mild and gentle whole body washing against MDRO.

octenisan® wash mitts are ready-to-use for cleaning and care of the skin; also for MDRO decontamination.

octenicare® repair creme contains panthenol to support the natural regeneration of the skin and is suitable for epithelialised wounds.

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Note

The terms mother and mothers have been used throughout this brochure, as this is the way that the majority of those who are pregnant and having a baby will identify. It also includes people whose gender identity does not correspond with their birth sex or who may have a non-binary identity.

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