

Table 1. The caesarean infection prevention (“CIP”) Bundle

Bundle element	Description	Patients applicable to	Evidence/ Rationale
1. Identification of women at higher risk of SSI post CS	Antenatal identification and education	Planned CS patients	[4, 34, 35]
2. Pre-operative site skin preparation protocol	No shaving, clip if required Wash the morning of procedure at the hospital prior to changing into hospital gown	Planned CS patients	[3-6]
	Neutral detergent bed bath wipes by midwives prior to CS	Emergency CS patients	
3. Antibiotic prophylaxis administered pre-operatively	Given pre-operatively, <i>(Cephazolin 2g ideally 15-60 minutes before knife to skin)</i> with the addition of Clindamycin 600mg IVI if known MRSA carrier or allergy to cephalosporins	Planned CS patients	[3, 6, 28, 29, 36-38]
	In category 1 emergency CS antibiotics administered intra-operatively as soon as possible.	Emergency CS patients	
4. Operative site skin preparation	2%-Chlorhexidine gluconate and 70% alcohol used for skin preparation in all CS with a mandatory 3-4 minute latency prior to surgical draping	All CS patients (exclude category 1 emergency CS where Povidone-iodine is used)	[3, 6, 34, 38-40]
5. Negative pressure wound therapy BMI>35 (PICO) BMI >40 (Prevena)	Applied in Operating suite at the time of wound closure and left in-situ for 7 days.	High-risk CS patients, classified as: CS patients with BMI >35.	[6, 31, 41-43]

Table 2: CS and SSI rates

	Pre-intervention	Post-intervention
Births	1002	929
C-S	346	364
C-S rate	34.5%	39.2%
BMI Class II (≥ 35 and < 40)	38	45
BMI Class III (≥ 40)	52	34
Infections	19	6
Infection rate	5.5%	1.6%
Infection rate (BMI ≥ 35 group)	12.2%	2.5%
Infections (BMI Class II)	3	0
Infections (BMI Class III)	8	2
Infection rate (BMI Class II)	7.9%	0%
Infection rate (BMI Class III)	15.4%	5.9%

Table 3: Demographic frequencies pre and post-intervention (Freq (%))

		All CS (<i>n</i> =735)		SSIs (<i>n</i> =25)	
		Pre-intervention <i>n</i> =365	Post-intervention <i>n</i> =370	Pre-intervention <i>n</i> =19	Post-intervention <i>n</i> =6
Maternal age	<20	21 (6%)	24 (7%)	3 (16%)	2 (33%)
	21-28	138 (38%)	123 (33%)	10 (53%)	1 (17%)
	29-35	146 (40%)	149 (40%)	3 (16%)	3 (50%)
	36-55	60 (16%)	74 (20%)	3 (16%)	0 (0%)
BMI group	<35	275 (75%)	291 (79%)	8 (42%)	4 (67%)
	>=35	90 (25%)	79 (21%)	11 (58%)	2 (33%)
Smoking status	Non-smoker	296 (81%)	284 (77%)	13 (68%)	3 (50%)
	Smoker	69 (19%)	86 (23%)	6 (32%)	3 (50%)
Diabetes	No	303 (83%)	307 (83%)	19 (100%)	3 (50%)
	Yes	61 (17%)	63 (17%)	0 (0%)	3 (50%)
Hypertension	No	325 (90%)	338 (92%)	14 (74%)	5 (83%)
	Yes	38 (10%)	31 (8%)	5 (26%)	1 (17%)

Table 4: Univariate results for patient characteristics and comorbidities

		Percentage of SSIs		Univariate difference pre and post-intervention
		Pre-intervention (n=710)	Post-intervention (n=25)	
All C-S		5.2%	1.6%	0.007
Maternal age	<20	14%	8%	No significant difference
	21-28	7%	1%	
	29-35	2%	2%	
	36-55	5%	0%	
BMI	<35	3%	1%	No significant difference
	>=35	12%	3%	
Smoking status	Non-smoker	4%	1%	No significant difference
	Smoker	9%	3%	
Diabetes	No	6%	1%	No significant difference
	Yes	0%	5%	
Hypertension	No	4%	1%	No significant difference
	Yes	13%	3%	

Table 5: Pre-intervention comparison between SSI and No SSI groups

Variable	All CS		Prob
	No SSI	SSI	
Maternal age (mean)	30	27	0.03
BMI (mean)	29	36	<0.01
Smoking status (prevalence)	21%	36%	0.1
Diabetes (prevalence)	17%	12%	0.5
Hypertension (prevalence)	9%	24%	0.02

Table 6: Multivariable regression results (adjusted for patient characteristics and comorbidities)

Variable	Class	Univariate		Multivariable	
		OR (95% CI)	Prob	OR (95% CI)	Prob
Pre/post-intervention	Post-intervention	0.30 (0.12, 0.76)	0.011	0.31 (0.12, 0.80)	0.016
Maternal age		0.91 (0.85, 0.98)	0.012	0.91 (0.84, 0.99)	0.021
BMI		1.11 (1.06, 1.17)	<0.0001	1.11(1.05, 1.16)	<0.0001
Smoking status	Yes	2.17 (0.94, 5.02)	0.069	2.4 (0.99, 6.0)	0.052
Diabetes	Yes	0.66 (0.20, 2.25)	0.509		
Hypertension	Yes	3.22 (1.24, 8.38)	0.016	2.3 (0.8, 6.5)	0.120

Table 7: Multivariable regression results for patients with BMI $\geq$ 35

Variable	Class	Multivariable	
		OR (95% CI)	Prob
Pre/post-intervention	Post-intervention	0.15 (0.03, 0.73)	0.019
Maternal age		1.0 (0.9, 1.1)	0.848
Smoking status	Yes	3.3 (1.0, 11.9)	0.059
Hypertension	Yes	1.4 (0.3, 5.7)	0.639