



Caesarean-Section Surgical Site Infection Surveillance

Annual report Appendix E

Cwm Taf University Health Board

Includes data from 01/01/2016 – 31/12/2016

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Section 1: Results

Surveillance form returns

Table 1.1 Number of inpatient, post-discharge and valid forms returned for the surveillance in 2016 for Cwm Taf UHB.

No. of inpatient forms returned	No. of expected post-discharge forms	No. of post-discharge forms returned (% forms returned)	No. of valid forms used for data analysis*	% of valid forms used for data analysis*
1081	1081	1028 (95.1)	1023	94.6 (1023/1081)

*Valid forms are forms where the SSI field is completed on the main (inpatient) form, or the infection data is subsequently updated at completion of a post-discharge form. A blank SSI field cannot be assumed to mean there is no infection, so these forms are considered invalid.

$$\% \text{ of valid forms} = \frac{\text{Number of valid forms analysed}}{\text{Number of inpatient forms received}} \times 100$$

Completion rates of surveillance forms

Details on the completion of the SSI field on the inpatient and post-discharge form for all Wales is shown in table 1.2.

The procedure date has not been included as a data item in table 1.2 and 1.3 since all data extractions are based on a record having a procedure date.

Table 1.2 % completion of the SSI field on the C-section surveillance form (inpatient and post-discharge) for Cwm Taf UHB.

Data Item	No. completed	No. expected	% complete
Inpatient SSI (Yes/No)	1065	1081	98.5
If Yes, SSI type	1	1	100.0
If Yes, Infection date	0	1	0.0
Post-discharge SSI* (Yes/No)	1026	1065	96.3
If Yes, Infection date	51	65	78.5
If Yes, SSI type	51	65	78.5

*Number expected is based on the number of post-discharge forms received.

Surveillance compliance

Table 1.3 shows the compliance of Wales in the mandatory C-section surveillance for 2016. The table includes the number of surveillance forms returned to Public Health Wales for 2016 and the number of valid surveillance forms returned (as detailed in table 1.1). The compliance figure is derived from the number of valid surveillance forms returned to Public Health Wales divided by the number of C-sections performed at the hospital.

Table 1.3 Coverage of the C-section SSI surveillance compared to procedures reported to PHW in 2016 for Cwm Taf UHB.

No. of surveillance forms returned to PHW	No. of valid surveillance forms returned to PHW*	No. of C sections reported to PHW	% compliance
1081	1023	1118	91.5

Figure 1.1 displays the compliance trend for 2008-2016. There was a period of over-compliance between 2011 and 2012, indicating the possibility of coding issues. The denominator for compliance is now provided by the hospital, rather than clinical coding data in PEDW. As a result, the drop in compliance from 2015 to 2016 could at least be partially attributed to this and reflect a truer value for compliance.

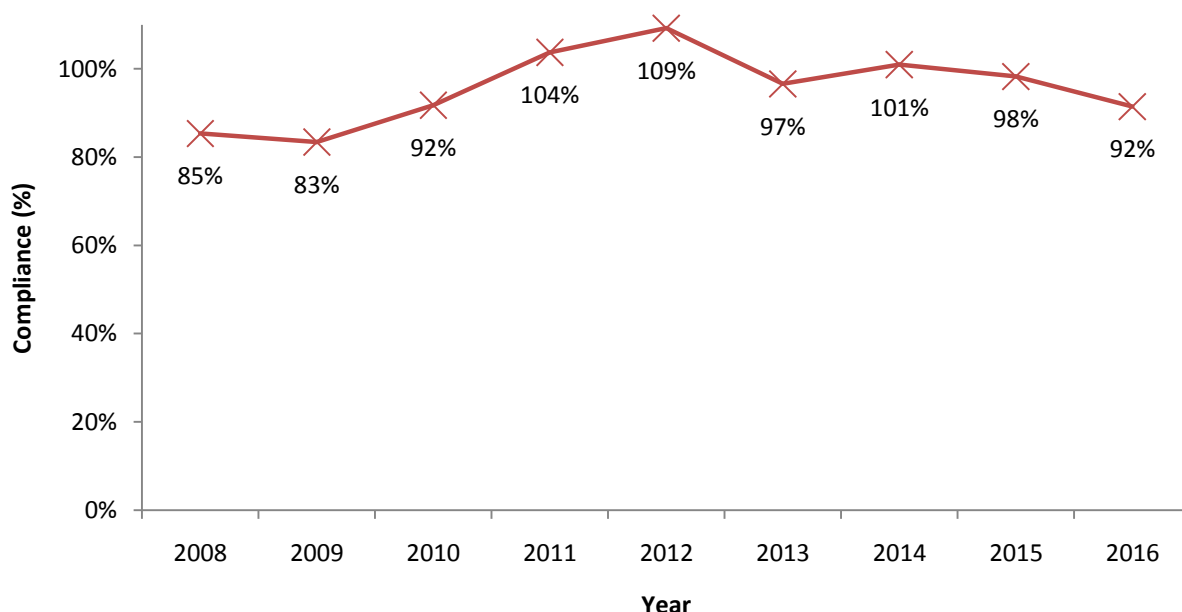


Figure 1.1 Trend rate for compliance from 2008 to 2016 for Cwm Taf UHB.

Summary:

94.6% of data received could be used for analysis.

Compliance has decreased since 2015, and is currently 92%.

Section 2: SSI rate

SSI rate calculation

Surgical site infection (SSI) rates in this report are calculated as the number of infections (inpatient and post-discharge) divided by the number of valid procedures, and reported as an infection rate per 100 procedures. Since the length of hospital stay after a C-section is generally between two and four days, the majority of SSIs will be captured post-discharge in the community.

Incidence of inpatient, post-discharge and overall SSI

Table 2.1 provides the inpatient and post-discharge SSI rates post C-section surgery. All rates are based on valid forms only.

Table 2.1 Incidence of inpatient and post-discharge SSIs in 2016 for Cwm Taf UHB.

	No. of procedures analysed	No. of SSI*	SSI rate (%)* (95% CI)
Inpatient	1019	1	0.10 (0.00-0.29)
Post-discharge	1019	62	6.08 (4.62-7.55)
Overall**	1019	63	6.18 (4.70-7.66)

*Figures based on valid surveillance forms only. This only includes procedures with either an SSI field completed on the inpatient form or where the infection data is updated post-discharge.

**Overall SSI rate is based on the valid forms rule as described in this document, and is not simply based on addition of the inpatient SSIs to the post-discharge SSIs.

Incidence of SSIs over time

It is important to note that initially not all health boards were participating in the surveillance, and some health boards were participating but with low compliance rates. Data became more reliable from 2010 onwards when all health boards were participating. Table 2.2 provides the overall SSI rate for 2010 – 2016 and broken down by elective and emergency procedures. Figure 2.1 provides the SSI trend over the same time period.

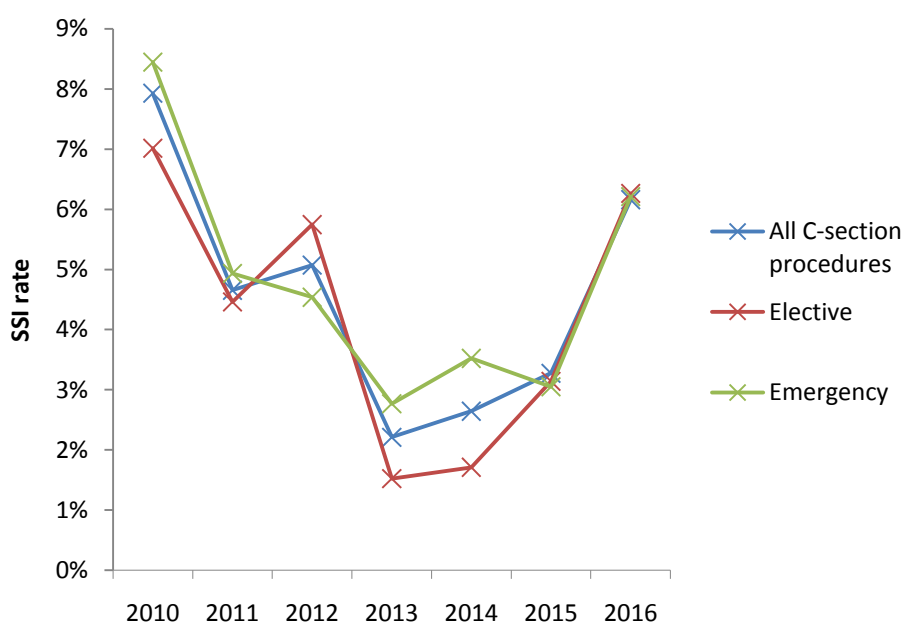


Figure 2.1 Overall, elective and emergency procedures SSI rates for 2010-2016 for Cwm Taf UHB.

Table 2.2 Overall SSI rate for 2010-2016 for Cwm Taf UHB.

Operation Type	Year	No. Procedures	No. SSI	%SSI (95% CI)
All C-section procedures	2016	1023	63	6.16 (4.69-7.63)
	2015	1038	34	3.28 (2.19-4.36)
	2014	1172	31	2.65 (1.73-3.56)
	2013	1175	26	2.21 (1.37-3.05)
	2012	1242	63	5.07 (3.85-6.29)
	2011	1203	56	4.66 (3.46-5.85)
	2010	1123	89	7.93 (6.35-9.51)
Elective	2016	495	31	6.26 (4.13-8.40)
	2015	446	14	3.14 (1.52-4.76)
	2014	468	8	1.71 (0.54-2.88)
	2013	460	7	1.52 (0.40-2.64)
	2012	470	27	5.74 (3.64-7.85)
	2011	426	19	4.46 (2.50-6.42)
	2010	442	31	7.01 (4.63-9.39)
Emergency	2016	483	30	6.21 (4.06-8.36)
	2015	557	17	3.05 (1.62-4.48)
	2014	653	23	3.52 (2.11-4.94)
	2013	650	18	2.77 (1.51-4.03)
	2012	661	30	4.54 (2.95-6.13)
	2011	689	34	4.93 (3.32-6.55)
	2010	592	50	8.45 (6.21-10.69)

Incidence of SSI by infection type

The type of SSI recorded on the surveillance form can be categorised into either superficial, deep seated or organ/space infections, which all have specific definitions. Table 2.3 breaks down the infections by type of SSI. Tables 2.4 and 2.5 show the overall infection rate and the post-discharge infection rate, broken down by SSI type.

The majority of infections at Prince Charles Hospital are deep seated infections (76.92% of infections), but these deep infections were reported **after** submission of the form in a single batch. This high proportion of deep infections is possible, but seems unlikely.

Table 2.3 Types of SSI for C-section procedures carried out in 2016 for Cwm Taf UHB.

SSI type	%
Superficial infections	55.56
Deep seated infections	38.10
Organ/space infections	4.76
Unknown	1.59

Table 2.4 Overall SSI rate (%) broken down by SSI type in 2016 for Cwm Taf UHB.

SSI type	No. SSI	% SSI (95% CI)
Superficial infections	35	3.43 (2.32-4.55)
Deep seated infections	24	2.36 (1.42-3.29)
Organ/Space infections	3	0.29 (0.00-0.63)
Unknown	1	0.10 (0.00-0.29)

Table 2.5 Post-discharge SSI rate (%) broken down by SSI type in 2016 for Cwm Taf UHB.

SSI type	No. SSI	% SSI (95% CI)
Superficial infections	25	2.45 (1.50-3.40)
Deep seated infections	23	2.26 (1.35-3.17)
Organ/Space infections	3	0.29 (0.00-0.63)
Unknown	11	1.08 (0.45-1.71)

Summary:

The SSI rate following C-section procedures in 2016 was 6.16% compared to 3.28% and 2.65% in 2015 and 2014, respectively.

Most common infection type is superficial (55.56% of infections).

Overall SSI rate, broken down by SSI type: 3.43% superficial, 2.36% deep seated, and 0.29% organ/space infections.

The overall SSI rate, the elective SSI rate and the emergency SSI rate have all increased from 2015.

Section 3: General demographics

This section gives information about the age groups and BMI of patients and the number of SSIs associated with each category.

Figure 3.1 provides a pyramid plot showing the age and SSI rates and table 3.1 provides the number of SSI by the specified age groups. Table 3.2 displays the number of SSIs by BMI category.

Incidence of SSI by age

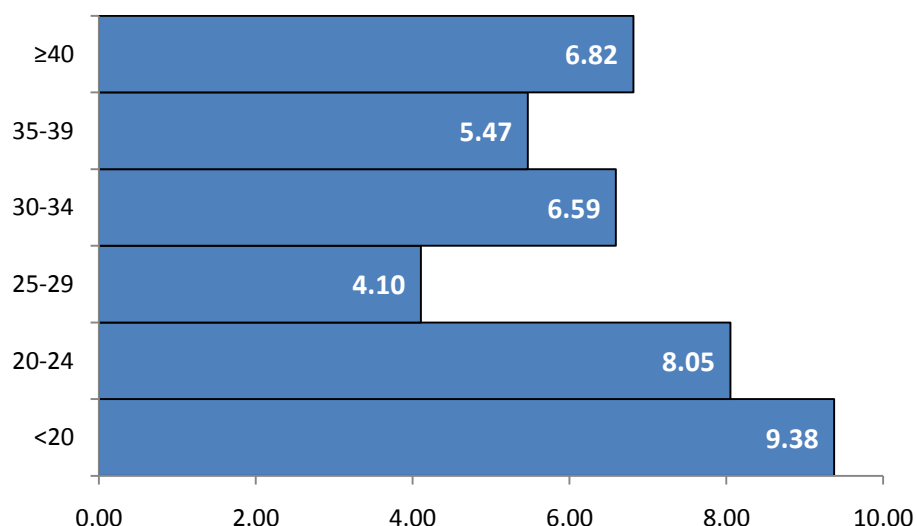


Figure 3.1 Pyramid plot showing age and corresponding SSI rate (%) for Cwm Taf UHB.

Table 3.1 C-section SSI by age in 2016. Procedures where age information was not provided were excluded for Cwm Taf UHB.

Age group	No. of valid procedures	No. of SSI	% SSI (95% CI)
<20	32	3	9.38 (0.00-19.47)
20-24	149	12	8.05 (3.68-21.42)
25-29	268	11	4.10 (1.73-6.48)
30-34	273	18	6.59 (3.65-9.54)
35-39	128	7	5.47 (1.53-9.41)
≥40	44	3	6.82 (0.00-14.27)

Incidence of SSI by BMI

Table 3.2 C-section SSI rates by BMI in 2016 for Cwm Taf UHB. Procedures where BMI information was not provided were excluded.

BMI category		No. of procedures	No. of SSI	% SSI (95% CI)
Underweight	<18.5	6	0	0.00 (0.00-0.00)
Healthy weight	18.5-24.9	224	8	3.57 (1.14-6.00)
Overweight	25.0-29.9	223	13	5.83 (2.75-8.90)
Obese	≥30.0	401	32	7.98 (5.33-10.63)

Summary:

There appears to be no overall trend for SSI rates when comparing between age groups.

There is a general increase in SSI rates as the weight of the patient increases.

Section 4: Details of the surgical procedure

The following section provides SSI rates associated with specific variables, including the type of operation (elective or emergency), use of and timing of antibiotic prophylaxis and skin closure types.

Incidence of SSI following elective and emergency procedures

Table 4.1 C-section SSI in elective and emergency surgical procedures in 2016 for Cwm Taf UHB. Procedures where this information was not provided were excluded.

Operation type	No. of procedures	No. of SSI	% SSI (95% CI)
Elective procedure	495	31	6.26 (4.13-8.40)
Emergency procedure	483	30	6.21 (4.06-8.36)

Incidence of SSI by timing of antibiotic prophylaxis

Table 4.2.1 Percentage (%) of C-section procedures by timing of antibiotic prophylaxis in 2016 for Cwm Taf UHB. Procedures where no antibiotics given were excluded.

Timing of antibiotic prophylaxis	No. of procedures	%
Prior to incision	857	94.59
After incision	49	5.41

Table 4.2.2 C-section SSI by antibiotic prophylaxis in 2016 for Cwm Taf UHB. Procedures where no antibiotic information given were excluded.

Was prophylactic antibiotic given?	No. of procedures	No. of SSI	% SSI (95% CI)
Yes, prior to incision	857	52	6.07 (4.47-7.67)
Yes, after incision	49	3	6.12 (0.00-12.84)
No	3	1	33.33 (0.00-86.68)

Incidence of SSI by wound closure type

Table 4.3 Percentage (%) of C-section procedures by type of skin closure in 2016 for Cwm Taf UHB. Procedures where this information was not available were excluded.

Type of wound closure	No. of procedures	%
Dissolvable suture	656	65.3
Removable suture	289	28.8
Staples	60	6.0

Table 4.4 C-section SSI rates by type of skin closure in 2016 for Cwm Taf UHB. Procedures where closure type information is missing were excluded.

Type of wound closure	No. Of procedures	No. Of SSI	% SSI (95% CI)
Dissolvable suture	656	40	6.1 (4.27-7.93)
Removable suture	289	17	5.88 (3.17-8.60)
Staples	60	5	8.33 (1.34-15.33)

Summary:

Antibiotic prophylaxis was given to 99.7% of patients.

94.59% of patients received their antibiotic prophylaxis prior to incision, with the remainder receiving antibiotics after incision.

94.0% of wounds were closed with sutures, with the remaining few using staples. Most sutures used were of the dissolvable variety.