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ANNUAL REPORT: 2015

Caesarean-Section Surgical Site Infection Surveillance

(Includes data from 01/01/2015 - 31/12/2015)

APPENDIX D:

Cardiff and the Vale

University Health Board

VERSION 1

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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 2015 for Cardiff and the Vale 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*
913	913	907 (99.3)	904	99.0 (904/913)

The SSI rate provided throughout this report is based on the overall infection rate (infections captured before or after discharge) unless otherwise stated. To obtain the overall SSI rate, only valid forms were used in data analysis.

*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. Table 1.3 displays other data items on the inpatient and post-discharge form that have a completion of less than 85%.

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.

All data items were completed to over 85%.

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

Data Item	No. completed	No. expected	% complete
Inpatient SSI (Yes/No)	907	913	99.3
If Yes, SSI type	7	7	100.0
If Yes, Infection date	7	7	100.0
Post-discharge SSI* (Yes/No)	904	907	99.7
If Yes, Infection date	89	90	98.9
If Yes, SSI type	90	90	100.0

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

Surveillance compliance

Table 1.4 shows the compliance of Wales in the mandatory C-section surveillance for 2015. The table includes the number of surveillance forms returned to WHAIP for 2015 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 WHAIP divided by the number of C-sections reported to NWIS.

Table 1.4 Coverage of the C-section SSI surveillance compared to procedures reported to NWIS in 2015 for Cardiff and the Vale UHB.

No. of surveillance forms returned to WHAIP	No. of valid surveillance forms returned to WHAIP*	No. of C sections reported to PEDW	% compliance
913	904	1144	79.0

Figure 1.1 displays the compliance trend for 2008-2015. With the exception of a brief period of overcompliance in 2012, compliance has remained below 80% and needs improvement.

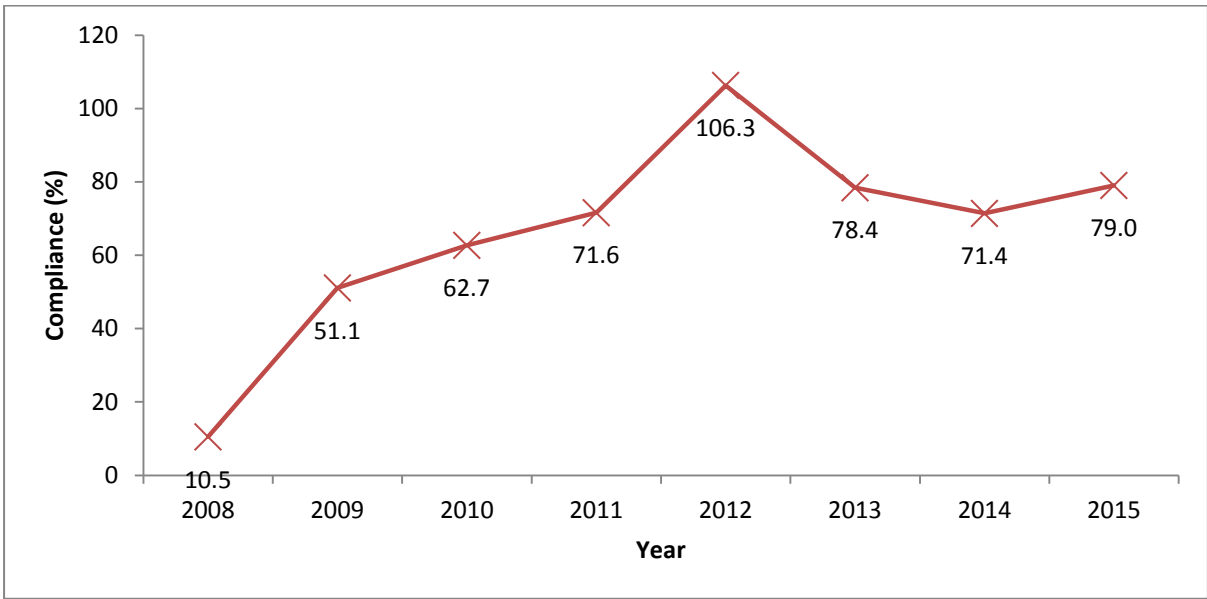


Figure 1.1 Trend rate for compliance from 2008 to 2015 for Cardiff and the Vale UHB.

Summary:

99.0% of data received could be used for analysis.

All data items on the form were completed well (over 85% completion).

Compliance is in need of improvement.

Section 2: SSI rate

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.

The SSI rates calculated in the remainder of this report are based on an overall rate unless otherwise specified. 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.

Table 2.1 Incidence of inpatient and post-discharge SSIs in 2015 for Cardiff and the Vale UHB.

	No. of procedures analysed	No. of SSI*	SSI rate (%)* (95% CI)
Inpatient	907	7	0.77 (0.20-1.34)
Post-discharge	904	90	9.96 (8.08-12.10)
Overall**	904	97	10.73 (8.71-12.75)

*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 – 2015 and broken down by elective and emergency procedures. Figure 2.1 provides the SSI trend over the same time period.

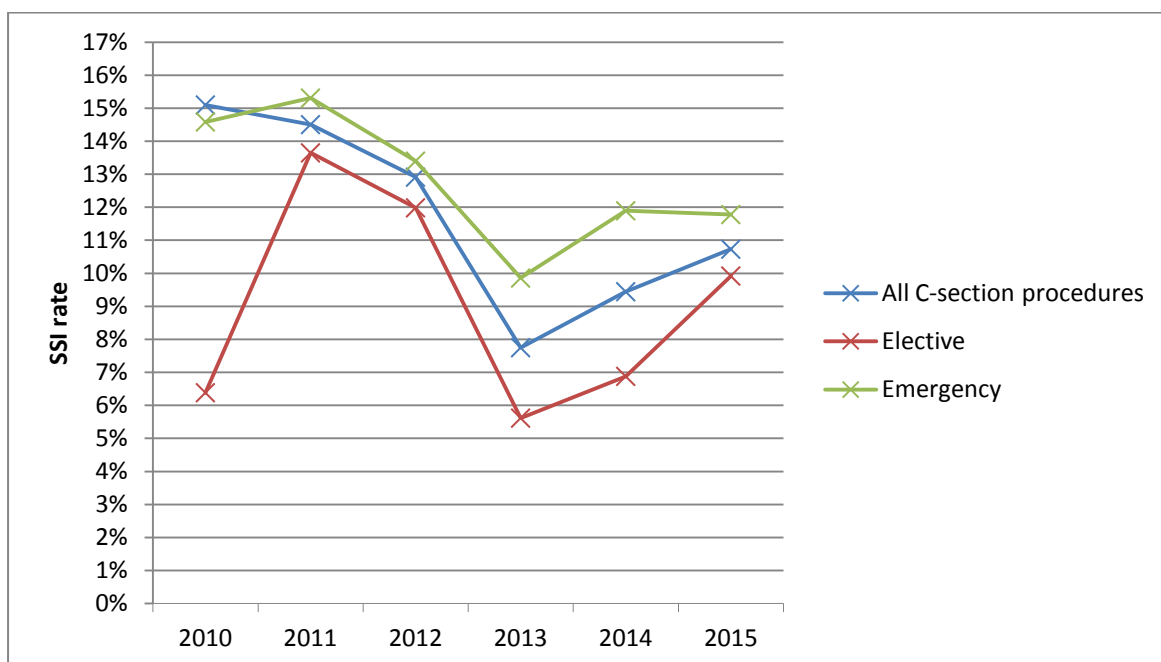


Figure 2.1 Overall, elective and emergency procedures SSI rates for 2010-2015 for Cardiff and the Vale UHB.

Table 2.2 Overall SSI rate for 2010-2015 for Cardiff and the Vale UHB.

Operation type	Year	No. of procedures	No. of SSI	%SSI (95% CI)
All C-section procedures	2015	904	97	10.73 (8.71-12.75)
	2014	826	78	9.44 (7.45-11.44)
	2013	968	75	7.75 (6.06-9.43)
	2012	1030	133	12.91 (10.86-14.96)
	2011	924	134	14.5 (12.23-16.77)
	2010	881	133	15.1 (12.73-17.46)
Elective	2015	494	49	9.92 (7.28-12.56)
	2014	407	28	6.88 (4.42-9.34)
	2013	463	26	5.62 (3.52-7.71)
	2012	484	58	11.98 (9.09-14.88)
	2011	425	58	13.65 (10.38-16.91)
	2010	924	59	6.39 (4.81-7.96)
Emergency	2015	399	47	11.78 (8.62-14.94)
	2014	412	49	11.89 (8.77-15.02)
	2013	487	48	9.86 (7.21-12.50)
	2012	530	71	13.4 (10.5-16.3)
	2011	490	75	15.31 (12.12-18.49)
	2010	720	69	9.58 (7.43-11.73)

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.

Table 2.3 Types of SSI for C-section procedures carried out in 2015 for Cardiff and the Vale UHB.

SSI type	%
Superficial infections	88.7
Deep seated infections	8.3
Organ/space infections	2.1
Unknown	1.0

Table 2.4 Overall SSI rate (%) broken down by SSI type in 2015 for Cardiff and the Vale UHB.

SSI type	No. SSI	% SSI (95% CI)
Superficial infections	86	9.51 (7.60-11.43)
Deep seated infections	8	0.88 (0.27-1.50)
Organ/Space infections	2	0.22 (0.00-0.53)
Unknown	1	0.11 (0.00-0.33)

Table 2.5 Post-discharge SSI rate (%) broken down by SSI type in 2015 for Cardiff and the Vale UHB.

SSI type	No. SSI	% SSI (95% CI)
Superficial infections	79	8.74 (6.9-10.58)
Deep seated infections	8	0.88 (0.27-1.50)
Organ/Space infections	2	0.22 (0.00-0.53)
Unknown	0	0.00 (0.00-0.41)

Summary:

The SSI rate following C-section procedures in 2015 was 10.7% compared to 9.4% and 7.8% in 2014 and 2013, respectively.

Most common infection type is superficial (88.7% of infections).

Overall SSI rate, broken down by SSI type: 9.5% superficial, 0.9% deep seated, and 0.2% organ/space infections.

Overall and emergency SSI rates have increased since 2013, but are lower than the rate in 2010. Elective rates show the same pattern with the exception of 2010, when the elective rate was lower than 7%.

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

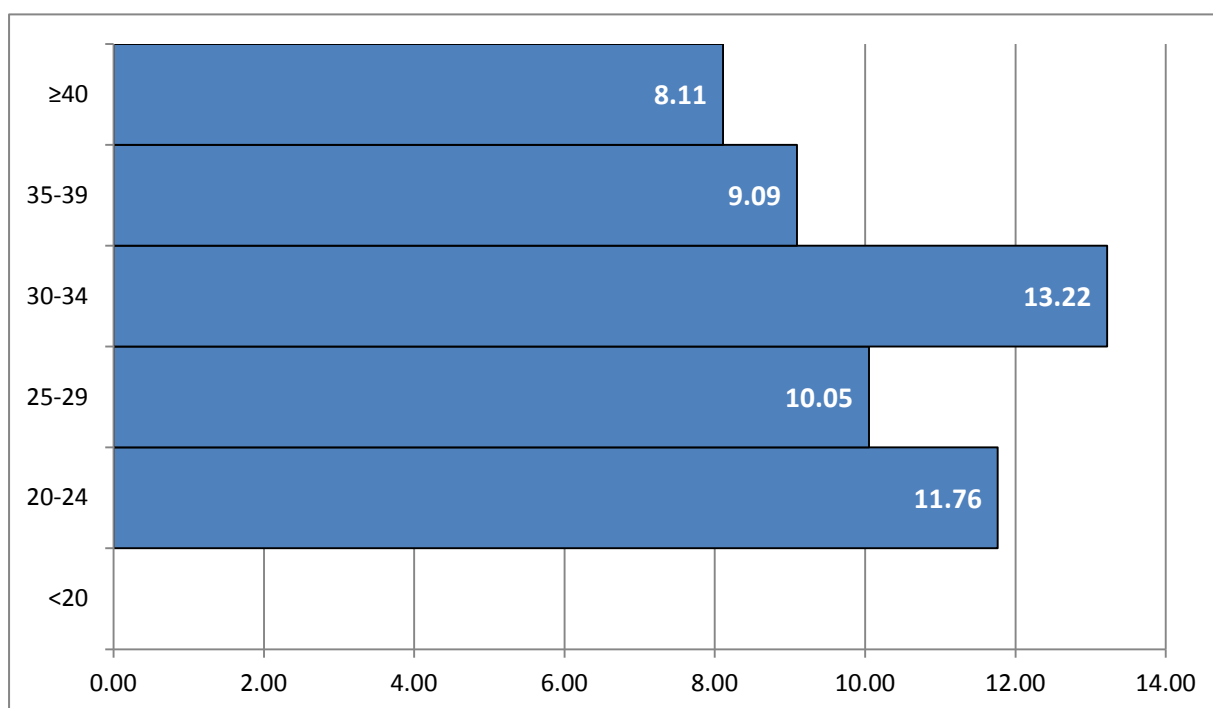


Figure 3.1 Pyramid plot showing age and corresponding SSI rate for Cardiff and the Vale UHB (%).

Table 3.1 C-section SSI by age in 2015 for Cardiff and the Vale UHB. Procedures where age information was not provided were excluded.

Age group	No. of valid procedures	No. of SSI	% SSI (95% CI)
<20	9	0	0.00 (0.00-0.00)
20-24	85	10	11.76 (4.92-18.61)
25-29	199	20	10.05 (5.87-14.23)
30-34	295	39	13.22 (9.36-17.09)
35-39	242	22	9.09 (5.47-12.71)
≥40	74	6	8.11 (1.89-14.33)

Incidence of SSI by BMI

Table 3.2 C-section SSI rates by BMI in 2015 for Cardiff and the Vale UHB. Procedures where BMI information was not provided were excluded.

BMI category		No. of procedures	No. of SSI	% SSI (95% CI)
Underweight	<18.5	12	1	8.33 (0.00-23.97)
Healthy weight	18.5-24.9	278	20	7.19 (4.16-10.23)
Overweight	25.0-29.9	256	25	9.77 (6.13-13.4)
Obese	≥30.0	358	51	14.25 (10.63-17.87)

Summary:

There were no significant differences in the SSI rate between differing age groups, and no SSIs were recorded in patients under the age of 20.

There is no significant difference in the SSI rate between the different BMI groups.

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 2015 for Cardiff and the Vale UHB. Procedures where this information was not provided were excluded.

Operation type	No. of procedures	No. of SSI	% SSI (95% CI)
Elective procedure	494	49	9.92 (7.28-12.56)
Emergency procedure	399	47	11.78 (8.62-14.94)

Incidence of SSI by timing of antibiotic prophylaxis

Table 4.2.1 Percentage (%) of C-section procedures by timing of antibiotic prophylaxis in 2015 for Cardiff and the Vale UHB. Procedures where no antibiotics given were excluded.

Timing of antibiotic prophylaxis	No. of procedures	%
Prior to incision	812	96.9
After incision	26	3.1

Table 4.2.2 C-section SSI by antibiotic prophylaxis in 2015 for Cardiff and the Vale 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	812	85	10.47 (8.36-12.57)
Yes, after incision	26	3	11.54 (0.00-23.82)
No	7	1	14.29 (0.00-40.21)

Incidence of SSI by wound closure type

Table 4.3 Percentage (%) of C-section procedures by type of skin closure in 2015 for Cardiff and the Vale UHB. Procedures where this information was not available were excluded.

Type of wound closure	No. of procedures	%
Dissolvable suture	677	77.0
Removable suture	57	6.5
Staples	145	16.5

Table 4.4 C-section SSI rates by type of skin closure in 2015 for Cardiff and the Vale 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	677	65	9.60 (7.38-11.82)
Removable suture	57	6	10.53 (2.56-18.49)
Staples	145	23	15.86 (9.92-21.81)

Summary:

Antibiotic prophylaxis was given to 99.2% of patients.

96.9% of patients received their antibiotic prophylaxis prior to incision, with the remainder receiving antibiotics after incision.

83.5% of wounds were closed with sutures, with the remaining few using staples. Most sutures used were of the dissolvable variety.