



Caesarean-Section Surgical Site Infection Surveillance

Annual report Appendix F

Hywel Dda University Health Board

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

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Contents

SECTION 1: RESULTS	3
SURVEILLANCE FORM RETURNS	3
COMPLETION RATES OF SURVEILLANCE FORMS	3
SURVEILLANCE COMPLIANCE.....	4
<i>Summary:</i>	4
SECTION 2: SSI RATE	5
SSI RATE CALCULATION	5
INCIDENCE OF INPATIENT, POST-DISCHARGE AND OVERALL SSI	5
INCIDENCE OF SSIs OVER TIME.....	5
INCIDENCE OF SSI BY INFECTION TYPE.....	7
<i>Summary:</i>	7
SECTION 3: GENERAL DEMOGRAPHICS	8
INCIDENCE OF SSI BY AGE	8
INCIDENCE OF SSI BY BMI	9
<i>Summary:</i>	9
SECTION 4: DETAILS OF THE SURGICAL PROCEDURE	10
INCIDENCE OF SSI FOLLOWING ELECTIVE AND EMERGENCY PROCEDURES	10
INCIDENCE OF SSI BY TIMING OF ANTIBIOTIC PROPHYLAXIS	10
INCIDENCE OF SSI BY WOUND CLOSURE TYPE	11
<i>Summary:</i>	11

Section 1: Results

Surveillance form returns

Table 1.1 Number of inpatient, post-discharge and valid forms returned for the surveillance in 2016 for Hywel Dda 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*
964	964	962 (99.8)	962	99.8 (962/964)

*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 Hywel Dda UHB.

Data Item	No. completed	No. expected	% complete
Inpatient SSI (Yes/No)	962	964	99.8
If Yes, SSI type	0	1	0.0
If Yes, Infection date	1	1	100.0
Post-discharge SSI* (Yes/No)	962	962	100.0
If Yes, Infection date	35	36	97.2
If Yes, SSI type	36	36	100.0

*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 Hywel Dda UHB.

No. of surveillance forms returned to PHW	No. of valid surveillance forms returned to PHW*	No. of C sections reported to PHW	% compliance
964	962	985	97.7

Figure 1.1 displays the compliance trend for 2008-2016. There was a period of over-compliance during 2015, 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.

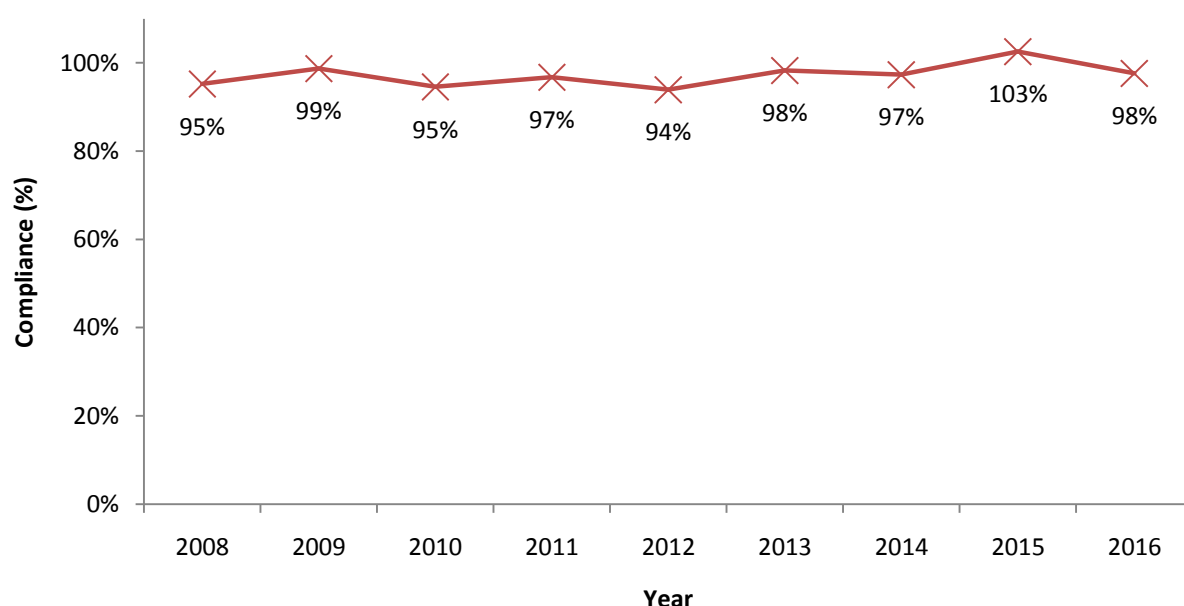


Figure 1.1 Trend rate for compliance from 2008 to 2016 for Hywel Dda UHB.

Summary:

99.8% of data received could be used for analysis.

Compliance has decreased since 2015, and is currently 98%.

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 Hywel Dda UHB.

	No. of procedures analysed	No. of SSI*	SSI rate (%)* (95% CI)
Inpatient	959	1	0.10 (0.00-0.31)
Post-discharge	959	36	3.75 (2.55-4.96)
Overall**	959	37	3.86 (2.64-5.08)

*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 Hywel Dda UHB.

Table 2.2 Overall SSI rate for 2010-2016 for Hywel Dda UHB.

Operation Type	Year	No. Procedures	No. SSI	%SSI (95% CI)
All C-section procedures	2016	962	37	3.85 (2.63-5.06)
	2015	999	18	1.80 (0.98-2.63)
	2014	932	27	2.90 (1.82-3.97)
	2013	921	35	3.80 (2.57-5.04)
	2012	949	59	6.22 (4.68-7.75)
	2011	879	55	6.26 (4.66-7.86)
	2010	978	68	6.95 (5.36-8.55)
Elective	2016	440	18	4.09 (2.24-5.94)
	2015	448	8	1.79 (0.56-3.01)
	2014	393	13	3.31 (1.54-5.08)
	2013	405	13	3.21 (1.49-4.93)
	2012	423	23	5.44 (3.28-7.60)
	2011	395	14	3.54 (1.72-5.37)
	2010	384	22	5.73 (3.40-8.05)
Emergency	2016	521	18	3.45 (1.89-5.02)
	2015	551	10	1.81 (0.70-2.93)
	2014	538	14	2.60 (1.26-3.95)
	2013	515	22	4.27 (2.53-6.02)
	2012	519	35	6.74 (4.59-8.90)
	2011	481	41	8.52 (6.03-11.02)
	2010	587	44	7.50 (5.37-9.63)

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 2016 for Hywel Dda UHB.

SSI type	%
Superficial infections	91.89
Deep seated infections	2.70
Organ/space infections	0.00
Unknown	5.41

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

SSI type	No. SSI	% SSI (95% CI)
Superficial infections	34	3.55 (2.37-4.72)
Deep seated infections	1	0.10 (0.00-0.31)
Organ/Space infections	0	0.00 (0.00-0.00)
Unknown	2	0.21 (0.00-0.50)

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

SSI type	No. SSI	% SSI (95% CI)
Superficial infections	34	3.55 (2.37-4.72)
Deep seated infections	1	0.10 (0.00-0.31)
Organ/Space infections	0	0.00 (0.00-0.00)
Unknown	1	0.10 (0.00-0.31)

Summary:

The SSI rate following C-section procedures in 2016 was 3.85% compared to 1.80% and 2.90% in 2015 and 2014, respectively.

Most common infection type is superficial (91.89% of infections).

Overall SSI rate, broken down by SSI type: 3.55% superficial, 0.10% deep seated, and 0.00% 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

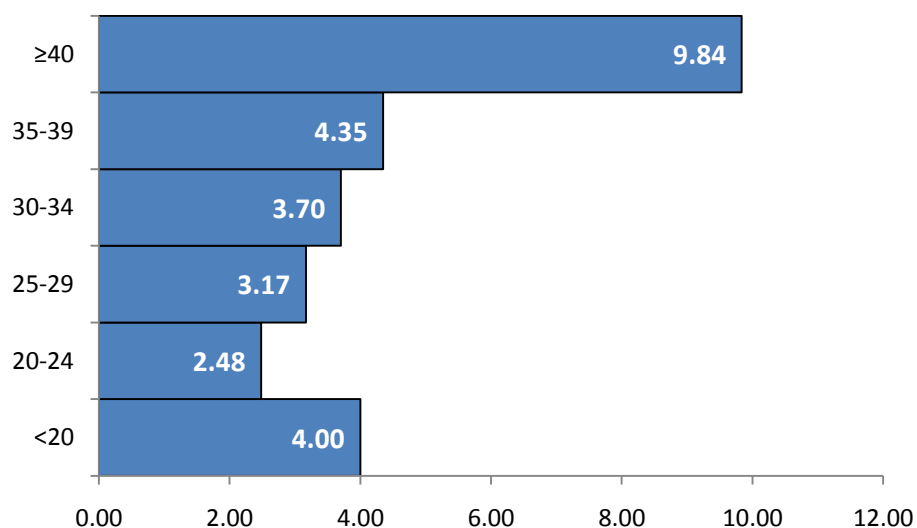


Figure 3.1 Pyramid plot showing age and corresponding SSI rate (%) for Hywel Dda UHB.

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

Age group	No. of valid procedures	No. of SSI	% SSI (95% CI)
<20	25	1	4.00 (0.00-11.68)
20-24	161	4	2.48 (0.08-4.89)
25-29	284	9	3.17 (1.13-5.21)
30-34	270	10	3.70 (1.45-5.96)
35-39	161	7	4.35 (1.20-7.50)
≥40	61	6	9.84 (2.36-17.31)

Incidence of SSI by BMI

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

BMI category		No. of procedures	No. of SSI	% SSI (95% CI)
Underweight	<18.5	10	1	10.00 (0.00-28.59)
Healthy weight	18.5-24.9	265	8	3.02 (0.96-5.08)
Overweight	25.0-29.9	340	12	3.53 (1.57-5.49)
Obese	≥30.0	347	16	4.61 (2.40-6.82)

Summary:

There appears to be no overall trend for SSI rates when comparing between age groups, with the exception of over 40s, who have a substantially increased SSI rate.

There is a general increase in SSI rates as the weight of the patient increases. The number of procedures on underweight patients was too small to draw any conclusions from.

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 Hywel Dda UHB. Procedures where this information was not provided were excluded.

Operation type	No. of procedures	No. of SSI	% SSI (95% CI)
Elective procedure	440	18	4.09 (2.24-5.94)
Emergency procedure	521	18	3.45 (1.89-5.02)

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 Hywel Dda UHB. Procedures where no antibiotics given were excluded.

Timing of antibiotic prophylaxis	No. of procedures	%
Prior to incision	848	89.36
After incision	101	10.64

Table 4.2.2 C-section SSI by antibiotic prophylaxis in 2016 for Hywel Dda 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	848	29	3.42 (2.20-4.64)
Yes, after incision	101	8	7.92 (2.65-13.19)
No	1	0	0.00 (0.00-0.00)

Incidence of SSI by wound closure type

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

Type of wound closure	No. of procedures	%
Dissolvable suture	887	92.8
Removable suture	56	5.9
Staples	13	1.4

Table 4.4 C-section SSI rates by type of skin closure in 2016 for Hywel Dda 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	887	35	3.95 (2.66-5.23)
Removable suture	56	2	3.57 (0.00-8.43)
Staples	13	0	0.00 (0.00-0.00)

Summary:

Antibiotic prophylaxis was given to 99.9% of patients.

89.36% of patients received their antibiotic prophylaxis prior to incision, with the remainder receiving antibiotics after incision.

98.6% of wounds were closed with sutures, with the remaining few using staples. Most sutures used were of the dissolvable variety.