

# HARP

Healthcare Associated Infection, Antimicrobial  
Resistance & Prescribing Programme

## Caesarean Birth Surgical Site Infection Surveillance

**2024 Annual Report:**

All Wales

Includes data from 01/01/2024 – 31/12/2024

Version 1

Issued: 18/09/2025

The Healthcare Associated Infection, Antimicrobial Resistance and Prescribing Programme (HARP) can be accessed via the Public Health Wales website at:

<https://phw.nhs.wales/services-and-teams/antibiotics-and-infections/healthcare-associated-infection-hai-surveillance/>

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We are grateful to the obstetric clinical teams, midwifery teams, infection control teams, and audit teams from all participating hospitals for continuing to provide surveillance data to Public Health Wales.

## Report Authors

The HARP Analytical Team in conjunction with the Communicable Disease Surveillance Centre (CDSC).

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## CONTENTS

SUMMARY .....	3
INTRODUCTION.....	4
DATA INTERPRETATION.....	5
SECTION 1: DATA COMPLETENESS.....	6
<b>Compliance</b> .....	6
<b>Completion Rates of Surveillance Forms</b> .....	6
<b>Incidence of Early Onset, Late Onset, and Overall SSI</b> .....	7
<b>Annual SSI Rates</b> .....	8
<b>Incidence of SSI by Infection Type</b> .....	10
SECTION 3: DEMOGRAPHICS.....	11
<b>Incidence of SSI by Age</b> .....	11
<b>Incidence of SSI by BMI</b> .....	12
<b>Incidence of SSI by Number of Previous C-births</b> .....	13
SECTION 4: DETAILS OF THE SURGICAL PROCEDURE.....	14
<b>Incidence of SSI by Procedure Type</b> .....	14
<b>Incidence of SSI by Antibiotic Prophylaxis</b> .....	15
<b>Incidence of SSI by Skin Closure Type</b> .....	16
SECTION 5: DETAILS OF THE MICROBIOLOGICAL RESULTS.....	20
SECTION 6: POST-PROCEDURE DETAILS & ONSET OF INFECTION.....	21
<b>Length of Stay in Hospital</b> .....	21
<b>Time to Onset of Infection</b> .....	22
<b>Anonymised Hospital SSI Rates</b> .....	23
DISCUSSION .....	24
REFERENCES.....	26

## SUMMARY

NOTE: This report refers to the procedures as Caesarean Births (C-Birth), following discussion with the Caesarean Birth Steering Group.

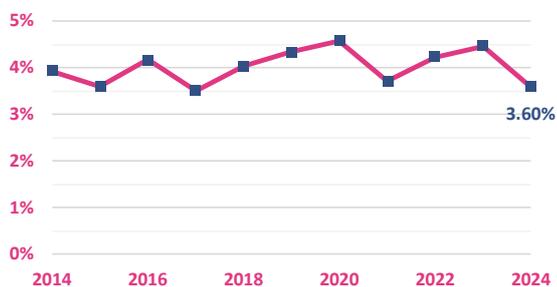
NOTE: This report contains data relating to Caesarean Births among women and pregnant people. Where the term woman/women are used throughout the text, it is intended to be inclusive of all pregnant people.

NOTE: The information in this annual report may differ from that found in the C-birth quarterly reports. This annual report should be used when quoting annual figures and for comparison across countries.

NOTE: This report contains data for 2019-2022, where the COVID-19 pandemic may have impacted data quality and reporting of C-birth SSIs.

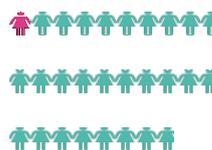
NOTE: Data submitted by Aneurin Bevan University Health Board is limited to January to September. Their data has been excluded from Sections 3,4 and 6 due to the limited information provided for procedures without a surgical site infection, SSI.

### SSI Rate



**1 in 28**

mothers had an SSI attributable to their C section procedure



**8.27%**

reduction in SSI rate since 2014, which equates to

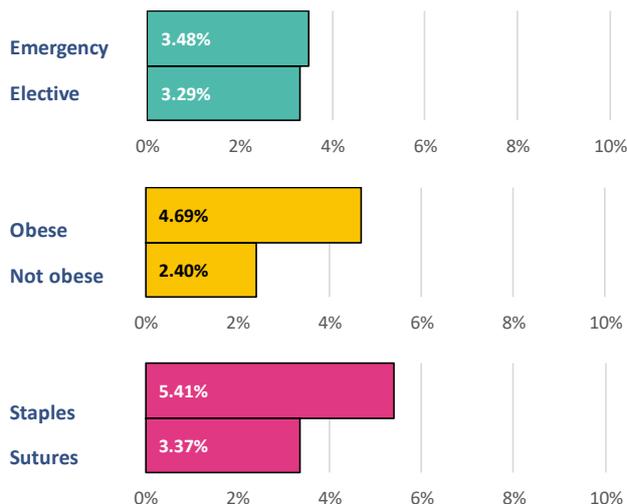
**3223**

infections prevented (based on 2014 rates)

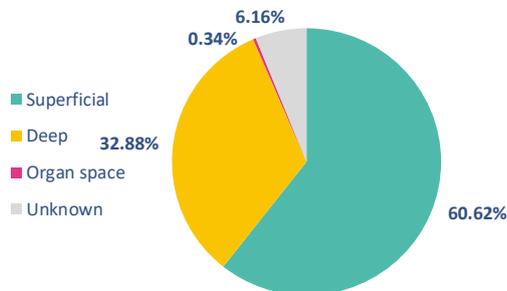
### Compliance



### Risk Factors



### Infection Type



9308 procedures were performed in 2024 and of these, 91.73% were valid forms that could be used for analysis (n=8538).

There were 307 SSIs reported in 2024, which equates to an SSI rate of 3.60%. 97 of these were complicated infections (deep or organ space), approximately 31.60% of all infections.

54.76% of procedures performed in 2024 were emergencies. The SSI rate in emergency procedures was not significantly higher than elective procedures.

## INTRODUCTION

The Healthcare Associated Infection, Antimicrobial Resistance and Prescribing Programme (HARP) team at Public Health Wales (PHW), Health Protection were instructed by the Welsh Government to develop and support the implementation of surveillance following Caesarean birth (C-birth) procedures undertaken in NHS hospitals in Wales. This process has been mandatory since January 2006.

Surgical Site Infection (SSI) is an important area for surveillance and remains a complication of surgery where human and financial costs are high (Plowman, 2000; Jenks, Laurent, McQuarry & Watkins, 2014). Additionally, most infections are preventable (National Institute for Health and Care Excellence, 2019). An SSI is one of most common complications following a C-birth (Zuarez-Easton et al. 2017; Zejnullahu et al. 2019).

Serious patient consequences can result from SSIs, including pain, suffering and, on some occasions, they require additional surgical interventions (Sykes, Brodribb, McLaws, & McGregor, 2005). It is important to recognise that SSIs can range from a relatively trivial wound discharge with no other complications, to a life-threatening condition. Other clinical outcomes of SSIs include poor scars that are cosmetically unacceptable, persistent pain and itching, restriction of movement and a significant impact on emotional wellbeing.

This report includes data captured both during hospital stay and post-discharge within the community. The surveillance incorporates data collected by clinical teams and midwives and uses internationally agreed definitions (Horan, Gaynes, Martone, Jarvis, & Emori, 1992), allowing Welsh data to be compared with and incorporated into other international databases, such as the European Centre for Disease Prevention and Control (ECDC) European SSI database. This report details results obtained for surveillance data captured in 2024.

## DATA INTERPRETATION

SSI rates in this report are calculated as the number of infections (inpatient and post-discharge) as a proportion of valid procedures. This is reported as a rate per 100 procedures.

$$SSI\ rate = \frac{\textit{number of SSIs}}{\textit{number of valid procedures}} \times 100\%$$

A valid procedure is one where an SSI is recorded, or one where there is confirmation of no SSI in both inpatient and post-discharge SSI fields. “Number of procedures” refers only to valid procedures, unless otherwise specified.

In keeping with the regular reports, all SSI rates reported in this document are those that occurred up to 14 days post-procedure. Due to the different discharge policies and treatment plans in place at all Health Boards, we are confident in the consistency of rates up to 14 days, but we are unable to guarantee consistency between hospitals after this point.

## SECTION 1: DATA COMPLETENESS

### Compliance

The proportion of valid forms being returned has increased compared to 2023, with 91.73% of the total number of forms being valid.

Table 1 - Proportion of valid C-birth SSI surveillance forms

	2022	2023	2024
Total number of surveillance forms	8127	9407	9308
Number of valid surveillance forms	7367	8437	8538
<b>Valid forms returned*</b>	90.65%	89.69%	91.73%

\*A valid form is a procedure where an SSI is recorded, or one where there is confirmation of no SSI on both inpatient and post-discharge SSI fields.

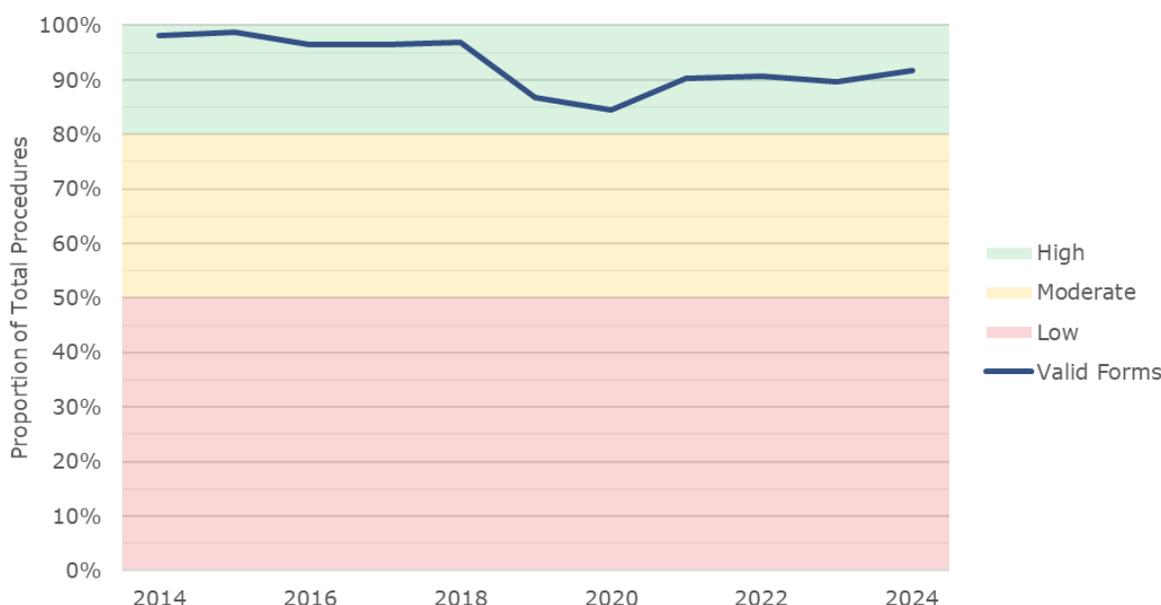


Figure 1 - Trend rate for valid forms over the previous 10 years, 2014-2024.

### Completion Rates of Surveillance Forms

The vast majority of inpatient forms received at PHW have a completed SSI status field (where either yes or no are selected), 9,289 of 9,308 forms (99.80%). Following on from these inpatient forms, 99.87% of post-discharge forms were received (9,296/9,308) with the remaining being sent in blank. Of the post discharge forms that were sent in, 91.85% (8,538/9,296) had a completed SSI field.

The additional information on post-discharge SSIs (type and date) is provided in most cases, with only a small number of forms missing this information. Of the forms where a post-discharge SSI is reported, 94.70% provided the SSI type and 99.12% provided an infection date. The additional information is provided less often in the case of inpatient SSIs, however, the numbers involved are too small to extrapolate any real meaning from them.

## SECTION 2: SSI RATE

### Incidence of Early Onset, Late Onset, and Overall SSI

Table 2 - Overall number of procedures, SSIs, and SSI rate, 2024.

	No. of procedures	SSI	SSI rate (95% CI)
C-birth surveillance	8538	307	3.60% (3.21-4.01)

Of the 8,538 valid procedures reported, 307 reported an inpatient or post-discharge SSI, giving an SSI rate of 3.60% which has decreased since the previous year where the SSI rate was 4.46%.

The following table provides the SSI rates separated out as 'early onset,' from 0 to 5 days, and 'late onset' from 6 to 14 days. Early onset are infections that may occur when the woman is still in hospital or following the first 2 to 3 days after discharge. Late onset are the infections that occur, typically, in the community. A total of 50 inpatient SSIs were recorded, giving an inpatient SSI rate of 0.59%. The vast majority of SSIs (257, 83.71%) occurred following hospital discharge, giving a rate of 3.01%. A total of 44 early onset SSIs were recorded, giving an early onset SSI rate of 0.52%. The vast majority of SSIs (248, 84.93%) occurred in the late onset period, giving a rate of 2.90%.

The length of hospital stay is shorter now than it was at the start of the surveillance period as more of an emphasis is being placed on community midwifery care, as well as shorter hospitalisations for labour and delivery during the COVID-19 pandemic. As a result, fewer early onset SSIs are being identified than previously, and these are instead being picked up as late onset. Although the overall SSI rate is 3.60%, the majority are late onset, so they are happening in the community rather than following discharge in the early days.

All SSIs are captured up to 14 days post procedure.

Table 3 - Incidence of SSIs, 2024.

Time to onset of infection	SSI	SSI rate
Early onset (0-5 days)	44	0.52%
Late onset (6-14 days)	248	2.90%

\*15 procedures reporting an SSI did not provide or provided an invalid infection date, preventing the calculation of time to onset of infection.

## Annual SSI Rates

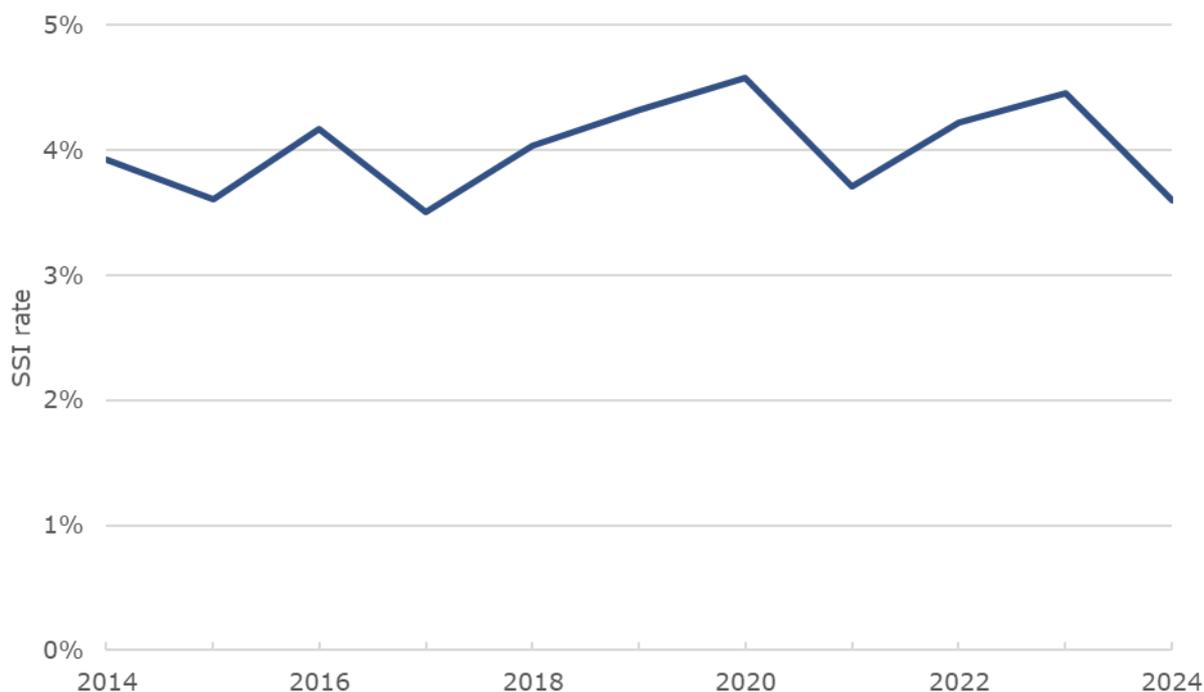
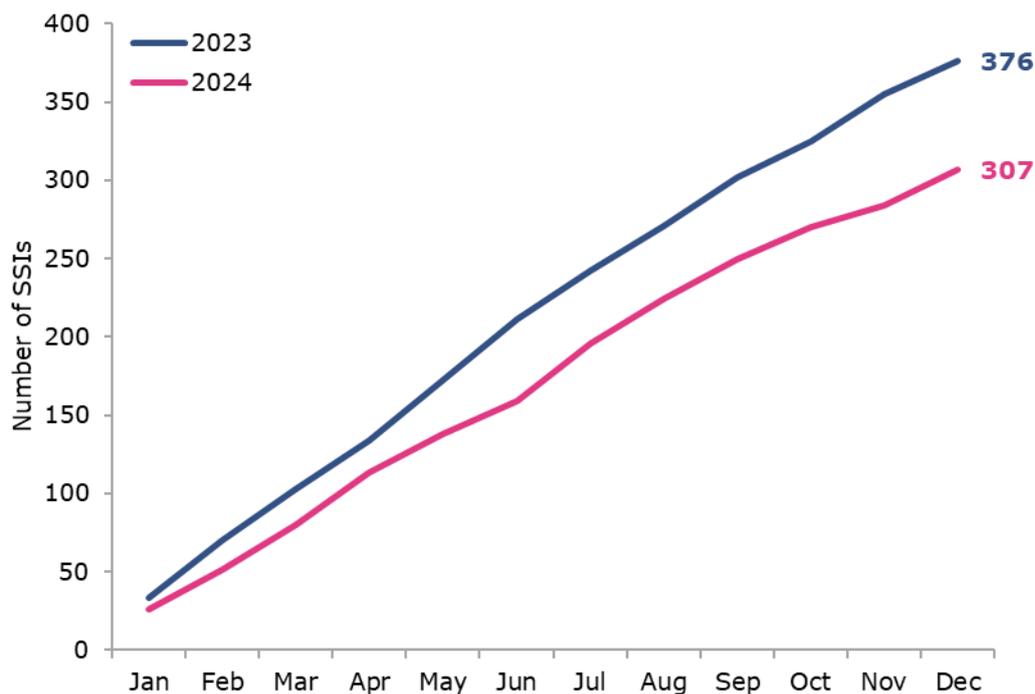


Figure 2 - Overall SSI rates for 2014-2024.

Table 4 - Overall SSI rates for the last five years. (Unknowns excluded).

Operation type	Year	No. of procedures	SSI	SSI rate (95% CI)
All C-birth procedures	2024	8538	307	3.60% (3.20-3.99)
	2023	8437	376	4.46% (4.02-4.90)
	2022	7367	311	4.22% (3.76-4.68)
	2021	7179	266	3.71% (3.27-4.14)
	2020	5304	243	4.58% (4.02-5.14)

The SSI rate across Wales has decreased this year from 4.46% in 2023 to 3.60% in 2024, with an increase in the number of procedures reported to PHW in 2024 compared to 2023. The number of procedures in 2023 and 2024 compared to 2020 show the numbers returning to those seen before the COVID-19 pandemic. The SSI rate back in 2014 was 3.92% and, when using this rate as a baseline, there has been a decrease of 8.27%. This represents an estimated 3,223 women who have been saved from an infection (Figure 2).



**Figure 3 - Cumulative SSI number for 2024, compared to the previous year.**

Throughout Wales, there were 307 SSIs reported in 2024. When compared to the previous year’s 376 SSIs, this is a reduction of 18.35% from the 2023 SSI numbers (i.e. without factoring in the denominator) and means there were 69 fewer infections in 2024 than in 2023. Cumulative SSI numbers for 2023 and 2024 are found in Figure 3.

## 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. These all have specific definitions and diagnostic criteria and remain standardised across Europe. The following tables show the split between different SSI types, and their corresponding rates.

Table 5 - Types of SSI in C-birth procedures by proportion, 2024.

SSI type	n	%
Superficial infection	177	60.62%
Deep infection	96	32.88%
Organ/space infection	1	0.34%
Unknown	18	6.16%

Table 6 - SSI rates broken down by type, (n procedures = 8,538), 2024.

SSI type	SSI	SSI rate (95% CI)
Superficial infection	177	2.07% (1.77-2.38)
Deep infection	96	1.12% (0.90-1.35)
Organ/space infection	1	0.01% (0.00-0.03)
Unknown	18	0.21% (0.11-0.31)

The split between different types of infection is as expected – the vast majority of infections reported are superficial (60.62%), followed by deep infections (32.88%), and one organ/space infection (0.34%).

## SECTION 3: DEMOGRAPHICS

This section provides information about the woman which is not affected by the current procedure itself and is known beforehand, namely age, Body Mass Index (BMI), and the number of prior C-birth procedures.

### Incidence of SSI by Age

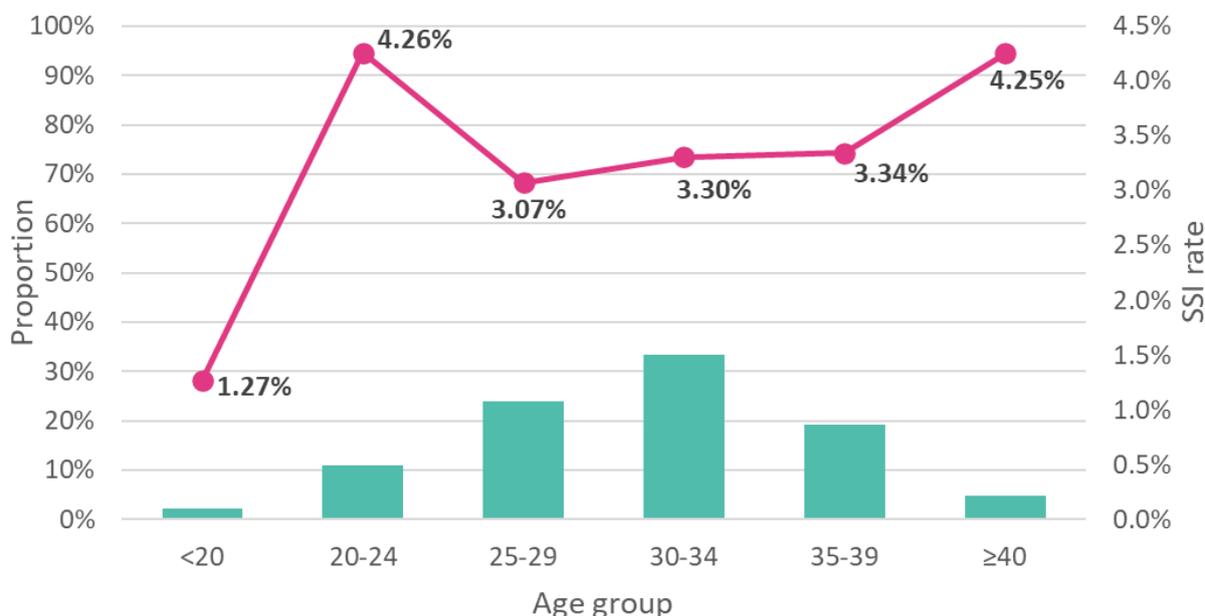


Figure 4 - Graph showing the incidence of SSI by age group, 2024.

Table 7 - Incidence of SSI by age group, 2024.

Age group	No. of procedures	SSI	SSI rate (95% CI)
<20	158	2	1.27% (0.15-4.50)
20-24	799	34	4.26% (2.96-5.90)
25-29	1759	54	3.07% (2.31-3.99)
30-34	2451	81	3.30% (2.63-4.09)
35-39	1407	47	3.34% (2.46-4.42)
≥40	353	15	4.25% (2.40-6.91)
Unknown	99	1	1.01% (0.03-5.50)

The primary axis in Figure 4 represents the proportion of procedures in each category, calculated as the number of procedures within the category divided by the total number of procedures for which an age is recorded. The secondary axis displays the SSI rate as a percentage, calculated as the number of procedures in the given category where an SSI is recorded, divided by the total number of procedures in that category. This is the case for all further graphs where the proportion and SSI rate are both shown in one graph.

In 2024, there was a higher SSI rate in women aged between 20 and 24 (4.26%), and also in women aged over 40 (4.25%), followed by women aged between 35 and 39 (3.34%). The mean age for all procedures was 30.9 but this increased to 31.0 when only those with an SSI were included. Age was not a significant factor in the probability of having an SSI ( $p=0.547$ ).

## Incidence of SSI by BMI

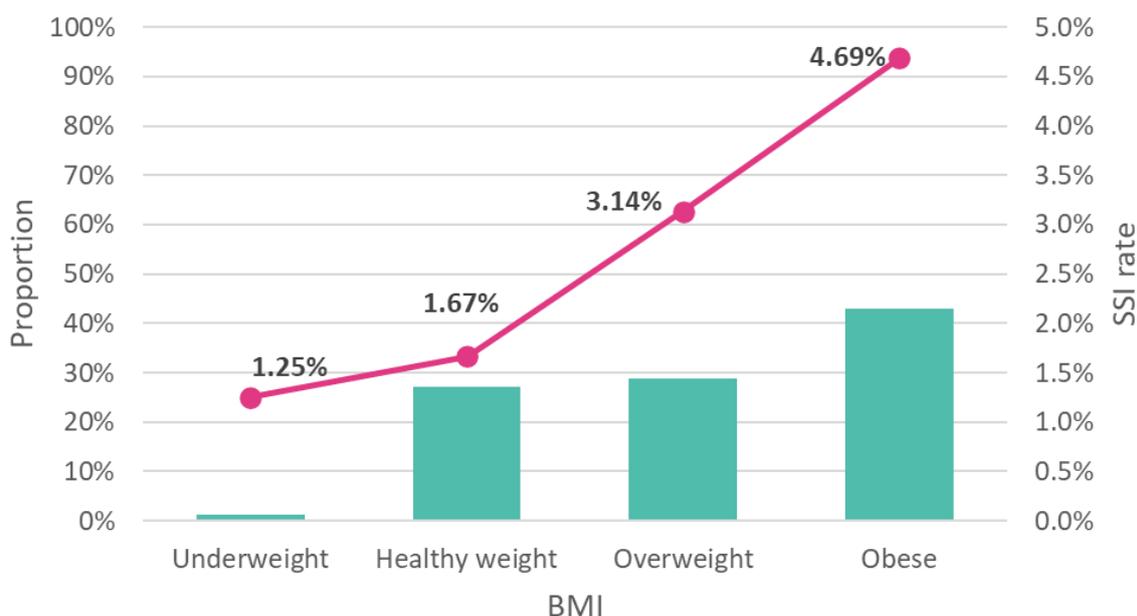


Figure 5 - Graph showing the incidence of SSI by BMI category, 2024.

Table 8 - Incidence of SSI by BMI category, 2024.

BMI		No. of procedures	SSI	SSI rate (95% CI)
Underweight	<18.5	80	1	1.25% (0.03-6.77)
Healthy weight	18.5-24.9	1799	30	1.67% (1.13-2.37)
Overweight	25.0-29.9	1912	60	3.14% (2.40-4.02)
Obese	≥30.0	2859	134	4.69% (3.94-5.53)
Unknown		376	9	2.39% (1.10-4.50)

In 2024, there was a clear association between BMI and the probability of having an SSI. The mean BMI for all procedures was 29.7 (median 28.4), this increased to 34.0 (median 33.2) when only those with an SSI were included. Figure 5 shows a similar proportion of procedures performed in women whose BMIs are classified as healthy, and overweight. When comparing BMI groups, the SSI rate in overweight women (including obese women) was significantly higher ( $p < 0.001$ ), and this was also true when comparing obese women to all other BMI groups ( $p < 0.001$ ). While the SSI rate in underweight women was lower, this group was very small compared to the other groups, so this was not significant ( $p = 0.350$ ).

## Incidence of SSI by Number of Previous C-births

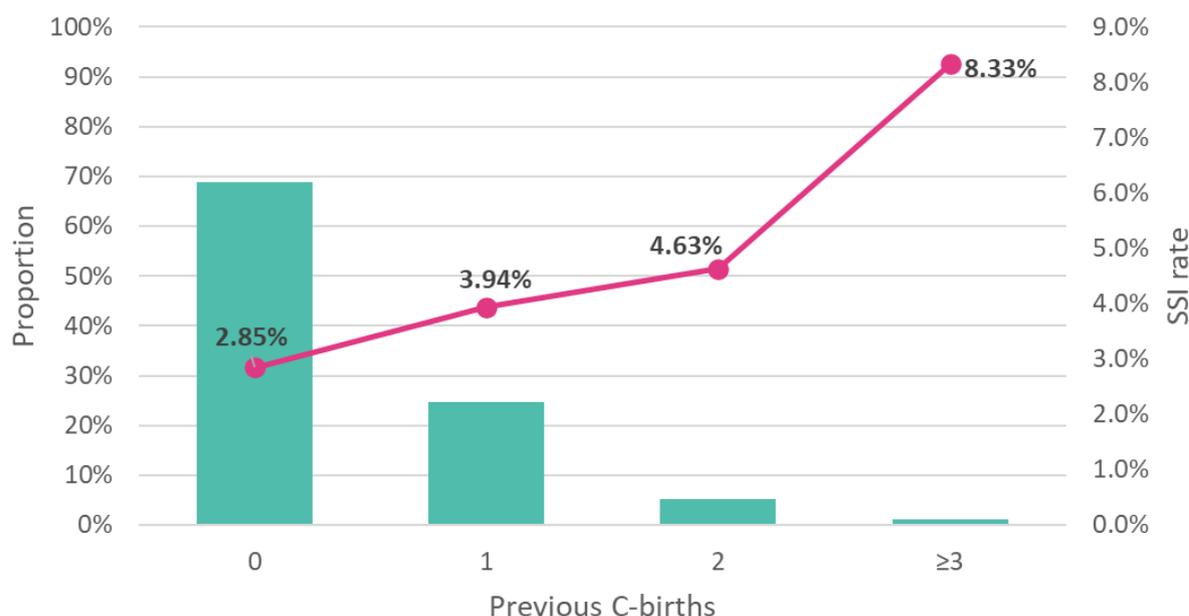


Figure 6 - Graph showing incidence of SSI by the number of previous C-births, 2024.

Table 9 - Incidence of SSI by the number of previous C-births, 2024.

Previous C-births	No. of procedures	SSI	SSI rate (95% CI)
0	4240	121	2.85% (2.37-3.40)
1	1522	60	3.94% (3.02-5.05)
2	324	15	4.63% (2.61-7.52)
≥3	72	6	8.33% (3.12-17.26)
Unknown	868	32	3.69% (2.54-5.16)

The proportion of procedures in each category steadily decreases as the number of previous C-births a woman has had increases, but when comparing the number of C-births a woman has undergone prior to the current procedure, there appears to be an increase in the SSI rate as the number of previous C-births increase. The SSI rate is highest among women who had undergone three or more previous C-births (8.33%), which is consistent with the previous year (6.14% in 2023).

## SECTION 4: DETAILS OF THE SURGICAL PROCEDURE

The following section provides information on the variables relating to the procedure itself (including procedure type, prophylaxis, and skin closure).

### Incidence of SSI by Procedure Type

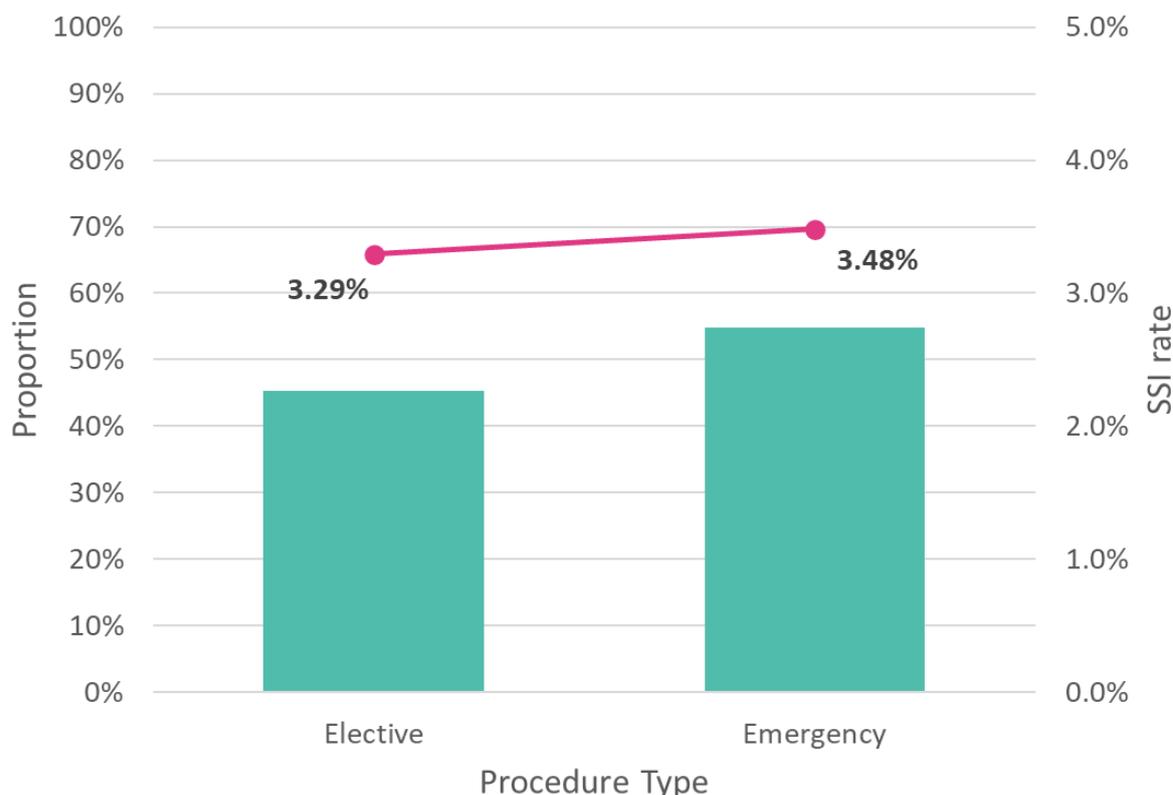


Figure 7 - Graph showing incidence of SSI by type of procedure, 2024.

Table 10 - Incidence of SSI by procedure type, 2024.

Procedure Type	No. of procedures	SSI	SSI rate (95% CI)
Elective	3038	100	3.29% (2.69-3.99)
Emergency	3677	128	3.48% (2.91-4.13)
Unknown	311	6	1.93% (0.71-4.15)

In 2024, the SSI rate in emergency procedures was slightly higher than in elective procedures (5.76% increase,  $p=0.934$ ). The split of procedures is also fairly even, with just over half (54.76%) of procedures being classed as emergencies (CS1, CS2 and CS3) and the remaining 45.24% being classed as elective (CS4).<sup>1</sup>

<sup>1</sup> CS1 – Immediate threat to life of woman or foetus, e.g. cord prolapse, significant placental abruption or maternal cardiorespiratory distress.

CS2 – Late foetal heart rate decelerations, CS pre-booked to avoid vaginal delivery but woman presents in advanced labour.

CS3 – Deteriorating but compensated maternal medical condition.

CS4 – Operation at short notice but no clinical urgency, Elective.

## Incidence of SSI by Antibiotic Prophylaxis

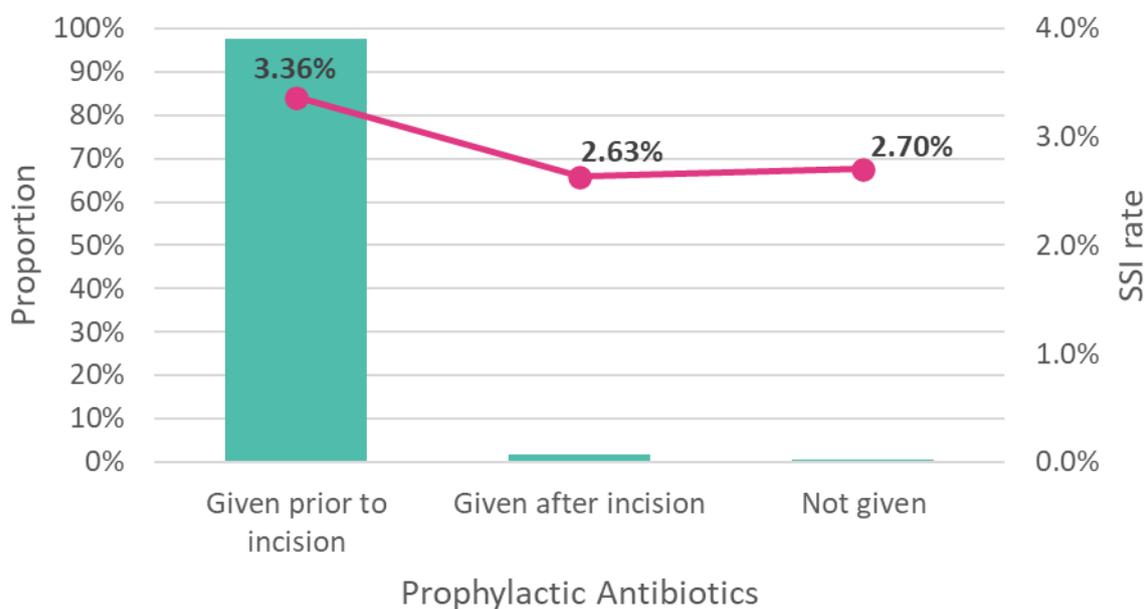


Figure 8 - Graph showing proportion of procedures and incidence of SSI by timing of prophylactic antibiotics, 2024.

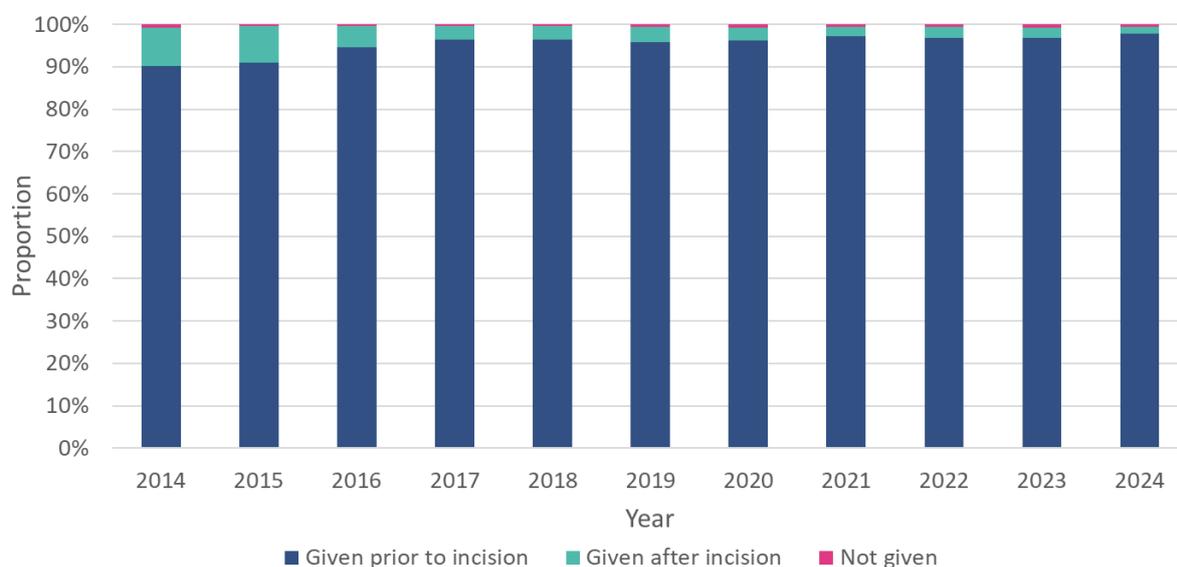


Figure 9 - Graph showing proportion of procedures by timing of prophylactic antibiotics, 2014 - 2024.

Table 11 – Proportion of procedures by timing of prophylactic antibiotics, 2024.

Prophylactic antibiotics	No. of procedures	Proportion
Given prior to incision	6449	97.71%
Given after incision	114	1.73%
Not given	37	0.56%

For procedures where timing of antibiotic prophylaxis was recorded, 99.44% of women were given prophylactic antibiotics and, of these, 98.26% were given prior to surgical incision. In line with 2023 but in contrast to previous years, there is a higher SSI rate when antibiotics are administered prior to incision, but this was not significant (27.86% increase,  $p=0.358$ ). As seen in Figure 9, it should be noted that the overall proportion of procedures where antibiotics were given prior to incision has increased, in line with guidance recommendations. Therefore, the comparison of SSI rate is difficult due to the smaller proportion of procedures where prophylactic antibiotics are administered after the incision.

We continue to recommend that antibiotics are administered prior to incision where possible, in accordance with NICE guidelines (National Institute for Health and Care Excellence, 2019). It is also worth taking into consideration that the serum half-life of Cefuroxime is 80 minutes, and NICE recommend that a repeat dose is administered when the length of the procedure exceeds this time. (In the case of women on second line antibiotics, both Clindamycin and Gentamicin have a serum half-life of two hours).

1st line	If allergic to penicillin
<b>Cefuroxime 1.5g IV</b>	<b>Clindamycin 600mg IV/PO</b>
+	+
<b>Metronidazole 500mg IV</b>	<b>Gentamicin 1.5mg/kg IV</b>

### Incidence of SSI by Skin Closure Type

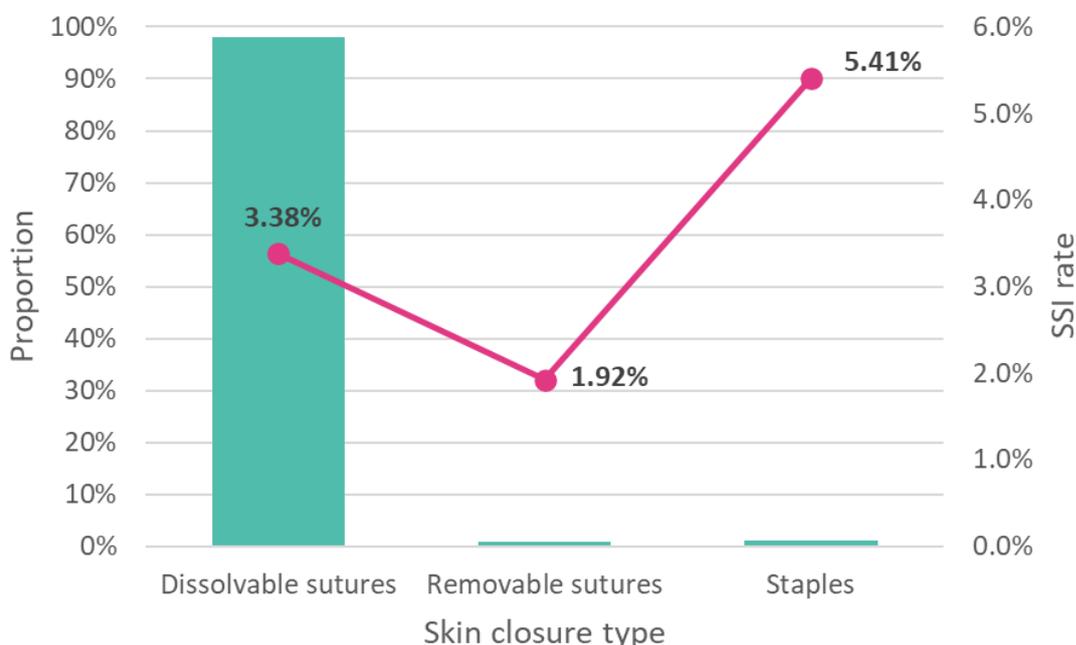


Figure 10 - Graph showing proportion of procedures and incidence of SSI by type of skin closure used, 2024.

In 2024, dissolvable sutures were used in the majority (98.10%) of procedures, with just 0.78% using removable sutures, 1.11% using staples and 0.01% using glue. The SSI rate where staples were used was not significantly higher in procedures ( $p=0.608$ ).

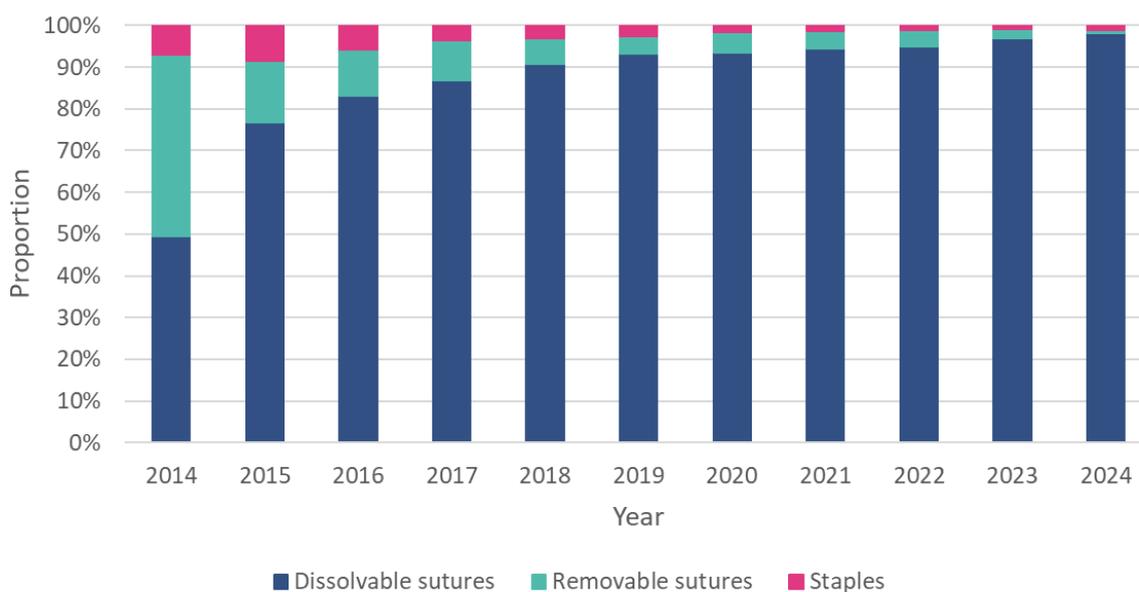


Figure 11 - Graph showing proportion of procedures by type of skin closure used, 2014 - 2024.

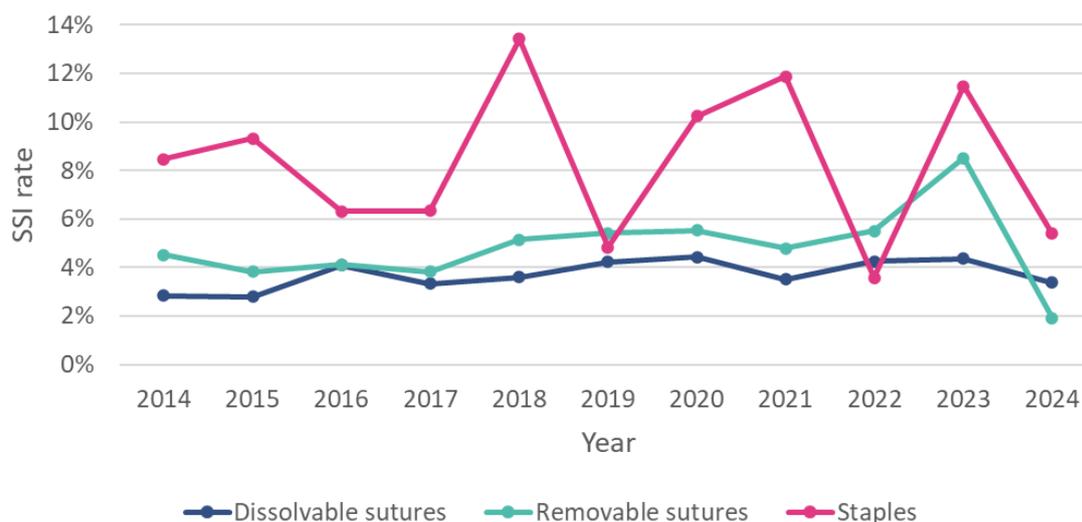


Figure 12 - Graph showing incidence of SSI by type of skin closure used, 2014 - 2024.

Table 12 - Incidence of SSI by type of skin closure, 2024.

Type of wound closure	No. of procedures	SSI	SSI rate (95% CI)
Sutures (all types)	6620	223	3.37% (2.93-3.80)
Dissolvable sutures	6568	222	3.38% (2.96-3.85)
Removable sutures	52	1	1.92% (0.05-10.26)
Staples	74	4	5.41% (1.49-13.27)
Glue	1	0	0.00% (0.00-97.50)
Unknown	331	7	2.11% (0.85-4.31)

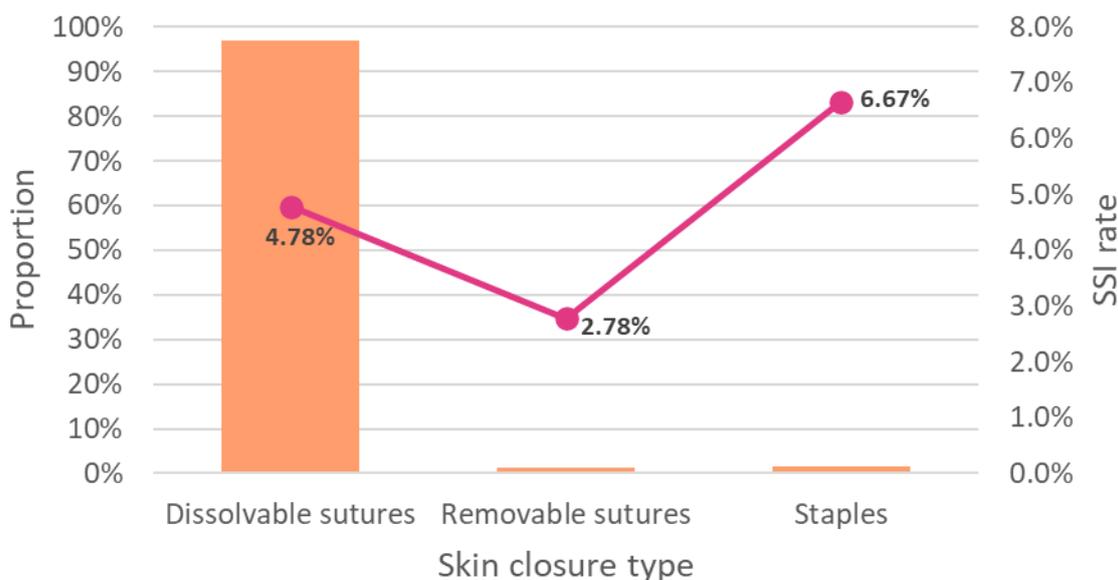


Figure 13 - Graph showing the incidence of SSI by skin closure used in women with BMI $\geq$ 30, 2024.

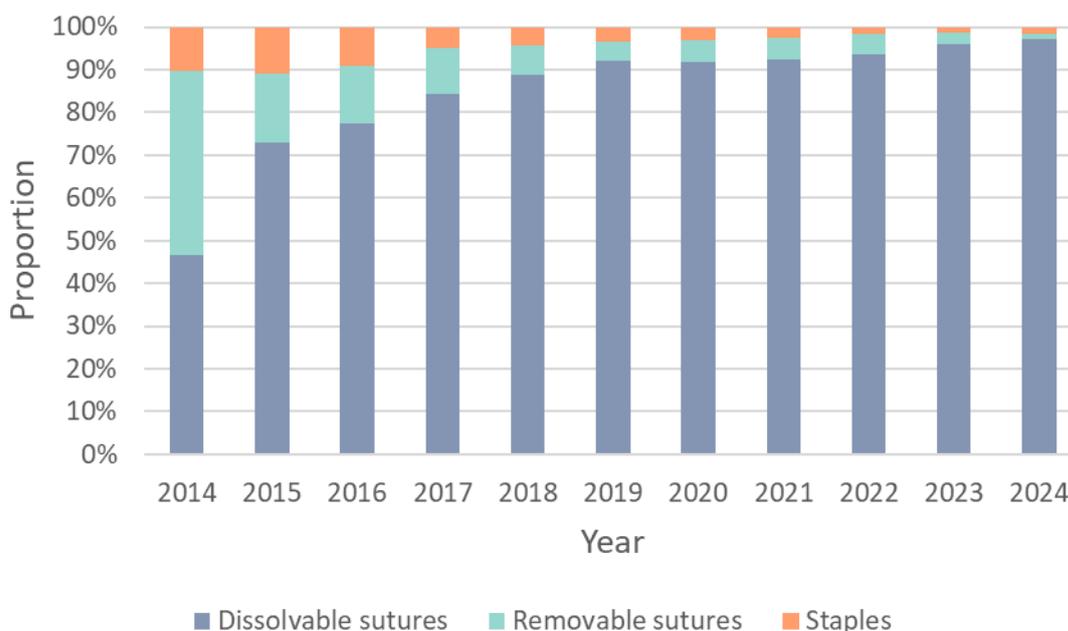


Figure 14 - Graph showing proportion of all procedures by type of skin closure used in women with BMI $\geq$ 30, 2014 – 2024.

In 2024, when the woman is obese (BMI $>$ 30) 97.08% of procedures are closed with dissolvable sutures with just 1.62% being closed with staples.

For all procedures, there are fewer instances where staples are used as the method of closure for C-birth procedures. For example, in 2023 staples were used for 61 procedures with a 11.48% SSI rate and in 2024 they were used for 74 procedures with an SSI rate of 5.41%. The SSI rate where staples were used as a method of closure was not significant when BMI $>$ 30 (p=0.928).

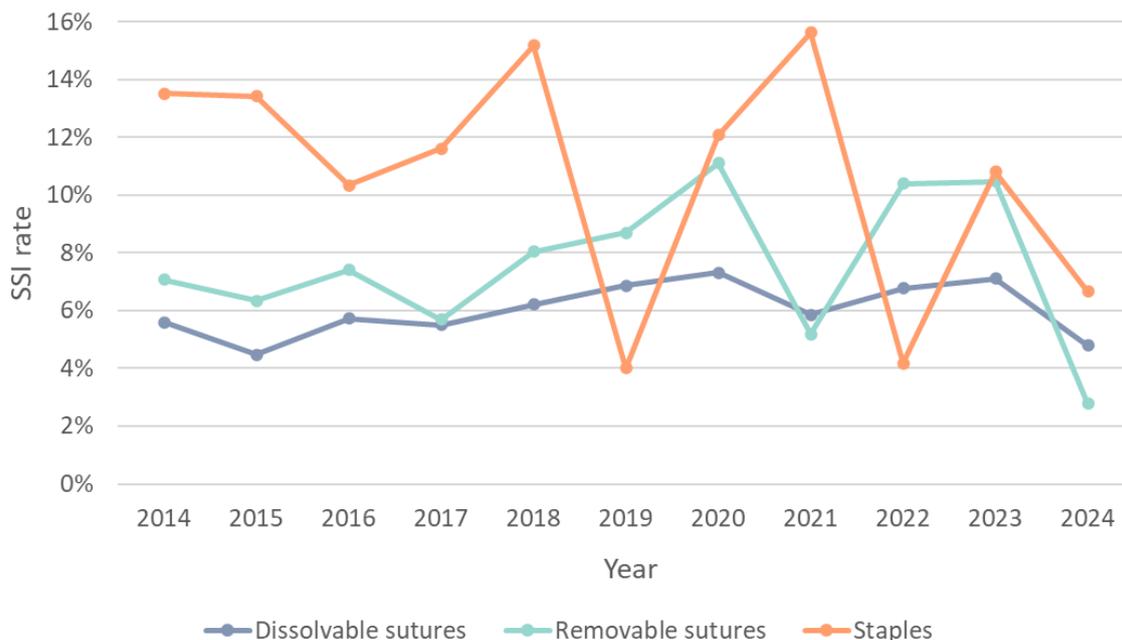


Figure 15 - Graph showing incidence of SSI by type of skin closure used in women with BMI $\geq$ 30, 2014 - 2024.

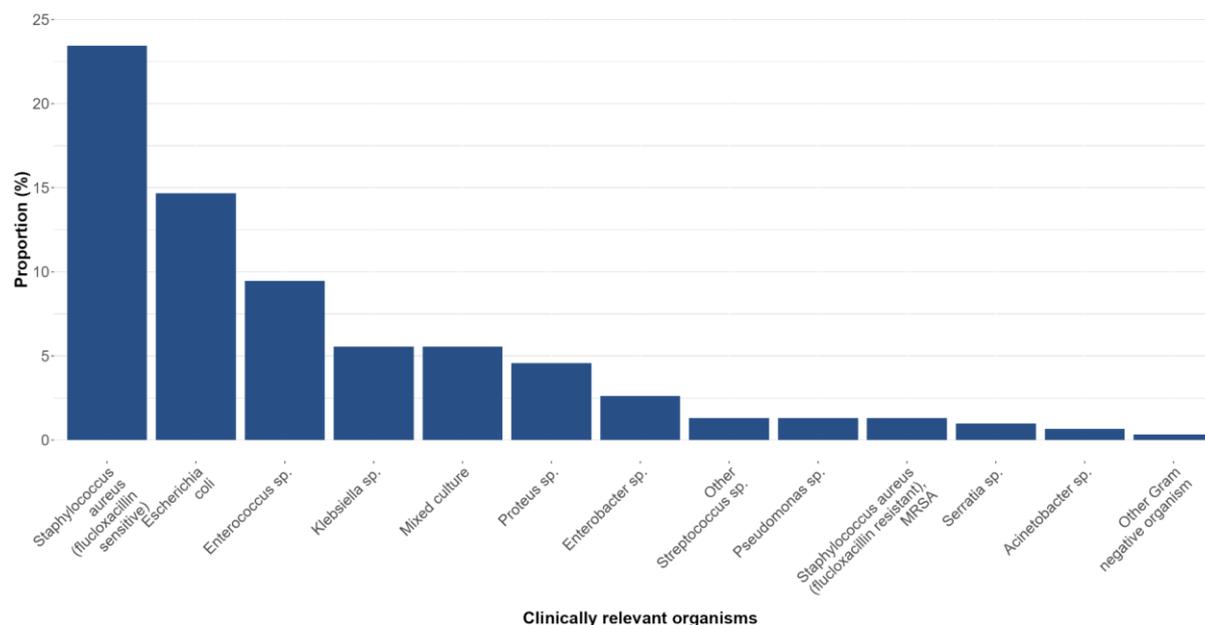
Table 13 - Incidence of SSI by type of skin closure in women with BMI $\geq$ 30, 2024.

Type of wound closure	No. of procedures	SSI	SSI rate (95% CI)
Sutures (all types)	2732	130	4.76% (3.96-5.56)
Dissolvable sutures	2696	129	4.78% (4.01-5.66)
Removable sutures	36	1	2.78% (0.07-14.53)
Staples	45	3	6.67% (1.40-18.27)
Unknown	82	1	1.22% (0.03-6.61)

Figures 12 and 15 show the trend in SSI rates by skin closure type from 2014 to 2024. The peaks in SSI rate for staple use in 2018 and 2021 occurred as a result of increased staple use, which was discussed with the relevant hospitals resulting in a drop in staple use and SSI rate in the subsequent following years.

## SECTION 5: DETAILS OF THE MICROBIOLOGICAL RESULTS

This section provides information about the types of organisms and the proportion reported for SSIs.



**Figure 16 - Graph showing proportion of organism results for SSIs reported, 2024.**

\* Clinically relevant organisms have been classified as those that are known microbiological pathogens, excluding contaminants

Figure 16 shows the proportion of organism results from wound swabs taken where an SSI was reported. Of the SSIs reported, 23.45% had a swab result recorded as '*Staphylococcus aureus* (flucloxacillin sensitive)' in 2024, compared to 16.91% in 2023. In 2024, 14.66% had an organism result of *Escherichia coli*, which is an increase from the 11.17% reported in 2023, and 9.45% had an organism result of *Enterococcus sp.*, a slight increase from the 8.31% reported in 2023. The proportion of reported *Klebsiella sp.* has decreased from 6.30% in 2023 to 5.54%. In 2024, 5.54% of results were recorded as 'Mixed culture' compared to 18.91% the previous year. It is important to note that the recording of 'Mixed culture' was discouraged for 2024 to reduce ambiguity, which has been reflected in the results.

## SECTION 6: POST-PROCEDURE DETAILS & ONSET OF INFECTION

This section deals with the time period after the procedure has occurred and the time to onset of infection.

### Length of Stay in Hospital

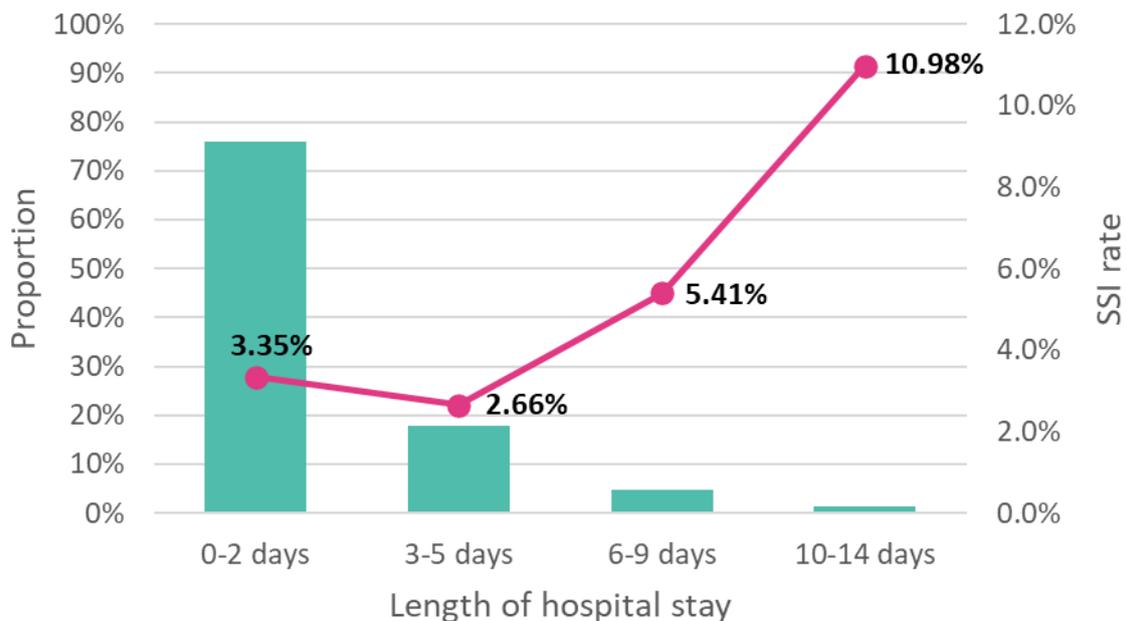


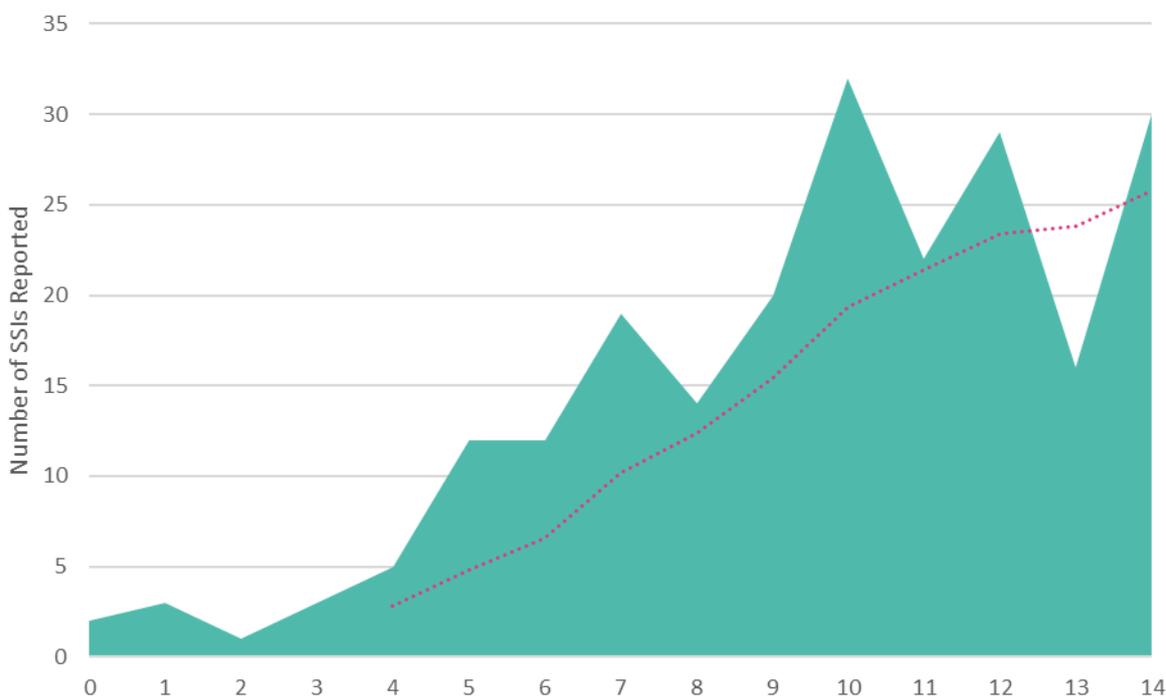
Figure 17 - Graph showing incidence of SSI by length of hospital stay, 2024.

Table 14 - Incidence of SSI by length of hospital stay, 2024.

Length of hospital stay	No. of procedures	SSI	SSI rate (95% CI)
0-2 days	4925	165	3.35% (2.85-3.85)
3-5 days	1165	31	2.66% (1.74-3.58)
6-9 days	314	17	5.41% (2.91-7.91)
10-14 days	82	9	10.98% (4.21-17.75)
Unknown	540	12	2.22% (0.98-3.46)

For all women undergoing a C-birth, the mean hospital stay following the procedure is 2.4 days (median of 2). When only women who have had an SSI are included, this increases to a mean of 3.6 days (median of 2). As the length of hospital stay increases, there is an associated increase in the SSI rate. This would suggest that those who have been discharged from the hospital later are more likely to develop an SSI, not necessarily because of the length of stay itself, but due to the same factors that resulted in the extended stay. Similarly to the previous year, the length of hospital stay resulted in a significantly higher SSI rate in 2024 ( $p < 0.001$ ), with the highest SSI rate seen where length of hospital stay was 10-14 days (10.98%). However, it is worth noting that the proportion of procedures in each group decreases as the length of stay increases, because most women are discharged between 0-2 days.

## Time to Onset of Infection



**Figure 18 - Graph showing number of SSIs up to 14 days post-procedure. Blank infection dates excluded, 2024.**

While SSIs can be reported on our forms up to 30 days post-procedure, we are only including those up to 14 days for consistency across Wales.

There were 14 (5.98%) infections where the date of onset was not recorded. Within the first 14 days, the mean time to infection was 9.7 days, with a median of 10. The greatest number of infections were reported on day 10 (n=32). The area graph indicates peaks in SSIs at day 14 (n=30) and 12 (n=29). This might reflect a follow-up from midwifery care around day 10. The pink dotted line represents the 5-day moving average.

## Anonymised Hospital SSI Rates

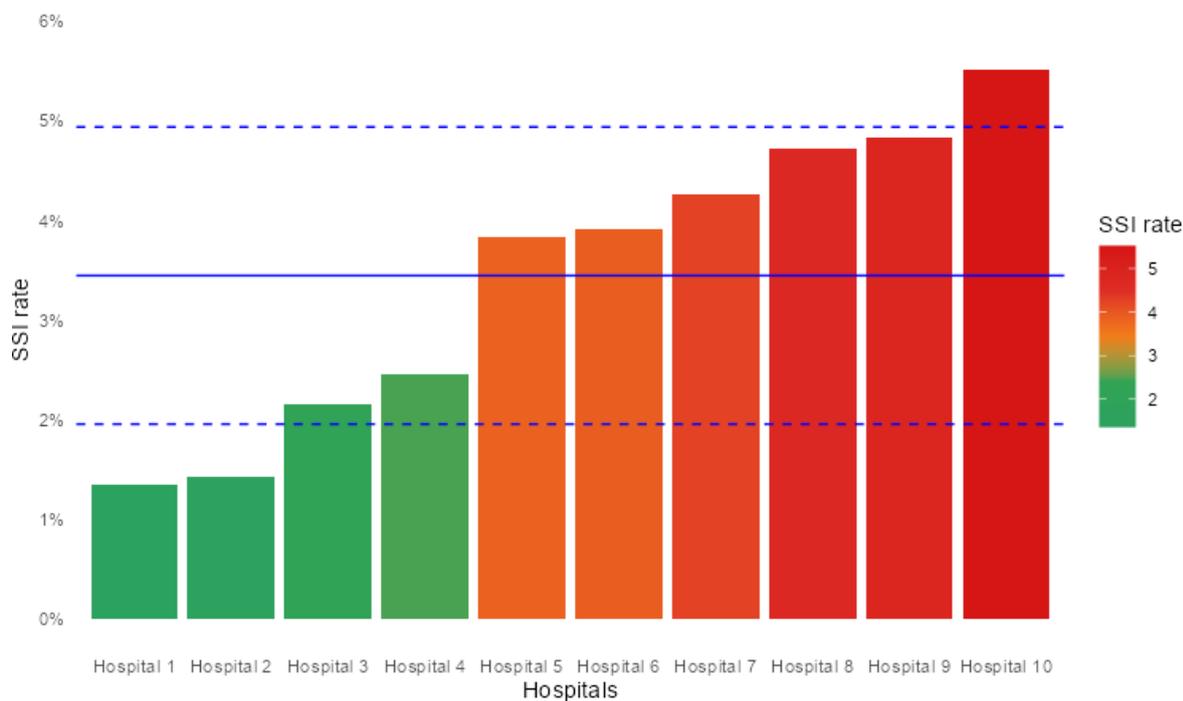


Figure 19 - Anonymised SSI rates for each hospital participating in the C-birth surveillance scheme as of 2024, from the lowest to highest rate.



Figure 19 shows anonymised SSI rates for each hospital reporting C-birth procedures in 2024. The solid blue line represents the mean (3.45%), and the dashed blue lines represent the + and – standard deviation (1.49%). At the highest end, the rate is 5.52%, compared to 1.36% at the lowest end. A total of six hospitals had an SSI rate above the mean.

## DISCUSSION

Compliance with the C-birth SSI surveillance is now being measured by evaluating the number of valid forms returned, with a valid form being defined as a procedure where an SSI is recorded, or one where there is confirmation of no SSI on both inpatient and post-discharge fields. In previous years, the Patient Episode Database Wales (PEDW) figures have been used as a denominator but inaccuracies in the dataset could have led to overestimation of the numbers. Compliance has slightly increased in 2024 with 91.73% of valid forms being returned compared to the 89.69% returned in 2023.

The overall SSI rate for 2024 was 3.60% (3.21-4.01), a significant decrease from 4.46% (4.02-4.90) in 2023. There has been an 8.27% reduction in SSI rate, equating to 3,223 infections prevented based on 2014 rates. In 2023 the SSI rate was higher than it was ten years ago, but this has improved in 2024. Emergency procedures have seen a decrease in SSI rates compared to 2023, from 4.52% (3.92-5.18) to 3.48% (2.91-4.13). Elective procedures have also seen a decrease in SSI rates compared to 2023, 4.45% to 3.29% in 2024.

Time to onset of infection has been categorised into 'early onset' (0-5 days) and 'late onset' (6-14 days). In 2024, 44 SSIs were early onset with an SSI rate of 0.52% and 248 were late onset with an SSI rate of 2.90%. The majority of SSIs were diagnosed between the 6<sup>th</sup> and 14<sup>th</sup> day, which could indicate that the SSIs are occurring in the community rather than in the hospitals. The mean time to infection was 9.7 days, with the greatest number of SSIs being diagnosed on day 10 (n=32) followed by days 14 (n=30), 12 (n=29) and 11 (n=22). Diagnosis of an SSI in the 6–14-day period could reflect the pattern of follow-up to midwifery care, where the woman can be assessed for any signs or symptoms of an SSI.

Across the years, a general trend has been observed in which higher BMIs are significantly associated with an increased risk of SSI. In 2024, the mean BMI for all procedures was 29.7, when including only procedures that had an SSI associated with them, this increased to 34.0. Obese women have an SSI rate of 4.69% while women with a healthy weight have an SSI rate of 1.67%. Younger women <20 years old had an SSI rate of 1.27%, and those between 20 and 24 had an SSI rate of 4.26%. The SSI rate decreases for women aged 25-29 (3.07%) but then slightly increases for each age group with those aged 30-34 having a rate of 3.30% and for those aged 35-39 (3.34%). It should be noted that the <20 and >40 age groups are the smallest. A significant relationship was not identified between age group and SSI risk (p=0.547).

Since 2015, PHW has been monitoring the use of staples in post procedure closure. There is only a small number of procedures where staples are used, with the majority being used in women with a BMI above 30. The SSI rate is highest in all women when staples are used (5.41%), followed by dissolvable sutures (3.38%) and removable sutures (1.92%). It is important to note that although there is a small number of procedures where removable sutures and staples are used. The SSI rate where staples were used as a method of closure was not significant for all BMIs (p=0.608) or where BMI>30 (p=0.928). The data over recent years indicates a positive shift towards the use of dissolvable sutures rather than removable sutures and staples and we continue to *recommend that staples are not used as a routine method of closure*.

For procedures where timing of antibiotic prophylaxis was recorded, 99.44% of women in Wales were given antibiotic prophylaxis for their procedure, with 98.26% having it administered prior to incision. As in 2023, the SSI rate was higher where antibiotics were administered prior to incision, which was not significant ( $p=0.358$ ). There are a small number of procedures where prophylactic antibiotics are not given ( $n=37$ ) but in recent years, hospitals appear to be adopting the recommendations in line with NICE and All Wales Medicines Strategy Group (AWMSG) and administering prophylactic antibiotics prior to procedures.

The proportion of deep infections has increased compared 2023, with deep SSIs making up 32.88% ( $n=96$ ) compared to 2023 where they accounted for 29.97% of all infections ( $n=101$ ). Organ/space SSIs remain rare, with one organ/space infection reported in 2024.

A strong association was seen between time spent in hospital and the occurrence of an SSI in 2024 ( $p<0.001$ ). The mean hospital stay following the procedure was 2.4 days and increased to 3.6 days when only women who have had an SSI were included. There is a higher SSI rate where length of hospital stay was 10-14 days (10.98%).

The microbiological results provided for procedures where an SSI was diagnosed were analysed according to their organism. The most common swab result was '*Staphylococcus aureus* (flucloxacillin sensitive)' (23.45%). The second most common infection was *Escherichia coli* (14.66%), followed by *Enterococcus* sp. (9.45%). The next most common results were 'Mixed culture' and *Klebsiella* sp. (5.54%). In 2023, 'Mixed culture' accounted for 18.91% but since then has decreased following advice from the surveillance team to avoid recording the results in this way, as it makes it difficult to attribute a causative organism. The decrease in reporting of *Klebsiella* sp. is a positive change compared to the previous year.

In conclusion, there was a decrease in SSI rate in 2024 compared to 2023, (3.60% from 4.46%), this is an 8.27% decrease in infection numbers from 2014. Health Boards in Wales have continued their excellent work in local infection prevention and the introduction of novel interventional methods. Despite still seeing a regular occurrence of SSIs (1 in 28) in women post-surgery, these rates are far below those in 2007/2008. PHW will continue to work together with all hospitals in Wales to strive to continue the progress we have made and reduce infections further.

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