GIG CYMRU NHS WALES
Iechyd Cyhoeddus Cymru
Public Health Wales

Caesarean Section Surgical Site Infection Surveillance

2020 Annual Report:

All Wales

Includes data from 01/01/2020 – 31/12/2020

Version 1

Issued: 24/10/2023

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Public Health Wales NHS Trust. Annual All Wales report on Caesarean Section Surgical Site Infection 2020, Wales.

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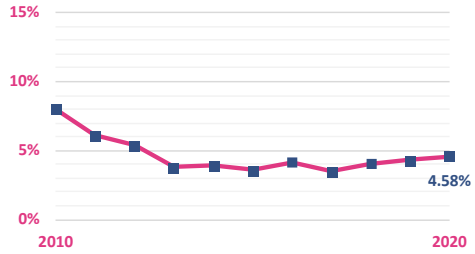
Summary

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

NOTE: This report contains data for 2019-2020, where the Covid-19 pandemic may have impacted data quality and reporting of C-section SSIs.

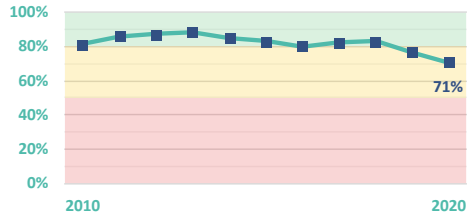
SSI rate



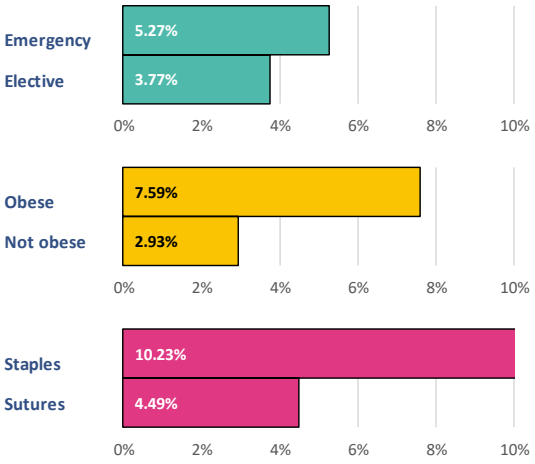
1 in 22
mothers had an SSI attributable to their C section procedure

43%
reduction in SSI rate since 2010, which equates to
2353
infections prevented (based on 2010 rates)

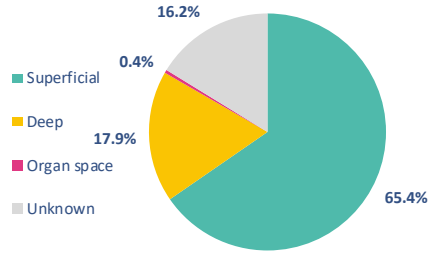
Compliance



Risk factors



Infection type



7497 procedures were performed in 2020 and forms were completed for 84% of these procedures (n=6278). Of these forms, 84% were valid forms that could be used for analysis (n=5301).

There were 243 SSIs reported in 2020, which equates to an SSI rate of 4.6%. 43 of these were complicated infections (deep or organ space), approximately 18% of all infections.

54% of procedures performed in 2020 were emergencies. The SSI rate in emergency procedures was significantly higher than elective procedures.

Introduction

The Healthcare Associated Infections team at Public Health Wales Health Protection were instructed by the Welsh Government to develop and support the implementation of surveillance following Caesarean section 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 the second most common infection following a C section, within a group of patients who are generally young, fit and well females (Sykes, Brodribb, McLaws, & McGregor, 2005).

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 ECDC European SSI database. This report details results obtained for surveillance data capture in 2018.

Data interpretation

Surgical site infection (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.

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

A valid procedure is one where an SSI is recorded, or one where there is confirmation of no SSI on both inpatient and post-discharge forms. "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 reduced compared to 2019, with 71% of the expected number of forms being valid, this makes up 84% of all forms received. Due to less hospitals directly reporting procedure numbers for compliance purposes we have had to move back to PEDW figures as the denominator for the majority of our compliance rates.

$$Compliance\ rate = \frac{number\ of\ returned\ forms}{number\ of\ procedures\ reported\ to\ PEDW} \times 100\%$$

$$If\ Compliance\ rate > 1\ then\ Compliance\ rate = \frac{number\ of\ returned\ forms}{mean(number\ of\ procedures\ reported\ in\ previous\ 3\ years)} \times 100\%$$

Table 1 – Coverage of the C section SSI surveillance compared to the expected number of forms.

	2018	2019	2020
Expected number of forms*	8871	7623	7497
Surveillance forms returned	7597	6732	6278
Valid surveillance forms	7364	5844	5301
Forms returned	86%	88%	84%
Valid forms returned	83%	77%	71%

*Total number of procedures performed at hospital, irrespective of whether or not a form was received.

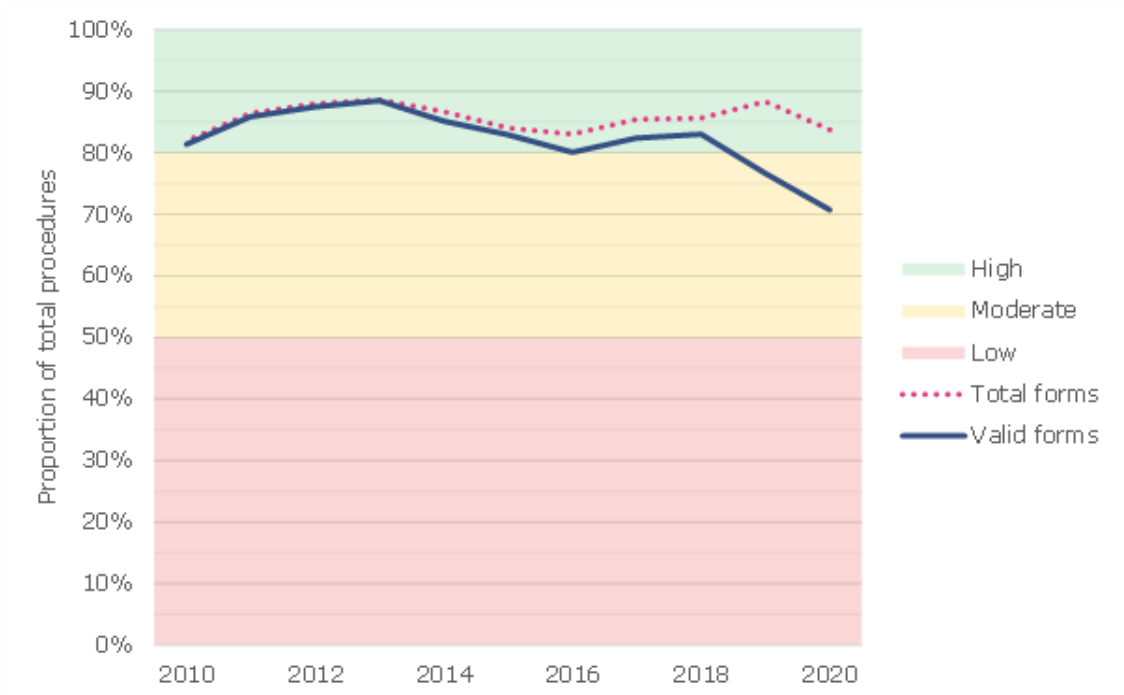


Figure 1 – Trend rate for compliance over the last 10 years, 2010-2020.

Completion rates of surveillance forms

The vast majority of inpatient forms received at Public Health Wales have a completed SSI status field (where either yes or no are selected), with 5940 of forms having a completed SSI field (of 6278 forms, 94.6%). Following on from these inpatient forms, 97.4% of post-discharge forms were received (6116/6278) with the remaining 2.6% either not sent in at all, or being sent in blank. Of the post discharge forms that were sent in, 86.7% 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. 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.

Table 2 – Completion rates of the SSI field (along with its associated type and infection date fields), 2020.

Data Item	Expected	Completed	Proportion
Inpatient SSI (Yes/No)	6278	5940	94.6%
If yes, SSI type	35	14	40.0%
If yes, infection date	35	30	85.7%
Post-discharge SSI* (Yes/No)	6116	5301	86.7%
If yes, SSI type	370	328	88.6%
If yes, infection date	370	347	93.8%

Section 2: SSI rate

Incidence of inpatient, post-discharge and overall SSI

The following table provides the SSI rates separated out as an inpatient and a post-discharge rate. A total of 30 inpatient SSIs were recorded, giving an inpatient SSI rate of 0.57%. The vast majority of SSIs (87.7%) occurred following hospital discharge, giving a rate of 4.02%.

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 inpatient SSIs are being identified than previously, and these are instead being picked up in the community.

All SSIs are captured up to 14 days post procedure.

Table 3 – Incidence of inpatient and post-discharge SSIs, 2020.

	No. of procedures	SSI	SSI rate (95% CI)
Inpatient	5301	30	0.57% (0.36-0.77)
Post-discharge	5301	213	4.02% (3.49-4.55)
Overall	5301	243	4.58% (4.04-5.18)

Annual SSI rates

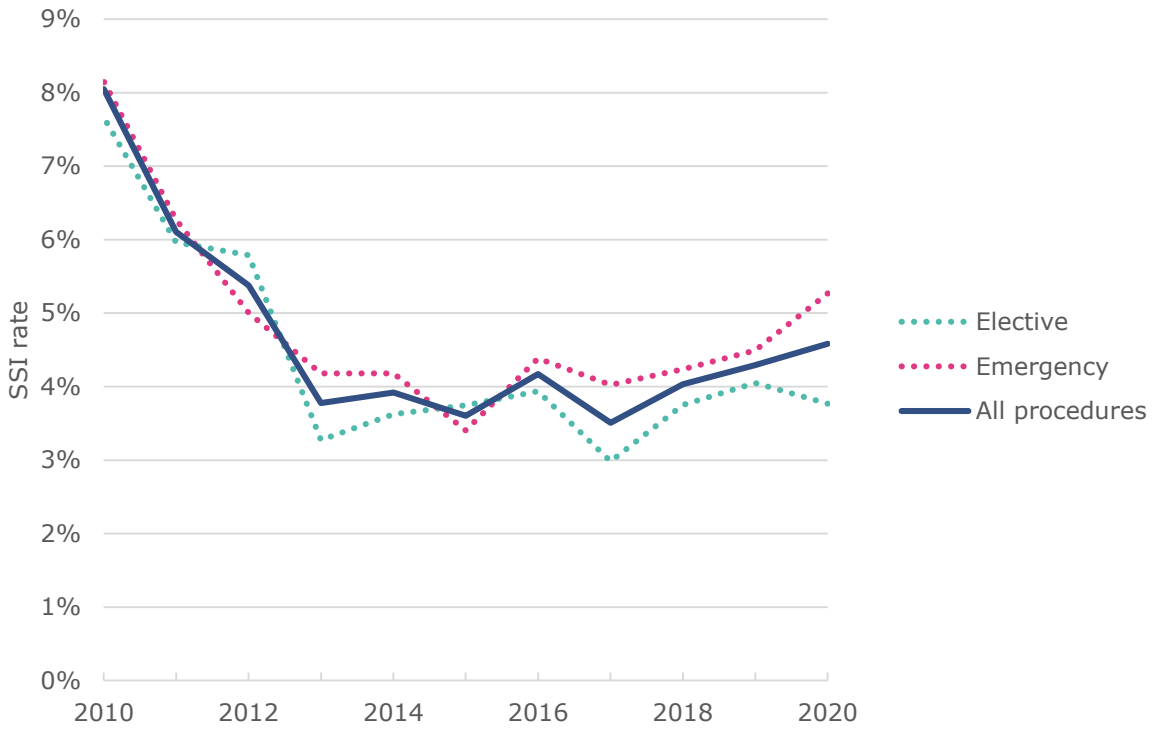


Figure 2 – Overall, elective and emergency SSI rates for 2010-2020.

Table 4 – Overall, elective and emergency SSI rates for the last five years. (Unknowns excluded).

Operation type	Year	No. of procedures	SSI	SSI rate (95% CI)
All C-section procedures	2020	5301	243	4.58% (4.02-5.15)
	2019	5845	253	4.33% (3.81-4.85)
	2018	7362	297	4.03% (3.58-4.48)
	2017	6700	235	3.51% (3.07-3.95)
	2016	7072	295	4.17% (3.71-4.64)
Elective	2020	2415	91	3.77% (3.01-4.53)
	2019	2641	107	4.05% (3.30-4.80)
	2018	3414	128	3.75% (3.11-4.39)
	2017	3151	94	2.98% (2.39-3.58)
	2016	3302	130	3.94% (3.27-4.60)
Emergency	2020	2867	151	5.27% (4.45-6.08)
	2019	3182	143	4.49% (3.77-5.21)
	2018	3893	165	4.24% (3.61-4.87)
	2017	3456	139	4.02% (3.37-4.68)
	2016	3672	161	4.38% (3.72-5.05)

The SSI rate across Wales has increased this year from 4.33% in 2019 to 4.58% in 2020 (Table 4). The SSI rate back in 2010 was 8.05% and, when using this rate as a baseline, there has been a reduction of 43% in the years following. This represents an estimated 2,353 mothers who have been saved from an infection (Figure 2).

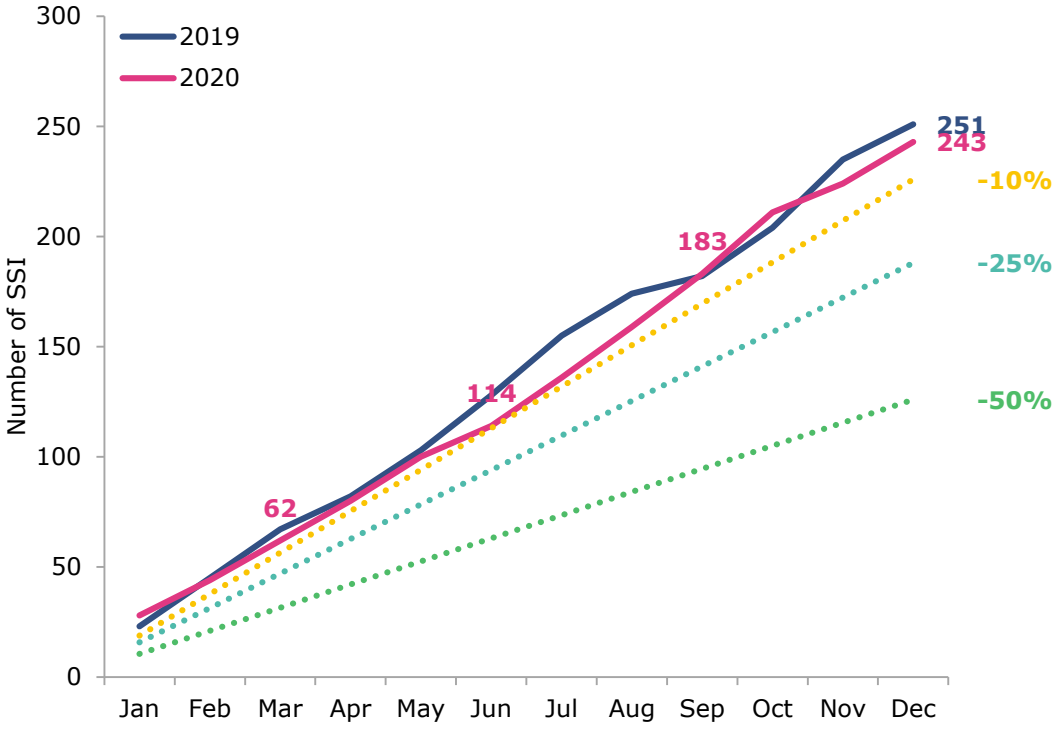


Figure 3 – Cumulative SSI number for 2019, and their relative change compared to the previous year.

Throughout Wales, there were 243 SSIs reported in 2020. When compared to the previous year's 251 SSIs, this is a reduction of 3% in raw SSI numbers (i.e. without factoring in the denominator) and means there were 8 fewer mothers who developed an infection in 2020 than in 2019. Cumulative SSI numbers for 2019 and 2020 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 section procedures by proportion, 2020.

SSI type	n	%
Superficial infection	153	65.4%
Deep infection	42	17.9%
Organ space infection	1	0.4%
Unknown	38	16.2%

Table 6 – SSI rates broken down by type, 2020.

SSI type	No. of procedures	SSI	SSI rate (95% CI)
Superficial infection	5301	153	2.89% (2.44-3.34)
Deep infection	5301	42	0.79% (0.55-1.03)
Organ space infection	5301	1	0.02% (0.00-0.06)
Unknown	5301	38	0.72% (0.49-0.94)

The split between different types of infection is as expected – the vast majority of infections reported are superficial (65.4%), with a small number of deep infections (17.9%), and even fewer organ space infections (0.04%).

Section 3: Demographics

This section provides information about the mother which is not affected by the current procedure itself and is known beforehand; namely age, BMI and the number of prior C section procedures.

Incidence of SSI by age

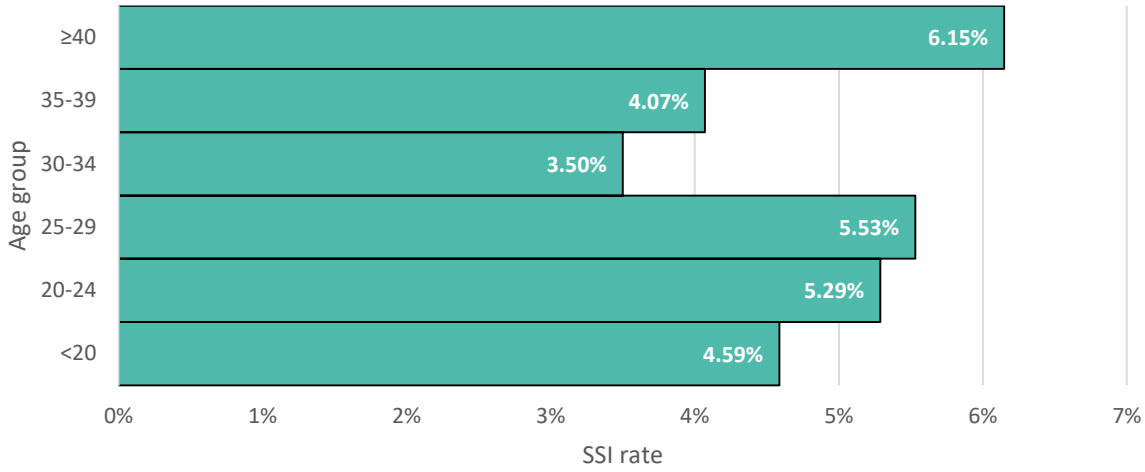


Figure 4 – Graph showing the incidence of SSI by age group, 2020.

Table 7 – Incidence of SSI by age group, 2020.

Age group	No. of procedures	SSI	SSI rate (95% CI)
<20	109	5	4.59% (1.51-10.38)
20-24	643	34	5.29% (3.69-7.31)
25-29	1356	75	5.53% (4.37-6.88)
30-34	1771	62	3.50% (2.69-4.47)
35-39	1081	44	4.07% (2.97-5.43)
≥40	309	19	6.15% (3.74-9.44)
Unknown	32	4	12.50% (3.51-28.99)

In 2020, the SSI rate was not higher in women <20 (4.59%), or between the ages of 20-24 (5.29%), which is a change from previous years. The highest SSI rate is in the >40 age group (6.15%). The mean age for all procedures was 30.8 (30.9 in 2019), but this reduced to 30.5 when only those with an SSI were included (P=0.327).

Incidence of SSI by BMI

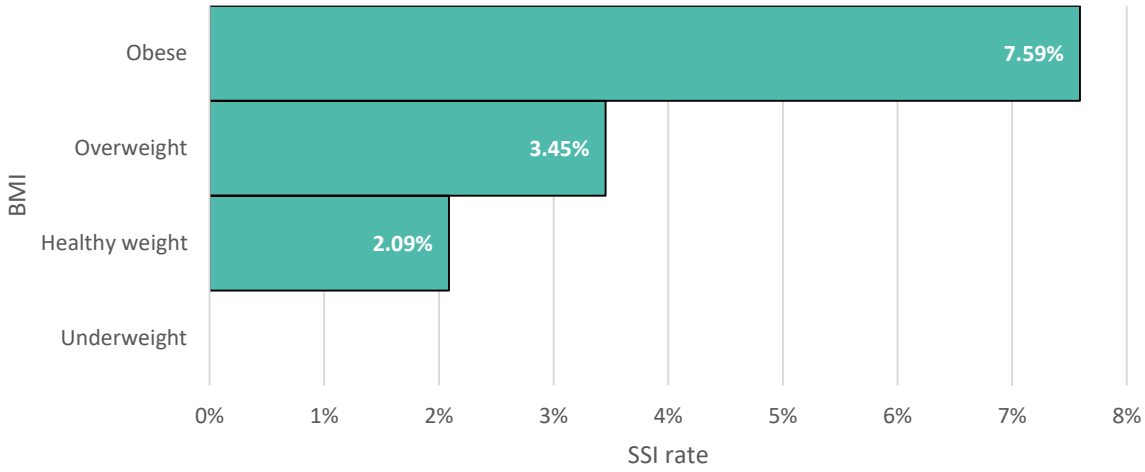


Figure 5 – Graph showing the incidence of SSI by BMI category, 2020.

Table 8 – Incidence of SSI by BMI category, 2020.

BMI		No. of procedures	SSI	SSI rate (95% CI)
Underweight	<18.5	75	0	0.00% (0.00-4.80)
Healthy weight	18.5-24.9	1581	33	2.09% (1.44-2.92)
Overweight	25.0-29.9	1564	54	3.45% (2.60-4.48)
Obese	≥30.0	1884	143	7.59% (6.43-8.88)
Unknown		197	13	6.60% (3.56-11.02)

In 2020, there was a very clear association between BMI and the probability of having an SSI. The mean BMI for all procedures was 28.8 (median 27.5), but this went up to 33.4 (median 33) when only those with an SSI were included. When comparing BMI groups, the SSI rate in overweight mothers (including obese mothers) was significantly higher ($P<0.001$), and this was also true when comparing obese mothers to all other BMI groups ($P<0.001$). While the SSI rate in underweight mothers was substantially lower, this group was very small compared to the other groups, so this was not significant ($P=0.058$) and differs with findings from previous years.

Incidence of SSI by number of previous C sections

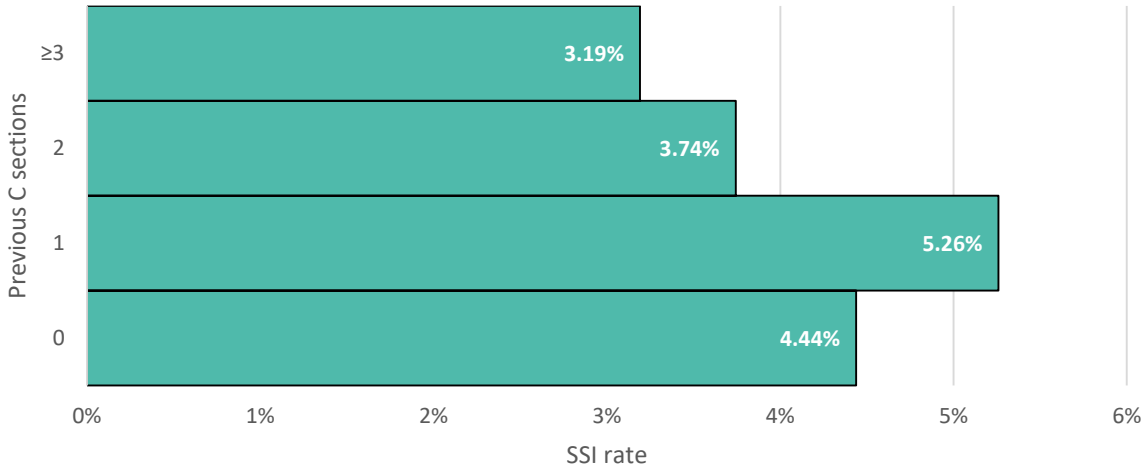


Figure 6 – Graph showing incidence of SSI by the number of previous C sections, 2020.

Table 9 – Incidence of SSI by the number of previous C sections, 2020.

Previous C sections	No. of procedures	SSI	SSI rate (95% CI)
0	3312	147	4.44% (3.76-5.20)
1	1445	76	5.26% (4.17-6.54)
2	374	14	3.74% (2.06-6.20)
≥3	94	3	3.19% (0.66-9.04)
Unknown	74	3	4.05% (0.84-11.39)

When comparing the number of C sections a mother has undergone prior to the current procedure, there are no apparent trends. There is a peak in SSI rate among mother's who had undergone 1 previous C-Section (5.26%), which differs to findings from the previous year, where a higher rate was seen in mothers who had undergone 2 previous C sections (6.68% in 2019).

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).

SSI risk score

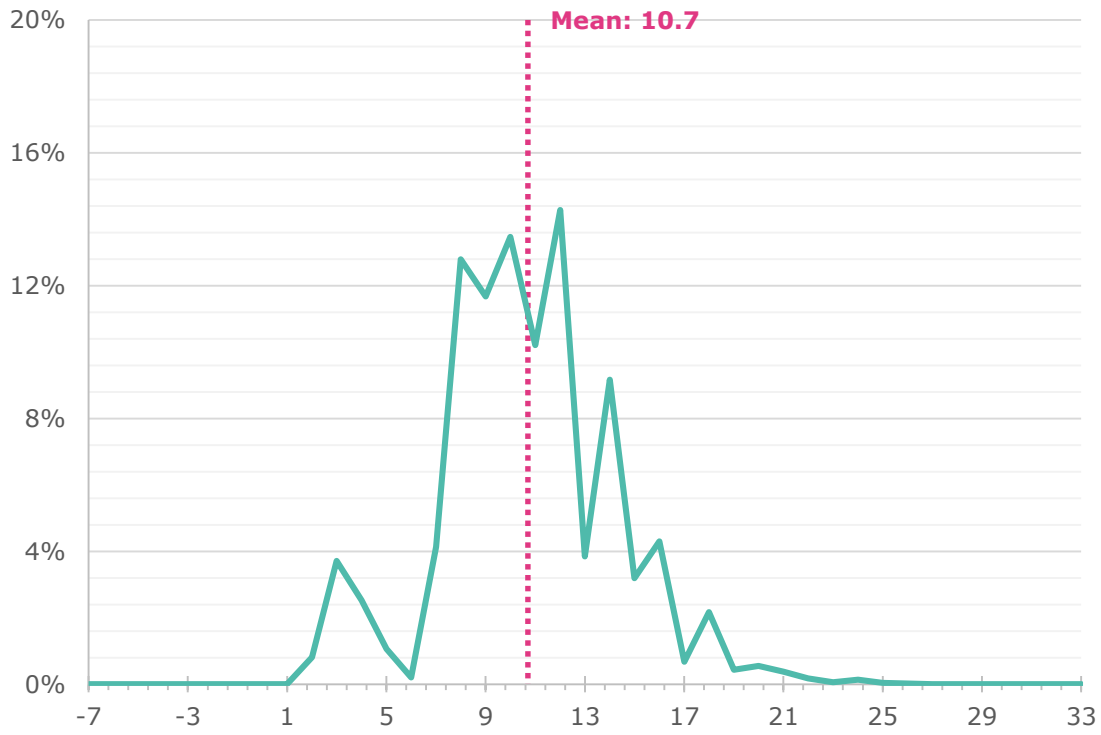


Figure 7 – Graph showing spread of risk score across all procedures (as percentage of all procedures reported). The score has a theoretical range of -7 to 33 for C section procedures in Wales.

The SSI risk score (van Walraven & Musselman, 2013) is based on a number of different factors; including procedure type, wound type, ASA class, BMI and procedure duration[1]. This yields a score that categorises mothers by their risk of developing an SSI (with higher scores equating to higher risk).

In 2020, the mean risk score for all mothers undergoing C section was 10.7 (median 11). When counting only those who have developed an SSI, the mean risk score increases to 12.0 (median 12), which means that mothers who developed an SSI had a significantly higher aggregate risk score than those who did not (P<0.001), this risk is higher than in 2019 (11.8, median 12).

While we can see that presence of a combination of risk factors evidently increases risk for the development of an SSI, no individual risk factor is associated with an increased risk of SSI.

[1] There are additional metrics used in the calculation of this score which we are unable to use since they are not reported as part of our surveillance. These are the number of concurrent procedures, type of anaesthetic, smoking status, presence of metastatic cancer or peripheral vascular disease, and use of steroids.

Incidence of SSI by procedure type

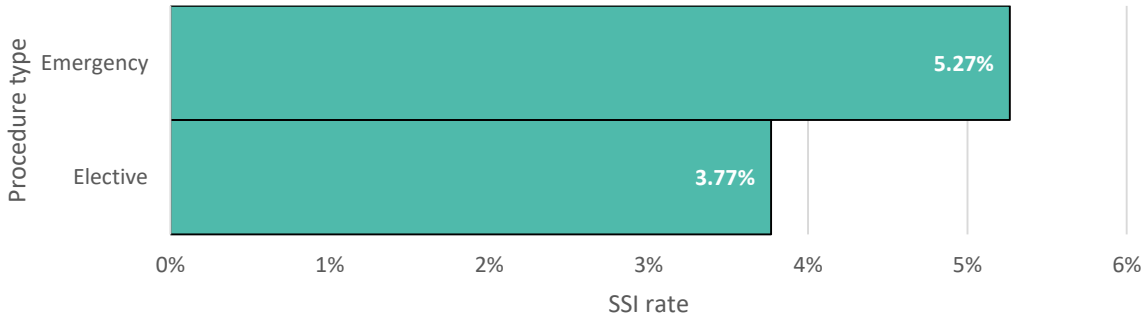


Figure 8 – Graph showing incidence of SSI by type of procedure, 2020.

Table 10 – Incidence of SSI by procedure type, 2020.

Age group	No. of procedures	SSI	SSI rate (95% CI)
Elective	2415	91	3.77% (3.04-4.61)
Emergency	2867	151	5.27% (4.48-6.15)
Unknown	19	1	5.26% (0.13-26.03)

In 2020, the SSI rate for emergency procedures was significantly higher than elective procedures (40% increase, P=0.00945). The split of procedures is also fairly even, with 54.3% of procedures being classed as emergencies (CS1, CS2 and CS3) and the remaining 45.7% being classed as elective (CS4).[2]

[2] 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

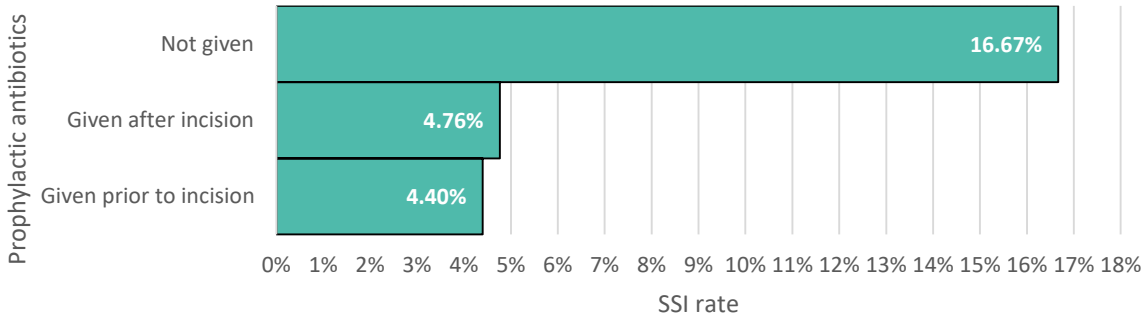


Figure 9 – Graph showing incidence of SSI by timing of prophylactic antibiotics, 2020.

Table 11 – Incidence of SSI by timing of prophylactic antibiotics, 2020.

Prophylactic antibiotics	No. of procedures	SSI	SSI rate (95% CI)
Given prior to incision	5028	221	4.40% (3.85-5.00)
Given after incision	168	8	4.76% (2.08-9.17)
Not given	36	6	16.67% (6.37-32.81)
Unknown	69	8	11.59% (5.14-21.57)

99.3% of mothers were given prophylactic antibiotics and, of these, 96.8% were given prior to surgical incision. There is a higher SSI rate when antibiotics are administered after incision, but this was not significant (8% increase, P=0.81994). The SSI rate is highest when prophylactic antibiotics are not given (16.67%), however it should be noted there is a small number of procedures within this group.

While this increase is not statistically significant, 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 mothers on second line antibiotics, both Clindamycin and Gentamicin have a serum half-life of two hours).

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

Incidence of SSI by skin closure type

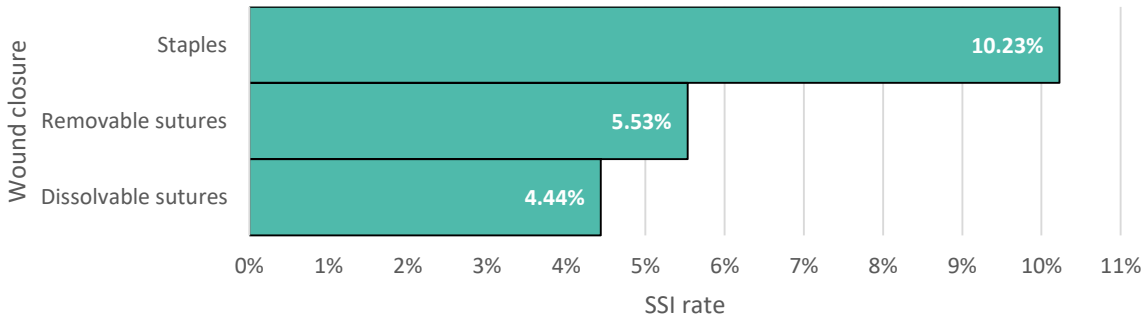


Figure 10 – Graph showing incidence of SSI by type of skin closure used, 2020.

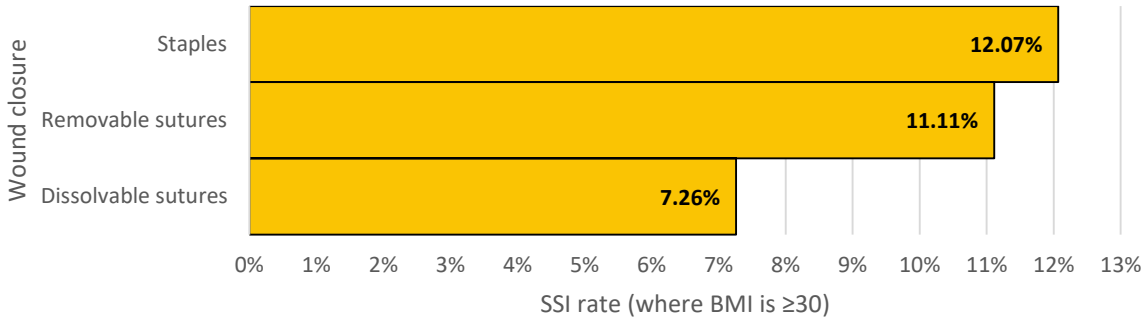


Figure 11 – Graph showing the incidence of SSI by skin closure in mothers with BMI≥30, 2020.

Table 12 – Incidence of SSI by type of skin closure, 2020.

Type of wound closure	No. of procedures	SSI	SSI rate (95% CI)
Sutures (all types)	5189	233	4.49% (3.93-5.05)
Dissolvable sutures	4936	219	4.44% (3.88-5.05)
Removable sutures	253	14	5.53% (3.06-9.11)
Staples	88	9	10.23% (4.78-18.53)
Unknown	24	1	4.17% (0.11-21.12)

Table 13 – Incidence of SSI by type of skin closure in mothers with BMI≥30, 2020.

Type of wound closure	No. of procedures	SSI	SSI rate (95% CI)
Sutures (all types)	1820	136	7.47% (6.26-8.68)
Dissolvable sutures	1721	125	7.26% (6.08-8.59)
Removable sutures	99	11	11.11% (5.68-19.01)
Staples	58	7	12.07% (4.99-23.30)
Unknown	6	0	0.00% (0.00-45.93)

In 2020, the SSI rate when staples were used as a method of skin closure was 128% higher than when sutures were used (p=0.01073). This trend is less pronounced when the mother is obese (BMI≥30), with the SSI rate being 62% higher when staples are used. There was not a significantly higher SSI rate when staples are used instead of sutures in Mother's whose BMI≥30 (P=0.19405). The overall SSI rate for the use of staples is 10.2% in 2020, whereas the SSI rate for removable sutures is 5.53%.

While it may be argued that staples provide an opportunity for the wound to be inspected as they are being removed, this does not sufficiently explain the relationship with SSI rate as we would expect to see the same pattern with the removable sutures.

Section 5: Post-procedure details and 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

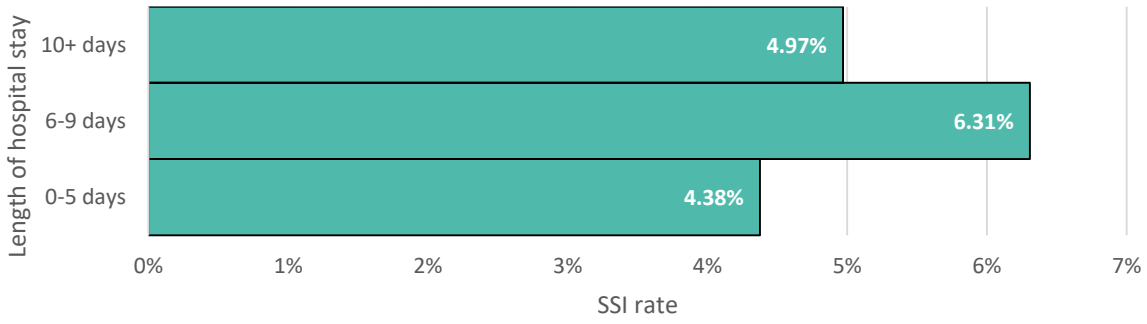


Figure 12 – Graph showing incidence of SSI by length of hospital stay, 2020.

Table 14 – Incidence of SSI by length of hospital stay, 2020.

Length of hospital stay	No. of procedures	SSI	SSI rate (95% CI)
0-5 days	4570	200	4.38% (3.80-5.01)
6-9 days	333	21	6.31% (3.95-9.48)
10+ days	161	8	4.97% (2.17-9.56)
Unknown	237	14	5.91% (3.27-9.71)

For all patients undergoing a C section, the mean hospital stay following the procedure is 2.8 days (median of 2). When only mothers who have had an SSI are included, this increases to a mean of 3.1 days (median of 2). This would suggest that those who have been discharged from the hospital later are more likely to develop an SSI, not because of the length of stay itself, but due to the same factors that resulted in the extended stay. The trend between the two is weak however, and the length of stay is not an accurate predictor of SSI rate on its own (P=0.673).

Length of midwifery care

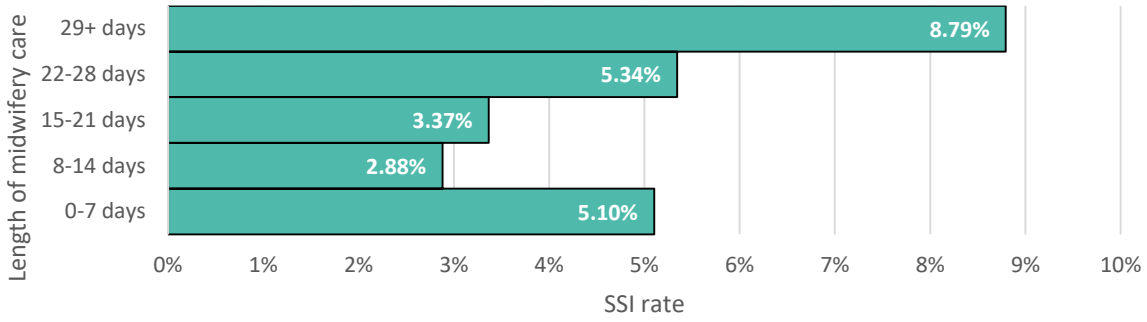


Figure 13 – Graph showing incidence of SSI by length of midwifery care post-procedure, 2020.

Table 15 – Incidence of SSI by length of midwifery care post-procedure, 2020.

Length of midwifery care	No. of procedures	SSI	SSI rate (95% CI)
0-7 days	98	5	5.10% (1.68-11.51)
8-14 days	1250	36	2.88% (2.03-3.96)
15-21 days	1456	49	3.37% (2.50-4.42)
22-28 days	1123	60	5.34% (4.10-6.82)
29+ days	398	35	8.79% (6.20-12.02)
Unknown	976	58	5.94% (4.54-7.61)

NOTE: All SSIs in this report occurred in the first 14 days post-procedure. Even in mothers who spent 29 or more days in care, the SSI rate does not include any SSIs occurring day 15 or later.

Following the procedure, women spend a mean length of 18.8 days under the care of a midwife (median of 18), including both the time spent in the hospital and the time spent at home with regular visits from a community midwife. If there has been an SSI, this rises to a mean of 21.8 days (median of 22), indicating that SSIs are causing women to be under midwifery care for significantly longer than they would be otherwise (P<0.001). In 2020, the SSI rate was higher where length of midwifery care was 29+ days (8.79%).

Time to onset of infection

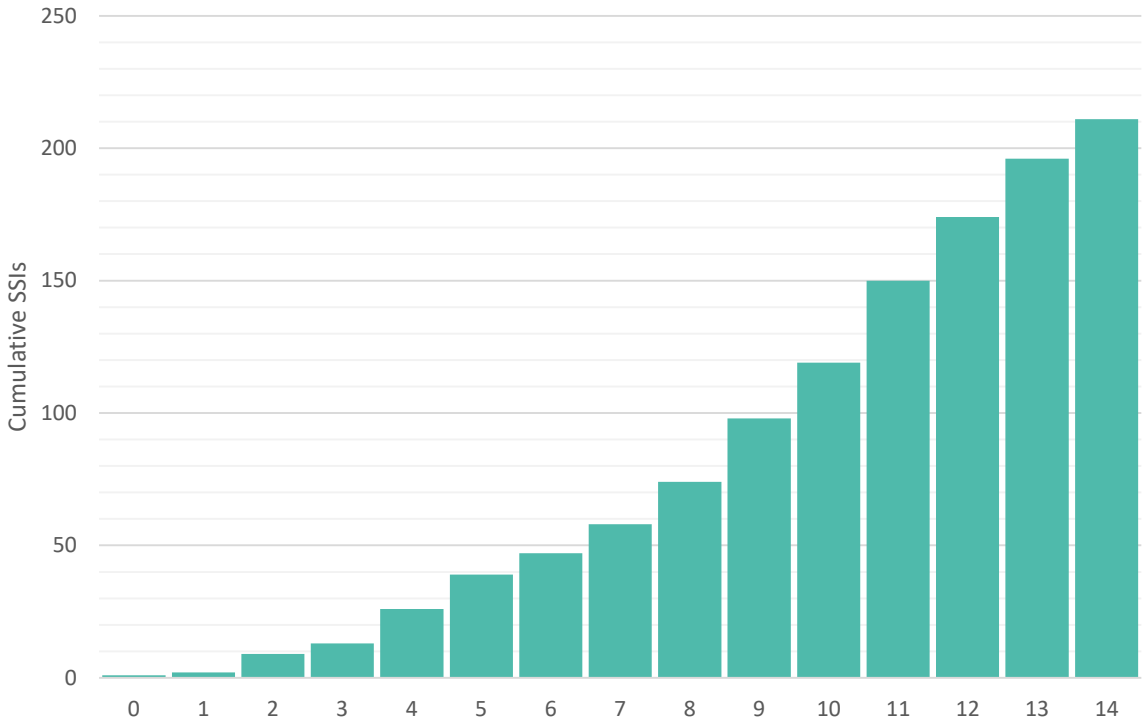


Figure 14 – Graph showing cumulative SSIs up to 14 days post-procedure. Blank infection dates excluded, 2020.

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. Despite this, we do request that hospitals continue reporting up to 30 days as normal, as infections occurring on days 15-30 are still counted and reported to the European Centre for Disease Prevention and Control (ECDC).

Any SSIs reported without an infection date are counted as occurring on day 0 and are included in the SSI rates. There were 32 (13%) infections where the date of onset was not recorded. Within the first 14 days, the mean time to infection was 9.2 days, with a median of 10. The greatest number of infections were reported on day 11 (n=31).

Anonymised Hospital SSI rates

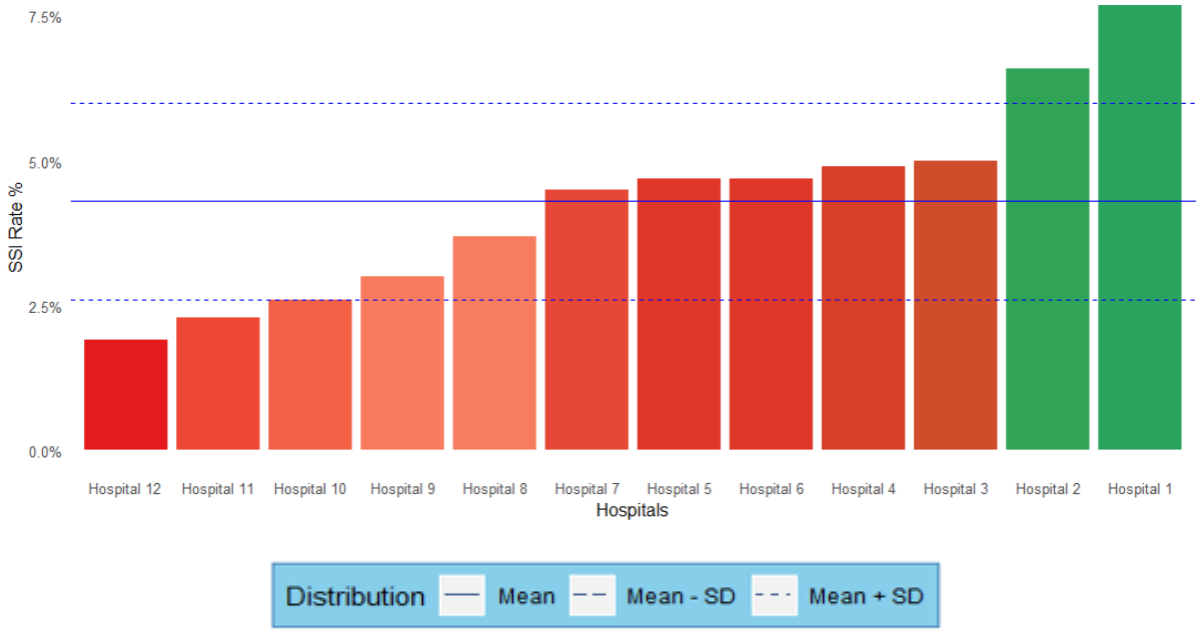


Figure 15 - Anonymised SSI rates for each Hospital participating in the C section surveillance scheme as of 2020, from the lowest to highest rate.

Figure 15 shows anonymised SSI rates for each hospital reporting C section procedures in 2020. The solid blue line represents the mean (4.3%) and the dashed blue lines represent the + and – standard deviation (1.7%). At the highest end the rate is 7.7%, compared to 1.9% at the lowest end. A total of 7 hospitals had an SSI rate above the mean.

Discussion

Compliance with the C section SSI surveillance has reduced in 2020 with 84% of expected forms being returned (88% in 2019) with a decrease in the proportion of valid forms at 71% (77% in 2019). Due to less hospitals directly reporting procedure numbers for compliance purposes we have had to move back to PEDW figures as the denominator for the majority of our compliance rates. There may be an overestimation of compliance due to inaccuracy of the PEDW dataset (i.e. more forms were being submitted than the number of procedures alleged to have occurred). The Covid-19 pandemic also had an impact on data quality and completeness in 2020, with a reduction in forms returned and the number of valid forms received.

The overall SSI rate for 2020 was 4.58%, higher than in 2019, which was 4.33%. Due to the higher SSI rate, the overall reduction over time has decreased to 43% (59% in 2019) and decreased slightly in real numbers, representing 2353 infections being prevented for mothers (2374 in 2019). Emergency procedures have seen an increase in SSI rates (4.49% to 5.27%), whereas Elective procedures had a reduced SSI rate (4.05% to 3.77%) in 2020. Fewer elective procedures were carried out in 2020 compared to the previous year, and fewer elective procedures were carried out compared to emergency procedures in 2020.

Across all patient demographics, the one factor which still has the largest impact on SSI rates is BMI. Across the years, a general trend has been observed in which higher BMIs are associated with an increased risk of SSI. In 2020, the mean BMI for all procedures was 28.8, when including only procedures that had an SSI associated with them, this increased to 33.4. Obese mothers have an SSI rate of 7.59% while healthy weight mothers have an SSI rate of 2.09%. Mothers under the age of 20 have an SSI rate of 4.59% and those between 20 and 24 have an SSI rate of 5.29%. Differing from previous years, the SSI rate also increased in the 25-29 age group, with an SSI rate of 5.53%. The above 40 bracket has the highest SSI rate of 6.15%. It should be noted that the above 40 age group is also one of the smallest age groups.

Since 2015, Public Health Wales has been monitoring the use of staples in post procedure closure. While usage has been decreasing over the last three years, there is still localised pockets of heavy usage. Our data indicated a strong risk of SSI associated with the usage of staples instead of sutures. Obese mothers see an SSI rate of 12.07% when staples are used, compared to 7.47% for all types of sutures, although in contrast to previous years the SSI rate is not significantly higher in procedures where staples are used for mothers with a BMI of >30. While we do acknowledge sutures are a more time consuming process, ***we recommend that staples are not used as a routine method of closure.***

Similar to 2019, 99.3% of mothers in Wales were given antibiotic prophylaxis for their procedure, with 96.8% having it administered prior to incision. The SSI rate is highest where antibiotic prophylaxis is not given (16.67%), however it should be noted this makes up a small number of procedures. As mentioned in last year's report, hospitals are adopting the recommending antibiotics and those hospitals that differed in dosage of the recommended antibiotics have adopted the recommendation in full. Continuing with the adoption of these recommendations in line with NICE and AWMSG is encouraged.

Inpatient SSIs are still relatively uncommon, however the proportion of SSIs that are inpatient SSIs has increased over recent years. There has been a decrease in 2020, with inpatient SSIs accounting for 12.3% of all infections (n =30), compared to 15.4% in 2019 (n = 39). Deep and organ space infections continue to be rare, although there has been an increase in the number of deep SSIs compared to the previous year, with deep SSIs making up 17.9% of all infections (n = 42) and organ space SSIs making up 0.4% (n =

1), while the proportion of organ space SSIs has increased this year, we have seen similar fluctuations across the years and is of little concern.

In terms of time spent in hospital, the mean time that mothers spend under the care of a midwife is 18.8 days. This mean increases to 21.8 days in the event of an SSI occurrence. A strong association was seen between added time spent under the care of a midwife and the occurrence of an SSI ($P<0.001$). As always, infection data is captured up to and including 14 days post-operatively. The mean time to infection is 9.2 days, with the most infections reported on day 11 (n = 31).

In conclusion, there was an increase in SSI rate in 2020 compared to 2019, (4.58% from 4.33%), this is still a 43% reduction in infection numbers from 2010. In order to maintain these SSI rates, 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 22) in mothers post-surgery, these rates are far below those in 2007/2008. Public Health Wales 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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