

A cost analysis of surgical site infection for hip fracture patients using national clinical audit data

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Abstract

Aim

To estimate the direct economic burden of surgical site infections (SSIs) following hip fracture surgery within the Irish healthcare system.

Methods

A micro-costing analysis using clinical audit data was undertaken to estimate the direct in-patient costs of treating SSIs after hip fracture surgery. Costs were calculated for the acute episode of care and stratified by demographic and clinical characteristics, allowing for a more detailed assessment of potential disparities in healthcare outcomes and associated expenditure across different patient groups.

Results

Over 12 months, 16 (0.4%) hip fracture patients developed an SSI. The total cost was €712,898, with a mean of €44,556 per patient. Differences by subgroup were noted: males €35,418, females €50,039, aged ≥80 €49,712 and <80 years €33,213.

Discussion

These findings indicate that disease-specific surveillance programmes can generate valuable health economic and epidemiological evidence. As the older population continues to grow, the incidence of SSIs and their associated costs are likely to rise. Ongoing analysis and systematic monitoring through clinical audit are crucial for refining cost estimates, informing

evidence-based policies, and optimising resource allocation to enhance the quality of care in the acute hospital setting.

Introduction

As the Irish population above 65 years old is forecasted to double by 2051¹, the associated health burden is expected to grow. A serious injury commonly associated with the expanding cohort over 60 years are hip fractures². Hip fractures present a large expense to the Irish healthcare system, costing approximately €44 million in 2020 for acute hospital care alone³. Older age is frequently cited as a driving factor that contributes to higher SSI rates⁴. This highlights the forecasted growing demand for healthcare services accompanied by increasing costs.

Surgical Site Infection (SSI) refers to a wound infection that causes disruption to the surgical incision or any surrounding anatomy. SSIs can be further categorized based on the depth of tissue involvement. The Centre for Disease Control (CDC) in the United States classifies various SSI types as follows: "*Superficial SSI* involves only skin and subcutaneous tissue of the incision"; "*Deep SSI* involves deep soft tissues of the incision (for example, fascial and muscle layers)"; "*Organ/Space SSI* involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure"⁵.

SSI is the most common complication of postoperative procedures, significantly impacting patient physical and psychological outcomes, as well as prolonged recovery⁶. Australia estimated an incidence rate of SSI ranging 2-11% depending on the surgical speciality and region. The estimated average cost per patient was €12,116, 2.5 times the average per capita spending on health⁷. The associated indirect costs of absenteeism and premature death of €14.8 million and €1,898 million respectively per year were estimated⁷. A study from the UK established extended in-patient length of stay as the main cost driver of hip fracture related SSIs⁸. However, evidence on the cost of SSIs relating to hip fractures and SSIs within an Irish context have not yet been reported.

The Irish Hip Fracture Database (IHFD)⁹ is a national clinical audit managed by the National Office of Clinical Audit and has been collecting data on patients aged 60 and older, hospitalised with a hip fracture since 2012. In 2022, the IHFD was the first national clinical audit in Ireland to integrate SSI surveillance data as recommended by the European Centre Disease Control (ECDC)¹⁰. The adaptation of this framework into the Irish health care system was conducted in collaboration with the national Antimicrobial Resistance and Infection Control (AMRIC) programme¹¹.

Methodology

The cost analysis was conducted using anonymised patient level data from IHFD for year 2023 which additionally captured SSI data. The extended SSI dataset for 15 hospitals with patients aged 60 years and older, were used in the analysis. The dataset incorporates the required data fields advised by the ECDC¹⁰ and is benchmarked against other data collection tools utilized by Public Health England & Scottish and Northern Irish healthcare systems. It also captures information on SSIs that occur using standardized definitions¹². Additionally, we summarised the clinical characteristics and associated complexity of the SSI and non-SSI cohort based on secondary diagnoses using the ICD-10-AM disease classification coding¹³.

A micro-costing analysis of patients with SSI was conducted. This method considered a detailed list of all resources used during an in-patient's acute episode of care and a corresponding cost to every component was assigned; "micro-costing is generally considered the 'gold standard' for costing inpatient stays"¹⁴. This method was deemed most appropriate, given the detailed data and information on individual patients' resource use who had developed an SSI.

For each patient's resource use, an appropriate cost was assigned, with a detailed breakdown and supporting references provided in Appendix A. The majority of these costs were retrieved from the Health Services Executive (HSE)'s reimbursable items list¹⁵. However, due to the decentralized nature of the Irish healthcare systems method of procurement, not all of the items were available through the reimbursable items list. The cost of these items was retrieved directly from the manufacturer or from a hospital procurement pricing list. All costs were adjusted to the 2023 consumer price index level using the Central Statistics Office Inflation Calculator¹⁶.

Each patient's additional SSI related length of stay (LOS) was calculated as the difference between discharge date and the date of SSI detection. For each patient, their additional SSI related LOS was estimated by assigning a daily cost. The Healthcare Pricing Office (HPO) estimated an average cost per day spent in hospital of €1,195 based on various costs at the national level¹⁷.

The total of each cost component was calculated by employing equations i-iv, presented in Appendix B. The cost of the surgical procedure, specifically the washout and debridement, was estimated by assigning a staff time cost associated with its delivery using the HSE pay scale and salary estimates from the economic research institute^{18, 19}.

Analysis was conducted in Microsoft Excel (Microsoft Corp., Redmond, WA) and using Stata version 18 (StataCorp LLC, College Station, TX).

Results

Demographics of patients with SSI

Table I summarises the demographics of the hip fracture patient cohort admitted in 2023 to participating hospitals. In total 3983 patients were admitted for a hip fracture. Of these, 0.4% were reported as having an SSI. The average length of stay for a patient in the IHFD was 19.3 days; in contrast to the average SSI patient's length of stay of 54.2 days.

Additionally, a detailed breakdown of the clinical characteristics of the SSI and non-SSI cohort as categorised using the ICD-10-AM disease classification is presented in Appendix C and is based solely on conditions that were present amongst the SSI cohort. These conditions are categorized into diagnoses identified upon admission and those identified during hospitalization, offering a comprehensive overview of the patient's evolving complexity from pre-admission through their hospital stay. The SSI cohort had 15.6 additional secondary diagnose of which 5.1 were hospital-acquired. In compassion, the IHFD cohort had 8.6 secondary diagnoses of which 1.4 were hospital- acquired.

The IHFD discharge destination variable was used to analyse the difference in outcomes between SSI and non-SSI cohorts as displayed in Table I. Notably, the results indicated that the SSI cohort had a 0% rate of new or returning long-stay care admissions. The IHFD cohort experienced a new long-stay care admission rate of 4% and a return long-stay care admission rate of 13.6%.

The SSI cohort had higher rates of admission to rehabilitation (43.8% vs 38.5%) and convalescent care (18.8% vs 17%) following discharge, as well as a higher rate of discharge to home. They also experienced a substantially greater societal burden, as reflected by a higher mortality rate (6.3%), compared to the IHFD patient cohort (2.3%).

Table I. Description of the cohort

Demographic	IHFD	SSI Patient
N	3983 (100%)	16 (0.4%)
Mean Age	80.4	79.6
Male	34%	37.5%
Female	66%	62.5%
Over 80	55.5%	68.8%
Under 80	44.5%	31.3%
Mean number of total secondary diagnoses	8.4	15.6
Mean number of hospital-acquired secondary diagnoses	1.4	5.1
Mean Hospital LOS (days)	19.3	54.2
Discharge destinations:		
Home	24.8%	31.3%
Rehab unit	38.5%	43.8%
Convalescence care	17%	18.8%
New admission to nursing home or long-stay care	4%	0%
Return admission to nursing home or long-stay care	13.6%	0%
Died	2.3%	6.3%

Estimated SSI Costs

The total cost for all patients with a post hip fracture SSI admitted to participating public hospitals in 2023 equated to €712,898. Table II summarises the main SSI cost components, along with the total SSI cost. Extended LOS due to SSI contributed to the majority of this cost, €647,690.

Table II. Summary of main SSI cost components and total SSI cost for all patients

Component	Total Cost
SSI Extended LOS	€647,690
Dressing	€42,406.37
Antibiotic	€14,331
Surgical Treatment	€ 6,742.95
Total Cost	€ 712,897.80

Table III summarises SSI costs by patient demographic and clinical group. The average cost of SSI was €44,556 per admission with the female cohort incurring 29.2% greater cost (€50,039) than males (€35,418). The estimated average cost for patients over the age of 80 years was €49,712, 33.2% higher compared to patients aged under 80 years, €33,213. Across types, deep SSI had the highest average cost at €46,768, followed by superficial SSI at €44,662 and organ or space SSI at €43,186.

Table III. SSI Cost by clinical and demographic subgroups

Subgroup	Cohort %	Mean	SD	Min	Max
Demographic					
Male	37.5	€35,417.92	€24,989.81	€12,010.93	€78,707.77
Female	62.5	€50,039.03	€34,141.62	€17,222.53	€135,836.20
Under 80	31.3	€33,212.82	€17,135.27	€13,988.05	€53,299.57
Over 80	68.8	€49,712.16	€35,078.07	€12,010.93	€135,836.20
SSI Type					
Superficial	62.5	€44,661.73	€37,842.67	€12,010.93	€135,836.20
Deep	12.5	€46,767.64	€11,949.65	€38,317.96	€55,217.32
Organ or Space	25	€43,186.31	€21,339.81	€17,222.53	€69,387.08
Average	100	€44,556.11	€30,999.96	€12,010.93	€135,836.20

Table IV summarises the breakdown of dressing and antibiotic costs, by SSI type. The estimated antibiotic costs to treat an organ or space SSI were highest, at €2,568, and lowest for superficial SSI, €386. In contrast, the estimated dressing costs to treat a superficial SSI type were highest, €3,044 and lowest for a deep SSI type, €1,097.

Table IV. Dressing and Antibiotic cost by SSI type for all SSI patients

Demographic	Cohort %	Mean	SD	Min	Max
Antibiotic costs					
Superficial	62.5	€385.93	€525.60	€20.25	€1,350.44
Deep	12.5	€985.82	€1,034.64	€254.22	€1,717.42
Organ or space	25	€2,567.48	€1,889.44	€585.19	€4,891.93
Average	100	€1,094.93	€1,425.94	€20.25	€4,891.93
Dressing costs					
Superficial	62.5	€3,044.24	€4,370.05	€8.86	€14,748.05
Deep	12.5	€1,096.83	€1,380.59	€120.61	€2,073.05
Organ or space	25	€2,442.59	€3,336.18	€34.84	€7,135.15
Average	100	€2,650.40	€3,774.68	€8.86	€14,748.05

Discussion

This study applied a micro-costing methodology to estimate the associated costs of SSI among patients in Ireland, post hip fracture surgery, using patient-level IHFD data. The total estimated SSI cost post hip fracture was €712,898, and the average cost per patient was €44,556. This highlights the significant financial burden on the Irish healthcare system, for a relatively small patient cohort.

Although it is not possible to make a direct clinical or international comparison, an incidence rate of 0.5% amongst all hip fracture patients in the UK in 2021 was reported²⁰. However, the average additional cost of €44,556 was noticeably higher relative to all of the international cost benchmarks used as a comparison. This can be attributed to the prolonged length of stay within this cohort of an additional 34.9 days. In comparison, the 'Reduction of Postoperative Wound Infections by Antiseptics' (RECIPE) trial in Germany analysed costs across a variety of surgical specialities and found an additional length of stay of 6 days, incurring an added cost of €6272.95 per patient²¹. However, when looking at hip fracture specific SSIs; a study in Spain found a 32.5 day median average length of stay²². This supports the findings of this study that this cohort is of a more complex nature relative to other surgical specialities.

Highlighting the high cost of SSIs and its key drivers plays an important role, as SSI prevalence is considered to "reflect the quality of care, as they are potentially preventable complications directly linked to surgery"²³. The decision to allocate resources toward preventing SSIs will depend on the collection of additional cost data from this cohort in the future. This will ensure that robust input parameters are used in subsequent cost-effectiveness analyses.

This study has several limitations. This was the first 12-month period during which SSI data was recorded in Ireland, capturing a relatively small cohort. Therefore, clinical and demographic subgroup analysis was more susceptible to the effects of extreme values. This may explain why superficial SSI is, on average, more expensive than organ or space SSI.

The small patient cohort restricted the use of more advanced matching methods such as propensity score and nearest neighbour matching to estimate the prolonged LOS attributable to SSI, a methodology demonstrated in previous research²⁴. This introduces a degree of uncertainty regarding the additional LOS associated with SSI. However, given the substantial difference in mean LOS between the SSI and non-SSI cohorts, this form of analysis was considered appropriate.

The €1067.49 cost of an organ or deep space SSI is likely underestimated due to limited and inconsistent data captured on the frequency of washout and debridement surgical procedures carried out per patient. This became apparent when comparing the number of washout and debridement procedure codes recorded in the Hospital In-Patient Enquiry (HIPE) section of the dataset with the IHFD treatment type indicator. The resources used for washout and debridement were not included in the cost due to there being too much uncertainty, resulting in this cost being estimated using the salaries of the attending staff, and staff time.

Uncertainty in resource utilisation affected the cost estimate for organ or space SSIs by limiting the ability to quantify the cost of revision procedures which were performed in 25% of organ or space SSI patients. Although these procedures appropriately influenced the DRG complexity scale, their associated costs could not be incorporated into the disease-specific cost analysis owing to the absence of sufficiently granular data on resource utilisation.

These sources of uncertainty and data related discrepancy are a major factor in the counterintuitive finding that an organ or space SSI presents less of a monetary burden than a superficial SSI.

Results from this study cannot be generalised to other patients in Ireland and should be interpreted with caution. The analysed data are from 15 Irish publicly funded hospitals, and the costs may not be fully generalisable across other hospitals not capturing SSI data in Ireland.

This analysis exclusively examined the individual acute episode of care within the acute hospital setting for hip fracture patients. The lack of unique patient identifiers allowed only the cost per acute episode of care to be quantified. The IHFD SSI surveillance ends once the patient is discharged; the standard SSI surveillance period for SSI after an implant surgery ranges up to 90 days making this a limitation of the data. The data do not capture medical attention sought outside the in-patient setting. This coupled with the nature in which SSIs are

recorded, may lead to a significant underreporting of the total number of SSIs if not carried out by an infection and control team²³.

The use of diagnostic codes to identify cohorts has previously been highlighted to be unreliable, specifically in their underutilization amongst Covid-19 patients²⁵. This study faces the same limitation when reporting secondary diagnoses, a common limitation amongst observational studies who use ICD-10 codes for cohort identification.

Finally, uncertainty about dressing change frequency and antibiotic course length was reduced using in-house clinical guidance from NOCA. Incomplete data on antibiotic dosage was addressed following recommendations from the European Medicines Agency (EMA) and the Health Products Regulatory Authority (HPRA)^{26, 27}.

In conclusion, these results indicate that disease-specific surveillance programmes can provide valuable health economic and epidemiological evidence. For the first time, this study provides estimates of the burden of SSI for hip fracture patients in Ireland. Spending €712,898 on a relatively small cohort highlights that SSI imposes a significant financial burden on the Irish healthcare system. With the forecasted growth of the aging Irish population, we can expect an increase in the number of SSIs and the associated treatment costs. This pilot study highlights the need for ongoing analysis for this subgroup to enhance the accuracy of our estimates and continued monitoring through clinical audit. These insights can help inform policies aimed at driving the quality of care within the acute hospital setting.

The findings of this study are particularly relevant to the activity-based funding (ABF) framework which allocates resources retrospectively based on the DRG and respective complexity level assigned upon discharge and derived from several clinical and demographic factors^{28, 29}. In light of the more comprehensive overview of the cost of illness associated with SSI amongst hip fracture patients, the condition should be assigned appropriate complexity weighting amongst this cohort to ensure accurate representation and equitable funding withing the ABF resource allocation model.

In addition, best practice tariffs for hip fracture care in Ireland have been developed and implemented as policy instruments to incentivise improvements in clinical practice. Further research is warranted on the inclusion of SSI prevalence as a key quality indicator. Given that such metrics determine NOCAs allocation of best practice tariffs³⁰, its effectiveness in generating cost savings and enhancing patients' quality of life must be evaluated in the future.

Declarations of Conflicts of Interest:

None declared.

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Ethics approval:

Ethics approval was granted by HREC Reference Number: REC202311007.

Data availability:

The data that support the findings of this study were made available under a strict user agreement with the Healthcare Pricing Office. Access to the data may only be sought directly from the Healthcare Pricing Office.

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Appendices:

Appendix A - Items, Costs and Sources

Item	Cost	Source
Antibiotics*		
Amoxicillin	€0.00031	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Clindamycin	€0.00155	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Flagyl	€0.00027	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Flucloxacillin	€0.00065	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Vancomycin	€0.02251	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Vancocin matrigel	€0.03117	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Rocephin (ceftriaxone)	€0.01423	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Rifadin	€0.00148	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Tazocin	€0.00077	St. Vincent's university hospital. Procurement Pricing List 2024. [Unpublished]
Zinacef (Cefurox)	€0.00437	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Cubicin (Daptomycin)	€0.27610	Health Services Executive (HSE), IPHA Framework Agreement on the Supply and Pricing of Medicines 2016 [Available at: https://www.hse.ie/eng/about/who/cpu/iphaprices16/iphapricechanges.pdf]
Dressings		
Aquacel surgical cover	€21.49	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Aquacel hydrofibre	€5.00	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
DuoDerm	€0.95	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Jubilee	€6.90	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]
Meptile	€2.57	St. Vincent's university hospital. Procurement Pricing List 2024. [Unpublished]
Mepor	€0.21	St. Vincent's university hospital. Procurement Pricing List 2024. [Unpublished]
Hypafix	€3.43	St. Vincent's university hospital. Procurement Pricing List 2024. [Unpublished]
Surgapad	€0.23	St. Vincent's university hospital. Procurement Pricing List 2024. [Unpublished]
Pressure dressing	€3.65	Advised by expert clinical opinion Hypafix + Surgapad
Inadine dressing	€1.56	Health Services Executive (HSE), Reimbursable Items. [Available at: https://www.sspcrs.ie/druglist/pub]

PICO 7 (Single dressing)	€150.00	Smith & Nephew, Cost obtained from direct inquiry. [Available at: https://www.smith-nephew.com/en/health-care-professionals/products/advanced-wound-management/pico-7-global#overview]
Prevena Vac (Complete unit)	€405.88	St. Vincent's university hospital. Procurement Pricing List 2024. [Unpublished]
Prevena Vac (Dressing)	€292.80	St. Vincent's university hospital. Procurement Pricing List 2024. [Unpublished]
Treatments		
**Surgical treatment	€1,067.49	Health Services Executive (HSE), Pay Scales for 1 October 2023 [Available at: https://assets.hse.ie/media/documents/FINAL_Pay_Scales_for_1_October_2023_V2.pdf] Economic Research Institute (ERI), Medical Anesthesiologist Salary in Ireland [Available at: https://www.erieri.com/salary/job/medical-anesthesiologist/ireland]
LOS		
Per day hospital LOS cost	€1,195	Healthcare Pricing Office (HPO), Letter to the Minister of Health 2023. [Available at: https://www.hse.ie/eng/about/personalpq/pq/2023-pq-responses/may-2023/pq-24179-23-richard-boyd-barrett.pdf]

* Antibiotics are represented as cost per milligram

** Surgical treatment was estimated as the hourly staff cost of a washout and debridement

Appendix B - Equations i-iv used for the calculation of each cost component

(i)

$$\text{Antibiotic} = \text{Cost per mg} \times \text{Dosage} \times \text{Daily frequency} \times \text{LOS}$$

(ii)

$$\text{Wound Covers and Single use NPWT} = \left(\frac{\text{LOS}}{\text{Change frequency}} \right) \times \text{Unit Cost}$$

(iii)

$$\text{NPWT} = \text{Full Unit Cost} + \left(\text{Dressing Cost} \times \left(\frac{\text{LOS}}{\text{Change Frequency}} \right) - 1 \text{ Dressing cost} \right)$$

(iv)

$$\text{LOS Cost} = \text{LOS} \times \text{HPOs Per Day Cost}$$

(v)

$$\text{Attending Staff} = \left(\frac{\text{Yearly Salary}}{\text{Weekly Hours} \times 52} \right) \times \text{Time spent attending}$$

(vi)

SSI Mean cost

$$= \frac{\text{Total Antibiotic} + \text{Single use NPWT and Wound Covers} + \text{NPWT} + \text{Surgical treatment} + \text{LOS Cost}}{\text{number of SSI patients}}$$

Appendix C – Clinical Characteristics of the Patient Cohort

Appendix C1, Mean number of diagnoses as defined by ICD-10 classification codes, by SSI category

Mean number of diagnoses	A00–B99	D50–D89	E00–E89	F00–F99	H00–H59	I00–I99	J00–J99	K00–K99	L00–L99	M00–M99	N00–N99	R00–R99	S00–T98	U50–U73, V00–Y98	Z00–Z99	U04–U49, U78–U88, U91, U92
Present on Admission																
SSI Type																
Superficial	0.3	0.4	0.5	0.5	0.1	0.4	0.1	0.6	0.2	0.4	0.8	0.8	1.1	2.2	1.3	1.2
Deep	0	0	0.5	0	0	1	0	0.5	0	0	1	0	1	2	0.5	1
Organ or Space	0	0.5	1.75	1	0	0.75	0	0.5	0.25	0.25	0.75	0.25	1.25	2	0.75	1
Cumulative	0.19	0.38	0.81	0.56	0.06	0.56	0.06	0.56	0.19	0.31	0.81	0.56	1.13	2.13	1.06	1.13
Non-SSI Patients	0.08	0.12	0.37	0.24	0.01	0.30	0.16	0.12	0.07	0.13	0.17	0.30	1.15	2.01	0.59	1.02
Hospital Acquired Diagnosis																
SSI Type																
Superficial	0.7	0.1	0	0	0	0.3	0.2	0.1	0.2	0	0.2	0.2	0.9	1.4	0.1	0.4
Deep	0.5	0.5	1.5	0.5	0	0.5	0	0.5	0	0	0	0	1	2	0	0
Organ or Space	1	0.25	0	0	0	0.25	0	0.25	0	0	0.5	0	1	1	0.75	0
Cumulative	0.75	0.19	0.19	0.06	0	0.31	0.13	0.19	0.13	0	0.25	0.13	0.94	1.38	0.25	0.25
Non-SSI Patients	0.10	0.04	0.09	0.07	0.004*	0.09	0.12	0.06	0.03	0.02	0.08	0.19	0.09	0.23	0.09	0.09

*This value is reported to three decimal places to preserve precision and avoid rounding to zero.

ICD-10-AM Disease Code List.¹³ A00-B99 = Infectious and parasitic diseases; D50-D89 = Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism; E00-E89 = Endocrine, nutritional and metabolic diseases; F00-F99 = Mental and behavioural disorders; H00-H59 = Diseases of the eye and adnexa; I00-I9 = Diseases of the

circulatory system; J00-J9= Diseases of the respiratory system; K00-K99 = Diseases of the digestive system; L00-L99 = Diseases of the skin and subcutaneous tissue; M00-M99 = Diseases of the musculoskeletal system and connective tissue; N00-N99 = Diseases of the genitourinary system; R00-R99 = Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified; S00-T98 = Injury, poisoning and certain other consequences of external causes; U50-U73, V00-Y98 = External causes of morbidity and mortality; Z00-Z99 = Factors influencing health status and contact with health services; U04-U49, U78-U88, U91, U92 = Codes for special purposes

Appendix C2, Proportion of patients as defined by ICD-10 classification codes, by SSI category

Categorical Prevalence	A00–B99	D50–D89	E00–E89	F00–F99	H00–H59	I00–I99	J00–J99	K00–K99	L00–L99	M00–M99	N00–N99	R00–R99	S00–T98	U50–U73, V00–Y98	Z00–Z99	U04–U49, U78–U88, U91, U92
Present on Admission																
SSI Type																
Superficial	30.00%	40.00%	20.00%	50.00%	10.00%	30.00%	10.00%	40.00%	20.00%	20.00%	50.00%	40.00%	100.00%	100.00%	80.00%	100.00%
Deep	0.00%	0.00%	50.00%	0.00%	0.00%	100.00%	0.00%	50.00%	0.00%	0.00%	50.00%	0.00%	100.00%	100.00%	50.00%	100.00%
Organ or Space	0.00%	50.00%	75.00%	50.00%	0.00%	25.00%	0.00%	50.00%	25.00%	25.00%	50.00%	25.00%	100.00%	100.00%	25.00%	100.00%
Cumulative	18.75%	37.50%	37.50%	43.75%	6.25%	37.50%	6.25%	43.75%	18.75%	18.75%	50.00%	31.25%	100.00%	100.00%	62.50%	100.00%
Non-SSI Patients	7.14%	11.23%	25.39%	20.94%	1.01%	21.28%	12.12%	9.28%	5.55%	11.20%	12.84%	20.99%	97.40%	97.62%	41.40%	97.38%
Hospital Acquired Diagnosis																
SSI Type																
Superficial	50.00%	10.00%	0.00%	0.00%	0.00%	20.00%	20.00%	10.00%	20.00%	0.00%	20.00%	20.00%	70.00%	60.00%	10.00%	30.00%
Deep	50.00%	50.00%	50.00%	50.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	0.00%	0.00%
Organ or Space	50.00%	25.00%	0.00%	0.00%	0.00%	25.00%	0.00%	25.00%	0.00%	0.00%	50.00%	0.00%	50.00%	50.00%	25.00%	0.00%
Cumulative	50.00%	18.75%	6.25%	6.25%	0.00%	25.00%	12.50%	18.75%	12.50%	0.00%	25.00%	12.50%	68.75%	62.50%	12.50%	18.75%
Non-SSI Patients	8.51%	3.44%	6.28%	6.76%	0.36%	7.14%	9.26%	5.43%	2.31%	1.47%	7.33%	12.86%	6.97%	11.18%	7.57%	8.46%

ICD-10-AM Disease Code List.¹³ A00-B99 = Infectious and parasitic diseases; D50-D89 = Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism; E00-E89 = Endocrine, nutritional and metabolic diseases; F00-F99 = Mental and behavioural disorders; H00-H59 = Diseases of the eye and adnexa; I00-I9 = Diseases of the circulatory system; J00-J9 = Diseases of the respiratory system; K00-K99 = Diseases of the digestive system; L00-L99 = Diseases of the skin and subcutaneous tissue; M00-M99 = Diseases of the musculoskeletal system and connective tissue; N00-N99 = Diseases of the genitourinary system; R00-R99 = Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified; S00-T98 = Injury, poisoning and certain other consequences of external causes; U50-U73, V00-Y98 = External causes of morbidity and mortality; Z00-Z99 = Factors influencing health status and contact with health services; U04-U49, U78-U88, U91, U92 = Codes for special purposes