Framework for HSE National Programme for Surgical Site Infection Surveillance - Pilot through the Irish Hip Fracture Database (IHFD)

Version Control

Version	Authors	Outline of Updates	Updated by	Release Date
1.0	SSI Steering Committee	n/a		09/12/2022
1.1	SSI Steering Committee	General formatting, addition of figure list. Updates to Definition of an operative procedure in relation to ECDC recommendations	Sarah Egan, Lauren Webster, Michelle Evans	TBC
1.2	SSI Steering Committee	Final proof read and edits prior to publication	Michelle Evans	01/10/2023
1.3	SSI Steering Committee	Correction to name Scottish Surveillance of Healthcare Associated Infection Programme (SSHAIP) Health Protection Scotland (HPS) as requested. Addition reference to CDC SSI guidelines (2016)	Michelle Evans	07/02/2024

Table of Contents

Background

Surgical site infections (SSIs) are associated with longer length of hospital stays, additional surgical procedures or treatment in intensive care units, and greater rates of morbidity and mortality (ECDC, PHE, CDC). It is estimated that SSI affects over 500,000 people per year in Europe and costs €19 million (WHO).

In the most recent HPSC coordinated Point Prevalence Survey of Hospital-Acquired (HAI) Infections, conducted across 60 hospitals in Ireland in May 2017, SSI was the second most common HAI, accounting for 18.1% of all HAI and 1.2% of inpatients overall (HPSC). This aligns with SSI being reported as the second most common HAI in Europe and the United States (WHO). Notably, the Point Prevalence Survey of Hospital-Acquired Infections noted that the actual burden of SSI was likely underestimated, particularly for superficial incisional SSI, due to many SSIs likely being diagnosed and managed post-discharge. Furthermore, the 2017 Point Prevalence Survey found that SSI was the second most common reason for which antimicrobials were prescribed to treat HAI, making up 13% of prescriptions. Surgical antimicrobial prophylaxis accounted for an additional 9.5% of prescriptions, of which nearly 70% exceeded the single dose recommended for the majority of surgical procedures (HSPC).

As per WHO core components of effective infection prevention and control (IPC) programmes, surveillance of healthcare-associated infections (HAIs) is critical to inform and guide IPC (WHO). SSI surveillance is key for determining the current extent of the problem, looking at trends over time, and assessing the impact of any interventions that were applied. It has been shown that surveillance of SSI that includes timely and appropriate feedback of data to surgeons can be an important part of reducing the risk of SSI (CDC).

This framework outlines the establishment of an SSI surveillance programme for public hospitals funded by the Health Service Executive (HSE). The development of this programme is a key component of Irish National Antimicrobial Plan (INAP2 ref: Strategic Objective 2: Enhancing surveillance of antibiotic resistance and antibiotic use.), The Antimicrobial Resistance and Infection Control Plan 2021-2025, (Action 2-02 Establish a national system for continuous monitoring of HCAIs in surgical site infections) and the Acute Operation Quality and Patient Safety Plan 2022 and is aligned to the commitments of Patient Safety Strategy 2019-2024.

The approach outlined in this framework has been developed by AMRIC national team, National Office of Clinical Audit (NOCA) and AMRIC Acute Operations team in consultation with the Health Protection Surveillance Centre (HPSC) and with reference to similar frameworks published by NHS UK, NHS Scotland, Centre for Disease Control (CDC) USA and European Centre for Disease Control (ECDC) and is therefore underpinned by review of best practice guidance, strong data quality and governance methods and a focus of improving patient outcomes.

Process Methodology

The National Office of Clinical Audit (NOCA) establishes and maintains national clinical audits across a number of clinical areas including Intensive Care, Obstetrics, major trauma, hip fractures, arthroplasty, and mortality. NOCA is funded by the Health Service Executive Quality Improvement Division and operationally supported by the Royal College of Surgeons in Ireland.

NOCA's audit portfolio includes:

1. Irish Hip Fracture Database (IHFD)
2. National Perinatal Epidemiology Centre (NPEC)
3. Irish National Orthopaedic Registrar (INOR)
4. Major Trauma Audit (MTA)
5. Irish National Intensive Care Audit – Adult and Paediatric (INICUA)
6. ICU Bed Information System
7. National Audit of Hospital Mortality (NAHM)
8. Irish National Audit of Stroke (INAS)
9. Irish Heart Attack Audit (IHAA)
10. National Paediatric Mortality Registrar (NPMR)

National clinical audits collect data against defined clinical standards and quality standards that allow hospitals to quality assure their care, drive quality improvement, and measure patient outcomes. The audits also capture demographic details, and pathway metrics for the care of specific groups of patients. Data can be accessed locally to support local clinical audits but are also reported nationally to allow for national hospital benchmarking and in some cases international benchmarking. In order to collate data on SSI additional questions will be added to the Irish Hip Fracture Database which is a mature audit (established in 2012) capturing data on 99% of hip fracture cases annually which are primarily a surgical group. Once the data has been successfully captured, validated, and reported, NOCA will endeavour to build that same additional SSI dataset into other clinical audits with surgical cohorts including patients that have undergone Caesarean sections and to progress to involve elective hip and knee replacements through the Irish National Orthopaedic Register. This will create a national view for SSI on three large surgical cohorts of patients in Ireland for the first time.

The additional international benchmarked SSI dataset will be collected through the IHFD first as a pilot to ensure this will yield the most meaningful data for the audit and also to support surveillance of SSI through AMRIC, the hospital groups (HGs)*, HSE Acute Operations and the ECDC. Additionally, SSI CNS (Clinical Nurse Specialist) in the local hospitals or hospital groups can use this data. Over time a repository of SSI data will be created which will allow for analysis by hospital, patient characteristics, operation and risk index which will support international surveillance in accordance with ECDC practices and inform improvement plans.

High Level Objectives Phase 1

1. To support systematic collection of data on the occurrence of SSI in patients treated for Hip fracture in acute hospitals during inpatient stay and up to 30 days post procedure
2. To analyse data to determine incidence of SSI and identification of risk factors

3. To provide timely national, surgical specialty, hospital group and hospital level data reports which will inform improvement strategies and plans to reduce incidence of SSI and support antimicrobial stewardship

4. To monitor and describe the epidemiology of SSIs in selected surgical procedures in hospitals in Ireland

5. To compare and follow trends on the level of implementation of key measures to prevent SSIs between hospitals and between EU/EEA countries.

IHFD Specific Audit Objectives

- To support systematic collection of data on the occurrence of SSI in patients treated for Hip fracture in acute hospitals during inpatient stay and up to 30 days post procedure in the IHFD
-To educate the IHFD audit coordinators about SSI data definitions and inform the IHFD clinical leads about this new data collection
-To provide supplementary reports of SSI data to AMRIC from the IHFD

IHFD Audit Methodology

The IHFD collects data on hip fracture patients (aged 60 years and over) through a portal on the HIPE system in collaboration with the HPO. The reference population for the national report is limited to patients aged 60 years and over. Data from the HIPE system, such as age, gender, admission source, etc., are merged with additional IHFD data. The inclusion and exclusion criteria for this report are detailed below. Care is measured against the Irish Hip Fracture Standards (Figure 1)

Inclusion criteria

Analysis is based on IHFD records as captured on the HIPE IHFD Portal software. It includes cases that are:
(i) discharged between 1 January (Year) and 31 December (Year), inclusive
(ii) diagnosed on HIPE with either a hip fracture due to injury or with a specified type of fracture, other than peri-prosthetic, on IHFD add-on screens.
(iii) aged 60 years and over.

Exclusion criteria

(i) patients aged 59 years or under
(ii) patients who died as an inpatient are excluded from comparative analysis of IHFS 3, 5 and 6 but are included in the rest of the report.

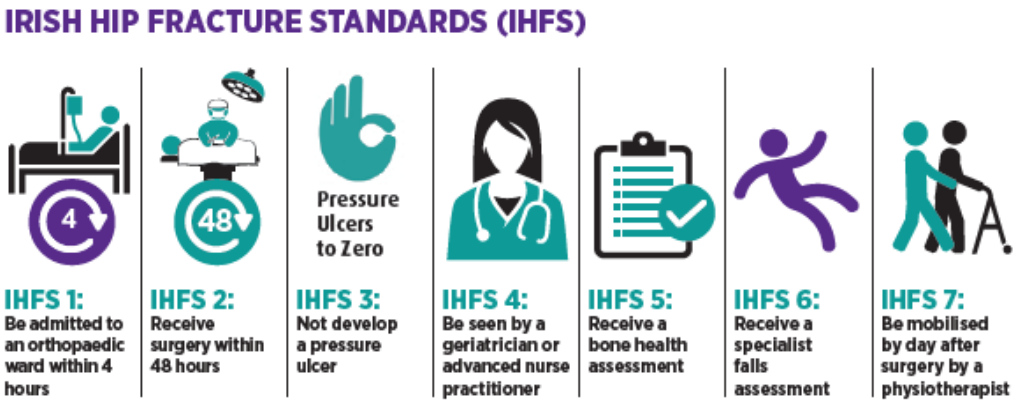


Figure 1: taken from the current IHFD dashboard available to each of the hospitals involved in the IHFD audit and in the annual IHFD reports.

Data collection and reporting from IHFD

The data are collected in the local hospitals by audit coordinators who enter the data retrospectively from patient medical records. Each hospital has an audit coordinator and a clinical lead and should have a hip fracture governance committee. A list of cases eligible for inclusion is identified by running a HIPE Discharge Report in the IHFD Portal. The data are entered through the HIPE IHFD Portal and linked with a hospital admission episode. The audit coordinator and clinical lead can generate local reports. The HPO issues monthly

coverage reports to the IHFD Audit Manager, as well as extracts of data on a quarterly basis to NOCA for analysis. These data are analysed, and quarterly reports are issued to hospitals and Hospital Groups. Most data are entered retrospectively, however, when possible, the data are entered prospectively and in accordance with the data collection targets which are usually reported quarterly, one quarter in arrears of the current quarter. That facilitates validation of the data prior to reporting.

Surveillance Methodology

A central aim of this surveillance framework is to enable participating hospitals to compare their rates of surgical site infection (SSI) in a specific group of surgical procedures against a benchmark. For this comparison to be valid the data collection methods used by participating hospitals must be similar, since the sensitivity with which different surveillance methods identify hospital-acquired infections varies and requires active and prospective methods of surveillance.

Active surveillance is where designated, trained personnel use a variety of methods to identify cases of infection. Prospective surveillance is the application of methods to detect surgical site infection from the time of exposure (the surgical procedure). This method is more likely to identify cases of infection than retrospective review of case-records after the patient has been discharged from hospital. The process supported by the NOCA Audit will incorporate a blend of prospective and retrospective assessment.

Surveillance is patient-based with data collected at an individual level on all eligible patients at risk of acquiring SSI, with active follow-up to identify those who develop an SSI.

Data definitions and data dictionary

The IHFD dataset and corresponding data definitions are available at www.noca.ie and the current dataset including SSI data collection can be found in Appendix I.

Definition of an operative procedure

SSI surveillance programs around the world have adopted definitions from the National Healthcare Safety Network (NHSN) in the United States. In addition to HIPE codes, NHSN code of the primary operative procedure are recommended. (Ref: CDC no. 2) The benefits of using standardised definitions like the NHSN definitions include easy comparison of local data with data from other health services and organisations and greater reliability as the definitions have been validated. As it is proposed in the future to use SNOMED codes to code to provide clinical reporting going forward, the relevant SNOMED codes for this surveillance programme have been included and are available in appendix II.

Inclusion criteria

All patients undergoing any of the surgical procedures in the chosen categories are eligible for inclusion in the surveillance even if the procedure was performed as an emergency. Initially hip fracture patients included in national clinical audit will be the first group identified for SSI surveillance followed by the cohort of patients which have undergone a Caesarean section and patients that have had elective joint replacement procedures. Data should be collected on each eligible procedure, and this should commence as soon after the operation as possible.

Monitoring patients for SSI

Every patient included in the surveillance cohort should be actively and systematically followed up from the time of surgery to establish whether they develop signs and symptoms

that meet the definition of SSI (see Appendix III). This includes monitoring during the post-operative hospital stay, on readmission or any other return visit to the hospital, for example, outpatient clinic. Data from the audit will identify cases with SSI that can be retrospectively reviewed by the SSI coordinators.

Local SSI clinical nurse specialists may also form a more detailed review of the circumstances where an SSI is identified within the audit.

Opportunities to develop a post-discharge follow up process will be explored in the context of roll-out for the Hip FORGE study in pilot sites (90-day surveillance study).

SSI Programme Proposed Governance Structure

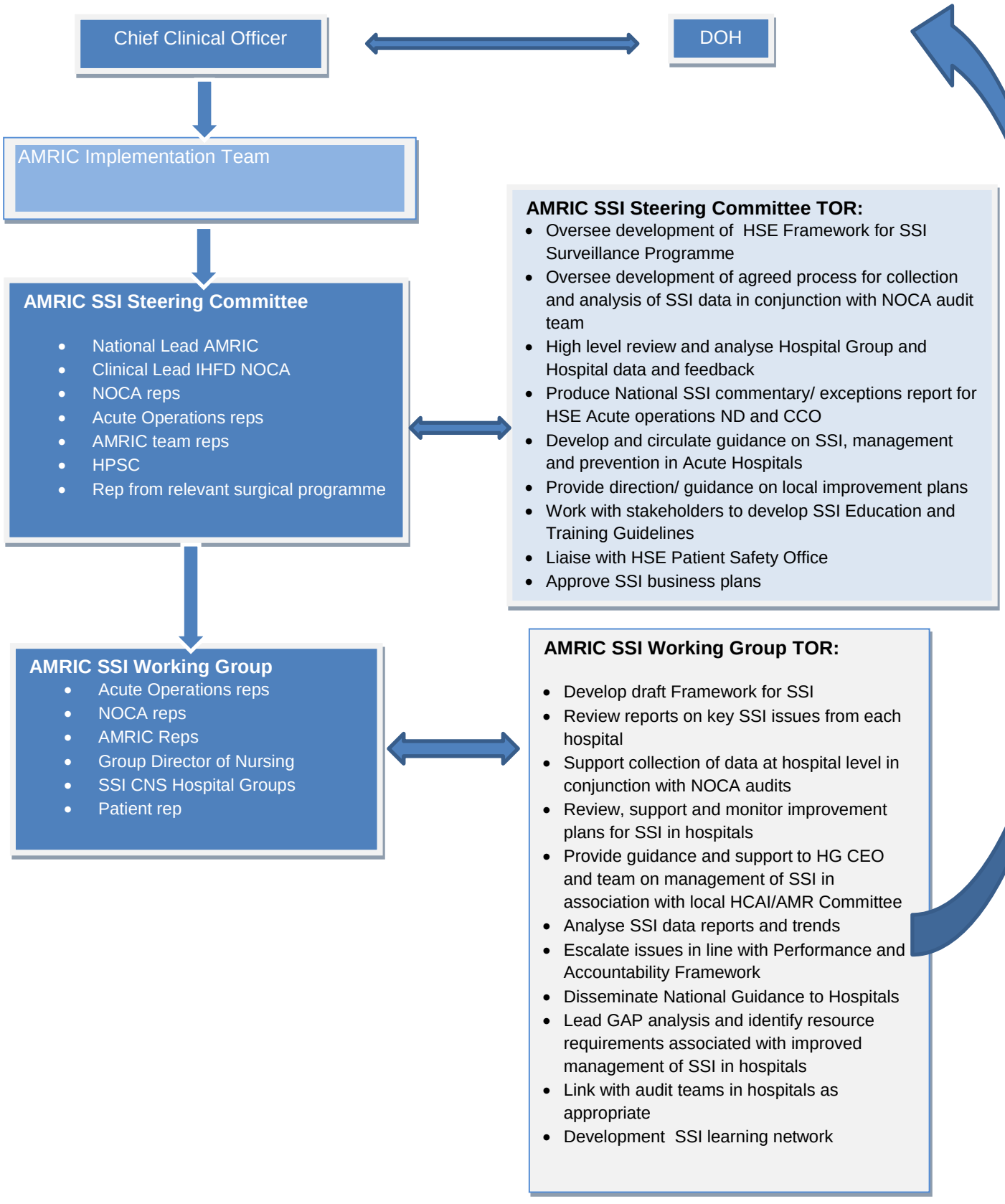


Figure 2: SSI Governance Structure

High Level Work plan SSI Programme			
Work stream Surgical Site Infection Surveillance Programme Proposal for Phased roll-out 2021-2024	**Objectives**	**Deliverables Short term Year 1 Phase 1**	**Deliverables Medium term Year 2-3 Phase 2**
Establish SSI Governance Structures (Clinical, Operations, Audit) at National Level and within Hospital Groups	Develop a clinical and operational governance framework which will enable development and phased implementation of National SSI Programme	Establish National SSI Steering Committee and working groups with agreed TOR Establish SSI learning network	Establish Local SSI Committees and TOR
Establish Process and Operating Model for SSI Programme in Acute Hospitals	With support of NOCA collate information on SSI for wound type linked to NOCA Audits. Analyse incidence and trends and develop improvements strategies and plans	Testing of process in one NOCA Audit, Irish National Hip Fracture Audit	Consolidate process within context of Irish National Hip Fracture Audit and commence testing in 1 or 2 additional audits
Support development and implementation of improvement initiatives to reduce incidence of SSI	Use SSI data and analysis to indicate areas for improvement	Support HGs and Hospitals in developing agreed plans to reduce incidence of SSI	Evaluation and further development of SSI improvement initiatives
Develop Training/ Education Material and delivery plan	Commence development of training material for SSI care.	Assessment of Staff training required	Develop SSI Education Programme
Consolidate Monitoring Systems in support of Performance Management of SSI prevention and management	Monitoring of incidence Development of targets Escalation Process in line with P&A framework	Development of SSI metrics. Develop framework for supporting Acute Operations and NPOG re. SSI	Monitor SSI performance
Conduct Evaluation of Phases of SSI Programme development	Auditing Learning Papers Quality Improvement plans	Evaluation of implementation in context of IHFD	Evaluation of testing in context of additional NOCA Audits
Cooperate with Research Quality Improvement and Innovation Projects and share learning as appropriate	Coordinate research in conjunction with clinical leads and SSI CNS in HGs as appropriate	TBA	TBA
Develop of Business Case for enhancement of SSI Surveillance	Develop SSI Estimates Proposal	Develop Key Result Areas for inclusion in NSP and Operational Plans	

Figure 3: High level Work Plan

Case Definition of SSIs

It is important that the case definition for SSI is consistent across all sites and periods of time. The CDC-NHSN definition for SSI is the standard that is used or recommended across all the major health organizations, including ECDC, with some slight adaptations introduced in some countries. Definitions are based on factors such as site of infection and type of incision (superficial, deep, organ/space), presence of purulent discharge coming from the wound, signs or symptoms of infection, physician diagnosis in a specific surveillance population, and/or specimen microbiological results. The case definitions used within this document will be in reference to the ECDC protocol, with additional adaptations from the Antimicrobial Resistance and Healthcare Associated Infection | National Services Scotland SSI surveillance protocol to facilitate guidance for orthopaedic procedures. See Appendix III

SSI Risk Index

The risk index was developed by the CDC-NHSN (CDC) and is used by the ECDC. It uses a combination of 3 indicators to assign patients into risk categories:

1. American Society of Anaesthesiologists (ASA) pre-operative assessment score of 3, 4 or 5 See Appendix V
2. Surgical wound class of contaminated or dirty/infection See Appendix IV for definitions adapted for Irish hospitals
3. Operation lasting more than the duration cut point hours, where the duration cut point is the 75th percentile of the duration of surgery (specific to surgical procedure being performed)

Each indicator described above contributes one point to the risk index, which ranges from 0 to 3.

Table 1. Calculation of basic SSI risk index

Calculation	Score =0, if:	Score=1, if:
Wound contamination class	W1, W2	W3, W4
ASA classification	A1, A2	A3, A4, A5
Duration of operation under 75th percentile cut-off value in hours (see table in chapter 3.2.4)	≤ 75th percentile cut-off value in hours	> 75th percentile cut-off value in hours
Basic SSI risk index =	Sum of scores	

Figure 4: ECDC SSI Surveillance Protocol

Data required for the SSI risk index will be collected so that risk stratification analysis can be performed. This will allow for identification of how the SSI rate is affected by differences in patient/operation-level risk and for valid comparisons within and between hospitals and over time.

Patient, Procedure, and Hospital Data

Collection of accurate and complete patient, procedure, and hospital-level data is important for analysing the results by subgroup and identifying high-risk patients and procedures.

The dataset for IHFD has been modified to include additional questions to facilitate SSI surveillance dataset. See Appendix I for full details.

Data Analysis / Indicators

Incidence of SSI

The primary output of SSI surveillance is the incidence, also referred to as the percentage of SSIs or SSI rate. This measure is calculated by dividing the number of SSIs detected by the number of operations in a specific procedure category and multiplying by 100. This calculation accounts for the fact that the same patient can develop more than one SSI related to the same procedure.

$$\text{Percentage of SSIs (by category)} = \frac{\text{all first SSIs* in that category x 100}}{\text{all operations in that category}}$$

Figure 5: taken from ECDC Protocol

Variations of the calculation of incidence can occur, which will affect interpretation. Some examples are:

1. Numerator includes only the number of first incidence of SSIs, meaning we do not consider the fact that the same patient can develop more than on SSI related to the same procedure.
2. Denominator is composed of the total number of surgical patients, as opposed to procedures, which means patients who undergo multiple procedures will not be considered.

It is recommended to report two separate rates of SSI:

1. Incidence of only SSI detected during inpatient stay and in patients readmitted with SSI
2. Incidence of all SSI detected during inpatient stay, patient readmission with SSI, and post-discharge surveillance

Incidence density of in-hospital SSIs

The ECDC runs an additional indicator which looks at incidence density of SSIs. This involves only cases of SSI detected during inpatient stay and in patients readmitted with SSI and is calculated by dividing the number of in-hospital SSIs by the number of in-hospital postoperative patient days until discharge and multiplying by 1000. This indicator accounts for the differences in post-operative hospital stays and may therefore be more reliable for comparisons between hospitals.

$$\text{Incidence density in-hospital SSIs (by category)} = \frac{\text{all in-hospital SSIs* in that category x 1 000}}{\text{In-hospital postoperative patient days with known discharge date in that category}}$$

Figure 6: taken from ECDC Protocol

Stratifications

Indicators can by stratified by subgroups (e.g., procedure type, surgery indication, patient characteristics) and by CDC-NHSN risk index with 95% confidence intervals calculated where applicable. CDC-NHSN risk index can also be used to calculate a risk ratio and compare the risk between the groups.

Dissemination of Results

Timely dissemination of the data is one of the cornerstones of surveillance. SSI surveillance poses some challenges in that regard due to the nature of the detection of SSIs (30- or 90-day follow-up required). Formal quarterly reports will be produced by NOCA for distribution to national team and hospitals. Monthly reports will be available on request.

Glossary of Terms

NOCA - The National Office of Clinical Audit (NOCA) works to promote an open culture of shared learning from national clinical audit (NCA) to improve clinical outcomes and patient safety. Under the NOCA Governance Board, each NCA establishes a separate Governance Committee.

AMRIC - The Antimicrobial Resistance and Infection Control (AMRIC) Team is a multidisciplinary team that provides specialist clinical advice, scientific advice, education and training, administrative and operational support for the Office of the CCO on implementing the HSE's programme for the control of antimicrobial resistance and healthcare associated infection.

HSE - Health Service Executive

IHFD - Irish Hip Fracture Database

HPSC - Health Protection Surveillance Centre

INAP - Ireland's National Action Plan for Antimicrobial Resistance

PHE – Public Health England

SSI – Surgical Site Infection

HCAI – Health Care Associated Infections

HAI – Hospital Acquired Infections

IPC – Infection Prevention and Control

CNS – Clinical Nurse Specialists

References

CDC

1. OPC Surgical Site Infection Protocol – January 2021:
https://www.cdc.gov/nhsn/opc/ssi/index.html
https://www.cdc.gov/nhsn/pdfs/pscmanual/9pscssicurrent.pdf

2. National Healthcare Safety Network (NHSN) - Surgical Site Procedure Codes
https://www.cdc.gov/nhsn/faqs/faq-ssi-proc-codes.html#q2

3. Patient Safety Component Be in the Know: An Overview of Surgical Site Infection (SSI) Event Surveillance

(NHSN Surgical Site Infection Surveillance in 2016 (cdc.gov)

ECDC

4. Surveillance of surgical site infections and prevention indicators in European hospitals - HAISSI protocol:

https://www.ecdc.europa.eu/en/publications-data/surveillance-surgical-site-infections-and-prevention-indicators-european

5. Healthcare-associated infections: surgical site infections - Annual Epidemiological Report for 2017:

https://www.ecdc.europa.eu/en/publications-data/healthcare-associated-infections-surgical-site-infections-annual-1

HPSC

6. Point Prevalence Survey of Hospital-Acquired Infections & Antimicrobial Use in European Acute Care Hospitals: May 2017. National Report - Ireland, 2018:

https://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/infectioncontrolandhai/surveillance/hospitalpointprevalencesurveys/2017/nationalppsreports/

7. PPS 2017 All Ireland Protocol: https://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/infectioncontrolandhai/surveillance/hospitalpointprevalencesurveys/2017/protocol/

PHE

7. Surveillance of surgical site infections in NHS hospitals in England: 2019 to 2020:

8. Protocol for surveillance of surgical site infection: June 2013:
https://www.gov.uk/government/publications/surgical-site-infection-surveillance-service-protocol-procedure-codes-and-user-manual

WHO

9. Protocol for surgical site infection surveillance with a focus on settings with limited resources:

https://www.who.int/infection-prevention/tools/surgical/evaluation_feedback/en/

10. Guidelines on core components of infection prevention and control programmes at the national and acute health care facility level: https://www.who.int/gpsc/ipc-components/en/

NOCA

11. www.noca.ie

12. https://www.noca.ie/audits/irish-hip-fracture-database

13. IHFD_Terms_of_reference_2019

INAP

14. https://www.gov.ie/en/publication/babe6-irelands-national-action-plan-for-antimicrobial-resistance-2017-2020-inap/

15. Strategic Objective 2: Enhancing surveillance of antibiotic resistance and antibiotic use.

AMRIC Plan

16. Action 2-02 Establish a national system for continuous monitoring of HCAIs in surgical site infections.

https://www.hse.ie/eng/about/who/nqpsd/qps-improvement/antimicrobial-resistance-infection-control-amric-.html

HSE QPS

17. HSE National Service Plan 2022

https://www.hse.ie/eng/about/who/hse-strategy-and-research-team/hse-national-service-plan-2022.pdf

18. HSE Patient Safety Strategy 2019-2024
https://www.hse.ie/eng/about/who/nqpsd/patient-safety-strategy-2019-2024.pdf

19. HSE – National Wound Management Guidelines 2018
https://healthservice.hse.ie/filelibrary/onmsd/hse-national-wound-management-guidelines-2018.pdf

Appendix I IHFD Dataset

HIPE Portal Data Entry / Hip Fracture Admission (V10.0.1) 01 Jan 2022

(Questions in Green are currently collected in IHFD required within SSSP)

(Questions in purple are additional questions for SSI data collection)

Question	Options	DEFINITIONS
Hospital, Gender, Age, Demographics		
1. Date of trauma causing hip fracture		
1A. Time of trauma causing hip fracture		
2. Type of trauma	1 High energy trauma, 2 Low energy trauma 8 Unknown, 9 Not documented	
3. Date of arrival at first presenting hospital		
3A. Time of arrival at first presenting hospital		
4. Admission via ED in operating hospital	1 Yes, 2 No	
4A. Date of arrival in ED of operating hospital		
4B. Time of arrival in ED of operating hospital		
4C. Date left ED in operating hospital		
4D. Time left ED in operating hospital		
4E. Did patient go directly to theatre from ED	1 Yes, 2 No	
4F. Date seen by orthopaedic team in operating hospital (if not admitted via ED)		
4G. Time seen by orthopaedic team in operating hospital (if not admitted via ED)		
4H. Did patient fall during an existing inpatient admission in operating hospital	1 Yes, 2 No	
5. Type of ward admitted to in operating hospital	1 Orthopaedic Ward 2 Never Admitted to Orthopaedic Ward 9 Not Documented	
5A. Date of admission to orthopaedic ward		
5B. Time of admission to orthopaedic ward		

5C. Delay to orthopaedic ward reason (if any)	1 Medically unwell 2 No bed available 3 Polytrauma 4 Awaiting orthopaedic diagnosis or investigation 8 Other 9 Not documented	
5D. Delay to orthopaedic ward reason (other)	Free Text (example): Isolation MDRO	
6. Is pre-fracture mobility documented?	1 Yes, 2 No, 9 Not Documented	
6A. Pre-fracture Indoor Walking	0 Unable 1 Assistance of one person 2 With an aid 3 independent	
6B. Pre-fracture Outdoor Walking	0 Unable 1 Assistance of one person 2 With an aid 3 independent	
6C. Pre-fracture Shopping	0 Unable 1 Assistance of one person 2 With an aid 3 independent	
6D. Pre-fracture New Mobility Score (Sum A+B+C)		
7A. Delirium assessment 4AT Day 1	1 Yes, 2 No, 3 Unable, 9 Not Doc	
7A2. If yes, enter score	00 - 12	
7B. Delirium assessment 4AT Day 3	1 Yes, 2 No, 3 Unable, 9 Not Doc	
7B2. If yes, enter score	00 - 12	
7C. Delirium assessment 4AT any other time	1 Yes, 2 No, 3 Unable, 9 Not Doc	
7C2. If yes, enter score	00 - 12	
8. Side of fracture	1 Left, 2 Right, 3 Both	
8A. Type of fracture	1 Intracapsular - displaced 2 Intracapsular - undisplaced 3 Intertrochanteric 4 Subtrochanteric 5 Periprosthetic 8 Other 9 Not documented	
8B. Type of fracture (Other, please specify)		
8C. Type of fracture (Right)	See Q8A	
8D. Type of fracture (Right, Other, please specify)		
9. Pathological	1 Atypical, 2 Malignancy 3 No, 9 Not documented	

10. History of previous fragility fracture(s)	1 Yes, 2 No, 9 Not documented	
11. Pre-op medical assessment	1 Routine by geriatrician 2 Routine by medical physician 6 None 7 Ger. review following request 8 Med physician review following request 9 Not documented	
11A. Assessed by Geriatrician during this acute admission	1 Yes, 2 No, 3 Not applicable, 9 Not documented	
11B. Geriatrician Assessment Date		
11C. Geriatrician Assessment Time		
11D. Geriatrician Grade	1 Consultant 2 SpR 3 Registrar 8 Other 9 Not documented	
11E. Assessed by a cANP/ANP gerontology/orthopaedics	1 Yes, 2 No, 3 Not applicable, 9 Not documented	
11F. Clinical Frailty Scale	01 Very fit 02 Well 03 Managing well 04 Vulnerable 05 Mildly frail 06 Moderately frail 07 Severely frail 08 Very severely frail 09 Terminally ill	
12. Nutritional risk assessment performed on admission	0 No 1 Indicates malnourished 2 Indicates risk of malnutrition 3 Indicates normal	
13. Nerve block in ED or ward before arrival in theatre suite	1 Yes, 2 No, 9 Not documented	
14. Operation Will give us a picture of if coated cement was used antibiotic	00 no oper. performed 01 int fix DHS 02 int fix Screws 03 int fix IM nail long 04 int fix IM nail short 05 art uni-p hemi uncem uncoated 06 art uni-p hemi uncem coated 07 art uni-p hemi cem. 08 art bi-p hemi uncem uncoated 09 art bi-p hemi uncem coated 10 art bi-p hemi cem. 11 art THR uncem uncoated 12 art THR uncem coated	

	13 art THR cem. 88 other 99 not documented	
14A. ASA Grade	1 Normal healthy individual 2 Mild systemic disease that does not limit activity 3 Severe systemic disease that limits activity but is not incapacitating 4 Incapacitating systemic disease which is constantly life-threatening 5 Moribund - not expected to survive 24 hours with or without surgery 9 Not documented	
14B. Type of Anaesthesia	01 GA only 02 GA + nerve block 03 GA + spinal anaesthesia 04 GA + epidural anaesthesia 05 SA only 06 SA + nerve block 07 SA + epidural (CSE) 08 Other 09 Not documented 10 SA + sedation (appears as option "A" on screen)	
14C. Surgeon Grade	1 Consultant 2 Specialist Registrar 3 Registrar 4 SHO 8 Other 9 Not documented	
14C2. Was consultant orthopaedic surgeon present in the operating room	1 Yes 2 No 9 Not documented	
14D. Anaesthetist Grade	1 Consultant 2 Specialist Registrar 3 Registrar 4 SHO 8 Other 9 Not documented	
14D2. Was consultant anaesthetist present in the operating room	1 Yes 2 No 9 Not documented	
Wound contamination classification	1. Clean 2. Clean-contaminated 3. Contaminated 4. Dirty or infected 5. Unknown	Wound contamination class

14E. Date of primary surgery	HH:MM	
Skin Preparation in Theatre:	Yes No	*Prepared with alcohol-based solution* *Survey of co-ordinators for routine practice*
14F. Start Time : of primary surgery	DD:MM:YY HH:MM	Induction of anaesthesia
Finish Time:	DD:MM:YYYY HH:MM	Time when surgery ended Surgery is finished when all instrument and sponge counts are completed and verified as correct, all postoperative radiologic studies to be done in the operating room are completed, all dressings and drains are secured, and the surgeons have completed all procedure-related activities on the patient.
14H. Reason if delay >48 hours	00 No delay - surgery < 48 hours 01 Awaiting orthopaedic diagnosis or investigation 02 Awaiting medical review investigation or stabilisation 03 Awaiting inpatient or high dependency bed 04 Awaiting space on theatre list 05 Problem with theatre/equipment 06 Problem with theatre/surgical/anaesthetic staff cover 07 Cancelled due to list over-run 08 Other 09 Not documented 10 Issues due to anticoagulation (appears as option "A" on screen)	
14H2. Other Reason if delay >48 hours		

14I. Was prophylaxis antibiotics administered to the patient to prevent SSI	1 Yes: 2 No 3 Unknown	Framework for prophylaxis antibiotic definition Right time: RCSI: Ensure that the antibiotic is given AT INDUCTION (WITHIN 60 MINUTES BEFORE SKIN INCISION). In surgery where a tourniquet is to be applied, a 15-minute period is required between the end of antibiotic administration, and tourniquet application.
14I2. If Yes, What type of prophylaxis antibiotics were administered and at what time?	Free Text	*Free text until consensus observed*
14I2.1 Is the patient currently receiving antibiotics for another reason?	1 Yes 2 No 3 Unknown	
14I2.1.2. If Yes what antibiotic	Free Text	
14I3. Skin Closure type?	Sutures Staples Glue Other	
14J. Mobilised on day of, or day after surgery	1 Yes 2 No, 9 Not documented	
14J2. Mobilised by	1 Physiotherapist 8 Other, 9 Not documented	
14J3. If no, reason why	1 Pain 2 Confusion/agitation/delirium 3 Patient declined 4 Medically not fit 5 Not mobile pre-fracture 6 Physio staffing issues 7 Other staffing 8 Other 9 Not documented	
14J4. If no, reason why (other, please specify)		
14K. Physiotherapy Assessment on day of, or day after surgery	1 Yes 2 No, 9 Not documented	
14L. Cumulated Ambulatory Score - day after surgery (0 - 6)		

14L2. Cumulated Ambulatory Score - Not Documented		
14M. Re-operation within 30 days	0 None 1 Reduction of dislocated prosthesis 2 Washout or debridement 3 Implant removal 4 Revision of internal fixation 5 Conversion to Hemiarthroplasty 6 Conversion to THR 7 Girdlestone/excision arthroplasty 8 Surgery for periprosthetic fracture 9 Not documented	
15. Operation (Right)	See Q12	
16. Pressure ulcers	1 Yes, 2 No, 9 Not documented	
17. Specialist Falls Assessment	0 No, 1 Yes - performed on this admission 2 Yes - awaits further out-patient assessment 3 Not applicable	
18. Bone protection medication	0 No assessment 1 Started on this admission 2 Continued from pre-admission 3 Awaits DXA scan 4 Awaits out-patient assessment 5 Assessed - no bone protection medication needed/appropriate 6 Not applicable	
18A. If medication type changed during admission, please document	1 Yes, 2 No, 9 Not documented	
19. Multidisciplinary rehabilitation team assessment	1 Yes, 2 No, 9 Not documented	
20. Cumulated Ambulatory Score - day of acute hospital discharge (0 - 6)		
21. Where was the patient discharged to following the acute hospital spell?	1 Home 2 On-site rehab unit 3 Off-site rehab unit 4 Convalescence care 5 New adm to nursing home or long-stay care 6 Return adm to nursing home or long-stay care 7 Died 8 Other	
21A. Discharged to (Other, please specify)	Free Text	
22. Is admission data entry complete for this episode?	1 Yes, 2 No	

SSI Questions		
23. Surgical site infection diagnosis documented	1 Yes, 2 No, 3 Unknown	
23A Date Surgical Site Infection documented (Onset Date)	DD:MM:YYYY	
23B TYPE OF SSI?	1.Superficial incisional 2.Deep incisional 3.Organ/space	
23C Was a Swab or a sample for culture taken?	1.Yes 2.No 3.Unknown	
23D Swab or sample for culture results available?	1. Yes 2. No 3. Unknown	
23E Was the patient treated with antibiotics specifically for treatment of an SSI	1.Yes 2.No 3 Unknown	
23F Type of Wound treatment	Dropdown with list of treatment options 1. Primary Dressing 2. Antimicrobial Dressing 3. PICO 4. Vac Dressing 5. Surgical Intervention 6. Other	
23G Was Normothermia Maintained 1 hr post procedure	1. Yes 2. No 3. Unknown	
23H Detection of SSI	1. At re-admission 2. During admission 3. Unknown	
23J. Date of last inpatient wound dressing check	DD/MM/YYYY	

Appendix II

Example NHSN (CDC) codes

Table 5. Selected type of surgical procedures for surveillance

NHSN category	Description	ICD-9-CM* Codes included in the category
COLO	Colon surgery Incision, resection or anastomosis of the large bowel; includes large-to-small and small-to-large bowel anastomosis Laparoscopic excision of large intestine Enterotomy Intestinal anastomosis	17.3–17.39, 45.00–45.03,45.15, 45.26, 45.31–45.34, 45.4, 45.41, 45.49, 45.50–45.52, 45.4, 45.41, 45.49, 45.50–45.52, 45.61–45.63, 45.7–45.95, 46.0, 46.03, 46.04, 46.1–46.14,46.20–46.24, 46.31, 46.39, 46.4, 46.41, 46.43, 45.5, 46.51, 46.52, 46.7–46.76, 46.9–46.94
REC	Rectum surgery	48.25, 48.35, 48.40, 48.42, 48.43, 48.49, 48.5–48.59, 48.6–48.69, 48.74
CHOL	Cholecystectomy	51.0,51.03, 51.04,51.13, 51.2–51.24
	Removal of gallbladder, includes procedures performed using the laparascope	
HPRO	Arthroplasty of hip	00.70–00.73, 00.85-00.87, 81.51–81.53
KPRO	Arthroplasty of knee	00.80–00.84, 81.54–81.55
LAM	Laminectomy Exploration or decompression of spinal cord through excision or incision into vertebral structures	03.0–03.09, 80.50, 80.51, 80.53, 80.54, 80.59, 84.60–84.69, 84.80–84.85
CSEC	Caesarean section	74.0–74.2, 74.4, 74.9–74.99
CARD	Cardiac surgery	35.00-35.04, 35.06, 35.08, 35.10-35.14, 35.20-35.28, 35.31-35.35, 35.39, 35.42, 35.50, 35.51, 35.53, 35.54, 35.60-35.63, 35.70-35.73, 35.81-35.84, 35.91-35.95, 35.98-35.99, 37.10-37.12, 37.31-37.33, 37.35-37.37, 37.41, 37.49, 37.60
CABG	Coronary artery bypass, unspecified	36.1–36.2
CBGB	Coronary artery bypass grafting with both chest and donor site incisions Chest procedure to perform direct revascularisation of the heart; includes obtaining suitable vein from donor site for grafting	36.10–36.14, 36.19
CBGC	Coronary artery bypass grafting with chest incision only Chest procedure to perform direct vascularisation of the heart using, for example, the internal mammary artery	36.15–36.17, 36.2

Figure 7: taken from NHSN CDC Code System

Example SNOMED codes (for proposed transfer to SNOMED coding)

Procedure Categories. Day 1 = the date of the procedure.

30-day Surveillance			
Category	**Operative Procedure**	**Category**	**Operative Procedure**
AAA	Abdominal aortic aneurysm repair	LAM	Laminectomy
AMP	Limb amputation	LTP	Liver transplant
APPY	Appendix surgery	NECK	Neck surgery
AVSD	Shunt for dialysis	NEPH	Kidney surgery
BILI	Bile duct, liver or pancreatic surgery	OVRY	Ovarian surgery
CEA	Carotid endarterectomy	PRST	Prostate surgery
CHOL	Gallbladder surgery	REC	Rectal surgery
COLO	Colon surgery	SB	Small bowel surgery
CSEC	Cesarean section	SPLE	Spleen surgery
GAST	Gastric surgery	THOR	Thoracic surgery
HTP	Heart transplant	THYR	Thyroid and/or parathyroid surgery
HYST	Abdominal hysterectomy	VHYS	Vaginal hysterectomy
KTP	Kidney transplant	XLAP	Exploratory laparotomy

90-day Surveillance	
Category	**Operative Procedure**
BRST	Breast surgery
CARD	Cardiac surgery
CBGB	Coronary artery bypass graft with both chest and donor site incisions
CBGC	Coronary artery bypass graft with chest incision only
CRAN	Craniotomy
FUSN	Spinal fusion
FX	Open reduction of fracture
HER	Herniorrhaphy
HPRO	Hip prosthesis
KPRO	Knee prosthesis
PACE	Pacemaker surgery
PVBY	Peripheral vascular bypass surgery
VSHN	Ventricular shunt

Notes:

- Superficial incisional SSIs are only followed for a 30-day period for all procedure types.
- Secondary incisional SSIs are only followed for a 30-day period regardless of the surveillance period for the primary site.

Figure 8: Example SNOMED Codes

Example of SNOMED IHFD SSI codes (proposed)

14. Operation Will give us a picture of if coated cement was used antibiotic	00 no oper. performed 01 int fix DHS 02 int fix Screws 03 int fix IM nail long 04 int fix IM nail short 05 art uni-p hemi uncem uncoated 06 art uni-p hemi uncem coated 07 art uni-p hemi cem. 08 art bi-p hemi uncem uncoated 09 art bi-p hemi uncem coated 10 art bi-p hemi cem. 11 art THR uncem uncoated 12 art THR uncem coated 13 art THR cem. 88 other 99 not documented	01 SCTID: 313330006 (Closed reduction of intracapsular fracture of neck of femur and internal fixation using a dynamic hip screw (procedure) 05-10 Hip hemiarthroplasty femur prosthesis (physical object) SCTID: 716300000
14A. ASA Grade	1 Normal healthy individual 2 Mild systemic disease that does not limit activity 3 Severe systemic disease that limits activity but is not incapacitating 4 Incapacitating systemic disease which is constantly life-threatening 5 Moribund - not expected to survive 24 hours with or without surgery 9 Not documented	American Society of Anesthesiologists physical status class (observable entity) SCTID: 302132005
14B. Type of Anaesthesia	01 GA only 02 GA + nerve block 03 GA + spinal anaesthesia 04 GA + epidural anaesthesia 05 SA only 06 SA + nerve block	01 General anesthesia (procedure) SCTID: 50697003 05 Local anesthetic intrathecal block

Figure 9: SNOMED Codes examples reflected in the IHFD dataset

Additional SNOMED code examples:

Infection status pre-operative MRSA Methicillin resistant Staphylococcus aureus (organism) SCTID: 115329001

- Diabetes: Diabetes mellitus (disorder) SCTID: 73211009

Appendix III - SSI case definitions

As per ECDC protocol:

SUPERFICIAL INCISIONAL

Infection occurs within 30 days after the operation and infection involves only skin and subcutaneous tissue of the incision and at least one of the following:

1. Purulent drainage with or without laboratory confirmation, from the superficial incision

2. Organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.

3. At least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat and superficial incision is deliberately opened by surgeon, unless incision is culture negative.

4. Diagnosis of superficial incisional SSI made by a surgeon or attending physician.

DEEP INCISIONAL

Infection occurs within 30 days after the operation if no implant* is left in place or within 90 days if implant* is in place and the infection appears to be related to the operation and infection involves deep soft tissue (e.g., fascia, muscle) of the incision and at least one of the following:

1. Purulent drainage from the deep incision but not from the organ/space component of the surgical site.

2. A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (>38°C), localized pain or tenderness, unless incision is culture negative.

3. An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.

4. Diagnosis of deep incisional SSI made by a surgeon or attending physician.

NOTE: Variances verses CDC definitions also includes Criterion 2 as stated below.

***Criterion 2**: The deep incision yields organisms from the culture of aseptically aspirated fluid or tissue, or from a swab and pus cells are present.*

ORGAN/SPACE

Infection occurs within 30 days after the operation if no implant* is left in place or within 90 days if implant* is in place and the infection appears to be related to the operation and infection involves any part of the anatomy (e.g., organs and spaces) other than the incision which was opened or manipulated during an operation and at least one of the following:

1. Purulent drainage from a drain that is placed through a stab wound into the organ/space.

2. Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space.

3. An abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination.

4. Diagnosis of organ/space SSI made by a surgeon or attending physician.

*Implant definition: a nonhuman-derived implantable foreign body (prosthetic heart valve, nonhuman vascular graft, mechanical heart, or hip prosthesis) that is permanently placed in a patient during surgery.

NOTE: Maximum of 30 days of follow-up available in the initial rollout of the SSI surveillance program with an aim to extend to 90 days follow-up. (Database is set up for longer follow up and will be extended following the initial roll-out)

Appendix III (a) - HPS Classification of surgical site infection

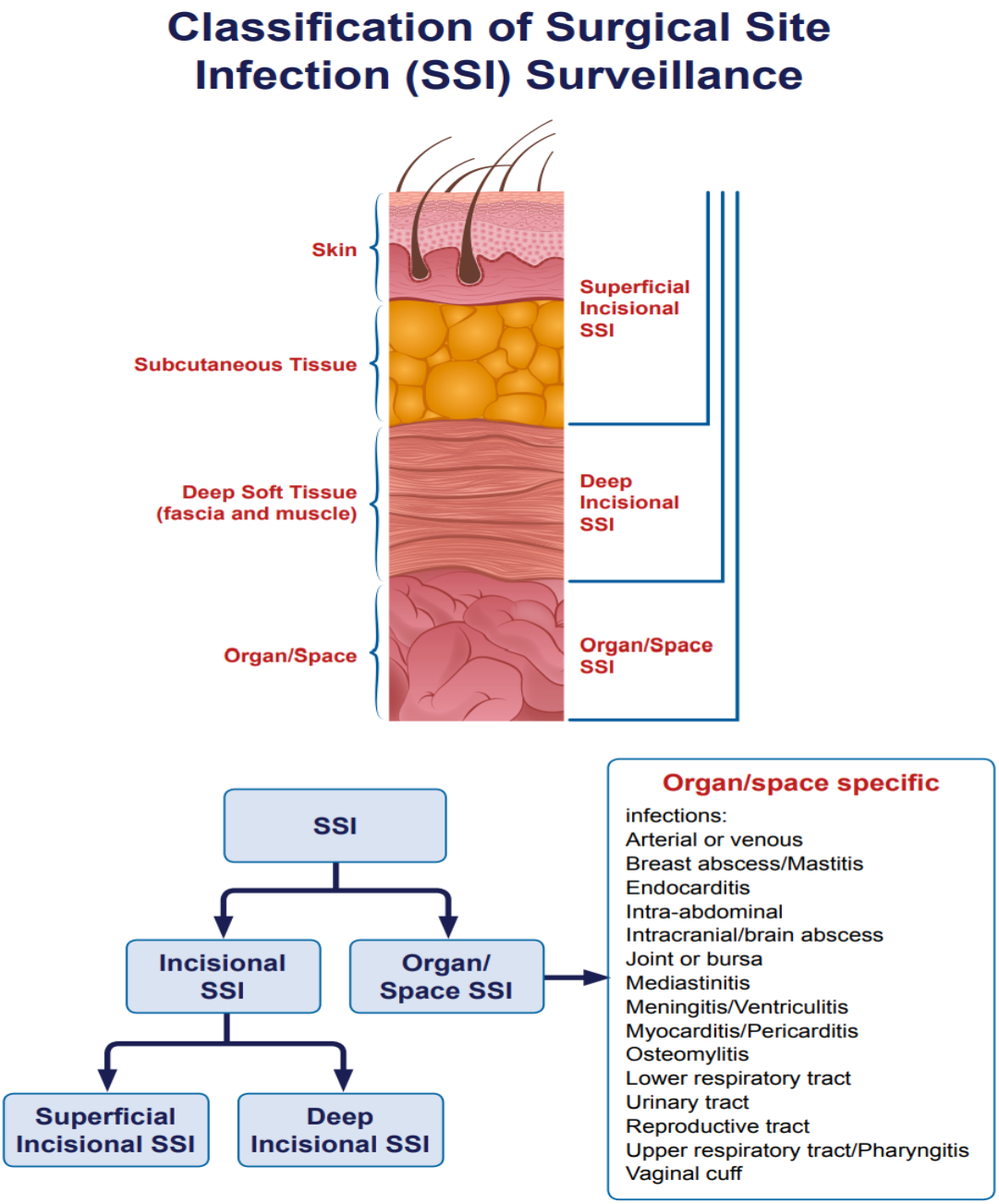
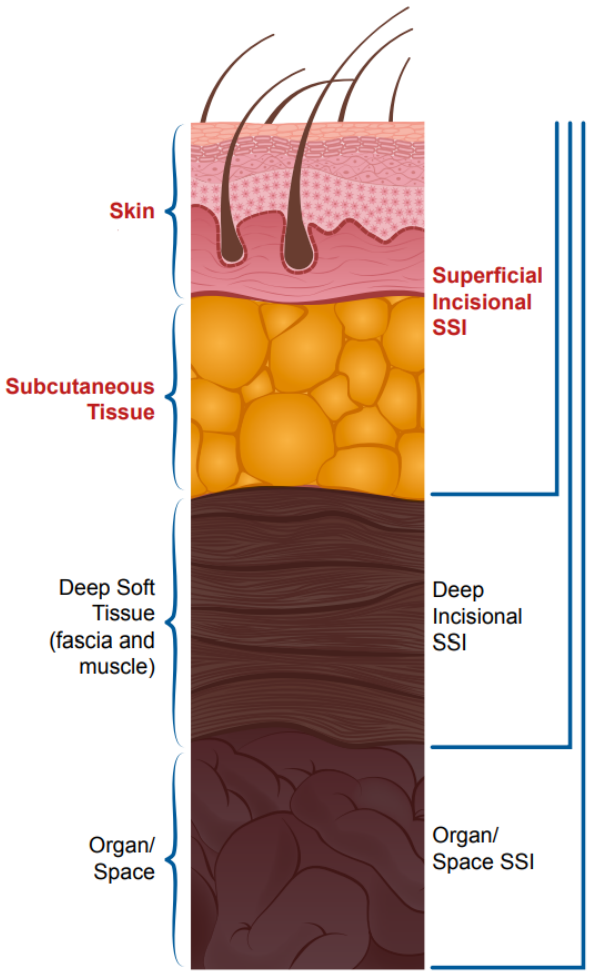


Figure 10: Adapted from Antimicrobial Resistance and Healthcare Associated Infection | National Services Scotland Health Protection Scotland (HPS) Ed 7.1 2019

Appendix III (b) HPS Definitions of surgical site infections detail

Definitions of Surgical Site Infections - Surveillance



Superficial SSI (Incisional)

A superficial SSI must meet the following criterion:

1. Infection occurs within 30 days after the operative procedure;
2. **And** involves only skin and subcutaneous tissue of the incision;
3. **And** patient has at least one of the following:
   - Purulent discharge from the superficial incision.
   - Organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.
   - At least one of the following signs or symptoms of infection: pain or tenderness, localised swelling, redness, or heat **and** superficial incision is deliberately opened by surgeon, **unless** the incision is culture negative.
   - Diagnosis of superficial incisional SSI by surgeon or trained healthcare worker.

The following are not reported as superficial incisional SSI:

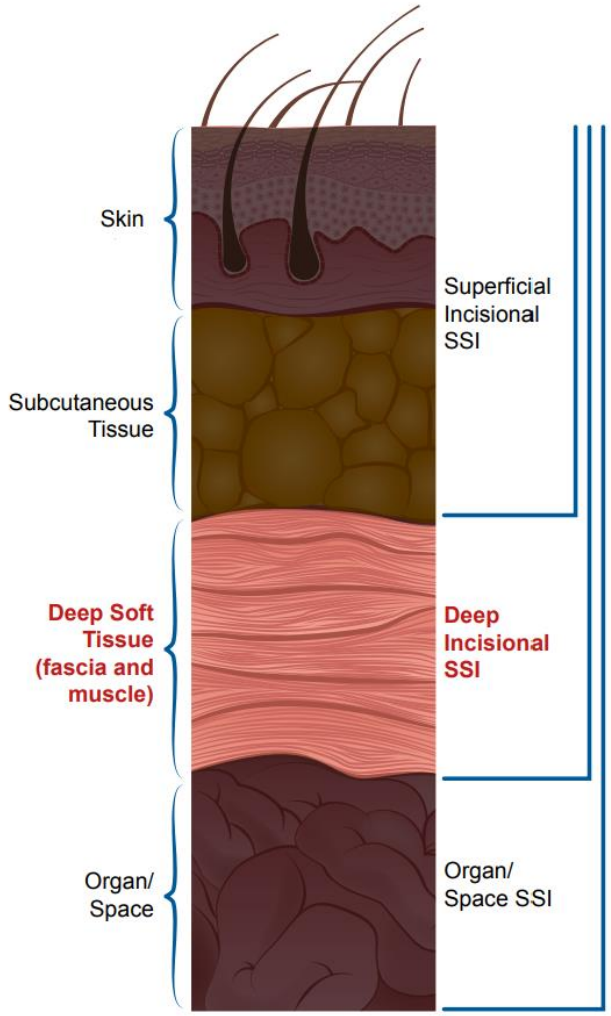
- **Stitch abscess (minimal inflammation and discharge confined to the points of suture penetration).**
- **Infected burn wound.**
- **Incisional SSI that extends into the fascial and muscle layers (deep incisional SSI).**

Scottish Surveillance of Healthcare Associated Infection Programme (SSHAIP)
Health Protection Scotland (HPS) Edition 7.1 2019

Figure 11: Adapted from Antimicrobial Resistance and Healthcare Associated Infection | National Services Scotland

Health Protection Scotland (HPS) Ed 7.1 2019

Definitions of Surgical Site Infections - Surveillance



Deep SSI (Incisional)

A deep incisional SSI must meet the following criterion:

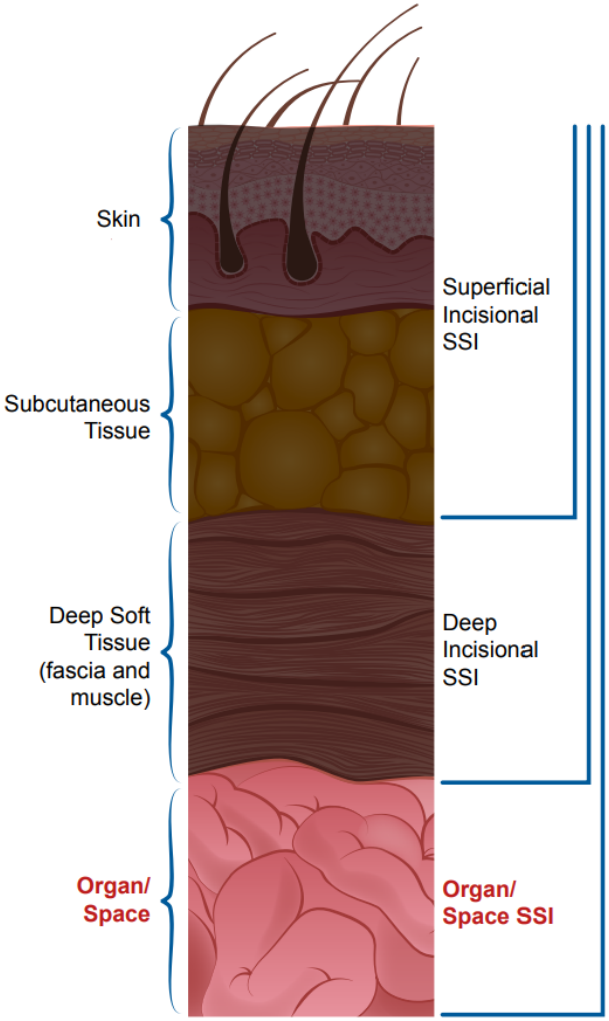
1. Infection occurs within 30 days after the operative procedure if no implant is left in place or within 90 days if implant is in place and the infection appears to be related to the operative procedure;
2. **And** involves deep soft tissues (e.g. fascial and muscle layers) of the incision;
3. **And** patient has at least one of the following:
   - Purulent discharge from the deep incision but not from the organ/ space component of a surgical site.
   - A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (>38ºC) or localised pain or tenderness, **unless** the incision is culture negative.
   - An abscess or other evidence of infection involving the deep incision is found on direct examination, during re-operation, or by histopathological or radiological examination.
   - Diagnosis of a deep incisional SSI by surgeon or trained healthcare worker.

Classify infection that involves both superficial and deep incision sites as deep incisional SSI.

Scottish Surveillance of Healthcare Associated Infection Programme (SSHAIP)
Health Protection Scotland (HPS) Edition 7.1 2019

Figure 12: Adapted from Antimicrobial Resistance and Healthcare Associated Infection | National Services Scotland

Definitions of Surgical Site Infections - Surveillance



Organ/Space SSI

An organ/space SSI involves any part of the body, excluding the skin incision, fascia, or muscle layers that is opened or manipulated during the operative procedure. Specific sites are assigned to organ/space SSI to further identify the location of the infection. An example is an appendicectomy with subsequent diaphragmatic abscess, which would be reported as an organ/ space SSI at the intra-abdominal specific site.

An organ/space SSI must meet the following criterion:

1. Infection occurs within 30 days after the operative procedure if no implant is left in place or within 90 days if implant is in place and the infection appears to be related to the operative procedure
2. And infection involves any part of the body, excluding the skin incision, fascia, or muscle layers that is opened or manipulated during the operative procedure.
3. **And** at least one of the following:
   - Purulent discharge from a drain that is placed through a stab wound into the organ/space.
   - Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space.
   - An abscess or other evidence of infection involving the organ/ space that is found on direct examination, during re-operation, or by histopathological or radiological examination.
   - Diagnosis of an organ/space SSI by surgeon or trained healthcare worker.

Occasionally an organ/space infection drains through the incision. Such an infection generally does not involve re-operation and is considered a complication of the incision. Therefore, it is classified as a deep incisional SSI.

Scottish Surveillance of Healthcare Associated Infection Programme (SSHAIP)
Health Protection Scotland (HPS) Edition 7.1 2019

Figure 13: Adapted from Antimicrobial Resistance and Healthcare Associated Infection | National Services Scotland

Appendix III (c) Additional Resources from HPS

ADDITIONAL CRITERIA TAKEN FROM ANTIMICROBIAL RESISTANCE AND HEALTHCARE ASSOCIATED INFECTION | NATIONAL SERVICE SCOTLAND REGARDING SSI

Orthopaedic surgery

Organ/ spaces: joint, bursa or bone

Joint or bursa infection must meet at least one of the following criteria:

Criterion 1: patient has organisms cultured from joint fluid or synovial biopsy.

Criterion 2: patient has evidence of joint or bursa infection seen during a surgical operation or histopathologic examination.

Criterion 3: patient has at least two of the following signs or symptoms with no other recognised cause: joint pain, swelling, tenderness, heat, evidence of effusion or limitation of motion.

And at least one of the following:

a) Organisms and white blood cells seen on Gram stain of joint fluid.

b) Positive antigen test on blood, urine, or joint fluid.

c) Cellular profile and chemistries of joint fluid compatible with infection and not explained by an underlying rheumatologic disorder.

d) Radiographic evidence of infection e.g., abnormal findings on x-ray, CT scan, MRI, or radiolabel scan.

Osteomyelitis must meet at least one of the following criteria:

Criterion 1: patient has organisms cultured from bone.

Criterion 2: patient has evidence of osteomyelitis on direct examination of the bone during a surgical operation or histopathologic examination.

Antimicrobial Resistance and Healthcare Associated Infection | National Services Scotland Health Protection Scotland (HPS) (Antimicrobial Resistance and Healthcare Associated Infection | National Services Scotland) SSI Surveillance Protocol Edition 7.1 2019

Organs Space Infection Definitions Supplement.

20

Criterion 3: patient has at least two of the following signs or symptoms with no other recognised cause:

a) fever (>38°C)

b) Localised swelling, tenderness, heat, or drainage at suspected site of bone infection.

And at least one of the following:

a) Organisms cultured from blood.

b) Positive blood antigen test.

c) Radiographic evidence of infection.

Criteria used to determine orthopaedic organ/space infections:

 Limitation of motion

 Evidence of effusion

 Organisms and white blood cells seen on Gram stain of joint fluid

 Positive antigen test on blood, urine, or joint fluid

 Cellular profile and chemistries of joint fluid compatible with infection

 Organisms cultured from fluid/tissue/biopsy/blood/bone 3.3. Wound Contamination Class

Wound contamination class as described by Altemeier et al. 4

Appendix IV – Wound Contamination Classification

As per ECDC protocol:

W1 A CLEAN WOUND is an uninfected operative wound in which no inflammation is encountered, and the respiratory, alimentary, genital, or uninfected urinary tracts are not entered. In addition, clean wounds are primarily closed and, if necessary, drained with closed drainage. Operative incisional wounds that follow non-penetrating trauma should be included in this category

W2 CLEAN-CONTAMINATED WOUNDS are operative wounds in which the respiratory, alimentary, genital, or uninfected urinary tracts are entered under controlled condition and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category provided no evidence of infection or major break in technique is encountered.

W3 CONTAMINATED WOUNDS include open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique or gross spillage from the gastrointestinal tract, and incisions in which acute, nonpurulent inflammation is encountered are included in this category.

W4 DIRTY OR INFECTED WOUNDS include old traumatic wounds with retained devitalised tissue and those that involve existing clinical infection or perforated viscera. This definition suggests that the organisms causing postoperative infection were present in the operative field before the operation. *

* If this patient develops SSI following operation with the same organism this should be included as an SSI within the surveillance.

Appendix V - ASA Score

The pre-operative ASA score is an assessment by the anaesthetist of the patient's pre-operative physical condition according to the American Society of Anaesthesiologists' classification of physical status. The patient's pre-operative physical condition will be scored by the anaesthetist, as indicated below. It is important that relevant anaesthetists understand the importance of clear documentation of the ASA score.

ASA physical status classification as per ECDC protocol:

Class of condition	Description of patient's condition
Class 1	Normal healthy patient
Class 2	Patient with mild systemic disease caused either by the condition to be treated surgically or by other pathophysiological processes
Class 3	Patient with severe systemic disease that is not incapacitating
Class 4	Patient with an incapacitating systemic disease that is already life-threatening, and not always correctable by operation
Class 5	Moribund patient who has little chance of survival
Unknown	Patient whose ASA score is not available, for example, emergency operation

Figure 14: ASA Classification table

List of Figures