Surveillance of Surgical Site Infection in Ireland

National Protocol for General Surgery

Surveillance Manual
Version 1
January 2008
Acknowledgements

This protocol has been adapted from the Panceltic surveillance network protocol for orthopaedic surgical site infection surveillance and the Hospitals in Europe Link for Infection Control through Surveillance (HELICS) protocol for surgical site infection surveillance.

We gratefully acknowledge the support and assistance of Dr. Edward TM Smyth, Mr. Gerard Mcllvenny and Ms. Geraldine Reid, Northern Ireland Healthcare-associated Infection Surveillance Centre and The Panceltic Surveillance Network.
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Table of Contents

SECTION 1: Introduction and Methodology

1.1 Introduction ........................................................................................................... 1:6
1.2 Aims of surgical site infection surveillance ......................................................... 1:8
1.3 Surveillance of general surgery ............................................................................. 1:8
1.4 Surveillance methods .............................................................................................. 1:8

SECTION 2: Surgical Site Infection Surveillance Fields and Definitions

2.1 Sample surveillance form ......................................................................................... 2:11
2.2 National SSI core dataset - general surgery ......................................................... 2:13
2.3 Additional non-core data ....................................................................................... 2:14
2.4 How to fill-in surgical site infection survey forms ............................................... 2:15
2.5 Care of survey forms ............................................................................................. 2:15

2.6 Definitions of fields and reporting instructions .................................................. Section 2:16 - 2:24
Q1 Hospital code ........................................................................................................... 2:17
Q2 Patient number ...................................................................................................... 2:17
Q3 Timing of surgery .................................................................................................. 2:17
Q4 Gender .................................................................................................................... 2:17
Q5 Date of birth .......................................................................................................... 2:18
Q6 Date of admission ................................................................................................. 2:18
Q7 Date of operation ................................................................................................. 2:18
Q8 Was patient readmitted due to a surgical site infection? .................................... 2:18
Q9 Anaesthesia ........................................................................................................... 2:18
Q10 ASA classification ............................................................................................... 2:19
Q11 Was the patient given systemic antibiotic prophylaxis? .................................... 2:19
Q12 Wound classification .......................................................................................... 2:20
Q13 Time of incision .................................................................................................. 2:21
Q146 Time of closure ................................................................................................. 2:21
Q15 Was an implant used? ......................................................................................... 2:21
Q16 Endoscopic approach .......................................................................................... 2:21
Q17 Category of surgical procedure .......................................................................... 2:22
Q18 Did patient develop a surgical site infection? ..................................................... 2:22
Q19 Type of surgical site infection ............................................................................ 2:22
Q20 Date of infection was diagnosed ...................................................................... 2:23
Q21 Outcome of patient .............................................................................................. 2:24
Q22 Date Outcome discharge/transfer/death ............................................................... 2:24
Q23 Date surveillance completed .............................................................................. 2:24
SECTION 3: References

SECTION 4: Appendices

4.1 Schematic of surveillance process
4.2 Schematic of diagnosing surgical site infections
4.3 OPCS procedure codes
SECTION 1

Introduction and Methodology
1.1 Introduction

Surgical site infections are one of the most common health-care associated infections (HCAI). They represent a significant burden in terms of patient morbidity and mortality and can result in increases in length of hospital stay and costs of hospitalisation (1,2,3). The establishment of well-organised infection control surveillance programs have been shown in multiple studies to reduce rates of surgical site infection (4,5), thus representing one successful approach to tackle this problem.

In May 2007, the SARI (Strategy for the control of Antimicrobial Resistance in Ireland) National Committee agreed that a subcommittee be established to produce recommendations on surveillance of surgical site infection in Ireland. This was subsequent to agreement at the Health Service Executive (HSE) healthcare-associated infections (HCAI) Governance Committee that HCAI surveillance was one of the key components in the prevention and control of HCAI.

Members of the subcommittee included:

- Dr. Fidelma Fitzpatrick, Consultant Microbiologist, Health Protection Surveillance Centre (HPSC) & Beaumont Hospital, Dublin (Chair)
- Ms. Mary Kelleher, Surveillance Scientist, St. James’s Hospital, Dublin (representing the Surveillance Scientists Association)
- Mr. Ken Mealy, Consultant Surgeon, Wexford General Hospital, Wexford (lead surgeon driving the General Surgery surveillance initiative in Wexford Hospital)
- Dr. Olive Murphy, Consultant Microbiologist, Bon Secours Cork (representing the Irish Society of Clinical Microbiologists - ISCM)
- Dr. Brian O’Connell, Consultant Microbiologist, St. James’s Hospital, Dublin (representing ISCM)
- Mr. Ajay Oza, Surveillance Scientist, HPSC.
- Dr. Fiona Roche, Surveillance Scientist, HPSC.
- Dr. Edward Smyth, Director, Northern Ireland Healthcare-associated infection Surveillance Centre and Consultant Microbiologist, Royal Hospitals, Northern Ireland.
- Ms. Mairead Twohig, Infection Control, Our Lady of Lourdes Hospital Drogheda. (representing the Infection Control Nurses Association)

The committee first met on 30th July 2007. In the short-term, the committee agreed to produce recommendations on the surveillance of surgical site infection nationally, including standardised definitions and a standardised national protocol containing a national core dataset. In the long-term the committee will act as a HCAI steering committee and guide developments in HCAI surveillance. The committee will feed back to the HSE HCAI Governance Group via the SARI National Committee.
The committee agreed from the outset that in order to enable national and international comparisons, the CDC definitions of surgical site infection should be employed (13). As the collection of data for surgical site infection involves a large number of staff including surgeons, nurses, infection prevention and control and administrative staff, it is recommended that institutions nominate a coordinator for surveillance from the outset to coordinate surveillance efforts. The committee acknowledges that many institutions will have real difficulties in establishing surgical site infection surveillance due to deficits in both staff and IT infrastructure.

In these cases, these deficits should be highlighted to the institution’s Chief Executive Officer and the chair of the National Hospitals Office (NHO) Local Implementation Team.

The purpose of this manual is to guide individual hospitals interested in participating in SSI surveillance to use a standardised approach in data collection by providing information, definitions, and instructions. The manual’s main focus is on general surgery but the core set of questions provided can also be applied to all types of surgical surveillance. We have provided an example of a general surgery surveillance form containing all of the core dataset questions, however institutions may wish to generate their own scannable forms to include additional questions as locally relevant. We hope that use of this protocol will ensure a standardised approach to data collection and enable comparative analysis of data at a national level. Institutions are requested not to alter the national core dataset as outlined in this manual. However as previously outlined, institutions may wish to add additional surveillance questions as locally relevant.

It is hoped that the information contained in this manual is clear and concise and will assist you in the completion of the surveillance forms.
1.2 Aims of surgical site infection surveillance

The main objectives of surgical site infection surveillance are to:

I. Collect surveillance data on SSI to permit estimation of the magnitude of SSI risks among hospitalised patients

II. Analyse and report SSI surveillance data and to provide risk-adjusted SSI rates and the identification of SSI trends

III. Provide timely feedback of SSI rates to assist surgical units in minimising the occurrence of SSIs

The aim of a national SSI surveillance programme is to ensure standardisation of definitions, data collection and reporting procedures for all participating hospitals. This will ensure that high quality data collected is comparable across all hospitals at a national level. In addition, it will provide a benchmark allowing individual hospitals to compare their rates of SSI in a specific group of surgical procedures against the national data set.

1.3 Surveillance of General Surgery

It was recommended by the SARI HCAI subcommittee that national surveillance of SSI should begin with a focus on general surgery. This is already running as a successful project in Wexford General Hospital and as part of the HISC surveillance initiatives in Northern Ireland where much experience has already been learned. Surveillance should be commenced with a small range of general surgical procedures and the type of procedure(s) chosen should be decided locally based on resources available and local interests. It may be preferable to choose procedures with known or suspected high infection rates and with a sufficient volume performed per year (e.g. > 20 procedures) in order to determine reliable rates of infection.

1.4 Surveillance methods

The surveillance method needed is prospective active surveillance. This means that designated and trained members of the surveillance team have to monitor each patient included in the surveillance program from the date of their procedure until they are discharged from hospital. It is important to note that the diagnosis of a SSI is made by a surgeon or attending physician according to the CDC definitions. See Appendix 4.1 for a schematic flowchart of the different stages of setting up SSI surveillance. Each hospital may decide to focus on a particular surgical procedure to monitor or a group of procedures. A list of the major surgical procedures within general surgery and their associated codes can be found under Appendix 4.3. Surgical operations and procedures are classified using the OPCS codes.
(version 4.4) to be consistent with Pan Celtic methodology. Any patient who then undergoes one of the selected surgical procedures, regardless of the presence of a SSI, should be included in the surveillance programme. **All patients included in the surveillance should be followed up prospectively from the time of surgery to discharge. The maximum period of follow up depends on whether the surgical procedure involved the insertion of an implant or not.**

- If no implant was used, the CDC definition of a SSI states that the maximum follow up time is 30 days post-operation.

- If an implant is used, the maximum follow up time is 1 year after the operation. However, since this surveillance protocol is restricted to inpatients only, the surveillance should be continued for the duration of the patients’ post-operative stay. If the patient is still in hospital after a 1 year surveillance period, then surveillance should be continued until the patient is discharged or for a maximum of a further 30 days.

At present we are not recommending the continuation of the surveillance once the patient has been discharged from hospital. This surveillance protocol is restricted to **inpatients only** since post-discharge surveillance is an extremely resource intensive process. However individual centres may wish to implement a system that includes post-discharge surveillance. It is important to note that any surveillance system that does not incorporate both in-patient and post-discharge surveillance is incomplete.

A two-page surveillance form representing the national core minimum dataset is provided within this document. **This form is a sample form and not for direct use.** It represents a template and can be used to guide hospitals in the design of their own forms if a hospital wants to add additional questions to the core minimum dataset to address issues within their own institution. It is strongly recommended that forms be designed using form-recognition software so that data collected can be scanned directly into a database to increase efficiency and improve data quality. Also, field names of the core minimum dataset should not change to allow downstream data integration at a later stage. Hospitals without form-recognition software should contact the HPSC to discuss other possible options.

Integral to a successful surveillance system is interdisciplinary co-operation, with involvement of nursing, medical and administrative staff with the Infection Prevention and Control Team. It is crucial that this team is supported by the institutions management team and the HSE.
SECTION 2

Surveillance Form
Fields and Definitions
2.1 Sample surveillance form

The surveillance form below represents the proposed core minimum data set for surgical site infection (SSI) surveillance for the Republic of Ireland. **This is a sample form and not for direct use.** You may wish to change the format of this form or include additional questions as locally relevant; however we ask that all the questions below are included in your form.

![Page 1 of sample form](image)

### Surgical Site Infection Surveillance General Surgery Form

<table>
<thead>
<tr>
<th>Q 1 Hospital code</th>
<th>Q 2 Patient number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q 3 Timing of surgery</th>
<th>Q 4 Gender</th>
<th>Q 5 Date of birth</th>
<th>Q 6 Date of admission</th>
<th>Q 7 Date of operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgent</td>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>Female</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not recorded</td>
<td>Not recorded</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PRE OPERATIVE**

<table>
<thead>
<tr>
<th>Q 8 Was patient readmitted due to a surgical site infection?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

**PERI OPERATIVE**

<table>
<thead>
<tr>
<th>Q 9 Anaesthesia</th>
<th>Q 10 ASA classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>1 Normal healthy patient</td>
</tr>
<tr>
<td>Regional</td>
<td>2 Patient with mild systemic disease</td>
</tr>
<tr>
<td>Local</td>
<td>3 Patient with severe systemic disease that is not incapacitating</td>
</tr>
<tr>
<td>Other</td>
<td>4 Patient with an incapacitating disease that is a constant threat to life</td>
</tr>
<tr>
<td></td>
<td>5 Moribund patient not expected to survive for 24 hours with or without operation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q 11 Was the patient given systemic antibiotic prophylaxis?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q 12 Wound classification</th>
<th>Q 13 Time of incision (24 hour clock)</th>
<th>Q 14 Time of closure (24 hour clock)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean</td>
<td>H H : M M</td>
<td></td>
</tr>
<tr>
<td>Clean-contaminated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contaminated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dirty or infected</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q 15 Was an implant used?</th>
<th>Q 16 Was an endoscope used?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ☐ No ☐</td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>
### PERI OPERATIVE cont.

**Q 17 Category of surgical procedure**
Tick only one procedure below (the main procedure) and fill out the OPCS code in box provided

<table>
<thead>
<tr>
<th>Endocrine System and Breast</th>
<th>Hepatobiliary, Pancreas and Spleen</th>
<th>OPCS-4 Code:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pituitary and pineal glands</td>
<td>Liver</td>
<td></td>
</tr>
<tr>
<td>Thyroid and parathyroid glands</td>
<td>Gall bladder</td>
<td></td>
</tr>
<tr>
<td>Other endocrine glands</td>
<td>Spleen</td>
<td></td>
</tr>
<tr>
<td>Breast</td>
<td>Pancreas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Upper Digestive Tract</th>
<th>Lower Digestive Tract</th>
<th>Soft Tissue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duodenum</td>
<td>Appendix</td>
<td>Hemia Repair</td>
</tr>
<tr>
<td>Jejunum</td>
<td>Colon</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Rectum</td>
<td></td>
</tr>
<tr>
<td>Stomach pylorus and general upper GI tract endoscopy</td>
<td>Anus and perianal region</td>
<td></td>
</tr>
<tr>
<td>Oesophagus including hiatus hernia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vascular</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aorta</td>
<td>iliac and femoral arteries</td>
<td></td>
</tr>
<tr>
<td>Carotid cerebral and subclavian arteries</td>
<td>Other arteries</td>
<td></td>
</tr>
<tr>
<td>Abdominal branches</td>
<td>Veins and other blood vessels</td>
<td></td>
</tr>
</tbody>
</table>

### POST OPERATIVE

**Q 18 Has patient developed a surgical site infection?**

- [ ] Yes  
- [ ] No

**Q 19 Type of surgical site infection**

- [ ] Superficial incisional
- [ ] Deep incisional
- [ ] Organ/space

**Q 20 Date infection was diagnosed**

- [ ] D  
- [ ] D  
- [ ] M  
- [ ] M  
- [ ] Y  
- [ ] Y  
- [ ] Y  

**Q 21 Outcome of the patient**

- [ ] Discharge
- [ ] Transfer
- [ ] Death
- [ ] Not recorded

**Q 22 Date of Outcome**

- [ ] D  
- [ ] D  
- [ ] M  
- [ ] M  
- [ ] Y  
- [ ] Y  
- [ ] Y  

**Q 23 Date surveillance completed**

- [ ] D  
- [ ] D  
- [ ] M  
- [ ] M  
- [ ] Y  
- [ ] Y  
- [ ] Y  
- [ ] Y  
- [ ] Y  

---
2.2 National SSI Core Dataset – General Surgery

Table 2.1 outlines the components of the national core data set for surgical site infection surveillance. Institutions may wish to add additional fields (see Table 2.2) as dictated by local requirements, however the core dataset and the exact core dataset field names should be collected as a minimum and it should not be modified.

Table 2.1 National Core Dataset

<table>
<thead>
<tr>
<th>Pre-Operative Data</th>
<th>Peri-Operative Data</th>
<th>Post-Operative Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital code</td>
<td>Anaesthesia</td>
<td>Surgical site infection</td>
</tr>
<tr>
<td>Patient number</td>
<td>ASA classification</td>
<td>Date infection diagnosed</td>
</tr>
<tr>
<td>Date of Birth</td>
<td>Systemic antibiotic prophylaxis</td>
<td>Type of infection</td>
</tr>
<tr>
<td>Date of Admission</td>
<td>Wound classification</td>
<td>Outcome of patient</td>
</tr>
<tr>
<td>Date of Operation</td>
<td>Time of incision</td>
<td>Date of outcome</td>
</tr>
<tr>
<td>Gender</td>
<td>Time of closure</td>
<td>Date surveillance completed</td>
</tr>
<tr>
<td>Timing of surgery</td>
<td>Implant use</td>
<td></td>
</tr>
<tr>
<td>Readmitted because of surgical site infection</td>
<td>Endoscope use</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surgical procedure</td>
<td></td>
</tr>
</tbody>
</table>
### 2.3 Additional Non-Core Data

Additional, non core, data might also be collated at local levels (Table 2.2).

#### Table 2.2 Optional fields to include in surgical site infection surveillance form

<table>
<thead>
<tr>
<th>Optional additional fields</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating theatre number</td>
<td>The code or name of operating theatre to track if certain operating theatres have a higher incidence of SSI</td>
</tr>
<tr>
<td>Surgeon Grade</td>
<td>The grade of surgeon who performed the procedure. If more than one surgeon was involved, record grade of surgeon performing the majority of the surgery. Options may include: Consultant, Specialist registrar, Senior House Officer, Unknown.</td>
</tr>
<tr>
<td>Consultant Responsible</td>
<td>Enter code of consultant responsible for the patient. The named consultant may not be the surgeon that performed the operative procedure.</td>
</tr>
<tr>
<td>Consultant present</td>
<td>Record whether a consultant was present or not in the theatre suite when the surgery was performed. (e.g. Y/N)</td>
</tr>
<tr>
<td>Locum</td>
<td>Record whether the surgeon who performed the operative procedure was a locum. (e.g. Y/N)</td>
</tr>
<tr>
<td>Patient weight</td>
<td>The weight of the patient pre-operation. Used in conjunction with patient height to determine the Body Mass index (BMI).</td>
</tr>
<tr>
<td>Patient height</td>
<td>The height of the patient pre-operation. Used in conjunction with patient weight to determine the Body Mass index (BMI).</td>
</tr>
<tr>
<td>Was patient given thromboprophylaxis</td>
<td>Record if the patient was given thromboprophylaxis. Options may include: Mechanical thromboprophylaxis only, Chemical thromboprophylaxis only, Both mechanical and chemical thromboprophylaxis, No thromboprophylaxis.</td>
</tr>
<tr>
<td>More detailed questions regarding antibiotic prophylaxis</td>
<td>For example, how many doses did patient receive?</td>
</tr>
<tr>
<td>Procedure performed as a result of a blunt or penetrating injury</td>
<td>Determine if procedure was performed as a result of trauma? There is a higher risk of SSI in this category of surgeries.</td>
</tr>
<tr>
<td>Was more than one procedure performed through the same incision during the same trip to theatre</td>
<td>Determine if there is a correlation with multiple procedures within the same incision AND risk of a SSI</td>
</tr>
<tr>
<td>Microbiology and antibiotic sensitivities of isolates implicated in SSI</td>
<td>Collect microbiological data on SSIs to investigate epidemiology of causative pathogens</td>
</tr>
<tr>
<td>If the patient died, relationship of surgical site infection to death</td>
<td>Options may include: SSI caused the death of the patient, SSI contributed to death, Patient died but death was not related to SSI, Relationship between SSI and death unknown.</td>
</tr>
</tbody>
</table>
2.4 How to fill-in survey forms

Surveillance forms should be generated using form-recognition software (such as Teleform or Formic) to ensure high quality and efficiency in data collection. For forms developed by such software, it is important to follow the points outlined below in filling in these forms to ensure a valid and accurate scanning process.

♦ Use a dark ink pen or biro. Avoid light coloured pens, e.g. green.

♦ Place cross (not tick) in appropriate box, i.e. ☒

Some questions can have more than one response. These are clearly indicated.

♦ Mistakes can be rectified.

If an incorrect response is chosen, blot out the incorrect response, ☒ and choose correct response by placing a cross in the appropriate box, ☒

♦ Be thorough in completion

Write from left to right (starting at the first box)

Write clearly

Write within the boxes

• If you make a mistake - cross out the error and write the correct character in the box.

• If it is not possible to fit a character in a box write directly above or below the relevant box

• do not leave gaps

2.5 Care of survey forms

♦ Avoid damaging form. Do not staple or tape forms together.

♦ The four-locator blocks (black boxes in the corners of forms) are essential for correct reading, do not write or draw around these locator blocks.

♦ Do not write on an area designated for a serial number.

♦ **DO NOT PHOTOCOPY BLANK FORMS**

Each form contains unique identification elements and is intended for single use.

You may photocopy completed forms for your own personal use.
2.6 Definitions and reporting instructions

In the section below which describes each field of the national core data set, each data element is defined. In addition, comments, reporting instructions and the rationale for collecting the data are given where relevant.

Field: The name given to the data field, e.g. Patient number. *(Patient's hospital number)*

Response required:
- **Single** response question will allow only one response to be selected.
- **Multiple** response questions will allow more than one response to be selected.
- **Numerical** question will accept only numerical characters.
- **Alphanumeric** question will accept numbers and letters.

Classification:
- **Required**: response must be completed on every procedure recorded.
- **Conditional**: response is conditionally required when the requirement for data is dependent on the response given to other fields.
- **Not required**

Definition: Reason for inclusion of field and desired response.
Some questions are self-explanatory and therefore do not require a definition.

Choice(s): Choice(s) that are available under the field. Numerical frames do not have choices.

Rationale: Explanation of why a question has been included or framed in a particular manner

Comments: Additional information

Reply: Numbers, dates, ☑
Question 1: Hospital code
Response: Numerical
Classification: Required
Definition: A code assigned by the HPSC to each hospital
Reply: Number

Question 2: Patient number
Response: Alphanumerical
Classification: Required
Definition: Patient's hospital number
Reply: Number

Question 3: Timing of surgery
Response: Single
Classification: Required
Definition: Timing of operative procedure
Choices: Urgent
        Elective
        Not recorded
Reply: [ ]

Question 4: Gender
Response: Single
Classification: Required
Definition: Sex of the patient
Choices: Male
        Female
        Not recorded
Reply: [ ]
<table>
<thead>
<tr>
<th>Question 5:</th>
<th><strong>Date of birth</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response:</strong></td>
<td>Numerical</td>
</tr>
<tr>
<td><strong>Classification:</strong></td>
<td>Required</td>
</tr>
<tr>
<td><strong>Definition:</strong></td>
<td>Date of patient’s birth</td>
</tr>
<tr>
<td><strong>Reply:</strong></td>
<td>DD/MM/YYYY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 6:</th>
<th><strong>Date of admission</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response:</strong></td>
<td>Numerical</td>
</tr>
<tr>
<td><strong>Classification:</strong></td>
<td>Required</td>
</tr>
<tr>
<td><strong>Definition:</strong></td>
<td>Date patient admitted to the hospital where surgery was performed</td>
</tr>
<tr>
<td><strong>Reply:</strong></td>
<td>DD/MM/YYYY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 7:</th>
<th><strong>Date of Operation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response:</strong></td>
<td>Numerical</td>
</tr>
<tr>
<td><strong>Classification:</strong></td>
<td>Required</td>
</tr>
<tr>
<td><strong>Definition:</strong></td>
<td>Date of operative procedure</td>
</tr>
<tr>
<td><strong>Reply:</strong></td>
<td>DD/MM/YYYY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 8:</th>
<th><strong>Was patient readmitted due to surgical site infection?</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classification:</strong></td>
<td>Required</td>
</tr>
<tr>
<td><strong>Choices:</strong></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td><strong>Reply:</strong></td>
<td>☑</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question 9:</th>
<th><strong>Anaesthesia</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response:</strong></td>
<td>Single</td>
</tr>
<tr>
<td><strong>Classification:</strong></td>
<td>Required</td>
</tr>
<tr>
<td><strong>Definition:</strong></td>
<td>Record the type of anaesthesia administered pre-operation.</td>
</tr>
<tr>
<td><strong>Choices:</strong></td>
<td><strong>General</strong></td>
</tr>
<tr>
<td></td>
<td>Administration of drugs or gases that enter the general circulation and affect the central nervous system to render the patient pain-free, amnesiac, unconscious, and often paralysed with relaxed muscles.</td>
</tr>
</tbody>
</table>
Regional
Use of local anaesthetic solution(s) to produce circumscribed areas of loss of sensation including nerve blocks, spinal, epidural and field blocks.

Local
Subcutaneous or deeper infiltration with analgesic solutions to produce localised areas of loss of sensation.

Other
If options above do not apply

Reply:

Question 10: ASA Classification
Response: Single
Classification: Required
Definition: An assessment by the anaesthesiologist of the patient's preoperative physical condition using the American Society of Anaesthesiologists' (ASA) Classification of Physical Status schema.\(^{11,12}\)
Choices:
1. Normally healthy patient.
2. Patient with mild systemic disease.
3. Patient with severe systemic disease that is not incapacitating.
4. Patient with an incapacitating systemic disease that is a constant threat to life.
5. Moribund patient who is not expected to survive for 24 hours with or without operation.
Rationale: Provides data to calculate infection frequencies and rates by ASA classification and is an element of the SSI risk index. This question is used in conjunction with wound class, time of skin incision and skin closure to assess a risk factor score\(^{10}\).
Reply:

Question 11: Was the patient given systemic antibiotic prophylaxis?
Response: Single
Classification: Required
Choices Yes
No
Definition: Systemic administration of antibiotic agent(s) at or within two hours prior to time of incision with the aim of preventing sepsis in the operative site(s).
Reply:
Question 12: Wound Classification

Response: Single

Classification: Required

Rationale: The degree of contamination at the time of the operation is one predictor of whether the surgical site will become infected. The wound class is an element of the NNIS infection risk index.

Choices:
- Clean
- Clean-contaminated
- Contaminated
- Dirty or infected

Definition: An assessment of the likelihood and degree of contamination of a surgical wound at the time of the operation. Wounds are divided into four classes; clean, clean-contaminated, contaminated, and dirty or infected.

- **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 (blunt) trauma should be included in this category if they meet the criteria.

- **Clean contaminated** wounds are operative wounds in which the respiratory, alimentary, genital, or urinary tracts are entered under controlled conditions 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.

- **Contaminated** wounds include open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique (e.g. open cardiac massage) or gross spillage from the gastrointestinal tract, and incisions in which acute, non-purulent inflammation is encountered are included in this category.

- **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.

Reply: ✗

Comment: This question is used in conjunction with ASA classification, Time of skin incision and time of skin closure to assess a risk factor score.
Question 13: Time of incision
Response: Numerical
Classification: Required
Definition: Time of skin incision. Used in conjunction with time of closure to determine duration of procedure.
Reply: HH: MM – using 24-hour clock

Question 14: Time of closure
Response: Numerical
Classification: Required
Definition: Time of skin closure. Used in conjunction with time of incision to determine duration of procedure.
Reply: HH: MM – using 24-hour clock

Question 15: Use of implant
Response: Single
Classification: Required
Definition: A non-human-derived implantable foreign body (e.g. prosthetic heart valve, non-human vascular graft, mechanical heart, or hip prosthesis) that is permanently placed in a patient during surgery.
Choices: Yes
No
Reply: X

Question 16: Use of endoscope
Response: Single
Classification: Required
Definition: Was an endoscope used during the procedure?
Choices: Yes
No
Reply: X
Question 17: Category of surgical procedure
Response: Single
Classification: Required
Definition: Tick the box indicating the main category of surgical procedure performed and record the specific OPCS code in the box provided. Refer to Appendix 4.3 for OPCS procedure codes.

Question 18: Has patient developed a surgical site infection?
Response: Single
Classification: Required
Definition: Did patient develop a surgical site infection following the current surgical procedure within the defined surveillance period (i.e. within 30 days of the procedure if no implant was used OR within 1 year of the procedure if an implant was used). See Appendix 4.2 for a schematic flowchart to help with diagnosing SSIs and identifying the type of SSI.

Choices: Yes No
Reply: ☒
Comment: If answer is "Yes" or you are in any doubt, contact Infection Prevention and Control staff. Final diagnosis of an SSI is made by a surgeon or attending physician.

Question 19: Type of surgical site infection
Response: Single
Classification: Conditionally required
Definition: For surveillance classification purposes, SSI is divided into incisional SSI and organ/space SSI. Incisional SSI are further classified into those involving only the skin and subcutaneous tissue (called superficial incisional SSI) and those involving deep soft tissues of the incision (called deep incisional SSI, e.g. facial and muscle layers). Organ/space SSI involve any part of the anatomy (e.g. organs or spaces), other than the incision, opened or manipulated during the operative procedure. See Appendix 4.2 for schematic diagram on diagnosing surgical site infections and identifying whether the type of SSI is superficial incisional, deep incisional or organ/space.

Choices: Superficial incisional Deep incisional Organ/Space
Comment: Final diagnosis of an SSI is made by a surgeon or attending physician.
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, localised 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 one year 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), localised 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

ORGAN/SPACE
Infection occurs within 30 days after the operation if no implant is left in place or within one year 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.

Question 20: Date infection was diagnosed
Response: Single
Classification: Conditionally required on patient developing a surgical site infection
Definition: The date when the first clinical evidence of the surgical site infection appeared or the date the specimen used to make or confirm the diagnosis was collected, whichever comes first
Reply: DD/MM/YYYY
**Question 21:** Outcome of the patient

*Response:* Single

*Classification:* Required

*Choices:* Discharge, Transfer, Death, Not recorded

*Definition:* If no implant was used in surgery, the outcome is measured either when the patient is discharged or 30 days after the operation date (whichever occurs first). If an implant was used, the outcome is measured either when the patient is discharged or 1 year after the operation date (whichever occurs first).

*Reply:* ☒

**Question 22:** Date of outcome

*Response:* Numeric

*Classification:* Required

*Reply:* DD/MM/YYYY

**Question 23:** Date surveillance completed

*Response:* Numeric

*Classification:* Required

*Reply:* DD/MM/YYYY
SECTION 3

REFERENCES
REFERENCES


SECTION 4

APPENDICES
### Appendix 4.1 Schematic of surveillance process

#### 1. Setup Surveillance Process

- **a)** Establish a multidisciplinary committee
- **b)** Ensure appropriate personnel in place
- **c)** Agree mechanism for data handling and feedback
- **d)** Agree on which surgical procedures to study

#### 2. Select Target Population

- **a)** Identify which patients to monitor at time of operation.
- **b)** Review theatre and ward records.
- **c)** Fill in patient pre-operative and peri-operative details on surveillance form

#### 3. Monitor in-patients

- **a)** Monitor in-patients regularly for signs of a SSI
- **b)** Exclude: Diagnostic procedures
  - Procedures where the wound is not closed
- **c)** Follow-up patients for 30 days (or 1 year when implant is used)
  - OR until patient is discharged

#### 4. Complete and submit surveillance form

- **a)** Complete post-operative section on surveillance form for each selected patient at time of patient discharge whether a SSI is diagnosed or not
Appendix 4.2 Schematic of diagnosing surgical site infections

POSSIBLE SURGICAL SITE INFECTION

Infection occurred within 30 days after an operation if no implant is in place OR within one year if an implant is in place eg. hip replacement

Yes

No

Do NOT report as a SSI

Infection related to the operative procedure

Yes

No

Do NOT report as a SSI

POSSIBLE SUPERFICIAL INCISIONAL SURGICAL SITE INFECTION

Yes

Go to Superficial Incisional Surgical Site Infection Sheet

POSSIBLE DEEP INCISIONAL SURGICAL SITE INFECTION

Yes

Go to Deep Incisional Surgical Site Infection Sheet

POSSIBLE ORGAN/SPACE SURGICAL SITE INFECTION

Yes

Go to Organ/Space Surgical Site Infection Sheet
POSSIBLE SUPERFICIAL INCISIONAL SURGICAL SITE INFECTION

Infection involves only skin or subcutaneous tissue of incision

No

Yes

Culture of fluid or tissue aseptically obtained from superficial incision

Yes

Culture negative

Yes

Diagnosis of superficial incisional SSI by surgeon or healthcare worker trained in SSI definitions

Yes

No

Culture positive*

Yes

Superficial incision deliberately opened by surgeon

Yes

No

At least one of the following signs or symptoms of infection are present:
- Pain or tenderness
- Localised swelling
- Redness
- Heat

Yes

No

Purulent drainage from superficial incision

Yes

No

Check Deep Incisional or Organ/Space sheet

Yes

No

SUPERFICIAL INCISIONAL SURGICAL SITE INFECTION

* Beware that colonised wounds can yield positive results.
Colonisation = proliferation of micro-organisms without host response.
If unsure consult trained healthcare professional.
**Appendix 4.2 continued…**

**POSSIBLE DEEP INCISIONAL SURGICAL SITE INFECTION**

Infection involves only deep soft tissues (e.g., fascia & muscle layers) of the incision OR

Infection involves both skin or subcutaneous tissue and deep soft tissues of the incision OR

Infection involves parts of body other than above that are opened/manipulated during operative procedures but the infection drains through the incision and generally does not involve re-operation

Yes

Check Superficial Incisional or Organ/Space sheet

No

Culture of fluid or tissue *aseptically obtained* from deep incision

Yes

No

Culture negative

Culture positive

Deep incision spontaneously dehisces or deliberately opened by surgeon

Yes

No

Purulent drainage from the deep incision, but not from organ/space of surgical site

Yes

No

Abscess or other evidence of infection involving the deep incision is found on direct examination, during re-operation, or by histopathological or radiological examination

Yes

No

Diagnosis of deep incisional SSI by surgeon or healthcare worker trained in SSI definitions

Yes

No

Do NOT report as a Deep Incisional SSI

**DEEP INCISIONAL SURGICAL SITE INFECTION**

At least one of the following signs or symptoms of infection are present:

- Fever (>38°C)
- Localised swelling
- Redness
- Heat

Yes

No
Appendix 4.2 continued…

POSSIBLE ORGAN/SPACE SURGICAL SITE INFECTION

Infection involves any part of the body, excluding the skin incision, fascia or muscle layers, that is opened or manipulated during the operative procedure

Yes

Infection draining through incision (generally does not involve re-operation)

No

Yes

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

No

Yes

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

No

Yes

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

No

Yes

Diagnosis of organ/space SSI by surgeon or healthcare worker trained in SSI definitions

No

Do NOT report as an Organ/Space SSI

ORGAN/SPACE SURGICAL SITE INFECTION
Appendix 4.3 OPSC Procedure codes (version OPCS 4.4)

The following are a list of surgical procedures for General Surgery with their corresponding three-digit OPCS codes.

**ENDOCRINE SYSTEM AND BREAST**

**Pituitary and pineal glands**
- B01 Excision of pituitary gland
- B02 Destruction of pituitary gland
- B04 Other operations on pituitary gland
- B06 Operations on pineal gland

**Thyroid and parathyroid glands**
- B08 Excision of thyroid gland
- B09 Operations on aberrant thyroid tissue
- B10 Operations on thyroglossal tissue
- B12 Other operations on thyroid gland
- B14 Excision of parathyroid gland
- B16 Other operations on parathyroid gland

**Other Endocrine glands**
- B17 Transplantation of thymus gland
- B18 Excision of thymus gland
- B20 Other operations on thymus gland
- B22 Excision of adrenal gland
- B23 Operations on aberrant adrenal tissue
- B25 Other operations on adrenal gland

**Breast**
- B27 Total excision of breast
- B28 Other excision of breast
- B29 Reconstruction of breast
- B30 Prosthesis for breast
- B31 Other plastic operations on breast
- B32 Biopsy of breast
- B33 Incision of breast
- B34 Operations on duct of breast
- B35 Operations on nipple
- B36 Reconstruction of nipple and areola
- B37 Other operations on breast
- B38 Reconstruction of breast using flap of skin of buttock
- B39 Reconstruction of breast using abdominal flap
- B40 Destruction of lesion of breast

**UPPER DIGESTIVE TRACT**

**Oesophagus including hiatus hernia**
- G01 Excision of oesophagus and stomach
G02  Total excision of oesophagus
G03  Partial excision of oesophagus
G04  Open extirpation of lesion of oesophagus
G05  Bypass of oesophagus
G06  Attention to connection of oesophagus
G07  Repair of oesophagus
G08  Artificial opening into oesophagus
G09  Incision of oesophagus
G10  Open operations on varices of oesophagus
G11  Open placement of prosthesis in oesophagus
G13  Other open operations on oesophagus
G14  Fibreoptic endoscopic extirpation of lesion of oesophagus
G15  Other therapeutic fibreoptic endoscopic operations on oesophagus
G16  Diagnostic fibreoptic endoscopic examination of oesophagus
G17  Endoscopic extirpation of lesion of oesophagus using rigid oesophagoscope
G18  Other therapeutic endoscopic operations on oesophagus using rigid oesophagoscope
G19  Diagnostic endoscopic examination of oesophagus using rigid oesophagoscope
G21  Other operations on oesophagus
G23  Repair of diaphragmatic hernia
G24  Antireflux operations
G25  Revision of antireflux operations

**Stomach pylorus and general upper gastrointestinal tract endoscopy**

G27  Total excision of stomach
G28  Partial excision of stomach
G29  Open extirpation of lesion of stomach
G30  Plastic operations on stomach
G31  Connection of stomach to duodenum
G32  Connection of stomach to transposed jejunum
G33  Other connection of stomach to jejunum
G34  Artificial opening into stomach
G35  Operations on ulcer of stomach
G36  Other repair of stomach
G38  Other open operations on stomach
G40  Incision of pylorus
G41  Other operations on pylorus
G42  Other fibreoptic endoscopic extirpation of lesion of upper gastrointestinal tract
G43  Fibreoptic endoscopic extirpation of lesion of upper gastrointestinal tract
G44  Other therapeutic fibreoptic endoscopic operations on upper gastrointestinal tract
G45  Diagnostic fibreoptic endoscopic examination of upper gastrointestinal tract
G46  Therapeutic fibreoptic endoscopic operations on upper gastrointestinal tract
G47  Intubation of stomach
G48  Other operations on stomach

**Duodenum**

G49  Excision of duodenum
G50  Open extirpation of lesion of duodenum
G51  Bypass of duodenum
G52  Operations on ulcer of duodenum
G53  Other open operations on duodenum
G54  Therapeutic endoscopic operations on duodenum
G55  Diagnostic endoscopic examination of duodenum
G57  Other operations on duodenum
### Jejunum
- **G58** Excision of jejunum
- **G59** Excirpation of lesion of jejunum
- **G60** Artificial opening into jejunum
- **G61** Bypass of jejunum
- **G62** Open endoscopic operations on jejunum
- **G63** Other open operations on jejunum
- **G64** Therapeutic endoscopic operations on jejunum
- **G65** Diagnostic endoscopic examination of jejunum
- **G67** Other operations on jejunum
- **G68** Transplantation of ileum

### Ileum
- **G69** Excision of ileum
- **G70** Open extirpation of lesion of ileum
- **G71** Bypass of ileum
- **G72** Other connection of ileum
- **G73** Attention to connection of ileum
- **G74** Creation of artificial opening into ileum
- **G75** Attention to artificial opening into ileum
- **G76** Intra-abdominal manipulation of ileum
- **G78** Other open operations on ileum
- **G79** Therapeutic endoscopic operations on ileum
- **G80** Diagnostic endoscopic examination of ileum
- **G82** Other operations on ileum

### LOWER DIGESTIVE TRACT

#### Appendix
- **H01** Emergency excision of appendix
- **H02** Other excision of appendix
- **H03** Other operations on appendix

#### Colon
- **H04** Total excision of colon and rectum
- **H05** Total excision of colon
- **H06** Extended excision of right hemicolon
- **H07** Other excision of right hemicolon
- **H08** Excision of transverse colon
- **H09** Excision of left hemicolon
- **H10** Excision of sigmoid colon
- **H11** Other excision of colon
- **H12** Excirpation of lesion of colon
- **H13** Bypass of colon
- **H14** Exteriorisation of caecum
- **H15** Other exteriorisation of colon
- **H16** Incision of colon
- **H17** Intra-abdominal manipulation of colon
- **H18** Open endoscopic operations on colon
- **H19** Other open operations on colon
- **H20** Endoscopic extirpation of lesion of colon
- **H21** Other therapeutic endoscopic operations on colon
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H22</td>
<td>Diagnostic endoscopic examination of colon</td>
</tr>
<tr>
<td>H23</td>
<td>Endoscopic extirpation of lesion of lower bowel using fibreoptic sigmoidoscope</td>
</tr>
<tr>
<td>H24</td>
<td>Other therapeutic endoscopic operations on lower bowel using fibreoptic sigmoidoscope</td>
</tr>
<tr>
<td>H25</td>
<td>Diagnostic endoscopic examination of lower bowel using fibreoptic sigmoidoscope</td>
</tr>
<tr>
<td>H26</td>
<td>Endoscopic extirpation of lesion of sigmoid colon using rigid sigmoidoscope</td>
</tr>
<tr>
<td>H27</td>
<td>Other therapeutic endoscopic operations on sigmoid colon using rigid sigmoidoscope</td>
</tr>
<tr>
<td>H28</td>
<td>Diagnostic endoscopic examination of sigmoid colon using rigid sigmoidoscope</td>
</tr>
<tr>
<td>H29</td>
<td>Subtotal excision of colon</td>
</tr>
<tr>
<td>H30</td>
<td>Other operations on colon</td>
</tr>
<tr>
<td>H31</td>
<td>Image guided colorectal therapeutic operations</td>
</tr>
</tbody>
</table>

**Rectum**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H33</td>
<td>Excision of rectum</td>
</tr>
<tr>
<td>H34</td>
<td>Open extirpation of lesion of rectum</td>
</tr>
<tr>
<td>H35</td>
<td>Fixation of rectum for prolapse</td>
</tr>
<tr>
<td>H36</td>
<td>Other abdominal operations for prolapse of rectum</td>
</tr>
<tr>
<td>H40</td>
<td>Operations on rectum through anal sphincter</td>
</tr>
<tr>
<td>H41</td>
<td>Other operations on rectum through anus</td>
</tr>
<tr>
<td>H42</td>
<td>Perineal operations for prolapse of rectum</td>
</tr>
<tr>
<td>H44</td>
<td>Manipulation of rectum</td>
</tr>
<tr>
<td>H46</td>
<td>Other operations on rectum</td>
</tr>
</tbody>
</table>

**Anus and perianal region**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>H47</td>
<td>Excision of anus</td>
</tr>
<tr>
<td>H48</td>
<td>Excision of lesion of anus</td>
</tr>
<tr>
<td>H49</td>
<td>Destruction of lesion of anus</td>
</tr>
<tr>
<td>H50</td>
<td>Repair of anus</td>
</tr>
<tr>
<td>H51</td>
<td>Excision of haemorrhoid</td>
</tr>
<tr>
<td>H52</td>
<td>Destruction of haemorrhoid</td>
</tr>
<tr>
<td>H53</td>
<td>Other operations on haemorrhoid</td>
</tr>
<tr>
<td>H54</td>
<td>Dilation of anal sphincter</td>
</tr>
<tr>
<td>H55</td>
<td>Other operations on perianal region</td>
</tr>
<tr>
<td>H56</td>
<td>Other operations on anus</td>
</tr>
<tr>
<td>H57</td>
<td>Other operations on the anal sphincter to control continence</td>
</tr>
<tr>
<td>H58</td>
<td>Drainage through perineal region</td>
</tr>
<tr>
<td>H59</td>
<td>Excision of pilonidal sinus</td>
</tr>
<tr>
<td>H60</td>
<td>Other operations on pilonidal sinus</td>
</tr>
<tr>
<td>H62</td>
<td>Other operations on bowel</td>
</tr>
<tr>
<td>H66</td>
<td>Therapeutic operations on ileoanal pouch</td>
</tr>
<tr>
<td>H68</td>
<td>Diagnostic endoscopic examination of enteric pouch using colonoscope</td>
</tr>
<tr>
<td>H69</td>
<td>Diagnostic endoscopic examination of enteric pouch using fibreoptic sigmoidoscope</td>
</tr>
<tr>
<td>H70</td>
<td>Diagnostic endoscopic examination of enteric pouch using rigid sigmoidoscope</td>
</tr>
</tbody>
</table>
OTHER ABDOMINAL ORGANS – PRINCIPALLY DIGESTIVE

Liver
J01 Transplantation of liver
J02 Partial excision of liver
J03 Extermination of lesion of liver
J04 Repair of liver
J05 Incision of liver
J06 Other transjugular intrahepatic operations on blood vessel of liver
J07 Other open operations on liver
J08 Therapeutic endoscopic operations on liver using laparoscope
J09 Diagnostic endoscopic examination of liver using laparoscope
J10 Transluminal operations on blood vessel of liver
J11 Transjugular intrahepatic operations on blood vessel of liver
J12 Other therapeutic percutaneous operations on liver
J13 Diagnostic percutaneous operations on liver
J14 Other puncture of liver
J15 Transluminal insertion of prosthesis into blood vessel of liver
J16 Other operations on liver
J17 Endoscopic ultrasound examination of liver

Gall bladder
J18 Excision of gall bladder
J19 Connection of gall bladder
J20 Repair of gall bladder
J21 Incision of gall bladder
J22 Other open operations on gall bladder
J23 Therapeutic percutaneous operations on gall bladder
J24 Diagnostic percutaneous operations on gall bladder
J25 Other operations on gall bladder

Bile duct
J27 Excision of bile duct
J28 Extermination of lesion of bile duct
J29 Connection of hepatic duct
J30 Connection of common bile duct
J31 Open introduction of prosthesis into bile duct
J32 Repair of bile duct
J33 Incision of bile duct
J34 Plastic repair of sphincter of oddi using duodenal approach
J35 Incision of sphincter of oddi using duodenal approach
J36 Other operations on ampulla of vater using duodenal approach
J37 Other open operations on bile duct
J38 Endoscopic incision of sphincter of oddi
J39 Other therapeutic endoscopic operations on ampulla of vater
J40 Endoscopic retrograde placement of prosthesis in bile duct
J41 Other therapeutic endoscopic retrograde operations on bile duct
J42 Therapeutic endoscopic retrograde operations on pancreatic duct
J43 Diagnostic endoscopic retrograde examination of bile duct and pancreatic duct
J44 Diagnostic endoscopic retrograde examination of bile duct
J45 Diagnostic endoscopic retrograde examination of pancreatic duct
J46 Therapeutic percutaneous attention to connection of bile duct
J47 Therapeutic percutaneous insertion of prosthesis into bile duct
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J48</td>
<td>Other therapeutic percutaneous operations on bile duct</td>
</tr>
<tr>
<td>J49</td>
<td>Therapeutic operations on bile duct along T tube track</td>
</tr>
<tr>
<td>J50</td>
<td>Percutaneous examination of bile duct</td>
</tr>
<tr>
<td>J51</td>
<td>Laparoscopic ultrasound examination of bile duct</td>
</tr>
<tr>
<td>J52</td>
<td>Other operations on bile duct</td>
</tr>
<tr>
<td>J53</td>
<td>Endoscopic ultrasound examination of bile duct</td>
</tr>
</tbody>
</table>

**Pancreas**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J54</td>
<td>Transplantation of pancreas</td>
</tr>
<tr>
<td>J55</td>
<td>Total excision of pancreas</td>
</tr>
<tr>
<td>J56</td>
<td>Excision of head of pancreas</td>
</tr>
<tr>
<td>J57</td>
<td>Other partial excision of pancreas</td>
</tr>
<tr>
<td>J58</td>
<td>Extirpation of lesion of pancreas</td>
</tr>
<tr>
<td>J59</td>
<td>Connection of pancreatic duct</td>
</tr>
<tr>
<td>J60</td>
<td>Other open operations on pancreatic duct</td>
</tr>
<tr>
<td>J61</td>
<td>Open drainage of lesion of pancreas</td>
</tr>
<tr>
<td>J62</td>
<td>Incision of pancreas</td>
</tr>
<tr>
<td>J63</td>
<td>Open examination of pancreas</td>
</tr>
<tr>
<td>J65</td>
<td>Other open operations on pancreas</td>
</tr>
<tr>
<td>J66</td>
<td>Therapeutic percutaneous operations on pancreas</td>
</tr>
<tr>
<td>J67</td>
<td>Diagnostic percutaneous operations on pancreas</td>
</tr>
<tr>
<td>J68</td>
<td>Other operations on pancreas</td>
</tr>
</tbody>
</table>

**Spleen**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J69</td>
<td>Total excision of spleen</td>
</tr>
<tr>
<td>J70</td>
<td>Other excision of spleen</td>
</tr>
<tr>
<td>J72</td>
<td>Other operations on spleen</td>
</tr>
<tr>
<td>J73</td>
<td>Laparoscopic ultrasound examination of pancreas</td>
</tr>
<tr>
<td>J74</td>
<td>Endoscopic ultrasound examination of pancreas</td>
</tr>
<tr>
<td>J76</td>
<td>Therapeutic percutaneous operations on bile duct</td>
</tr>
<tr>
<td>J77</td>
<td>Other transluminal operations on blood vessel of liver</td>
</tr>
</tbody>
</table>

**VASCULAR SURGERY**

**Great vessels and pulmonary artery**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L01</td>
<td>Open operations for combined abnormality of great vessels</td>
</tr>
<tr>
<td>L02</td>
<td>Open correction of patent ductus arteriosus</td>
</tr>
<tr>
<td>L03</td>
<td>Transluminal operations on abnormality of great vessel</td>
</tr>
<tr>
<td>L04</td>
<td>Open operations on pulmonary arterial tree</td>
</tr>
<tr>
<td>L05</td>
<td>Creation of shunt to pulmonary artery from aorta using interposition tube prosthesis</td>
</tr>
<tr>
<td>L06</td>
<td>Other connection to pulmonary artery from aorta</td>
</tr>
<tr>
<td>L07</td>
<td>Creation of shunt to pulmonary artery from subclavian artery using interposition tube prosthesis</td>
</tr>
<tr>
<td>L08</td>
<td>Other connection to pulmonary artery from subclavian artery</td>
</tr>
<tr>
<td>L09</td>
<td>Other connection to pulmonary artery</td>
</tr>
<tr>
<td>L10</td>
<td>Repair of pulmonary artery</td>
</tr>
<tr>
<td>L12</td>
<td>Other open operations on pulmonary artery</td>
</tr>
<tr>
<td>L13</td>
<td>Transluminal operations on pulmonary artery</td>
</tr>
</tbody>
</table>

**Aorta**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L16</td>
<td>Extra-anatomic bypass of aorta</td>
</tr>
<tr>
<td>L18</td>
<td>Emergency replacement of aneurysmal segment of aorta</td>
</tr>
<tr>
<td>L19</td>
<td>Other replacement of aneurysmal segment of aorta</td>
</tr>
<tr>
<td>L20</td>
<td>Other emergency bypass of segment of aorta</td>
</tr>
<tr>
<td>L21</td>
<td>Other bypass of segment of aorta</td>
</tr>
</tbody>
</table>
L22 Attention to prosthesis of aorta
L23 Plastic repair of aorta
L25 Other open operations on aorta
L26 Transluminal operations on aorta
L27 Transluminal insertion of stent graft for aneurysmal segment of aorta
L28 Transluminal operations on aneurysmal segment of aorta

Carotid cerebral and subclavian arteries
L29 Reconstruction of carotid artery
L30 Other open operations on carotid artery
L31 Transluminal operations on carotid artery
L33 Operations on aneurysm of cerebral artery
L34 Other open operations on cerebral artery
L35 Transluminal operations on cerebral artery
L37 Reconstruction of subclavian artery
L38 Other open operations on subclavian artery
L39 Transluminal operations on subclavian artery

Abdominal branches of aorta
L41 Reconstruction of renal artery
L42 Other open operations on renal artery
L43 Transluminal operations on renal artery
L45 Reconstruction of other visceral branch of abdominal aorta
L46 Other open operations on other visceral branch of abdominal aorta
L47 Transluminal operations on other visceral branch of abdominal aorta

Iliac and femoral arteries
L48 Emergency replacement of aneurysmal iliac artery
L49 Other replacement of aneurysmal iliac artery
L50 Other emergency bypass of iliac artery
L51 Other bypass of iliac artery
L52 Reconstruction of iliac artery
L53 Other open operations on iliac artery
L54 Transluminal operations on iliac artery
L56 Emergency replacement of aneurysmal femoral artery
L57 Other replacement of aneurysmal femoral artery
L58 Other emergency bypass of femoral artery
L59 Other bypass of femoral artery
L60 Reconstruction of femoral artery
L62 Other open operations on femoral artery
L63 Transluminal operations on femoral artery

Other arteries
L65 Revision of reconstruction of artery
L66 Other therapeutic transluminal operations on artery
L67 Excision of other artery
L68 Repair of other artery
L69 Operations on major systemic to pulmonary collateral arteries
L70 Other open operations on other artery
L71 Therapeutic transluminal operations on other artery
L72 Diagnostic transluminal operations on other artery
L73 Mechanical embolic protection of blood vessel
Veins and other blood vessels

L74  Arteriovenous shunt
L75  Other arteriovenous operations
L76  Endovascular placement of stent
L77  Connection of vena cava or branch of vena cava
L79  Other operations on vena cava
L80  Operations on individual pulmonary veins
L81  Other bypass operations on vein
L82  Repair of valve of vein
L83  Other operations for venous insufficiency
L84  Combined operations on varicose vein of leg
L85  Ligation of varicose vein of leg
L86  Injection into varicose vein of leg
L87  Other operations on varicose vein of leg
L88  Transluminal operations on varicose vein of leg
L89  Other endovascular placement of stent
L90  Open removal of thrombus from vein
L91  Other vein related operations
L92  Unblocking of access catheter
L93  Other open operations on vein
L94  Therapeutic transluminal operations on vein
L95  Diagnostic transluminal operations on vein
L96  Percutaneous removal of thrombus from vein
L97  Other operations on blood vessel
L98  Operations on microvascular vessel
L99  Other therapeutic transluminal operations on vein

SOFT TISSUE

Abdominal wall

T19  Simple excision of inguinal hernial sac
T20  Primary repair of inguinal hernia
T21  Repair of recurrent inguinal hernia
T22  Primary repair of femoral hernia
T23  Repair of recurrent femoral hernia
T24  Primary repair of umbilical hernia
T25  Primary repair of incisional hernia
T26  Repair of recurrent incisional hernia
T27  Repair of other hernia of abdominal wall
T28  Other repair of anterior abdominal wall
T29  Operations on umbilicus
T30  Opening of abdomen
T31  Other operations on anterior abdominal wall