# Surgical Site Infection Investigation Tool

# Introduction

## Problem Statement

Your team cannot always predict which patients will develop a surgical site infection, but you can learn from them when they occur. To improve, perioperative teams need a structured approach to investigate infections at a systems level and develop strategies to address the contributing factors.

## Purpose of This Tool

This tool will help your safety program team understand lapses in infection prevention processes that may have contributed to the surgical site infection case. It can help your team identify practice patterns and inconsistencies in practice, so you can more easily pinpoint opportunities for intervention.

## Please Adapt This Tool

A team of clinicians designed this tool to assess practice variability in its perioperative area. Your team may want to investigate care processes that are not included in this tool, or assess different levels for normothermia or glucose control. Also, this tool may include processes your team does not use. Please modify this tool to best fit your team’s needs.

## How To Use This Tool

Your team should investigate as many site infections as possible, but there is no right number to review. A team member can abstract this information from a patient’s chart and present it to the team at a safety program or Comprehensive Unit-based Safety Program (CUSP) meeting. If you already have a site infection review process, you can embed this tool into your existing process. Only you know the approach that will work best in your perioperative area.

## How To Use Investigation Data

Even if some team members are not part of the data collection process, the entire improvement team is responsible for creating a cohesive plan to address performance gaps. If the investigation reveals variability in surgical care, your safety program team can use additional audit tools to dig deeper into the care delivery system. Once defects have been clearly identified, you can design a quality improvement intervention to address them. You should also share investigation results monthly or quarterly with your frontline staff and operating room leadership (if they are not already part of your CUSP team) to raise awareness of ongoing quality issues. You can use the materials in the AHRQ Toolkit to Promote Safe Surgery, such as the Surgical Complication Prevention guide, to guide your team through the quality improvement intervention design process.

# Data Table

| **QUESTION** | **DATA** |
| --- | --- |
| Patient name: |  |
| Medical record number: |  |
| Diagnosis: |  |
| Date of admission: |  |
| Date of Surgical site infection: |  |
| Surgical site infection criteria: (Superficial, deep, organ space) |  |

## Patient or Provider Factors

|  |  |
| --- | --- |
| 1. Procedure name: |  |
| 1. Date of procedure: |  |
| 1. Primary nurse: |  |
| 1. Scrub technician: |  |
| 1. Anesthesia provider: |  |
| 1. Surgeon: |  |
| 1. How many people participated in the procedure (including breaks, shift changes, etc.)? | Surgeons:  Nurses:  Scrub technicians:  Anesthesia providers:  Other: |
| 1. Any unusual circumstances surrounding the procedure? | Yes □ No □ |
| * 1. If yes, please specify: |  |
| 1. Did the patient use a mechanical bowel preparation and oral antibiotics preoperatively? *(Check all that apply)* | Mechanical bowel prep □  Oral antibiotics □ |

Normothermia Maintenance: Was the patient’s temperature higher than 36 degrees Celsius?

|  |  |
| --- | --- |
| 1. Was an active warming device used during the procedure? | Yes □ No □ |
| 1. What was the patient’s temperature at the following locations: |  |
| * 1. Arrival to preoperative area: |  |
| * 1. At or just prior to time of incision: |  |
| * 1. Final temperature in the operating room: |  |
| * 1. Arrival to recovery area: |  |

Did you find practice variability? Dig deeper with the [**Normothermia Audit Tool**](https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/hais/tools/surgery/tools/surgical-complication-prevention/normothermia_audit.docx)**.**

Glucose Control: Was the patient’s blood glucose maintained at less than \_\_\_\_\_\_\_ g/dL?\*

|  |  |
| --- | --- |
| 1. What was the patient’s blood glucose level preoperatively (if checked)? | Glucose level:  Time: |
| 1. What was the patient’s highest blood glucose level on postoperative day one (if checked)? | Glucose level:  Time: |

Did you find practice variability? Dig deeper with the [**Glucose Control Audit Tool**](https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/hais/tools/surgery/tools/surgical-complication-prevention/glucose_control_audit.docx)**.**

Skin Preparation:† Was the skin preparation appropriate and adequate?

|  |  |
| --- | --- |
| 1. Did the patient use chlorhexidine washcloths prior to surgery? | Yes □ No □ |
| 1. Which skin preparation was used? | Betadine □ ChloraPrep □  DuraPrep □ Other □  Name, if other: |
| 1. Who applied the skin preparation? | Name:  Role: |
| * 1. Ask if trained in a protocol for skin preparation based on the product used and the manufacturer’s recommendations | Trained: Yes □ No □ |

Did you find practice variability? Dig deeper with the [**Skin Preparation Audit Tool**](https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/hais/tools/surgery/tools/surgical-complication-prevention/surgical_skinprep_audit.docx).

Prophylactic Antibiotics: Did the patient receive appropriate antibiotic selection, dosing, timing, and redosing?

|  |  |
| --- | --- |
| 1. Which antibiotic(s) were selected? | Antibiotic 1:  Appropriate for procedure?  Yes □ No □  Antibiotic 2:  Appropriate for procedure?  Yes □ No □ |
| 1. What antibiotic dose was given? | Antibiotic 1 dose:  Appropriate dose?  Yes □ No □  Antibiotic 2 dose:  Appropriate dose?  Yes □ No □ |
| 1. What time was the antibiotic administered? | Antibiotic 1:  Administration time:  Antibiotic 2:  Administration time: |
| 1. Case duration   *(Subtract incision time from procedure completion time, below, if it is not explicitly documented)* |  |
| * 1. Incision time: |  |
| * 1. Time procedure was completed: |  |
| 1. What time was the antibiotic redosed, if indicated? | Antibiotic 1  First redose time:  Second redose time:  Antibiotic 2  First redose time:  Second redose time: |

Did you find practice variability? Dig deeper with the [**Antibiotic Audit Tool**](https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/hais/tools/surgery/tools/surgical-complication-prevention/antibiotic_audit.docx).

\* Enter target level for assessment; examples: 180 or 200 g/dL. The Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017 (JAMA Surgery. 2017;152:784-791.), recommends target blood glucose level less than 200 mg/dL. It did not identify clinical trial evidence to support a lower target, but noted that some other organizations have made recommendations based on observational evidence.

† Use of brand names is for identification only and does not imply endorsement by the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.

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