NICE National Institute for Health and Care Excellence

Surgical site infection

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NICE quality standard 49

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Contents

Introduction

This quality standard covers the prevention and treatment of surgical site infection for adults, children and young people undergoing surgical incisions through the skin, in all healthcare settings. For more information see the scope.

Why this quality standard is needed

Surgical site infection is a type of healthcare-associated infection in which a surgical incision site becomes infected after a surgical procedure. It can cause significant morbidity and mortality if left untreated. Other types of surgery-related infections include postoperative respiratory and urinary tract infections, infections secondary to wound sepsis or medical devices (such as intravascular cannulae), and diarrhoea related to antibiotics (particularly *Clostridium difficile*-associated disease). Surgical site infections have been shown to account for up to 16% of all of healthcare-associated infections. The rate of surgical site infection varies depending on the type of procedure, with rates of less than 1% for orthopaedic procedures and rates of over 10% for large bowel surgery[1]. Surgical site infections can often be prevented with appropriate care before, during and after surgery. If an infection does develop, appropriate treatment will minimise morbidity resulting from the infection.

How this quality standard supports delivery of outcome frameworks

NICE quality standards are a concise set of prioritised statements designed to drive measureable quality improvements within a particular area of health or care. They are derived from high-quality guidance, such as that from NICE or other sources accredited by NICE. This quality standard, in conjunction with the guidance on which it is based, should contribute to the improvements outlined in the following 2 outcomes frameworks published by the Department of Health:

- NHS Outcomes Framework 2013/14
- Improving outcomes and supporting transparency: a public health outcomes framework for England 2013–2016, Part 1 and Part 1A.

Tables 1 and 2 show the outcomes, overarching indicators and improvement areas from the frameworks that the quality standard could contribute to achieving.

Table 1 NHS Outcomes Framework 2013/14

Domain	Overarching indicators and improvement areas
1 Preventing people from dying prematurely	***Overarching indicator*** 1a Potential Years of Life Lost (PYLL) from causes considered amenable to healthcare.

3 Helping people to recover from episodes of ill health or following injury	***Overarching indicators*** 3b Emergency readmissions within 30 days of discharge from hospital* ***Improvement areas*** **Improving outcomes from planned treatments** 3.1 Total health gain as assessed by patients for elective procedures i Hip replacement ii Knee replacement iii Groin hernia iv Varicose veins **Improving recovery from injuries and trauma** 3.3 Proportion of people who recover from major trauma **Improving recovery from fragility fractures** 3.5 The proportion of patients recovering to their previous levels of mobility/walking ability at 3.5i 30 and 3.5ii 120 days
4 Ensuring that people have a positive experience of care	***Overarching indicators*** 4a Patient experience of primary care i GP services ii GP Out of Hours services 4b Patient experience of hospital care 4c Friends and family test

5 Treating and caring for people in a safe environment and protecting them from avoidable harm	***Overarching indicators*** 5a Patient safety incidents reported 5b Safety incidents involving severe harm or death 5c Hospital deaths attributable to problems in care ***Improvement areas*** **Reducing the incidence of avoidable harm** 5.2 Incidence of healthcare associated infection (HCAI) i MRSA bacteraemia ii *Clostridium difficile*
Alignment across the health and social care system * Indicator shared with Public Health Outcomes Framework (PHOF)	

Table 2 Public health outcomes framework for England, 2013–2016

Domain	Objectives and indicators
4 Healthcare public health and preventing premature mortality	***Objective*** Reduced numbers of people living with preventable ill health and people dying prematurely, while reducing the gap between communities ***Indicators*** 4.3 Mortality from causes considered preventable 4.8 Mortality rate from communicable diseases 4.11 Emergency readmissions within 30 days of discharge from hospital

Coordinated services

The quality standard for surgical site infection specifies that services should be commissioned from and coordinated across all relevant agencies encompassing the whole surgical pathway. A person-centred, integrated approach to providing services is fundamental to delivering high-quality care for the prevention and treatment of surgical site infection.

The Health and Social Care Act 2012 sets out a clear expectation that the care system should consider NICE quality standards in planning and delivering services, as part of a general duty to secure continuous improvement in quality. Commissioners and providers of health and social care should refer to the library of NICE quality standards when designing high-quality services. Other quality standards that should also be considered when choosing, commissioning or providing high-quality services for the prevention and treatment of surgical site infection are listed in Related quality standards.

Training and competencies

The quality standard should be read in the context of national and local guidelines on training and competencies. All healthcare professionals and social care and public health practitioners involved in surgery, including surgical site infection prevention and treatment, should have sufficient and appropriate training and competencies to deliver the actions and interventions described in the quality standard.

Role of families and carers

Quality standards recognise the important role families and carers have in supporting adults, children and young people having surgery. If appropriate healthcare professionals and social care and public health practitioners should ensure that families and carers are involved in the decision-making process about investigations, treatment and care.

[1] Health Protection Agency (2012) English national point prevalence survey on healthcare-associated infections and antimicrobial use, 2011: preliminary data.

List of quality statements

Statement 1. People having surgery are advised not to remove hair from the surgical site and are advised to have (or are helped to have) a shower, bath or bed bath the day before or on the day of surgery.

Statement 2. People having surgery for which antibiotic prophylaxis is indicated receive this in accordance with the local antibiotic formulary.

Statement 3. Adults having surgery under general or regional anaesthesia have normothermia maintained before, during (unless active cooling is part of the procedure) and after surgery.

Statement 4. People having surgery are cared for by an operating team that minimises the transfer of microorganisms during the procedure by following best practice in hand hygiene and theatre wear, and by not moving in and out of the operating area unnecessarily.

Statement 5. People having surgery and their carers receive information and advice on wound and dressing care, including how to recognise problems with the wound and who to contact if they are concerned.

Statement 6. People with a surgical site infection are offered treatment with an antibiotic that covers the likely causative organisms and is selected based on local resistance patterns and the results of microbiological tests.

Statement 7. People having surgery are cared for by healthcare providers that monitor surgical site infection rates (including post-discharge infections) and provide feedback to relevant staff and stakeholders for continuous improvement through adjustment of clinical practice.

Quality statement 1: Personal preparation for surgery

Quality statement

People having surgery are advised not to remove hair from the surgical site and are advised to have (or are helped to have) a shower, bath or bed bath the day before or on the day of surgery.

Rationale

It is not necessary to remove hair routinely to reduce the risk of surgical site infection, and the use of razors for hair removal may increase the risk of infection. If hair needs to be removed, this should be done by healthcare staff using electric clippers with a single-use head on the day of surgery. Pre-operative showering is likely to reduce the number of microorganisms on the skin surrounding the incision and may therefore reduce the risk of infection. Pre-operative advice (and assistance if needed) on personal preparation for surgery will help to ensure that people having surgery have clean skin without unnecessary micro-abrasions (from shaving), which will reduce the risk of surgical site infection.

Quality measures

Structure

a) Evidence of local arrangements to ensure that people having surgery are advised not to remove hair from the surgical site.

Data source: Local data collection.

b) Evidence of local arrangements to ensure that people having surgery are advised to have (or are helped to have) a shower, bath or bed bath the day before or on the day of surgery.

Data source: Local data collection.

Process

a) Proportion of surgical procedures for which the person having surgery is advised not to remove hair from the surgical site.

Numerator – the number in the denominator for which the person having surgery is advised not to remove hair from the surgical site.

Denominator – the number of surgical procedures.

Data source: Local data collection.

b) Proportion of surgical procedures for which the person having surgery is advised to have (or is helped to have) a shower, bath or bed bath the day before or on the day of surgery.

Numerator – the number in the denominator for which the person having surgery is advised to have (or is helped to have) a shower, bath or bed bath the day before or on the day of surgery.

Denominator – the number of surgical procedures.

Data source: Local data collection.

Outcome

Feedback from people having surgery on whether they received the help they needed to have a shower, bath or bed bath the day before or on the day of surgery.

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals, social care practitioners and commissioners

Service providers ensure that systems are in place for their staff to understand and act on the need to advise people having surgery not to remove hair from the surgical site and to advise them to have (or help them to have) a shower, bath or bed bath the day before or on the day of surgery.

Healthcare professionals advise people having surgery not to remove hair from the surgical site and advise them to have (or help them to have) a shower, bath or bed bath the day before or on the day of surgery.

Social care practitioners help people to have a shower, bath or bed bath the day before or on the day of surgery.

Commissioners ensure that they commission services from service providers that can demonstrate arrangements to ensure that people having surgery are advised not to remove hair from the surgical site and advised to have (or helped to have) a shower, bath or bed bath the day before or on the day of surgery.

What the quality statement means for patients, service users and carers

People having an operation are advised not to remove hair from the area of the body where they are having the operation and are advised to have a shower or bath either the day before or on the day of the operation. If they are not able to wash themselves, they should be helped by health or social care staff.

Source guidance

- Surgical site infection (NICE clinical guideline 74) recommendations 1.2.2, 1.2.3 (key priorities for implementation) and 1.2.1.

Equality and diversity considerations

This quality statement applies to all people preparing for surgery, regardless of their ability to carry out personal preparations themselves. If people need help with washing before surgery or if hair removal is necessary, they should be treated with dignity at all times.

Advice should be both age-appropriate and culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English. People having surgery and their carers or parents should have access to an interpreter or advocate if needed.

Quality statement 2: Antibiotic prophylaxis

Quality statement

People having surgery for which antibiotic prophylaxis is indicated receive this in accordance with the local antibiotic formulary.

Rationale

Antibiotic prophylaxis is effective for preventing surgical site infections in certain procedures. However, the use of antibiotics for prophylaxis carries a risk of adverse effects (including *Clostridium difficile*-associated disease) and increased prevalence of antibiotic-resistant bacteria. The choice of antibiotic prophylaxis should cover the organisms most likely to cause infection and be influenced by the strength of the association between the antibiotic used and these adverse effects. Using a local antibiotic formulary should ensure that the most appropriate antibiotic, dose, timing of administration and duration are used for effective prophylaxis.

Quality measures

Structure

Evidence of local arrangements to ensure that people having surgery for which antibiotic prophylaxis is indicated receive this in accordance with the local antibiotic formulary and that this is recorded.

Data source: Local data collection.

Process

Proportion of surgical procedures for which antibiotic prophylaxis is indicated for which the person having surgery receives antibiotic prophylaxis in accordance with the local antibiotic formulary and that this is recorded.

Numerator – the number in the denominator for which the person having surgery receives antibiotic prophylaxis in accordance with the local antibiotic formulary and that this is recorded.

Denominator – the number of surgical procedures for which antibiotic prophylaxis is indicated.

Data source: Local data collection. Also contained within NICE clinical guideline 74 audit support, criteria 4a and 4b.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers ensure that they develop or have access to a local antibiotic formulary and that their staff understand and act on the need to prescribe and administer antibiotic prophylaxis in accordance with this to people having surgery for which antibiotic prophylaxis is indicated. This includes having systems in place to record when antibiotic prophylaxis has been given.

Healthcare professionals offer antibiotic prophylaxis to people having surgery for which antibiotic prophylaxis is indicated, in accordance with the local antibiotic formulary and record when this has been given.

Commissioners ensure development of, or access to, a local antibiotic formulary and commission services from service providers that can demonstrate arrangements to prescribe and administer antibiotic prophylaxis to people having surgery for which antibiotic prophylaxis is indicated in accordance with the local antibiotic formulary.

What the quality statement means for patients, service users and carers

People having certain types of operation for which there is a higher risk of infection are given antibiotics before surgery to help prevent infection.

Source guidance

- Surgical site infection (NICE clinical guideline 74) recommendation 1.2.13 (key priority for implementation).

Definitions of terms used in this quality statement

Antibiotic formulary

An antibiotic formulary is a local policy document produced by a multi-professional team, usually in a hospital trust or commissioning group, combining best evidence and clinical judgement [adapted from NICE clinical guideline 74 – full guideline]. See also the Department of Health's UK five year antimicrobial resistance strategy 2013 to 2018 and Antimicrobial stewardship 'Start smart – then focus': guidance for antimicrobial stewardship in hospitals (England) published by the Department of Health Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI).

Surgery that requires antibiotic prophylaxis

Surgery that requires antibiotic prophylaxis is:

- clean surgery involving the placement of a prosthesis or implant
- clean-contaminated surgery
- contaminated surgery
- surgery on a dirty or infected wound (requires antibiotic treatment in addition to prophylaxis). [NICE clinical guideline 74 recommendations 1.2.11 (key priority for implementation) and 1.2.16]

Surgical site infection (NICE clinical guideline 74) also recommends that antibiotic prophylaxis should not be used routinely for clean non-prosthetic uncomplicated surgery because of the risk of adverse events, *Clostridium difficile*-associated disease, resistance and drug hypersensitivity [recommendation 1.2.12 (key priority for implementation)].

See the glossary of terms in NICE clinical guideline 74 for definitions of surgical wound classification.

Quality statement 3: Patient temperature

Quality statement

Adults having surgery under general or regional anaesthesia have normothermia maintained before, during (unless active cooling is part of the procedure) and after surgery.

Rationale

During surgery patients are kept in a stable condition by the operating team. All tissues heal most effectively in optimal conditions of oxygenation, perfusion and body temperature. Inadvertent perioperative hypothermia is a common but preventable complication of perioperative procedures that is associated with an increased risk of surgical site infection and other postoperative complications. Surgical patients are at risk of developing hypothermia before, during or after surgery. Maintaining normothermia throughout this period (except if cooling is required for medical reasons) will therefore reduce the risk of infection at the surgical site and ensure that patients feel comfortably warm at all times.

Quality measures

Structure

Evidence of local arrangements to ensure that adults having surgery under general or regional anaesthesia have normothermia maintained before, during (unless active cooling is part of the procedure) and after surgery.

Data source: Local data collection.

Process

Proportion of surgical procedures on adults under general or regional anaesthesia in which the person having surgery has their core temperature measured and documented in accordance with Inadvertent perioperative hypothermia (NICE clinical guideline 65).

Numerator – the number in the denominator in which the person having surgery has their core temperature measured and documented in accordance with Inadvertent perioperative hypothermia (NICE clinical guideline 65).

Denominator – the number of surgical procedures on adults under general or regional anaesthesia.

Data source: Local data collection.

Outcome

Proportion of surgical procedures on adults under general or regional anaesthesia in which the person having surgery is normothermic before, during (unless active cooling is part of the procedure) and after surgery.

Numerator – the number in the denominator in which the person having surgery is normothermic before, during (unless active cooling is part of the procedure) and after surgery.

Denominator – the number of surgical procedures on adults under general or regional anaesthesia.

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers ensure that systems are in place to measure and document core temperature in accordance with Inadvertent perioperative hypothermia (NICE clinical guideline 65) and maintain normothermia for adults having surgery under general or regional anaesthesia before, during (unless active cooling is part of the procedure) and after surgery.

Healthcare professionals measure and document core temperature in accordance with Inadvertent perioperative hypothermia (NICE clinical guideline 65) and maintain normothermia for adults having surgery under general or regional anaesthesia before, during (unless active cooling is part of the procedure) and after surgery.

Commissioners commission services from service providers that can demonstrate arrangements to ensure that they maintain normothermia for adults having surgery under general or regional anaesthesia before, during (unless active cooling is part of the procedure) and after surgery.

What the quality statement means for patients, service users and carers

Adults having an operation under a general anaesthetic or a regional anaesthetic (which affects a large part of the body, such as a limb or the lower half of the body) are kept comfortably warm (at normal body temperature) before, during and after the operation to help reduce the risk of infection.

Source guidance

- Surgical site infection (NICE clinical guideline 74), recommendation 1.3.10.

Definitions of terms used in this quality statement

The following definitions have been adapted from NICE clinical guideline 65:

Adults

People aged 18 years and over.

Regional anaesthesia

Central neuraxial block.

Normothermia

A core temperature range of 36.5°C to 37.5°C.

Before surgery

The preoperative phase, defined as 1 hour before induction of anaesthesia (when the patient is prepared for surgery on the ward or in the emergency department).

During surgery

The intraoperative phase, defined as total anaesthesia time (including the time in the anaesthetic room before induction of anaesthesia).

After surgery

The postoperative period, defined as 24 hours after entry into the recovery area (which will include transfer to and time spent on the ward).

Perioperative pathway

The continuous period of the preoperative, intraoperative and postoperative phases.

Measurement and documentation of core temperature

In accordance with NICE clinical guideline 65, measure and document core temperature:

- in the hour before the patient leaves the ward or emergency department [recommendation 1.2.4]
- again before induction of anaesthesia and then every 30 minutes until the end of surgery [recommendation 1.3.1 (key priority for implementation)]
- on admission to the recovery room and then every 15 minutes [recommendation 1.4.1 (key priority for implementation)]
- on arrival at the ward [recommendation 1.4.2]
- every 4 hours on the ward [recommendation 1.4.2].

This quality statement does not cover people undergoing therapeutic hypothermia or people with severe head injuries resulting in impaired temperature control. Other exclusions may apply at certain points on the perioperative pathway, such as when surgery needs to be expedited for clinical urgency. Inadvertent perioperative hypothermia (NICE clinical guideline 65) does not cover children and young people (aged less than 18 years), pregnant women or people undergoing local anaesthesia, but it is recognised that users of the quality standard may wish to consider how the quality statement on normothermia may apply to these groups.

Equality and diversity considerations

This quality statement may not apply to all pregnant women, because they are not covered by NICE clinical guideline 65. Because of the physiological changes in pregnancy, the needs of pregnant women may need to be considered separately from non-pregnant women for some types or aspects of surgery. Similarly, NICE clinical guideline 65 does not cover children (aged less than 18 years). Users of the quality standard will need to apply clinical judgement in considering how the quality statement on patient temperature applies to these groups.

Quality statement 4: Intraoperative staff practices

Quality statement

People having surgery are cared for by an operating team that minimises the transfer of microorganisms during the procedure by following best practice in hand hygiene and theatre wear, and by not moving in and out of the operating area unnecessarily.

Rationale

In order to reduce the risk of surgical site infection, the risk of microbial contamination of the surgical site from the theatre environment needs to be minimised. Staff practices aimed at achieving this are known collectively as theatre discipline. In order to maintain theatre discipline, a number of practices should be followed that include using appropriate theatre wear and minimising movement of people in and out of the operating area. Effective hand decontamination will also reduce the risk of transferring microorganisms during the procedure, and this is most likely to be achieved if hand jewellery, artificial nails and nail polish are removed before decontamination takes place.

Quality measures

Structure

a) Evidence of local arrangements to ensure that operating teams remove any hand jewellery, artificial nails and nail polish before starting surgical hand decontamination.

Data source: Local data collection.

b) Evidence of local arrangements to ensure that operating teams follow practices for surgical hand decontamination in accordance with Surgical site infection (NICE clinical guideline 74) recommendations 1.3.1 and 1.3.2.

Data source: Local data collection.

c) Evidence of local arrangements to ensure that staff wear specific non-sterile theatre wear in all areas where operations are undertaken.

Data source: Local data collection.

d) Evidence of local arrangements to ensure that operating teams minimise any staff movements in and out of the operating area.

Data source: Local data collection.

e) Evidence of local arrangements to ensure that spot checks are carried out in relation to structure measures a), b), c) and d).

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers ensure that policies and procedures are in place and implemented to ensure that operating teams minimise the transfer of microorganisms during surgery by following best practice in hand hygiene and theatre wear, and by not moving in and out of the operating area unnecessarily.

Operating teams follow practices that minimise the transfer of microorganisms during surgery by following best practice in hand hygiene and theatre wear, and by not moving in and out of the operating area unnecessarily.

Commissioners commission services from service providers that have policies and procedures to ensure that operating teams follow practices that minimise the transfer of microorganisms during surgery by following best practice in hand hygiene and theatre wear, and by not moving in and out of the operating area unnecessarily.

What the quality statement means for patients, service users and carers

People having an operation are cared for by an operating team that minimises the chances that microorganisms will be transferred during the operation by following best practice when

cleaning their hands and by wearing the correct type of clothing, and by not moving in and out of the operating area unnecessarily.

Source guidance

- Surgical site infection (NICE clinical guideline 74) recommendations 1.2.5, 1.2.6, 1.2.9, 1.2.10, 1.3.1 and 1.3.2.

Definitions of terms used in this quality statement

Best practice in hand hygiene

Best practice in hand hygiene includes the following:

- The operating team should remove hand jewellery, artificial nails and nail polish before operations.
- The operating team should wash their hands prior to the first operation on the list using an aqueous antiseptic surgical solution, with a single-use brush or pick for the nails, and ensure that hands and nails are visibly clean.
- Before subsequent operations, hands should be washed using either an alcohol hand rub or an antiseptic surgical solution. If hands are soiled then they should be washed again with an antiseptic surgical solution. [NICE clinical guideline 74 recommendations 1.2.9, 1.2.10, 1.3.1 and 1.3.2.]

Best practice in theatre wear

Best practice in theatre wear includes the following:

- Staff should wear specific non-sterile theatre wear (scrub suits, masks, hats and overshoes) in all areas where operations are undertaken.
- Staff wearing non-sterile theatre wear should keep their movements in and out of the operating area to a minimum [NICE clinical guideline 74 recommendations 1.2.5 and 1.2.6].

Quality statement 5: Information and advice on wound care

Quality statement

People having surgery and their carers receive information and advice on wound and dressing care, including how to recognise problems with the wound and who to contact if they are concerned.

Rationale

Appropriate wound and dressing care promotes healing and reduces the risk of infection. Providing information and advice on this to people having surgery and their carers will reduce the risk of them doing something to the wound or dressing that might contaminate the site with microorganisms unnecessarily. If a person develops a surgical site infection, early treatment is essential to prevent the infection getting worse. Providing information on how to recognise problems with a wound and who to contact if they are concerned should lead to prompt treatment for those who need it and reduce infection-related morbidity.

Quality measures

Structure

Evidence of local arrangements to ensure that people having surgery and their carers receive information and advice on wound and dressing care, including how to recognise problems with the wound and who to contact if they are concerned.

Data source: Local data collection.

Process

Proportion of surgical procedures for which the person having surgery and their carers receive information and advice on wound and dressing care, including how to recognise problems with the wound and who to contact if they are concerned.

Numerator – the number in the denominator for which the person having surgery and their carers receive information and advice on wound and dressing care, including how to recognise problems with the wound and who to contact if they are concerned.

Denominator – the number of surgical procedures.

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers ensure that protocols are in place to provide people having surgery and their carers with information and advice on wound and dressing care, including how to recognise problems with the wound and who to contact if they are concerned.

Healthcare professionals provide people having surgery and their carers with information and advice on wound and dressing care, including how to recognise problems with the wound and who to contact if they are concerned.

Commissioners commission services from service providers that can demonstrate that they have protocols to provide people having surgery and their carers with information and advice on wound and dressing care, including how to recognise problems with the wound and who to contact if they are concerned.

What the quality statement means for patients, service users and carers

People having an operation and their carers are given information and advice about how to look after the wound when they go home, how to recognise problems with the wound and who to contact if they are concerned about it.

Source guidance

- Surgical site infection (NICE clinical guideline 74), recommendations 1.1.2 and 1.1.3.

Equality and diversity considerations

Information should be both age-appropriate and culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English. People having surgery and their carers or parents should have access to an interpreter or advocate if needed.

Quality statement 6: Treatment of surgical site infection

Quality statement

People with a surgical site infection are offered treatment with an antibiotic that covers the likely causative organisms and is selected based on local resistance patterns and the results of microbiological tests.

Rationale

People who develop an infection need to receive the treatment that is most likely to be effective in order to minimise associated morbidity. It is also important that they are not given more treatment than they need, because antibiotic therapy carries risks of adverse reactions, the development of resistant bacteria and *Clostridium difficile*-associated disease. Taking into account local resistance patterns and the results of microbiological tests will help to ensure that people receive the most appropriate treatment.

Quality measures

Structure

Evidence of local arrangements to ensure that people with a surgical site infection are offered treatment with an antibiotic that covers the likely causative organisms and is selected based on local resistance patterns and the results of microbiological tests.

Data source: Local data collection.

Process

Proportion of surgical site infections for which the person with the infection receives treatment with an antibiotic that covers the likely causative organisms and is selected based on local resistance patterns and the results of microbiological tests.

Numerator – the number in the denominator for which the person with the infection receives treatment with an antibiotic that covers the likely causative organisms and is selected based on local resistance patterns and the results of microbiological tests.

Denominator – the number of surgical site infections.

Data source: Local data collection.

What the quality statement means for service providers, healthcare professionals and commissioners

Service providers ensure that systems are in place (including development of, or access to, a local antibiotic formulary) to offer people with a surgical site infection treatment with an antibiotic that covers the likely causative organisms and is selected based on local resistance patterns and the results of microbiological tests.

Healthcare professionals offer people with a surgical site infection treatment with an antibiotic that covers the likely causative organisms and is selected in accordance with the local antibiotic formulary and based on local resistance patterns and the results of microbiological tests.

Commissioners ensure development of, or access to, a local antibiotic formulary and that they commission services from service providers that can demonstrate that systems are in place to offer people with a surgical site infection treatment with an antibiotic that covers the likely causative organisms and is selected based on local resistance patterns and the results of microbiological tests.

What the quality statement means for patients, service users and carers

People with a surgical site infection are given an antibiotic that has been chosen because it is effective for the microorganisms most likely to have caused the infection. The healthcare team should look at the results of tests carried out on samples from the wound and they should also consider which antibiotics are most likely to work in the area local to the hospital, because the effectiveness of antibiotics can vary from place to place.

Source guidance

- Surgical site infection (NICE clinical guideline 74), recommendation 1.4.9.

Definitions of terms used in this quality statement

Surgical site infection

The presence of a surgical site infection can be determined using the Surgical Site Infection Surveillance Service (SSISS) definitions in Protocol for the surveillance of surgical site infection: surgical site infection surveillance service, which are modified from those used by the US Centers for Disease Control (CDC). Other measures that are also based on clinical signs and symptoms are available. The term does not include colonisation.

Antibiotics

Antibiotics should be prescribed in accordance with the local antibiotic formulary. An antibiotic formulary is a local policy document produced by a multi-professional team, usually in a hospital trust or commissioning group, combining best evidence and clinical judgement [adapted from NICE clinical guideline 74 – full guideline]. See also the Department of Health's UK five year antimicrobial resistance strategy 2013 to 2018 and Antimicrobial stewardship 'Start smart – then focus': guidance for antimicrobial stewardship in hospitals (England) published by the Department of Health Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI).

Quality statement 7: Surveillance

Quality statement

People having surgery are cared for by healthcare providers that monitor surgical site infection rates (including post-discharge infections) and provide feedback to relevant staff and stakeholders for continuous improvement through adjustment of clinical practice.

Rationale

Surveillance data on surgical site infection rates can inform and influence steps taken to minimise the risk of infection, as well helping to clearly communicate the risks to patients. Some infections take time to develop and may not become apparent until after the patient has been discharged from hospital. Therefore surveillance for infections in hospitalised patients only is likely to underestimate the true infection rate – a problem exacerbated by the increasing trend towards shorter postoperative hospital stays and day surgery. Therefore, systems that identify surgical site infection after patients leave hospital enhance the value of surveillance and the provider's ability to deliver interventions to reduce the risk of infections based on their own results, leading to continuous quality improvement.

Quality measures

Structure

a) Evidence of local arrangements to ensure the existence of surveillance systems that capture inpatient and post-discharge surgical site infections.

Data source: Local data collection. Also contained within Prevention and control of healthcare-associated infections (NICE public health guidance 36): quality improvement statement 3, evidence of achievement 6.

b) Evidence of local arrangements to ensure surveillance data on surgical site infection rates (including post-discharge infections) are fed back to relevant staff and stakeholders.

Data source: Local data collection. Prevention and control of healthcare-associated infections (NICE public health guidance 36): quality improvement statement 3, evidence of achievement 13.

c) Evidence of local arrangements to ensure that surveillance data on surgical site infection rates (including post-discharge infections) are used for continuous improvement through adjustment of clinical practice.

Data source: Local data collection.

Outcome

Readmissions for surgical site infection.

Data source: Local data collection. Data collected as part of the Surgical Site Infection Surveillance Service (SSISS) are published by Public Health England in annual reports available through their website. This includes readmissions data from individual hospitals, collected as part of the Department of Health's mandatory surveillance scheme (orthopaedic surgery).

What the quality statement means for service providers, healthcare professionals, public health practitioners and commissioners

Service providers ensure that systems are in place to monitor surgical site infection rates (including post-discharge infections) and provide feedback to their clinical and non-clinical staff and stakeholders for continuous improvement through adjustment of clinical practice.

Healthcare professionals and public health practitioners act on information provided to them on surgical site infection rates (including post-discharge infections) to adjust clinical practice for continuous improvement.

Commissioners commission services from service providers that can demonstrate that they monitor surgical site infection rates (including post-discharge infections) and provide feedback to relevant staff and stakeholders for continuous improvement through adjustment of clinical practice.

What the quality statement means for patients, service users and carers

People having an operation are cared for by healthcare services that monitor surgical site infection rates, share this information with patients and relevant staff, and use it to help improve services and minimise future infection rates.

Source guidance

- Prevention and control of healthcare-associated infections (NICE public health guidance 36), quality improvement statement 3.

Definitions of terms used in this quality statement

Surgical site infection

The presence of a surgical site infection can be determined using the Surgical Site Infection Surveillance Service (SSISS) definitions: Protocol for the surveillance of surgical site infection: surgical site infection surveillance service, which are modified from those used by the US Centers for Disease Control (CDC). Other measures that are also based on clinical signs and symptoms are available. The term does not include colonisation.

Surgical site infection rates (including post-discharge)

Many surgical site infections present after discharge from hospital. Comparison of post-discharge surveillance data is difficult because it depends on the methods used to detect infections. The method of surveillance should be clear so that comparisons can be made. A Protocol for the surveillance of surgical site infection: surgical site infection surveillance service is available from Public Health England. The Department of Health UK five year antimicrobial resistance strategy highlights access to and use of surveillance data in the context of bacterial resistance.

Staff and stakeholders

Staff may include the board and individual clinical units in a hospital setting. Stakeholders include patients, GPs, commissioners and other local health and social care organisations [adapted from NICE public health guidance 36: quality improvement statement 3].

Using the quality standard

Quality measures

The quality measures accompanying the quality statements aim to improve the structure, process and outcomes of care in areas identified as needing quality improvement. They are not a new set of targets or mandatory indicators for performance management.

We have indicated if current national indicators exist that could be used to measure the quality statements. These include indicators developed by the Health and Social Care Information Centre through its Indicators for Quality Improvement Programme. If there is no national indicator that could be used to measure a quality statement, the quality measure should form the basis for audit criteria developed and used locally.

See NICE's What makes up a NICE quality standard? for further information, including advice on using quality measures.

Levels of achievement

Expected levels of achievement for quality measures are not specified. Quality standards are intended to drive up the quality of care, and so achievement levels of 100% should be aspired to (or 0% if the quality statement states that something should not be done). However, NICE recognises that this may not always be appropriate in practice, taking account of safety, choice and professional judgement, and therefore desired levels of achievement should be defined locally.

Using other national guidance and policy documents

Other national guidance and current policy documents have been referenced during the development of this quality standard. It is important that the quality standard is considered by commissioners, providers, health and social care practitioners, patients, service users and carers alongside the documents listed in Development sources.

Information for commissioners

NICE has produced support for commissioning that considers the commissioning implications and potential resource impact of this quality standard. This is available on the NICE website.

Information for the public

NICE has produced information for the public about this quality standard. Patients, service users and carers can use it to find out about the quality of care they should expect to receive, as a basis for asking questions about their care and to help make choices between providers of social care services.

Diversity, equality and language

During the development of this quality standard, equality issues have been considered and equality assessments are available.

Good communication between healthcare professionals, social care practitioners and public health practitioners and people having surgery and their carers or parents is essential. Treatment, care and support, and the information given about it, should be both age appropriate and culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English. People having surgery and their carers or parents should have access to an interpreter or advocate if needed.

Commissioners and providers should aim to achieve the quality standard in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this quality standard should be interpreted in a way that would be inconsistent with compliance with those duties.

Development sources

Further explanation of the methodology used can be found in the quality standards Interim process guide on the NICE website.

Evidence sources

The documents below contain recommendations from NICE guidance or other NICE-accredited recommendations that were used by the Topic Expert Group to develop the quality standard statements and measures.

- Prevention and control of healthcare-associated infections. NICE public health guidance 36 (2011)
- Surgical site infection. NICE clinical guideline 74 (2008)
- Inadvertent perioperative hypothermia. NICE clinical guideline 65 (2008)

Policy context

It is important that the quality standard is considered alongside current policy documents, including:

- Department of Health (2013) UK five year antimicrobial resistance strategy 2013 to 2018
- Public Health England (2013) Protocol for the surveillance of surgical site infection: surgical site infection surveillance service
- Department of Health Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) (2011) Antimicrobial stewardship 'Start smart – then focus'.: guidance for antimicrobial stewardship in hospitals (England)
- Department of Health (2010) The Health and Social Care Act 2008: code of practice on the prevention and control of infections and related guidance
- Department of Health (2010) Uniforms and workwear: guidance on uniform and workwear policies for NHS employers

- Department of Health (2010) MRSA screening – operational guidance 3
- Department of Health (2009) National Decontamination Programme: theatre support pack
- Department of Health (2008) MRSA screening – operational guidance 2

Definitions and data sources for the quality measures

- Department of Health (2013) UK five year antimicrobial resistance strategy 2013 to 2018
- Public Health England (2013) Protocol for the surveillance of surgical site infection: surgical site infection surveillance service
- Prevention and control of healthcare-associated infections. NICE public health guidance 36 (2011)
- Surgical site infection: audit support. NICE clinical guideline 74 (2008)
- Horan TC, Gaynes RP, Martone WJ et al. (1992) CDC definitions of nosocomial surgical site infections, 1992: a modification of CDC definitions of surgical wound infections. *Infection Control and Hospital Epidemiology* 13: 606–8

Related NICE quality standards

Published

- Patient experience in adult NHS services. NICE quality standard 15 (2012)

In development

- Infection control. Publication expected April 2014

Future quality standards

This quality standard has been developed in the context of all quality standards referred to NICE, including the following topics scheduled for future development:

- Perioperative care
- Readmissions
- Sepsis.

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About this quality standard

NICE quality standards describe high-priority areas for quality improvement in a defined care or service area. Each standard consists of a prioritised set of specific, concise and measurable statements. NICE quality standards draw on existing NICE or NICE-accredited guidance that provides an underpinning, comprehensive set of recommendations, and are designed to support the measurement of improvement.

The methods and processes for developing NICE quality standards are described in the quality standards process guide.

This quality standard has been incorporated into the NICE pathways for prevention and control of healthcare-associated infections and inadvertent perioperative hypothermia.

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