UK Health Security Agency

Point prevalence survey on healthcare-associated infections, antimicrobial use and antimicrobial stewardship in England

Protocol 2023

Sixth national point prevalence survey on healthcare-associated infections and third national point prevalence survey on antimicrobial use and quality indicators in England

Contents

Amendments to the protocol in this version

The following changes have been made to the protocol in this version:

- updated Information governance section to include statement on national data opt-out and include CAP reference and details on data linkage
- clarification to Ward guidance section on ward specialty categorisation – main ward specialty (≥80% of patients requiring this specialty)
- update to the AMU section frequency of doses per day to include options for 5 per day, 6 per day, twice per week and continuous infusion
- inclusion of description of the Case-finding algorithm for accessible content

Introduction

Over 4 million people in Europe acquire a healthcare-associated infection (HCAI) every year, of whom approximately 37,000 die as a direct result of the infection. The death toll from antimicrobial resistance (AMR) exceeds the number of people who die each year in road traffic accidents: in 2021 there were an estimated 2,213 AMR-associated deaths and 1,329 reported road fatalities in England (ESPAUR report 2021 to 2022; Reported road casualties Great Britain, annual report: 2021). Antimicrobial use (AMU) is a key driver of AMR; understanding the indications, dose used, and adherence to guidelines is key to reducing antibiotic consumption.

Surveillance of HCAI and AMU is an essential component of infection prevention and antimicrobial stewardship. It drives key actions by planning and implementing more effective, evidence-based interventions, policies, surveillance and strategies. However, robust comparable data for HCAI and AMU (other than mandatory reporting) are not currently available across all inpatient settings in England making it difficult to quantify overall if there have been any changes in NHS trusts' or independent providers' HCAI rates or AMU other than the few (MRSA, MSSA, Gram-negative bacteraemia and *Clostridioides difficile* infections) which are reported on a mandatory basis.

Prevalence surveys are useful in providing data on the proportion of HCAI and proportion and types of AMU at any one point (or period) in time in hospitals and give a better understanding of burden of both HCAI and community-acquired infection (CAI) treated with antibiotics and AMU.

This point prevalence survey will be the sixth national point prevalence survey on HCAI and the third national survey on AMU. The results of previous point prevalence surveys are provided in Table 1.

Table 1. Results of previous point prevalence surveys

Year of survey	Total patients surveyed	Total number with HCAI	HCAI prevalence (%)	Total number on antimicrobials [note 1]	AMU prevalence (%)
England 2016	48,312	3,314	6.9	17,884	37.0
England 2011	52,443	3,360	6.4	18,219	34.7
England 2006	58,775	4,812	8.2	N/A	N/A
UK 1993 to 1994	37,111	3,353	9.0	N/A	N/A
UK 1980	18,163	1,671	9.2	N/A	N/A

N/A = Not assessed.
Note 1: number of patients on at least one antimicrobial (excluding TB, HIV and hepatitis treatment).

Objectives

The objectives of the 2023 point prevalence survey of HCAI and AMU in all NHS and independent acute-care hospitals as well as NHS community and mental health trusts are to:

- estimate the total burden (prevalence) of HCAI and AMU in acute-care hospitals, community trust sites and mental health sites
- describe patients, invasive procedures, infections (sites, microorganisms and markers of antimicrobial resistance) and antimicrobials prescribed (agents, indications)
    - by patient demographics, admitting specialties or healthcare facilities
- describe key structures and processes for the prevention of HCAI and antimicrobial resistance at the hospital and ward level in English hospitals
- disseminate results to those who need to know at local, regional, national levels
    - to raise awareness and development of relevant local and national interventions
    - to train and reinforce surveillance structures and skills
    - to identify common problems and set up priorities accordingly
    - to evaluate the effect of strategies and guide policies for the future at the local, national and regional level (repeated PPS)
- provide a standardised tool for hospitals to identify targets for quality improvement

Materials

The materials and tools have been developed to assist hospitals in carrying out the 2023 PPS and include:

- PPS protocol
- PPS data entry forms
- PPS codebook, including case definitions of HCAI
- standardised training material
- web-based software to enter data (including user guides)

The first 3 of these can be found on the project resources page.

Inclusion and exclusion criteria

Hospitals

All NHS and independent acute-care hospitals, NHS Community and Mental Health Trusts in England are eligible for inclusion. An acute-care hospital is defined according to national definitions. There is no minimal size of hospitals.

Hospitals caring for exclusively day-case patients are excluded.

For administrative hospital groups (hospital ‘mergers’ or ‘trusts’), data should ideally be collected by hospital site.

Wards

Acute hospitals

All wards of each hospital must be included in acute-care facilities, including, for example, chronic care, rehabilitation and long-term care wards, acute psychiatric wards and neonatal intensive care units (ICUs). The ward specialty must be recorded so that results can be stratified and standardised. This data is important to collect to provide accurate benchmarking across specialty.

Excluded areas in the hospital are:

- accident and emergency department (except for wards attached to A&E departments where patients are monitored for more than 24 hours)
- day wards (for example surgery, medical, haematology, oncology)
- renal dialysis units
- outpatients
- virtual wards

Community and mental health hospitals or sites

All wards must be included, including, for example chronic care, rehabilitation and long-term care wards, mental health wards.

Excluded areas in the hospital are:

- accident and emergency department (except for wards attached to A&E departments where patients are monitored for more than 24 hours)
- day wards (for example, surgery, medical, haematology, oncology)
- renal dialysis units

- outpatients
- virtual wards
- health and justice including forensic and secure services

For trusts with both community and mental health sites, you can choose to register only your community or mental health sites or both community and mental health sites.

If you choose to include only community health sites, then all patient and ward data from all community health units in the trust needs to be included. If you choose to include only mental health sites, then all patient and ward data from all mental health units in the trust need to be included. This is to ensure accurate denominator data and to allow accurate benchmarking with peers.

Patients

Include all patients admitted to the ward before or at (≤) 8am and not discharged from the ward at the time of the survey; in practice, this means that patients transferred in or out after 8am from or to another ward should not be included (see Figure 1).

Include:

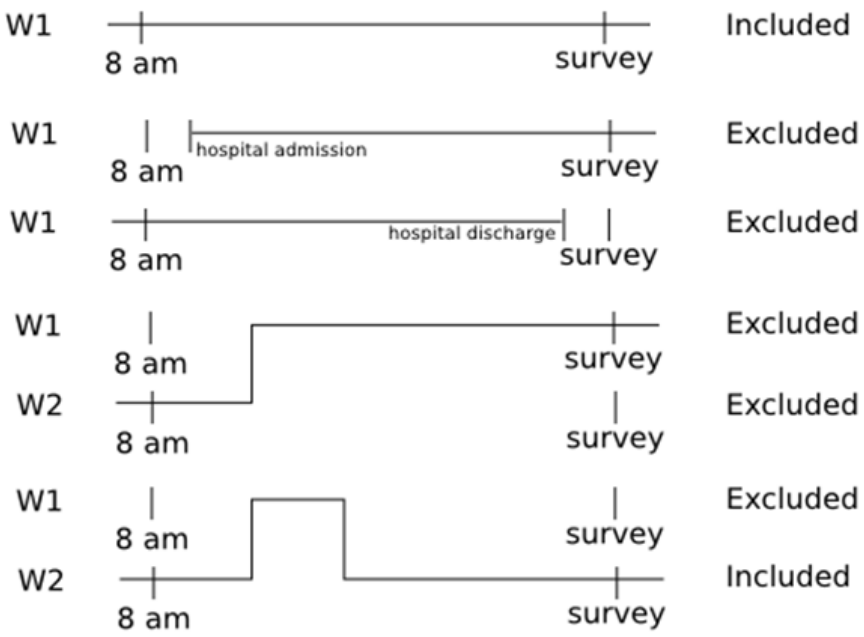
- neonates on maternity and paediatric wards if born before or at 8am
- patients who are temporarily off from the ward for diagnostic investigations, procedures; if patient does not return to the ward before the end of the PPS day and information about patient is not available at 8am, please revisit ward
- patients who are on the patient administration system but at home for several hours

Exclude:

- day-case patients
- patients undergoing same day treatment or surgery, with the expectation of being discharged before 9pm
- patients seen only at an outpatient department
- patients in the emergency room and not admitted to the hospital
- patients admitted for routine dialysis (ambulatory care or day attenders)
- patients in virtual wards
- patients receiving outpatient parenteral antimicrobial therapy (OPAT)

Note: Decision to include or exclude patients is based on information available at 8am on the day of the survey.

Figure 1. Examples of included and excluded patients in the point prevalence survey



Note

W1: ward 1, W2: ward 2.

Note: Include patients who are temporarily off from the ward for diagnostic investigations, procedures; if patient does not return to the ward before the end of the PPS day and information about patient is not available at 8am, please revisit ward.

Include patients who are on the patient administration system but at home for several hours.

Information governance

The UK Health Security Agency (UKHSA) has permission under section 251 of the National Health Service Act 2006 and its current Regulations, the Health Service (Control of Patient Information) Regulations 2002, as detailed in NIGB register of approved section 251 applications for processing confidential patient information. The NHS Act 2006 and the Regulations enable the common law duty of confidentiality to be temporarily lifted so that confidential patient information can be transferred to an applicant without the discloser being in breach of the common law duty of confidentiality. They must still comply with all other relevant legal obligations, for example the Data Protection Act 2018. Approval also provides reassurance that that the persons receiving the information has undergone an independent review of their purposes and governance arrangements.

The original application (HPA) was PIAG 03(c)/2001 'Application for Section 60 support for obtaining patient information for communicable disease surveillance and control'. UKHSA retains the original PIAG approval number, and this is reviewed through CAG annually.

All data processed by UKHSA is held on secure encrypted servers. Access is only permitted to those that have completed appropriate information governance training and where patient identifiable information is required to complete the relevant analysis.

Any data (either on paper forms or downloaded from the system) held by the hospital should be used and stored under Caldicott principles.

National data opt-out

The national data opt-out does not apply to the disclosure of confidential patient information where Regulation 3 of the Health Service (Control of Patient Information) Regulations 2002 provides the lawful basis for the common law duty of confidentiality to be lifted. Public Health England (now UKHSA) oversees the use of this legal gateway on behalf of the Secretary of State for Health and Social Care. UKHSA has been given approval by the Caldicott Guardian to process confidential patient information for the PPS under Regulation 3 (reference: CAP-2018-116).

Data linkage

Data collected during the PPS may be linked with other routine data sources available to UKHSA including UKHSA's Second Generation Surveillance System (SGSS), Hospital Episode Statistics and NHS Spine to enhance PPS outputs. Data linkage will be used to enrich PPS data including microbiology results and antimicrobial resistance, provide mortality, case-mix and health inequalities data (such as index of multiple deprivation). Data linkage will be deterministic and use patient identifiable information submitted for the PPS such as NHS number and date of birth. Although less reliable than direct data capture, data linkage offers the opportunity to complete missing information submitted for the PPS.

Data collection

Data collection includes variables at the national, hospital, ward and patient level. The national level data collection is performed by UKHSA. The hospital level data collection may be collected at any point after registration on the data capture system until the end of the survey period. Some ward-level data needs to be collated in advance of the survey date. This includes ward-level activity data describing:

- occupied bed-days per ward (usually provided by local hospital analysts)
- alcohol hand rub consumption per ward (usually provided by hospital procurement department)
- number of hand hygiene opportunities (audit data of number of staff observed in performing hand hygiene on the ward; usually provided by infection prevention and control or audit department)

Denominator data is collected for each patient, hospital and ward. Numerator data is collected for each patient with an active HCAI (related to a hospital stay) and/or receiving an antimicrobial drug at the time of the survey.

When to collect the data

The remainder of the data should be collected in a single day for each ward or unit. The total time frame for data collection for all wards of a single hospital should not exceed 2 to 3 weeks. It is practice in some hospital units to admit additional patients on Mondays for elective procedures; it is therefore recommended to conduct the survey in these units between Tuesday and Friday.

Who collects the data

The composition of the team responsible for data collection may vary from one hospital to another. It is recommended to involve hospital infection prevention and control, antimicrobial stewardship, clinical microbiology, infectious disease, and clinical personnel as well as the team in charge of the patients in the process although not all have to be involved in direct data collection.

Training

UKHSA will run training webinars for nominated PPS leads as well as other hospital staff from participating hospitals involved in the data collection prior to the point prevalence survey. Training materials will be made available to hospitals and links will be sent to all registered hospital coordinators via email.

PPS training days are:

- national training webinar on 5 September 2023
- question and answer webinar on 14 September 2023

The training sessions will be recorded for future viewing; recordings are available at Point prevalence survey on HCAI, AMU and AMS in England.

Data collection

Data can be collected in one of 2 ways:

- first on printed forms which will be circulated to registered hospital leads and subsequently be entered onto the web-based data tool by the hospital staff after data verification (examples of the forms can be found in the Appendix)
- directly entered onto the web-based tool by hospital staff while collecting the data

Overview of collected data

National data

Collected by UKHSA on administrative data from the NHS.

Hospital data

One registration form per hospital per PPS.

Ward data

Including structure and process indicators and denominator data for all patients present in the ward at 8am and not discharged at the time of the survey.

Patient data

One form per patient (for all patients present in the ward at 8am and not discharged at the time of the survey) collecting risk factors for each patient, infected or not; healthcare-associated infection data (to be collected for all patients with an infection that matches the definition of active HCAI) and/or AMU data (to be collected for all patients receiving an antimicrobial agent) is collected on the same form.

Hospital data

Hospital variables are collected to describe results by type and size of healthcare facilities and by the average length of stay in the hospital, a variable which is known to influence prevalence

figures because patients with infections are known to stay longer in the hospital than the average hospital population.

The questionnaire also includes Structure and Process Indicators (SPIs) at a hospital level on infection prevention and control and antimicrobial stewardship.

This data is collected at any time during or after the data collection period.

Ward data

Ward variables are collected to describe ward size and composition and capture SPIs at a ward level on infection prevention and control and antimicrobial stewardship.

This data is collected primarily during the data collection period, though some may be collected in advance of the survey date.

Denominator data

Denominator data is collected for all patients admitted before or present at 8am in the ward and not discharged from the ward at the time of the survey.

Patient data must be collected for each patient admitted to the ward at 8am on the survey date, infected or not, only excluding day cases (see inclusion criteria).

Specific issues related to obstetrics:

- both mother and neonate are counted if present at 8am on the survey date, if mother was present before 8am but baby not born until after 8am, mother is counted but baby is not
- obstetrics – natural birth with no interventions, procedures or devices on or after Day 3 before HCAI; otherwise, follows the HCAI rule on interventions and procedures

For neonates:

- count all infections after their birth as HCAI
- register consultant or patient specialty as GOBAB or PEDBAB (healthy neonates) unless specifically under care of PEDNEO, PEDGEN or ICUNEO

For obstetrics and gynaecology wards where mothers and babies stay together, register patient specialty for wards for mothers as GOOBS and healthy babies as GOBAB when they are located in obstetrics or as PEDBAB if they are located in paediatrics. Therefore, a ward with 14 mothers and 10 babies who were born before 8am equals 24 patients on the ward: 14 GOOBS and 10 GOBAB. If the babies are on neonatal ICU, then they should be counted as ICUNEO and not counted on the ward.

Antimicrobial use data and HCAI data

Only collect information if the patient receives at least one antimicrobial at the time of the survey (surgical prophylaxis: in the 24 hours prior to 8am on the day of the survey) or if the patient has an active HCAI.

The use of antimicrobials will often lead to the detection of a HCAI. Some patients may have a HCAI that is not effectively treated by an antimicrobial (for example most viral respiratory infections, urinary tract infections), which makes it necessary to consult other sources (see HCAI case-finding algorithm). In other cases, the physicians may treat an infection which does not match the case definition. Therefore, the diagnosis list for antimicrobial use differs from the HCAI case definition list (see the codebook) and the indication list mentions treatment intention of an infection. It is not the objective of this survey to relate the use of an antibiotic to the information on HCAI (such as microorganisms). Both types of data are collected separately.

Antimicrobial use data

Surgical prophylaxis should be registered if given the day before the survey (that is in the 24 hours prior to 8am on the day of the survey). For all other antimicrobial use (for example, treatment, medical prophylaxis), any given or planned (including intermittent treatments, for example alternate day) administration of antimicrobials should be registered as those active at the time of the survey. If an antimicrobial is prescribed on alternate days (for example Monday, Wednesday and Fridays every week or every other week) as ongoing medical prophylaxis, and the survey is conducted on a day it is not administered (for example, Tuesday or Thursday of that week, or the week it is not administered), the data for this antimicrobial should be collected as it is an active prescription.

The aim is to determine what the physicians intend to be treating. To do so, PPS staff will look at all patient records and may request additional information from nurses, pharmacists or doctors. No attempts will be made to change prescriptions, and staff should not feel supervised at any time including during the validation exercise.

Healthcare-associated infection data

An active HCAI (associated to a hospital stay) present on the day of the survey is defined as follows.

Signs and symptoms (one of the following):

- an infection is active when signs and symptoms of the infection are present on the survey date

- signs and symptoms were present in the past and the patient is (still) receiving treatment for that infection on the survey date – the presence of signs and symptoms prior to the start of the treatment should be reviewed, to determine whether the treated infection matches the case definition of an HCAI

And onset or admission (one of the following):

- the onset of symptoms was on Day 3 or later of the current admission, with Day 1 being day of admission
- the patient presents with an infection but has been readmitted less than 48 hours after a previous discharge or transfer from a healthcare facility
- the patient has been admitted (or develops symptoms within 2 days) with an infection that meets the case definition of an active surgical site infection (SSI) that is the SSI occurred within 30 days of the operation (or in the case of surgery involving an implant, was a deep or organ or space SSI that developed within 90 days of the operation) and the patient either has symptoms that meet the case definition and/or is on antimicrobial treatment for that infection
- the patient has been admitted (or develops symptoms within 2 days) with *C. difficile* infection less than 28 days after a previous discharge from a healthcare facility
- an invasive device was placed on Day 1 or Day 2, resulting in an HCAI before Day 3
- onset of symptoms on Day 1 or Day 2 in a newborn, with Day 1 being day of birth
- the patient was diagnosed with COVID-19 and the onset of symptoms (or first positive test if asymptomatic) was on Day 3 or later (day of admission = Day 1) of the current admission or the patient has COVID-19 on admission (or onset before Day 3) and was (re-)admitted fewer than 48 hours after a stay of more than 7 days in the same or another healthcare facility

Results of tests or examinations that are not yet available on the survey date should neither be completed after the survey date nor taken into account when establishing whether the case definition criteria are fulfilled. This exclusion may cause some cases of HCAI to be discarded but will compensate for the (potentially long) retrospective period preceding the start of the treatment when signs or symptoms are no longer present on the survey date.

Healthcare-associated COVID-19 (HA-COVID-19) cases are categorised according to the day of symptom onset (or first positive test for asymptomatic cases) as:

- possible HA-COVID-19 – onset on Day 3 to 7
- probable HA-COVID-19 – onset on Day 8 to 14
- definite HA-COVID-19 – onset on Day 15 and later

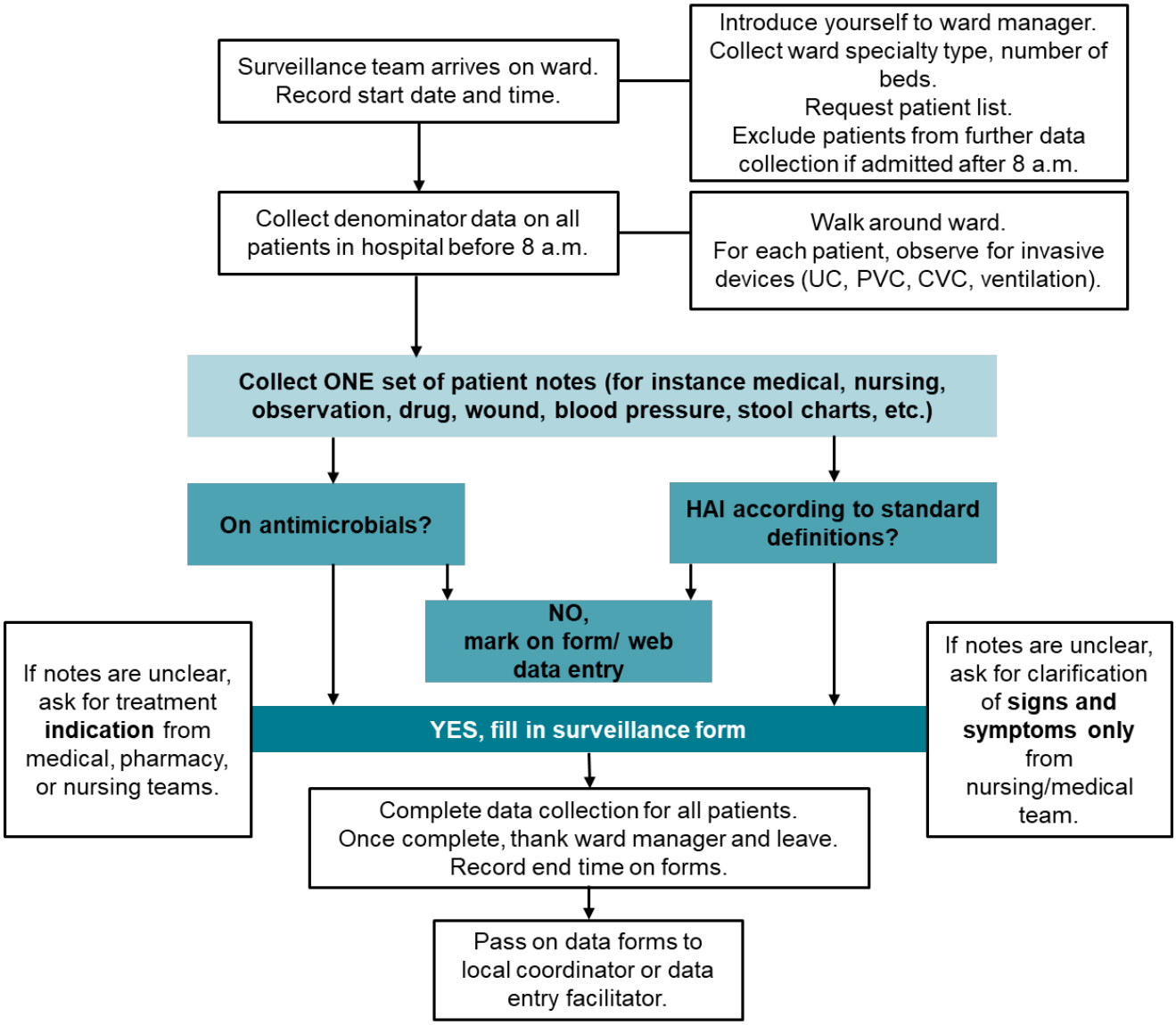
Report COVID-19 cases with symptom onset (or first positive test for asymptomatic cases) during the current hospitalisation from Day 3 onwards. Categorisation of these cases as possible, probable and definite healthcare-associated COVID-19 is done in the analysis based on the date of admission and the date of onset. For healthcare-associated COVID-19 present

on admission, only probable and definite healthcare-associated COVID-19 cases should be reported (previous stay in healthcare facility of more than 7 days).

A device-associated HCAI is an HCAI in a patient with a (clinically relevant) device that was used within the 48-hour period before onset of infection (including intermittent use). The term ‘device-associated’ is only used for pneumonia, bloodstream infection and urinary tract infection. The ‘relevant devices’ are intubation (endotracheal tube with or without mechanical ventilation), vascular (central or peripheral) catheter and urinary catheter, respectively. If the interval is longer than 48 hours, there must be compelling evidence that the infection was associated with device use. For catheter-associated UTI, the indwelling urinary catheter must have been in place within 7 days before positive laboratory results or signs and symptoms meeting criteria for UTI were evident. (See: Horan and others. ‘Definitions of key terms used in the NNIS system’ American Journal of Infection Control 1997: volume 25, pages 112 to 116.)

A bloodstream infection (BSI and secondary BSI) is always registered as a separate HCAI with specification of the source in a separate field (peripheral, arterial or central catheter, other infection site – pulmonary (S-PUL), urinary tract (S-UTI), digestive tract (S-DIG), surgical site infection (S-SSI), skin and soft tissue infection (S-SST), other infection (S-OTH)); the only exceptions are a CRI3 (catheter-related bloodstream infection with microbiological documentation of the relationship between the vascular catheter and the BSI) and neonatal bloodstream infections. CRI3 and neonatal BSIs should not be reported twice in the point-prevalence survey (see codebook for case definitions). Microbiologically confirmed catheter-related BSI should be reported as a CRI3. Neonatal bloodstream infections should be reported as NEO-LCBI or NEO-CNSB, together with BSI origin.

Figure 2. Recommended case-finding algorithm for healthcare-associated infections



Text description of Figure 2. Recommended case-finding algorithm for healthcare-associated infections

This algorithm describes the process for PPS teams to collect data on patients in the wards. The first stage is to introduce the surveillance to the ward manager, collect information on the ward specialty type, number of beds and request a patient list. Use the patient list to exclude patients from further data collection if admitted after 8am. Surveillance team should then arrive on the ward, recording the date and time. Denominator data should be collected on all patients in the hospital before 8am. The surveillance team should walk around the ward and for each patient observe for invasive devices (urinary catheters, peripheral venous and central venous catheters and ventilation). The next stage is to collect information on the patient by collecting one set of patient notes (for instance, medical, nursing, observation, drug, wound, blood pressure, stool charts) and assess whether the patient is on antimicrobials and whether the patient has an HCAI according to standard definitions. If no, mark on the paper form or in web data entry. If yes, complete the relevant antimicrobial use (AMU) or HCAI surveillance form. If

notes are unclear, ask for treatment indication or clarification of signs and symptoms only from medical, pharmacy or nursing teams. The third stage is to complete the data collection for all patients. Once complete, thank the ward manager and leave. Record survey end time on forms. Pass the data forms to the local coordinator or data entry facilitator.

Appendix

Forms and definitions of data items

Figure 3. Point prevalence survey 2023: healthcare-associated infections and antimicrobial use – ward data

Point Prevalence Survey 2023: healthcare-associated infections and antimicrobial use
Ward data

Hospital code: _____ **Ward name/unit ID[1]:** _____ **Survey date[2]:** ____/____/_____

Ward specialty[3] ☐ PED ☐ NEO ☐ ICU ☐ MED ☐ SUR ☐ G/O ☐ GER ☐ PSY ☐ YMH ☐ AMH ☐ OMH ☐ RHB ☐ LTC ☐ OTH ☐ MIX

For 2022/2023 financial year (or most recent FY data)
This should be requested from hospital analysts and procurement team and be available before web data entry commences

	Number	Year
Number of patient days in ward*		____/____
Alcohol hand rub (AHR) consumption		____/____
Number of hand hygiene opportunities		____/____

* Provide data for same year as AHR consumption

Data to be reported at time of survey	Number
Number of eligible[4] patients on ward	
Number of beds in ward	
Number of beds in unconventional settings ('corridor beds', 'cupboard beds')	
Number of beds with AHR dispenser at point of care	
Number of HCWs[5] on ward at time of PPS	
Number of HCWs on ward carrying AHR dispensers	
Number of rooms in ward	
Number of single rooms in ward	
Number of beds occupied at 00:01 on the day of PPS	

Please provide for all eligible[4] patients

Consultant/patient specialty (see codebook)	Number

Is there a hospital policy for review of the appropriateness of an antimicrobial within 72 hours from the initial order (post-prescription review) by an AMS team (i.e., separate from the primary clinical team) in this ward?

☐ Yes ☐ No ☐ Unknown

Comments/observations:

[1] Unique identifier for each unit (abbreviated ward name) within a hospital; this should remain identical between PPS years; [2] Patients on the same ward should be included on a single day; [3] Main ward specialty: >=80% of patients belong to this specialty, otherwise choose mixed (see codebook); [4] Patients admitted to the ward before or at 8:00 AM and not discharged from the ward at time of survey; [5] HCWs = Healthcare workers

Definition of ward data

Hospital code

Hospital identifier or code assigned by UKHSA.

Ward name (abbreviated) or unit ID

Unique identifier for each hospital unit (abbreviated ward name); essential for linking between denominator and HCAI or AMU data. If hospitals decide to leave their ward names as a sequence of numbers from one to the maximum number of wards (for instance 20 wards may be listed as 1 to 20), then they will need to keep a code list locally of those wards to allow translation to local ward names for feedback.

Survey date

Date on which the data was collected in the ward. Data from a single ward should be collected on one day: date dd/mm/yyyy.

Ward specialty

Main ward specialty (80% or more of patients requiring this specialty). If fewer than 80%, report ‘mixed ward’ (MIX). PED – paediatrics, NEO – neonatal, ICU – intensive care, MED – medicine, SUR – surgical, G/O – gynaecology or obstetrics, GER – geriatrics, PSY – psychiatry, YMH – young persons’ mental health, AMH – adult mental health, OMH – older persons mental health, RHB – rehabilitation, LTC – long-term care, OTH – other, MIX – mix.

Neonatal ICU patients should be coded as ward specialty NEO and paediatric ICU patients should be coded as ward specialty PED.

A ward with healthy newborns must either be allocated to GO when it is located in obstetrics or to PED if it is located in paediatrics.

Number of patient-days in ward

Number of patient-days in one year for current ward (data from previous year if available, specify year in second column; years accepted 2022 to 2023, 2021 to 2022, 2020 to 2021). This should be requested from the hospital analysts or information team and be available before ward data entry commences.

Alcohol hand rub consumption in wards (litres per year)

Number of litres of alcohol hand rub delivered to the ward in one year. Provide data for the same year as the number of patient-days in the ward. This should be requested from the hospital procurement team and be available before ward data entry commences. If there are a variety of sizes used; these should be recalculated to litres.

Number of hand hygiene opportunities observed in ward per year

Number of hand hygiene opportunities observed in the current ward in one year. Provide data for previous year if available or the most recent data available (specify year in second column).

Report the total number of observed opportunities for hand hygiene, not only the compliant observations.

Total number of eligible patients in ward

Total number of patients admitted to the ward before or at 8am that were not discharged from the ward at the time of the survey.

Number of beds in ward

Total number of beds in ward on the PPS day. Include beds in unconventional settings (see directly below) and neonatal beds.

Number of beds in unconventional settings ('corridor beds', 'cupboard beds'), if available

Total number of beds in corridors or overflow rooms that are not usually designated as ward areas such as staff rooms or maintenance rooms.

Number of beds in ward with AHR dispensers at the point of care

Number of beds in the ward with alcohol hand rub (AHR) dispensers available at the point of care as recommended by the 2009 World Health Organization (WHO) Guidelines on Hand Hygiene in Health Care. AHR dispensers at the entrance of the patient room only are not considered as 'available at the point of care'. The 'point of care' is the place where 3 elements come together: the patient, the HCW, and care or treatment involving contact with the patient or his or her surroundings (within the patient zone). The concept embraces the need to perform hand hygiene at recommended moments exactly where care delivery takes place. This requires that a hand hygiene product (for example, alcohol-based hand rub, if available) be easily accessible and as close as possible – within arm's reach of where patient care or treatment is taking place. Point-of-care products should be accessible without having to leave the patient zone.

Number of HCWs on ward at time of PPS

Number of healthcare workers (HCWs) on ward at the time of PPS. The purpose of this variable is to measure the denominator of those carrying AHR dispensers. Therefore, this requires a visual inspection of each HCW on the ward and whether they are carrying AHR or not.

Number of HCWs on ward carrying AHR dispensers

Number of HCWs on ward carrying AHR dispensers (for example, in their pocket).

Number of rooms in ward

Total number of rooms in the ward on the PPS day. A room requires a door that can close it off from the rest of the ward. A ward with 4 bays without any doors closing each bay would have one room. A ward with 2 bays with doors, 2 bays without doors, one single room without a toilet and one single room with individual toilet and shower, would have 5 rooms.

Number of single rooms in ward

Total number of single-bed rooms in the ward on the PPS day. Rooms with more than one bed that are designated for use as single occupancy and isolation rooms (for example, for infection

control purposes) should be included. This includes those with individual toilet and shower and those without individual toilet and shower.

Number of beds occupied at 00:01 on the day of PPS

Number of ward beds occupied at midnight on the day of the PPS – ward teams should be asked to document this for the PPS data collection team to collect on the day.

Consultant or patient specialty

See the codebook for a complete list.

Specialty of physician in charge of the patient or main specialty for which the patient was admitted to the hospital. If the consultant specialty differs from the patient specialty, give priority to the patient specialty. A ward with healthy newborns must either be allocated to GO (GOBAB) when it is located in obstetrics, or to PED (PEDBAB) if it is located in paediatrics; the patient specialty for mothers on obstetrics and gynaecology ward should be GOOBS. For paediatric patients on a PED ward, code the patient specialty as per adult codes using the subspecialty (MEDGEN, MEDSUR and so on); exceptions are PEDGEN (Paediatrics general, not specialised) and ICUPED (paediatric ICU). Paediatric patients will be coded as per age between under 16 years or under 18 years. Please note that long-term care is award specialty and should only exceptionally be used as a patient or consultant specialty.

Number of patients in ward by consultant or patient specialty

Number of patients admitted to the ward before or at 8am and not discharged from the ward at the time of the survey, recorded separately for each consultant or patient specialty.

Post-prescription review of antimicrobials in ward

Is there a hospital policy for review of the appropriateness of an antimicrobial within 72 hours from the initial order (post-prescription review) by an AMS team (that is separate from the primary clinical team) in this ward? It should be documented and the review should take place by individuals who are part of the hospital antimicrobial stewardship team with specific time in their jobs for this role. It should be performed by a person or team other than the treating physician or the ward pharmacist. The procedure should at least address the prescription of broad-spectrum or reserve antimicrobials but can include a review of all antimicrobials.

Comments or observations

Free text field to report for example feasibility issues, data quality problems or specific epidemiological information for the current ward.

Patient form (grouped)

Figure 4. Point prevalence survey 2023: healthcare-associated infections and antimicrobial use – ward handover form

UK Health Security Agency

Point Prevalence Survey 2023: healthcare-associated infections and antimicrobial use
Ward handover form

Hospital code:_____ Ward name/unit ID[2]: _____Survey date:____/____/_____

Initials	NHS no.	Hosp. no.	DoB	Adm. date	Specialty[3]	Surgery[4]	McCabe score (Non/Ult/ Rap/ Unk)	CVC Y/N/U	PVC Y/N/U	Urinary catheter Y/N/U	Intubated Y/N/U	Amx[5] Y/N	HAI[6] Y/N

[1] Patients admitted to the ward before or at 8:00 AM and not discharged from the ward at time of survey
[2] Unique identifier for each unit (abbreviated ward name) within a hospital
[3] See codebook for patient specialty (the specialty of consultant looking after the patient)
[4] Surgery since admission (document most recent NHSN surgery)
[5] At the time of the survey, except for surgical prophylaxisadministered with 24h before 8:00 AM on the day of the survey; if yes, fill antimicrobial use data; if patient receives >5 antimicrobials, add a new form
[6] [infection with onset ≥ Day 3, OR SSI criteria met (surgery in previous 30d/90d), OR discharged from acute care hospital <48h ago, OR CDI and discharged from acute care hospital < 28 days ago OR onset < Day 3 after invasive device/procedure on D1 or D2] **AND** [HAI case criteria met on survey day OR patient is receiving (any) treatment for HAI AND case criteria are met between D1 of treatment and survey day; if patient has >3 HAI, add a new form

Patient form

Figure 5. Point prevalence survey 2023: healthcare-associated infections and antimicrobial use – patient data, patient details

Point Prevalence Survey 2023: healthcare-associated infections and antimicrobial use
Patient data, patient details

Collect for all eligible patients

NHS number: _____

Hospital number: _____

Date of birth: ___/___/_____ (dd/mm/yyyy) **Sex:** M / F / U

Ethnicity: _____ **Postcode:**_____

Date of hospital admission: ___ / ___ / _____(dd / mm / yyyy)

Consultant/Patient Specialty[2]: _____

If neonate, birth weight: _____ grams

If neonate, is neonate admitted to hospital because the mother is receiving treatment? ☐ **No** ☐ **Yes** ☐ **Unknown**

Surgery since admission (most recent NHSN surgery)?

☐ No surgery ☐ Minimal invasive/non-NHSN surgery

☐ NHSN surgery -> specify (optional)[2]: _____ ☐ Unknown

McCabe score:

☐ Non-fatal disease ☐ Ultimately fatal disease

☐ Rapidly fatal disease ☐ Unknown

Is the patient vaccinated against COVID-19?

☐ No ☐ 1-2 doses ☐ 3 doses ☐ 4 or more doses ☐ Unknown

Presence of any of the following (at time of survey):

Central vascular catheter:	☐ No	☐ Yes	☐ Unknown
Peripheral venous catheter:	☐ No	☐ Yes	☐ Unknown
Urinary catheter:	☐ No	☐ Yes	☐ Unknown
Intubation:	☐ No	☐ Yes	☐ Unknown

Does the patient have allergies to any antimicrobial?

☐ Present ☐ Nil known ☐ Not documented

Is the patient receiving any antimicrobial(s)[3]:

☐ No ☐ Yes ⟶ if "Yes", complete antimicrobial usage data **(over page)**

Does the patient have an active HAI[4]**?**:

☐ No ☐ Yes ⟶ if "Yes", complete HAI data form **(over page)**

(if yes, fill HAI data; if patient has > 3 HAIs, add new form)

Hospital code: _____

Ward name/unit ID[1]**:** _____

Survey date: ____/____/_____(dd/mm/yyyy)

(1) Unique identifier for each unit (abbreviated ward name) within a hospital;
(2) See codebook;
(3) At the time of the survey, except for surgical prophylaxis administered within 24h before 8:00 AM on the day of the survey or if patient has an active HAI; if yes, fill antimicrobial use data; if patient receives >4 antimicrobials, add a new form;

(4) Active HAI definition
Meets one or more of these criteria: Infection with onset ≥ Day 3 or later (day of admission = Day 1), OR SSI criteria met (surgery in previous 30d/90d), OR discharged/transferred from HCF <48h ago, OR CDI and discharged from HCF < 28 days ago OR onset < Day 3 after invasive device/procedure on D1 or D2 OR COVID-19 on day 1 or day 2 and (re-)admission within 48 hours after stay in HCF of >7 days OR onset of symptoms on day 1 or day 2 in a newborn (Day of birth = Day 1)
AND
Meets one or more of these criteria: [HAI case criteria met on survey day OR patient is receiving (any) treatment for HAI AND case criteria are met between D1 of treatment and survey day];

Definition of patient data

Hospital code
Hospital identifier or code assigned by UKHSA.

Ward name
Abbreviated name of hospital ward: essential for linking between denominator and HCAI or AMU data.

Survey date
Date on which data was collected in this ward. Data from a single ward should be collected on one day (dd/mm/yyyy). This variable can be omitted from the patient data if ward data is provided. If ward data is not provided, it should be added on the patient form.

Initials
For local use only.

NHS number
Ten digit NHS number. This should be completed for all NHS patients and for independent sector for English residents, especially those who are receiving NHS funded procedures or interventions. For those without an NHS number, please enter 9999999999.

Hospital number
Local hospital number to facilitate data entry, validation and checks.

DOB
Date of birth.

Sex
Sex of the patient (at time of survey): M (male), F (female), U (unknown or other).

Date of hospital admission
Date patient was admitted to the hospital for the current hospitalisation (dd/mm/yyyy).

Consultant or patient specialty
Specialty of physician in charge of the patient or main specialty for which the patient was admitted to the hospital. If the consultant specialty differs from the patient specialty, give priority to the patient specialty. A ward with healthy newborns must either be allocated to GO (GOBAB) when it is located in obstetrics, or to PED (PEDBAB) if it is located in paediatrics; the patient specialty for mothers on obstetric and gynaecology ward should be GOOBS. For paediatric patients on a PED ward, code the patient specialty as per adult codes using the subspecialty (MEDGEN, MEDSUR and so on); exceptions are PEDGEN (Paediatrics general, not specialised) and ICUPED (paediatric ICU). Paediatric patients will be coded as per age between under 16 years or under 18 years. Please note that long-term care is award specialty and should only exceptionally be used as a patient or consultant specialty.

Birth weight

Birth weight in grams, to be provided for infants less than 3 months old or those on NICU; the birth weight is the weight of the infant at the time of birth and should not be changed as the infant gains or loses weight.

If neonate, is neonate admitted to hospital because the mother is receiving treatment?

This is to ascertain if the neonate is otherwise healthy. Yes if the neonate is not admitted to the hospital for clinical reasons relating to their own health (that is the neonate is healthy). No if the neonate is admitted for clinical reasons relating to their own health (that is the neonate is receiving treatment).

Surgery since admission

Patient has undergone surgery during current hospitalisation. Surgery is defined as a procedure performed primarily for therapeutic reasons where an incision is made (not just a needle puncture), with breach of mucosa and/or skin – not necessarily in the operating theatre.

Answer categories:

- no surgery
- yes, minimally invasive or non-NHSN surgery (examples see codebook)
- yes, NHSN surgery – specify NHSN surgery code (ICD-9-CM code of the intervention is listed for the surveillance of surgical site infections in the NHSN system, see the codebook)
- unknown

Where multiple procedures have taken place, record the most recent NHSN surgery.

McCabe score

Classification of the severity of underlying medical conditions. Disregard the influence of acute infections, for example if the patient has an active HCAI, estimate the score the patient had before the infection.

Answer categories:

- non-fatal disease (expected survival at least 5 years)
- ultimately fatal disease (expected survival between one and 5 years)
- rapidly fatal disease (expected death within one year)
- unknown

Although the prognosis of diseases varies in time and between hospitals due to changes in treatment options and their availability, using McCabe scores can still be helpful. Some examples of disease and different McCabe score categories are given below. These examples, in particular those of the second (ultimately fatal) category, are not meant to be exhaustive but rather to serve as a guidance tool for the current protocol.

Is the patient vaccinated against COVID-19?

No, 1 to 2 doses, 3 doses (if eligible), 4 or more, unknown.

Central vascular catheter

Patient has central vascular catheter in place on survey date; yes, no or unknown (includes temporary and longer term CVC including Hickman, portocath, vascath, PICC). It does not include temporary or permanent pacing wires, where fluid is not put in or blood withdrawn.

Peripheral vascular catheter

Patient has peripheral vascular (venous or arterial catheter) in place; yes, no or unknown.

Urinary catheter

Patient has indwelling urinary catheter in place at the date of the survey; yes, no or unknown.

Intubation

Patient is under intubation with or without mechanical ventilation (endotracheal tube or tracheostomy) on survey date; yes, no or unknown.

Is the patient receiving any antimicrobials?

Patient is receiving at least one systemic antimicrobial agent on the date of the survey (given or planned treatment, including intermittent treatments, for example alternate day or medical prophylaxis); for surgical antimicrobial prophylaxis, check whether any surgical prophylaxis was given in the 24 hours prior to 8am on the day of the survey. If patient is receiving one or more antimicrobial, collect antimicrobial use data. If an antimicrobial is prescribed on alternate days (for example, Monday, Wednesday and Fridays every week or every other week) as ongoing medical prophylaxis, and the survey is conducted on a day it is not administered (for example, Tuesday or Thursday of that week, or the week it is not administered), the data for this antimicrobial should be collected as it is an active prescription.

How many antimicrobials is the patient receiving? (data-capture system only)

Specify the number of antimicrobial agents the patient is receiving on the date of the survey (from 1 to 8) as per definitions above. This will permit collection of antimicrobial use data for each antimicrobial agent the patient is receiving on the date of the survey.

Does the patient have an active HCAI?

Patient has an active healthcare-associated infection on survey date. If patient has one or more active HCAI, collect HCAI data.

How many active HAIs does the patient have? (data-capture system only)

Specify the number of HAIs the patient has on the date of the survey (from 1 to 4) as per definition above. This will permit collection of HCAI data for each HCAI the patient has on the date of the survey.

Examples of diseases for different McCabe score categories

Rapidly fatal – less than one year:

- end-state haematological malignancies (unsuitable for transplant or relapsed), heart failure (EF <25%) and end-stage liver disease (unsuitable for transplant with recalcitrant ascites, encephalopathy or varices)
- multiple organ failure on intensive care unit – APACHE II score more than 30, SAPS II score more than 70
- pulmonary disease with cor pulmonale

Ultimately fatal – one year to 4 years:

- chronic leukaemias, myelomas, lymphomas, metastatic carcinoma, end-stage kidney disease (without transplant)
- motor neuron disease, multiple sclerosis non-responsive to treatment
- Alzheimer's disease or dementia
- diabetes requiring amputation or post amputation

Nonfatal – more than 5 years:

- diabetes
- carcinoma or haematological malignancy with more than 80% 5-year survival
- inflammatory disorders
- chronic gastrointestinal, genitourinary conditions
- obstetrics
- infections (including HIV, hepatis C virus, hepatitis B virus – unless in above categories)
- all other diseases

Figure 6. Point prevalence survey 2023: healthcare-associated infections and antimicrobial use – antimicrobial usage data

Point Prevalence Survey 2023: healthcare-associated infections and antimicrobial use
Antimicrobial usage data[1]

Hospital code: _____ **Ward name/unit ID[2]:** _____ **Survey date:** ____/____/_____

NHS number: _____ **Hospital number:** _____ **Date of birth:** ____/____/_____ **Gender:** _____

[1] See next page for response options for these questions
[2] Unique identifier for each unit (abbreviated ward name) within a hospital

Antimicrobial (AM) (generic name)	Route	Number of doses / day	Indication (CI, HI, LI, SP1, SP2, SP3, MP, O, UI)	Diagnosis (site) (only for CI,HI,LI)	Reason for AM in notes (Y/N)	Date this AM started (dd/mm/yyyy)	Antimicrobial Review? (within 72h after start)	AM Changed? (+ reason)	**Optional** (strongly recommended in acute care settings)																
									Number missed doses	Reason missed doses	Course length or stop date documented? (Y/N)	Guidance compliance (1-6)	Surgical prophylaxis for more than 24 hours (Y/N/NA)	Allergy mismatch (Y/N/ND/UNK)	Microbiology mismatch (Y/N/NS/P/S)	Indication does not require ANY antimicrobials (Y/N/UNK)	Incorrect route (Y/N/UNK)	Incorrect dose/frequency	Incorrect duration	Spectrum too broad (Y/N/UNK)	Spectrum too narrow (Y/N/UNK)	If AM restricted, approval given (Y/N/UNK)	Appropriateness (1-5)
						/ /																			
						/ /																			
						/ /																			
						/ /																			
						/ /																			

Optional notes

Were appropriate microbiology samples collected?
☐ Yes ☐ Partially* ☐ Not applicable ☐ No ☐ Not assessable
Record the specimen type, organism, and susceptibilities if relevant

*If more than one indication or microbiological sample is required

Clinical notes or comments
☐ Renal replacement therapy given with previous 24 hours (e.g. dialysis)

Antimicrobial usage data responses

Route
P – parenteral, O – oral, R – rectal, I – inhalation.

Number of doses per day
OD – once a day, BD – twice a day, TDS – 3 times a day, QDS – 4 times a day, 18 hourly, QOD – alternate day, 3 times per week, weekly.

Indication
Treatment intention for community (CI), long-term care (LI) or acute hospital (HI) infection; surgical prophylaxis:

- SP1 – single dose
- SP2 – one day
- SP3 – more than one day
- MP – medical prophylaxis
- O – other
- UI – unknown indication or reason (verified during PPS)
- UNK – unknown or missing, information on indication was not verified during PPS

Diagnosis
See ‘Diagnosis or site code' on pages 7 and 8 of the codebook for CI-LI-HI. Otherwise code as not applicable (NA).

Reason in notes
Y or N.

Date this AM started (dd/mm/yyyy)
Start date of the current antimicrobial. If the patient received the antimicrobial on admission, record the date of admission.

Antimicrobial review
Within 72 hours after start of each antibiotic; not from the start of the indication): Y – yes, N – no, UNK – unknown, NA – not applicable (start less than 72 hours ago).

AM Changed? (+ reason)
Was the antimicrobial (or the route of administration) changed for this indication, and if so, what was the reason? N – no change, E – escalation, D – de-escalation, S – switch IV to oral, A – adverse effects, O – OPAT/COpAT, OU – changed, other or unknown reason, U – unknown.

Number missed doses
From start date of current antibiotic treatment until the date of the survey. If no doses missed, report as 0. If unknown, leave field empty.

Reason missed doses

S – due to stock out, P – patient could not purchase, D – patient declined or refused, O – other reason, M – multiple reasons, UNK – unknown.

Course length or stop date documented?

Y – yes, N – no.

Guidance compliance

Was the antimicrobial prescription compliant with guidelines?

1: compliant with national guidelines
2: compliant with locally endorsed guidelines (select 1 – national guidelines, if local guidelines are the same)
3: non-compliant with guidelines
4: directed therapy
5: no guidelines available
6: not assessable (see accompanying criteria on pages 35 and 38)

Surgical prophylaxis for more than 24 hours

Y – yes, N – no, NA – not applicable, for example, surgical prophylaxis not administered.

Allergy mismatch

Was there a mismatch between the allergy information for the patient and the prescribed antimicrobial agent? Y – yes, N – no, ND – not documented, UNK – unknown.

Microbiology mismatch

Is there a mismatch in relation to susceptibility testing. Y – yes, N – no, NS – specimen not sent, P – result pending, S – susceptibility testing not performed.

Indication does not require any antimicrobials

Y – yes, N – no, UNK – unknown.

Incorrect route

Y – yes, N – no, UNK – unknown.

Incorrect dose or frequency

N – no, dose and frequency were correct; H – yes, dose or frequency too high; L – yes, dose or frequency too low.

Incorrect duration

N – no, duration correct; TL – yes, duration too long; TS – yes, duration too short.

Spectrum too broad or spectrum too narrow

Y – yes, N – no, UNK – unknown.

If AM restricted, approval given

If local policy restricts a certain antimicrobial for specialist approval or pre-authorisation.

Y – yes, N – no, UNK – unknown.

Appropriateness

1: optimal
2: adequate
3: suboptimal
4: inadequate
5: not assessable (see accompanying guidance, above)

Figure 7. Point prevalence survey 2023: healthcare-associated infections and antimicrobial use – compliance with guidelines assessment criteria

UK Health Security Agency

Point Prevalence Survey 2023: healthcare-associated infections and antimicrobial use Compliance with guidelines assessment criteria (adapted from Australian National Antimicrobial Prescribing Survey[1])

Compliance with guidelines (only choose **one** of the following five criteria)

Compliant with National Guidelines[2]	• The prescription complies with the current National Guidelines[2], including: ○ route, dose, frequency **AND** ○ takes into account acceptable alterations due to age, weight, renal function, allergies, other prescribed medications etc.
Compliant with locally endorsed guidelines[3]	• The prescription complies with an officially endorsed local guideline, including: ○ route, dose, frequency **AND** ○ takes into account acceptable alterations due to age, weight, renal function, allergies, other prescribed medications etc. • This does not include individual, departmental or historical guidelines that do not have executive or drug and therapeutic committee approval • If the local guidelines are based exactly on the National Guidelines[2], then choose the 'National Guidelines' in preference to 'Local Guidelines'
Non-compliant with guidelines	• There is non-compliance with both National Guidelines[2] and local guidelines. **UNLESS** the prescription takes into account acceptable alterations due to age, weight, renal function, allergies, other prescribed medications etc.

Directed therapy	• The prescription has changed from empiric to directed therapy with microbiology culture or susceptibility results available
No guidelines available	• There are no guidelines available for the documented or presumed indication
Not assessable	• The medical records are not comprehensive enough to determine a documented or presumed indication **OR** • It is difficult to assess if there is compliance

[1] Royal Melbourne Hospital and the National Centre for Antimicrobial Stewardship. Antimicrobial prescribing practice in Australian hospitals. Results of the 2020 Hospital National Antimicrobial Prescribing Survey Canberra: Department of Health and Aged Care; 2023. https://www.ncas-australia.org/ncas-publications date accessed: 02/08/2023

[2] National Institute for Health and Care Excellence guidelines on antimicrobial stewardship (including prescribing)

[3] Local guidelines must be authorised and readily available on wards or on the hospital intranet. They cannot be a web link to international guidelines or other non-approved sites. Exceptions include paediatric and neonatal guidelines from an English children's hospital and links to other guidelines within a hospital's network

Compliance with guidelines assessment criteria: text version

Adapted from Australian National Antimicrobial Prescribing Survey.[1]

Compliance with guidelines (only choose one of the following 5 criteria)

Compliant with national guidelines[2]

The prescription complies with the current national guidelines[2], including route, does and frequency and takes into account acceptable alterations due to age, weight, renal function, allergies, other prescribed medications and so on.

Compliant with locally endorsed guidelines[3]

The prescription complies with an officially endorsed local guideline, including route, does, frequency and takes into account acceptable alterations due to age, weight, renal function, allergies, other prescribed medications and so on.

This does not include individual, departmental or historical guidelines that do not have executive or drug and therapeutic committee approval.

If the local guidelines are based exactly on the national guidelines[2], then choose the 'National guidelines' in preference to 'Local guidelines'.

Non-compliant with guidelines

There is non-compliance with both national guidelines[2] and local guidelines, unless the prescription takes into account acceptable alterations due to age, weight, renal function, allergies, other prescribed medications and so on.

Directed therapy

The prescription has changed from empiric to directed therapy with microbiology culture or susceptibility results available.

No guidelines available

There are no guidelines available for the documented or presumed indication.

Not assessable

The medical records are not comprehensive enough to determine a documented or presumed indication or **i**t is difficult to assess if there is compliance.

[1] Royal Melbourne Hospital and the National Centre for Antimicrobial Stewardship. Antimicrobial prescribing practice in Australian hospitals. Results of the 2020 Hospital National Antimicrobial Prescribing Survey Canberra Department of Health and Aged Care 2023, viewed on 2 August 2023

[2] National Institute for Health and Care Excellence guidelines on antimicrobial stewardship (including prescribing)

[3] Local guidelines must be authorised and readily available on wards or on the hospital intranet. They cannot be a web link to international guidelines or other non-approved sites. Exceptions include paediatric and neonatal guidelines from an English children's hospital and links to other guidelines within a hospital's network

Figure 8. Point prevalence survey 2023: healthcare-associated infections and antimicrobial use – appropriateness definitions

UK Health Security Agency

Point Prevalence Survey 2023: healthcare-associated infections and antimicrobial use: Appropriateness definitions (adapted from Australian National Antimicrobial Prescribing Survey[1])

			If endorsed guidelines are present	If endorsed guidelines are absent
Appropriate	1	**Optimal**[2]	Antimicrobial prescription follows either the National Guidelines[3] or endorsed local guidelines **optimally,** including antimicrobial choice, dosage, route and duration[4]	The antimicrobial prescription has been reviewed and endorsed by an infectious diseases clinician or clinical microbiologist OR The prescribed antimicrobial will cover the likely causative or cultured pathogens **and** there is not a narrower spectrum or more appropriate antimicrobial choice, dosage, route or duration[4] available
	2	**Adequate**	Antimicrobial prescription does not optimally follow the National Guidelines[3] or endorsed local guidelines**,** including antimicrobial choice, dosage, route and duration[4], however, is a **reasonable** alternative choice for the likely causative or cultured pathogens **OR** For surgical prophylaxis, as above **and** duration[4] is less than 24 hours	Antimicrobial prescription including antimicrobial choice, dosage, route and duration[4] is not the most optimal, however, is a **reasonable** alternative choice for the likely causative or cultured pathogens **OR** For surgical prophylaxis, as above **and** duration[4] is less than 24 hours
Inappropriate	3	**Suboptimal**	There may be a mild or non-life-threatening allergy mismatch **OR** Antimicrobial prescription including antimicrobial choice, dosage, route and duration[4], is an **unreasonable** choice for the likely causative or cultured pathogens, including: • spectrum excessively broad, unnecessary overlap in spectrum of activity, dosage excessively high or duration excessively long • Failure to appropriately de-escalate with microbiological results	
	4	**Inadequate**	Antimicrobial prescription including antimicrobial choice, dosage, route and duration[4], is **unlikely** to treat the likely causative or cultured pathogens **OR** The documented or presumed indication does not require **any** antimicrobial treatment **OR** There may be a severe or possibly life-threatening allergy mismatch, or the potential risk of toxicity due to drug interaction **OR** For surgical prophylaxis, the duration[4] is greater than 24 hours (except where local guidelines endorse this)	
	5	**Not assessable**	The indication is not documented and unable to be determined from the notes **OR** The notes are not comprehensive enough to assess appropriateness **OR** The patient is too complex, due to multiple co-morbidities, allergies or microbiology results, etc	

[1] Rodney James and others, The feasibility and generalizability of assessing the appropriateness of antimicrobial prescribing in hospitals: a review of the Australian National Antimicrobial Prescribing Survey, JAC-Antimicrobial Resistance, https://doi.org/10.1093/jacamr/dlac012

[2] Taking into account acceptable changes due to the patient's weight, allergy status, renal or hepatic function, or relevant drug interactions (if this information is available)

[3] National Institute for Health and Care Excellence guidelines on antimicrobial stewardship (including prescribing)

[4] Duration should only be assessed if the guidelines state a recommended duration and the antimicrobial has already been dispensed for longer than this, or there is a clear planned 'end date' documented

Appropriateness definitions: text version

Adapted from Australian National Antimicrobial Prescribing Survey[1]

If endorsed guidelines are present

Appropriate

1. Optimal[2]

Antimicrobial prescription follows either the National Guidelines[3] or endorsed local guidelines optimally, including antimicrobial choice, dosage, route and duration[4].

2. Adequate

Antimicrobial prescription does not optimally follow the National Guidelines[3] or endorsed local guidelines, including antimicrobial choice, dosage, route and duration[4], however, is a reasonable alternative choice for the likely causative or cultured pathogens or for surgical prophylaxis, as above and duration[4] is less than 24 hours.

If endorsed guidelines are absent

Appropriate

1. Optimal[2]

The antimicrobial prescription has been reviewed and endorsed by an infectious diseases clinician or clinical microbiologist or the prescribed antimicrobial will cover the likely causative or cultured pathogens and there is not a narrower spectrum or more appropriate antimicrobial choice, dosage, route or duration[4] available.

2. Adequate

Antimicrobial prescription including antimicrobial choice, dosage, route and duration[4] is not the most optimal, however, is a reasonable alternative choice for the likely causative or cultured pathogens or for surgical prophylaxis, as above and duration[4] is less than 24 hours.

Inappropriate

3. Suboptimal

There may be a mild or non-life-threatening allergy mismatch, or antimicrobial prescription, including antimicrobial choice, dosage, route and duration[4], is an unreasonable choice for the likely causative or cultured pathogens, including:

- spectrum excessively broad, unnecessary overlap in spectrum of activity, dosage excessively high or duration excessively long
- failure to appropriately de-escalate with microbiological results

4. Inadequate

Antimicrobial prescription, including antimicrobial choice, dosage, route and duration[4], is unlikely to treat the likely causative or cultured pathogens, or (one of the following):

- the documented or presumed indication does not require any antimicrobial treatment
- there may be a severe or possibly life-threatening allergy mismatch or the potential risk of toxicity due to drug interaction
- for surgical prophylaxis, the duration[4] is greater than 24 hours (except where local guidelines endorse this)

5. Not assessable
The indication is not documented and unable to be determined from the notes, or the notes are not comprehensive enough to assess appropriateness, or the patient is too complex, due to multiple co-morbidities, allergies or microbiology results and so on.

[1] Rodney James and others. The feasibility and generalizability of assessing the appropriateness of antimicrobial prescribing in hospitals: a review of the Australian National Antimicrobial Prescribing Survey Journal of Antimicrobial Chemotherapy – Antimicrobial Resistance
[2] Taking into account acceptable changes due to the patient's weight, allergy status, renal or hepatic function, or relevant drug interactions (if this information is available)
[3] National Institute for Health and Care Excellence guidelines on antimicrobial stewardship (including prescribing)
[4] Duration should only be assessed if the guidelines state a recommended duration and the antimicrobial has already been dispensed for longer than this, or there is a clear planned 'end date' documented

Antimicrobial use section

Antimicrobial generic name

Allowed are, for example, amoxicillin; include ATC codes (ATC 2nd level: J01, antibacterials for system use; J02 antifungals for systemic use; ATC 4th level: A07AA, P01AB, D01BA; ATC 5th Level: J04AB02). Treatment for tuberculosis is excluded but antituberculosis drugs are included when used for treatment of mycobacteria other than tuberculosis (MOTT) or as reserve treatment for multidrug-resistant bacteria. See the codebook for included antimicrobial agents.

Route

Route of administration of the antimicrobial agent. P – parenteral, O – oral, R – rectal, I – inhalation.

Dosage per day

OD – once a day, BD – twice a day, TDS – 3 times a day, QDS – 4 times a day, 5 per day, 6 per day, 18 hourly, QOD – alternate day, twice per week, 3 times per week, weekly, continuous infusion.

The main objective of this variable is to provide information to 1) enable comparisons of antimicrobial consumption nationally and internationally, and 2) enable updating the defined daily doses (DDD) values by the WHO Collaboration Centre for Drug Statistics Methodology (Norwegian Institute of Public Health).

Indication for antimicrobial use

Patient receives systemic antimicrobials for:

- treatment intention:
  - CI – community-acquired infection
  - LI – infection acquired in long-term care facility (for example nursing home) or chronic-care hospital
  - HI – acute-hospital-acquired infection
- surgical prophylaxis:
  - SP1 – single dose
  - SP2 – one day
  - SP3 – more than one day (check if given in the 24 hours prior to 8am on the day of the survey – if yes, check if given on the day before yesterday or on the day of the survey in order to determine duration)
- MP – medical prophylaxis
- O – other indication (for example erythromycin use as a prokinetic agent)
- UI – unknown indication or reason (verified during PPS)
- UNK – unknown or missing, information on indication was not verified during PPS

If the antimicrobial use is intended for treatment of an infection (CI, LI or HI), fill in site of infection (diagnosis). Otherwise code NA (not applicable).

Diagnosis (infection site)

Diagnosis group by anatomical site: see infection (site) code list for antimicrobial use. Should only be recorded when the indication is 'intention to treat an infection'; not recorded for prophylaxis or other indications (use code 'NA' for not applicable).

Reason in notes: yes or no

Yes, if the reason for antimicrobial use was documented in the patient chart or notes.

Start date current antimicrobial

Start date of the current antimicrobial. If the patient received the antimicrobial on admission, record the date of admission.

Antibiotic review?

(Less than 72 hours after start of each antibiotic; not from the start of the indication). Y – yes, N – no, UNK – unknown, not documented, NA – not applicable (that is treatment with this antibiotic is less than 72 hours).

Antimicrobial changed? (+ reason)

Was the antimicrobial (or the route of administration) changed for this indication, and if so, what was the reason? If the antimicrobial was changed more than once for the current indication, report the reason of the last change. The term 'indication' in this context should be interpreted as the entire treatment regimen for the infection episode.

For information, the corresponding CARES acronyms from the recently updated (August 2023) Start Smart Then Focus (SSTF) antimicrobial stewardship toolkit for inpatient care settings are indicated in parentheses. Please also see the look-up table, below.

N – no change, antimicrobial was not changed (CARES review outcomes equivalent: E – extend).

E – escalation: antimicrobial was escalated (or other antimicrobial was added) on microbiological and/or clinical grounds, that is the isolated microorganism was not susceptible to the previous antimicrobial and/or lack of clinical effect of previous antimicrobial; includes switch from oral to parenteral for the same antimicrobial (CARES review outcomes equivalent: A – amend).

D – de-escalation: antimicrobial was de-escalated on microbiological and/or clinical grounds, that is the isolated microorganism was susceptible to more narrow-spectrum or first-line antimicrobials than the previous antimicrobial and/or the clinical situation of the patient allows changing to a more narrow-spectrum or to a first-line antimicrobial. If other antimicrobials given for the same indication were stopped at the time of the survey, report de-escalation for the remaining antimicrobial(s) (CARES review outcomes equivalent: A – amend).

S – switch IV to oral; route of administration of same antimicrobial was changed from parenteral to oral. A switch can also occur between antimicrobials belonging to the same antimicrobial class, for example IV co-amoxiclav to oral co-amoxiclav or IV levofloxacin to oral ciprofloxacin or IV ceftriaxone to oral cefixime. (CARES review outcomes equivalent: S-Switch).

A – adverse effects; antimicrobial was changed because of observed or expected side or adverse effects of the antimicrobial.

OPAT/COpAT – outpatient parenteral antimicrobial therapy or complex outpatient oral and parenteralantimicrobial therapy.

OU – change for other or unknown reason: the antimicrobial for that indication was changed for another reason or the antimicrobial was changed but the reason why could not be determined by the surveyor.

U – unknown: no information on whether the antimicrobial was changed or not.

Antimicrobial review code for HCAI and AMU PPS	**SSTF antimicrobial review outcome (CARES) equivalent**
N – no change	Extend
E – escalation	Amend
D – de-escalation	Amend
S – switch	Switch
A – adverse effects	Switch
COPAT – complex outpatient antibiotic therapy	Refer
OU – change for other or unknown reason	No equivalent
U – unknown	No equivalent

The following questions are optional, but organisations participating in surveys in Australia and England that use these indicators have found the outputs informative for antimicrobial stewardship. Many of the questions have been adapted from the Australian National Antimicrobial Prescribing Survey.

Number missed doses

From start date of current antibiotic treatment until the date of the survey. If no doses missed, report as 0. If unknown, leave field empty. Note, do not count intermittent treatment that a patient is receiving but does not receive at the time of the survey as a missed dose.

Reason missed doses

S – due to stock out, P – patient could not purchase, D – patient declined or refused, O – other reason, M – multiple reasons, UNK – unknown.

Course length or stop date documented?

Y – yes, N – no.

Guidance compliance

Was the antimicrobial prescription compliant with guidelines?

1 – compliant with national guidelines
2 – compliant with locally endorsed guidelines (select 1 – national guidelines, if local guidelines are the same)
3 – non-compliant with guidelines
4 – directed therapy
5 – no guidelines available
6 – not assessable (see accompanying criteria, above)

Surgical prophylaxis for more than 24 hours

Y – yes, N – no, NA – not applicable (for example surgical prophylaxis not administered)

Allergy mismatch

Was there a mismatch between the allergy information for the patient and the prescribed antimicrobial agent?

- Y – yes
- N – no
- ND – not documented
- UNK – unknown

Microbiology mismatch

Is there a mismatch in relation to susceptibility testing and the prescribed antimicrobial agent?

- Y – yes
- N – no

- NS – specimen not sent
- P – result pending
- S – susceptibility testing not performed

Indication does not require any antimicrobials

Y – yes, N – no, UNK – unknown.

Incorrect route

Was the route of administration incorrect?

- Y – yes
- N – no
- UNK – unknown

Yes, if the route was incorrect.

Incorrect dose or frequency

N – no, dose and frequency were correct. H – yes, dose or frequency too high. L – yes, dose or frequency too low.

Specify H if the dose or frequency are incorrect and too high and L if the dose or frequency are incorrect and too low.

Incorrect duration

N – no, duration correct. TL – yes, duration too long. TS – yes, duration too short.

Spectrum too broad

Y – yes, N – no, UNK – unknown. Yes, if the spectrum was too broad.

Spectrum too narrow

Y – yes, N – no, UNK – unknown. Yes, if the spectrum was too narrow.

If AM restricted, approval given

If local policy restricts a certain antimicrobial for specialist approval or pre-authorisation:

- Y – yes
- N – no
- UNK – unknown

Appropriateness

1 – optimal, 2 – adequate, 3 suboptimal, 4 inadequate, 5 – not assessable (see accompanying guidance, above).

The assessment of appropriateness is adapted from the Australian National Antimicrobial Prescribing Survey.

Figure 9. Point prevalence survey 2023: healthcare-associated infections and antimicrobial use – HAI data

UK Health Security Agency

Point Prevalence Survey 2023: healthcare-associated infections and antimicrobial use
HAI data

Hospital code: _____ **Ward name/unit ID[1]:** _____ **Survey date:** ____/____/_____

NHS number: _____ **Hospital number:** _____ **Date of birth:** ____/____/_____ **Gender:** _____

	HAI 1					HAI 2					HAI 3				
Case definition code															
Invasive device[2]	☐ Yes ☐ No ☐ Unknown					☐ Yes ☐ No ☐ Unknown					☐ Yes ☐ No ☐ Unknown				
Present on admission	☐ Yes ☐ No ☐ Unknown					☐ Yes ☐ No ☐ Unknown					☐ Yes ☐ No ☐ Unknown				
Date of onset[3]	/ /					/ /					/ /				
Origin of infection	☐ Current hospital ☐ Other acute care hospital ☐ LTCF ☐ Other community/mental health hospital ☐ Other/ unknown					☐ Current hospital ☐ Other acute care hospital ☐ LTCF ☐ Other community/mental health hospital ☐ Other/ unknown					☐ Current hospital ☐ Other acute care hospital ☐ LTCF ☐ Other community/mental health hospital ☐ Other/ unknown				
HAI associated to current ward	☐ Yes ☐ No ☐ Unknown					☐ Yes ☐ No ☐ Unknown					☐ Yes ☐ No ☐ Unknown				
Vasopressor treatment	☐ Yes ☐ No ☐ Unknown					☐ Yes ☐ No ☐ Unknown					☐ Yes ☐ No ☐ Unknown				
If BSI: source[4]															
	Microbes code	Spec type[5]	AMR AB[6]	AMR SIR	PDR	Microbes code	Spec type[5]	AMR AB[6]	AMR SIR	PDR	Microbes code	Spec type[5]	AMR AB[6]	AMR SIR	PDR
Microorganism 1															
Microorganism 2															
Microorganism 3															

[1] Unique identifier for each unit (abbreviated ward name) within a hospital
[2] Relevant invasive device present (even intermittently) 48 hours before onset infection; intubation for pneumonia (PN); CVC/PVC for BSI; urinary catheter for UTI
[3] Only for infections not present/active on admission (dd/mm/yyyy)
[4] C-CVC (central venous catheter), C-PVC (peripheral venous catheter), S-PUL (pulmonary infection), S-UTI (urinary tract infection), S-DIG (digestive tract infection), S-SSI (surgical site infection), S-SST (skin/soft tissue infection), S-OTH (other), UO (none of the above, BSI of unknown origin, clinically asserted), UNK (unknown)
[5] Specimen type: B=Blood, CSF=Cerebrospinal fluid, U=urine, S=sputum, T=tissue, SB=swab, O=Other fluid, BAL = Bronchoalveolar Lavage
[6] AB: tested antibiotic(s): *S. aureus*: OXA (includes oxacillin or other marker for MRSA such as cefoxitin, cloxacillin, dicloxacillin, flucloxacillin or meticillin) and GLY; Enterococci: GLY; Enterobacterales: C3G and CAR; *P. aeruginosa* and *Acinetobacter* spp.: CAR; SIR: S=susceptible, standard, I=susceptible, increased exp, R=resistant, U=unknown; PDR: Pan-drug resistant: N=No, P=Possible, C=Confirmed, U=Unknown

Healthcare-associated infection data

Case definition code

HCAI case definition codes (see the codebook). A single-case definition code should only be provided once per patient (no different infection episodes). For pneumonia and urinary tract infections, only fill in one subcategory (priority pneumonia: PN1> PN2> PN3> PN4> PN5; urinary tract infections: UTI-A> UTI-B). For laboratory-confirmed bloodstream infections, provide only one of BSI, CRI3 (priority CRI3> BSI), NEO-LCBI or NEO-CNSB (priority NEO-LCBI> NEO-CNSB [> BSI]). All signs and symptoms since the onset of the infection until the time of the survey should be considered to categorise the HCAI.

Relevant device in situ

Yes, no or unknown. To be specified for PN, BSI, NEO-LCBI, NEO-CNSB and UTI only. Answer 'Yes' if a relevant invasive device was in situ (even intermittently) for any amount of time within 48 hours for PVC/ CVC (for BSI/ CRI/ CVS-VASC), Intubation (PN) and 7 days for UC for UTI before onset of the infection.

Infection present at admission

Yes or no. Signs and symptoms of the infection were present at admission to the hospital; if not, provide date onset of infection.

Date of onset

Date of onset of the infection (dd/mm/yyyy). Not to be recorded if signs or symptoms are present at admission (tick the N/A response box), but mandatory if onset during current hospitalisation. Record the date of first signs or symptoms of the infection; if unknown, record the date treatment was started for this infection or the date the first diagnostic sample was taken. If no treatment or sample, please estimate.

Origin of the infection

Infection is associated with (1) current hospital; (2) another acute care hospital; (3) other origin or unknown. Infections present at admission may be associated with a previous stay in your hospital or a transfer from another acute care facility. The category 'other origin or unknown' can be used for example, for infections with an onset after Day 2 of the current hospitalisation (equals HCAI by definition), for which the surveyor does not agree that it is associated with the current hospital stay. However, the category should not be used for long-term care-facility or nursing home-associated infections, since only HCAI associated with acute care hospital stays are recorded in the ECDC PPS.

HCAI associated to current ward

An HCAI is associated with the current ward if the infection started on Day 3 or later after admission to the current ward (where the date of admission to the ward is Day 1) or if the infection started on Day 1 or 2 after a placement of an invasive device on the current ward or if the patient was readmitted with an HCAI present on admission associated to a previous stay in the same ward, within 30 days after operation for surgical site infections (or 90 days for deep

and organ or space SSI after implant surgery), less than 28 days after discharge for *C. difficile* infections, less than 48 hours (2 calendar days) after discharge for other HAIs.

Vasopressor treatment

Vasopressor treatment (for example norepinephrine, epinephrine, vasopressin, phenylephrine, dopamine) was initiated for the treatment of the consequences of the HCAI (marker of septic shock).

If BSI: source

If lab-confirmed bloodstream infection, specify the origin:

- catheter-related (central: C-CVC, peripheral C-PVC)
- secondary to another infection :
  - pulmonary (S-PUL)
  - urinary tract (S-UTI)
  - digestive tract (S-DIG)
  - surgical site infection (S-SSI)
  - skin and soft tissue infection (S-SST)
  - other infection (S-OTH)
  - BSI of (confirmed) unknown origin (UO)
- missing data, no information available – UNK
- secondary BSI reported as separate HCAI, in addition to the primary infection if it matches the case definition

Microorganisms

Collect microbiological results available on the survey date (do not wait for results not available on the survey date).

Antimicrobial resistance phenotype

Specify susceptibility to selected antimicrobial resistance (AMR) marker depending on microorganism.

Report S (susceptible, standard dosing regimen), I (susceptible, increased exposure), R (resistant) or U (unknown) for the antimicrobial group (preferred) or for tested antimicrobials within the group. Reporting group susceptibility requires that at least one antimicrobial belonging to the group is tested. If several antibiotics within the group were tested (for example carbapenems (CAR)), report the least susceptible result for the group (for example meropenem R + imipenem I equals CAR R. Note: Ertapenem is not coded).

Staphylococcus aureus: OXA, GLY

MRSA: resistant to oxacillin (OXA) or other marker of meticillin-resistant *S. aureus* (MRSA), such as cefoxitin (FOX), cloxacillin (CLO), dicloxacillin (DIC), flucloxacillin (FLC), meticillin (MET).

VISA, VRSA: Resistant to glycopeptides (GLY): vancomycin (VAN) or teicoplanin (TEC), report the most resistant isolate.

Enterococcus spp.: GLY

VRE: resistant to glycopeptides (GLY): vancomycin (VAN) or teicoplanin (TEC).

Enterobacterales (*Escherichia coli, Klebsiella spp., Enterobacter spp., Proteus spp., Citrobacter spp., Serratia spp., Morganella spp.*): C3G, CAR

Third-generation cephalosporins (C3G): cefotaxime (CTX), ceftriaxone (CRO), ceftazidime (CAZ), report consistent with the most resistant MIC.

Carbapenems (CAR): imipenem (IPM), meropenem (MEM), doripenem (DOR).

Pseudomonas aeruginosa: CAR

Carbapenems (CAR): imipenem (IPM), meropenem (MEM), doripenem (DOR).

Acinetobacter spp.: CAR

Carbapenems (CAR): imipenem (IPM), meropenem (MEM), doripenem (DOR).

Pandrug resistance (PDR)

Microorganism is pandrug resistant:

N = no PDR (susceptible to at least one antimicrobial)
P = possible PDR (I/R to all antimicrobials tested in hospital)
C = confirmed PDR (I/R to all antimicrobials confirmed by reference laboratory)
U = unknown

Source: Clinical Microbiological Infections 2012: volume18, issue 3, pages: 268 to 281

Abbreviations

More abbreviations can be found in the codebook.

Abbreviation	Meaning
A&E	Accident and Emergency
AM	antimicrobial or antimicrobial agent
AMR	antimicrobial resistance
AU	antimicrobial use
BSI	bloodstream infection
CQC	Care Quality Commission
CVC	central vascular catheter
ECDC	European Centre for Disease Prevention and Control
HCAI	healthcare-associated infections
ICU:	intensive care units
NEO-CNSB	laboratory-confirmed bloodstream infection with coagulase-negative staphylococci in neonates
NEO-LCBI	laboratory-confirmed bloodstream infection in neonates, non-CNS
NNIS	National Nosocomial Infections Surveillance
PPS	point prevalence survey
PVC	peripheral vascular catheter
SPI	structure and process indicators
SSI	surgical site infections
SST	skin and soft tissue
UTI	urinary tract infection

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UKHSA is responsible for protecting every member of every community from the impact of infectious diseases, chemical, biological, radiological and nuclear incidents and other health threats. We provide intellectual, scientific and operational leadership at national and local level, as well as on the global stage, to make the nation health secure.

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