



Public Health
England



Protecting and improving the nation's health

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

Protocol, 2016

Fifth national point prevalence survey of healthcare-associated infections and second national point prevalence survey of antimicrobial use and quality indicators in England

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

Public Health England
Wellington House
133-155 Waterloo Road
London SE1 8UG
Tel: 020 7654 8000
www.gov.uk/phe
Twitter: @PHE_uk
Facebook: www.facebook.com/PublicHealthEngland

Prepared by: PHE PPS England Team

For queries relating to this document, please contact: PPSEngland@phe.gov.uk

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Introduction

More than four million people in Europe acquire a healthcare-associated infection (HAI) every year, of whom approximately 37,000 die as a direct result of the infection. The death toll from HAI is comparable to the number of people who die each year in road traffic accidents. Antimicrobial use (AMU) is a key driver of antimicrobial resistance (AMR); understanding the indications, dose used, and adherence to guidelines is key to reducing antibiotic consumption.

Surveillance of HAI and AMU is an essential component of infection prevention and antimicrobial stewardship. It drives key actions by planning and implementing more effective, evidence-based policies, surveillance and strategies. However, robust comparable data for HAI and AMU (other than mandatory reporting) are not currently available for the NHS in England, making it difficult to quantify overall if there have been any changes in NHS trusts' HAI rates or AMU other than those reported on a mandatory basis.

Prevalence surveys are useful in providing data on the proportion of HAI 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 HAI and community-acquired infection (CAI) treated with antibiotics and AMU.

This point prevalence survey will be the fifth national point prevalence survey on healthcare-associated infections and the second national survey on antimicrobial use.

Table 1. Results of previous HAI point prevalence surveys

| Year of Survey | Total patients surveyed | Total number with HAI | Prevalence |
|-----------------------|--------------------------------|------------------------------|-------------------|
| England 2011 | 52443 | 3360 | 6.4 |
| England 2006 | 58775 | 4812 | 8.2 |
| UK 1993/4 | 37111 | 3353 | 9.0 |
| UK 1980 | 18163 | 1671 | 9.2 |

In 2011, 18,219 patients were on at least one antimicrobial (excluding TB, HIV and hepatitis treatment); the overall prevalence of AMU was 34.7%.

Objectives

The objectives of the point prevalence survey of HAIs and AMU in acute-care hospitals are:

- to estimate the total burden (prevalence) of HAIs and AMU in acute-care hospitals
- to describe patients, invasive procedures, infections (sites, microorganisms including markers of antimicrobial resistance) and antimicrobials prescribed (compounds, indications)
 - by type of patients, specialties or healthcare facilities
- to describe key structures and processes for the prevention of HAIs and antimicrobial resistance at the hospital and ward level in EU hospitals
- to disseminate results to those who need to know at local, regional, and national level:
 - to raise awareness
 - 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/regional level (repeated PPS)
- to 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 PPS and include:

- PPS protocol and data entry forms
- PPS codebook, including case definitions of HAI
- standardised training material
- web-based software to enter data

Inclusion/exclusion criteria

Hospitals

All acute-care hospitals are eligible for inclusion. An acute-care hospital is defined according to national definitions. There is no minimal size of hospitals.

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

Wards

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 ICUs. The ward specialty is always recorded so that results can be stratified and standardised.

Excluded areas in the hospital are:

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

Patients

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

Include:

- neonates on maternity and paediatric wards if born before/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 a number of hours

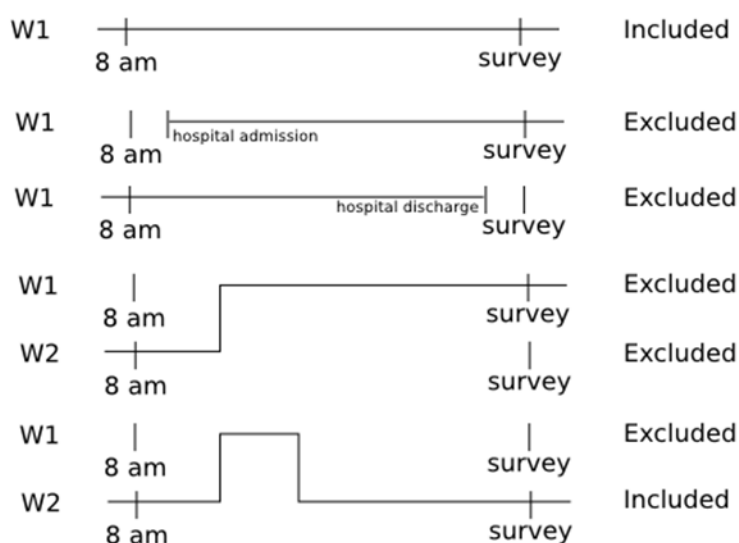
Exclude the following:

- day case patients

- patients undergoing same day treatment or surgery, with the expectation of being discharged before 9pm
- patients seen at outpatient department
- patients in the emergency room
- dialysis patients (ambulatory care/day attenders)

Note: decision to include/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



Legend. W1: ward 1, W2: ward 2

Information governance

PHE 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](#). 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 1998. Approval also provides reassurance that the person(s) 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'.

PHE retains the original PIAG approval number and this is reviewed through **CAG** annually.

All data held within PHE 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.

Data collection

Data collection includes variables at the national, hospital, ward and patient level. The national level data collection is performed by PHE. The hospital level data collection is performed through the hospital registration survey, completed in May 2016. If these data need to be updated, this should be done via email to PPSEngland@phe.gov.uk.

Some ward level data needs to be collated in advance of the survey date. This includes ward level activity data of:

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

Denominator data are collected for each patient, hospital and ward. Numerator data are collected for each patient with an active HAI (related to acute-care hospital stay) and/or receiving an antimicrobial drug at the time of the survey.

When?

The remainder of the data should be collected in a single day for each ward/unit. The total time frame for data collection for all wards of a single hospital should not exceed two to three 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 will collect 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 and clinical personnel as well as the team in charge of the patients.

Training

PHE has run four training days to provide helpful information to nominated PPS leads from participating hospitals prior to the point prevalence survey. Training modules are also available to hospitals and links will be sent to all registered hospital co-ordinators via email.

PPS training days:

- Manchester: Friday 10 June 2016
- London: Monday 13 June 2016
- Bristol: Monday 20 June 2016
- Web-based training: Tuesday July 12 2016

Data processing

Data processing can occur in one of two ways:

- it can be collected on the forms provided and subsequently be entered onto the web-based data tool by the hospital staff after data verification
- alternatively, it can be entered directly onto the web-based tool by hospital staff while collecting the data. While this may be more time efficient, it may be more difficult to check any data errors at a later date

Overview of collected data

- national data; collected by PHE 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 healthcare-associated infection) and/or antimicrobial use data (to be collected for all patients receiving an antimicrobial agent) are collected on the same form

Hospital data

Hospital variables are collected in order 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 was collected as part of the registration survey.

Ward data

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

Denominator data

Denominator data are 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 have to 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/devices on or after day three before HAI; otherwise follows the HAI rule on interventions and procedures
- for neonates:
 - count all infections after their birth as HAI
 - register consultant/patient specialty as PEDBAB (healthy neonates) unless specifically under care of PEDNEO/ PEDGEN/ ICUNEO
- for obstetrics and gynaecology wards where mothers and babies stay together, register patient specialty for wards for mothers as GOOBS and babies as PEDBAB. Therefore, a ward with 14 mothers and 10 babies who were born before 8am = 24 patients on the ward: 14 GOOBS and 10 PEDBAB. If the babies are on Neonatal ICU then they should be counted as ICUNEO and not counted on the ward

Antimicrobial use data and HAI 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 HAI.

The use of antimicrobials will often lead to the detection of a HAI. Some patients may have a HAI that is not treated by an antimicrobial (eg viral infections, urinary tract infections), which makes it necessary to consult other sources (see HAI 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 HAI case definition list (see 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 HAIs (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 (ie in the 24 hours prior to 8am on the day of the survey). For all other antimicrobial use (eg treatment, medical prophylaxis), any given or planned (including intermittent treatments, eg alternate day) administration of antimicrobials should be registered at the time of the survey only.

The aim is to determine what the physicians think they are treating. In order to do so, we will look at all patient records and may request additional information from nurses, pharmacists or doctors. The appropriateness of prescriptions will not be discussed, no attempts will be made to change prescriptions, and staff should not feel supervised at any time.

Healthcare-associated infection data

An active HAI (associated to acute-care hospital stay) present on the day of the survey is defined as follows:

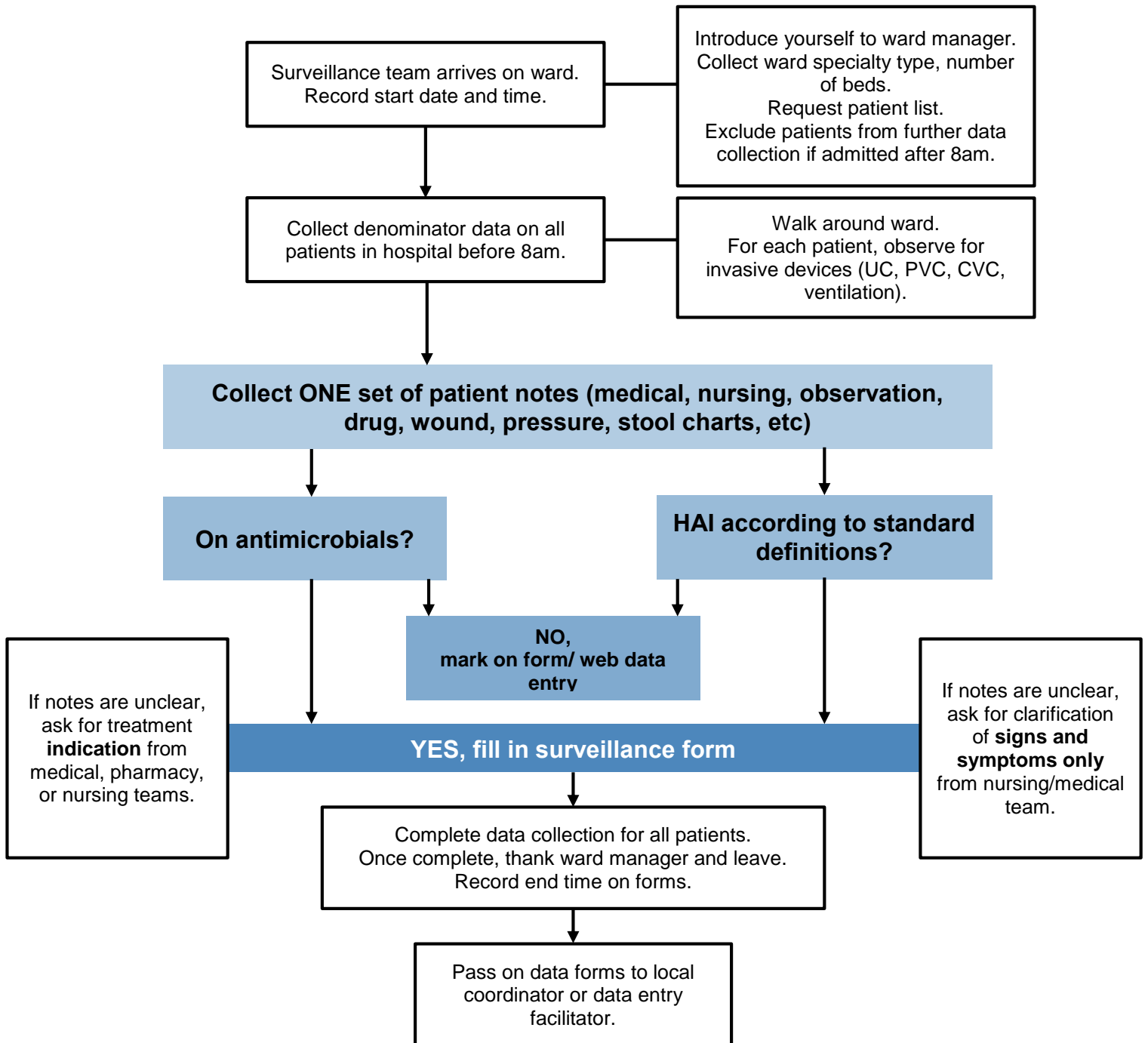
- signs and symptoms
 - an infection is active when signs and symptoms of the infection are present on the survey date
 - OR
 - signs and symptoms were present in the past and the patient is (still) receiving treatment for that infection on the survey date
 - the presence of signs and symptoms should be verified until the start of the treatment in order to determine whether the treated infection matches one of the case definitions of HAI
- onset
 - the onset of symptoms was on day three or later (day of admission = day one) of the current admission
 - OR
 - the patient presents with an infection but has been readmitted less than 48 hours after a previous admission to an acute-care hospital
 - OR
 - the patient has been admitted (or develops symptoms within two 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/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
- devices
 - an invasive device was placed on day one or day two, resulting in an HAI before day three
- admission
 - the patient has been admitted (or develops symptoms within two days) with *C. difficile* infection less than 28 days after a previous discharge from an acute-care hospital

Results of tests/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 HAI 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.

Device-associated HAI is an HAI in a patient with a (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, vascular (central/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 seven days before positive laboratory results or signs and symptoms meeting criteria for UTI were evident. See: Horan *et al.* Definitions of key terms used in the NNIS system. *Am J Infect Control* 1997; 25:112-6.

A bloodstream infection (BSI and secondary BSI) is always registered as a separate HAI with specification of the source in a separate field (peripheral, arterial or central catheter, other infection site – PUL, UTI, DIG, SSI, SST, 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 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.

Recommended case finding algorithm for healthcare-associated infections



Forms and definitions of data items

Ward form



Protecting and improving the nation's health

Point Prevalence Survey 2016: healthcare-associated infections and antimicrobial use
Ward data



Hospital code: _____ Ward name/unit ID¹: _____ Survey date²: ____/____/____

For 2015/2016 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* | | ___/___ |
| Alcohol hand rub (AHR) consumption | | ___/___ |
| Number of hand hygiene opportunities | | ___/___ |

* Provide data for same year as AHR consumption

Please provide for all eligible³ patients

| Consultant/patient specialty (see codebook) | Number |
|---|--------|
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| Data to be reported at time of survey | Number |
|---|--------|
| Number of eligible ³ patients on ward | |
| Number of beds | |
| Number of beds with AHR dispenser | |
| Number of healthcare workers (HCWs) | |
| Number of HCWs carrying AHR | |
| Number of rooms | |
| Number of single rooms | |
| Number of single rooms with individual toilet and shower | |
| Number of beds occupied at midnight the night before survey | |

Is there a formal procedure (external to primary clinical team or ward pharmacy team) to review the appropriateness of an antimicrobial within 72 hours from the initial order in this ward (post-prescription review)?

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 Patients admitted to the ward before or at 8:00 AM and not discharged from the ward at time of survey

Definition of ward data

Hospital code. Hospital identifier/code assigned by PHE

Ward name (abbreviated)/unit ID. Unique identifier for each hospital unit (abbreviated ward name); essential for linking between denominator and HAI/AU data. If hospitals decide to leave their ward names as 1 to 50 (or whatever is the highest number), 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 were collected in the ward. Data from a single ward should be collected on one day; date dd/mm/yyyy.

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 2015/16, 2014/15, 2013/14). This should be requested from the hospital analysts/information team and be available before ward data entry commences.

Alcohol hand rub¹ consumption in wards (litres/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 / 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 'corridor beds' and neonatal beds.

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 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 three elements come together: the patient, the HCW, and care or treatment involving contact with the patient or his/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 (eg 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.

¹ Alcohol-based (hand) rub. An alcohol-containing preparation (liquid, gel or foam) designed for application to the hands to inactivate microorganisms and/or temporarily suppress their growth. Such preparations may contain one or more types of alcohol, other active ingredients with excipients, and humectants.

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 (eg 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 four bays without any doors closing each bay would have one room. A ward with two bays with doors, two bays without doors, one single room without a toilet and one single room with individual toilet and shower, would have five 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 (eg for infection control purposes) should be included. This includes those with individual toilet and shower and those without individual toilet and shower.

Number of single rooms with individual toilet and shower. Total number of single-bed rooms with individual toilet and shower in the ward. Rooms which have toilet and shower in a communal area should not be counted. An individual toilet alone or a commode (toilet chair) is not sufficient to qualify for this indicator.

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/ Patient Specialty. Please see **codebook** for complete list.

Note: how to code paediatric patients? Please add a note to the 'Comments' section of the form - "this is a paediatric ward" – then code the patient specialty as per adult codes. Paediatric patients will be coded as per age under 16 years or 17 years within paediatric hospitals. For obstetrics and gynaecology wards where mothers and babies stay together, register patient specialty for wards for mothers as GOOBS and babies as PEDBAB.

Number of patients in ward by consultant/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/patient specialty.

Post-prescription review of antimicrobials in ward. Is there a formal procedure (external to the clinical team or ward pharmacy team) to review the appropriateness of an antimicrobial within 72 hours from the initial order in this ward (post-prescription review)? 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/observations. Free text field to report, for example, feasibility issues, data quality problems or specific epidemiological information for the current ward.

Patient form (grouped)



Point Prevalence Survey 2016: healthcare-associated infections and antimicrobial use Ward handover form



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To be completed for all eligible patients¹ at time of survey

Hospital code: _____ **Ward name/unit ID²:** _____ **Survey date:** ____/____/____

| Initials | NHS no. | Hosp. no. | DoB | Gender M/F/U/O | Adm. date | Specialty ³ If <3m or on NICU include birthwt too | Surgey ⁴ | McCabe score (Non/UH/ Rap/ Unk) | CVC Y/N/U | PVC Y/N/U | Urinary catheter Y/N/U | Intubated Y/N/U | Abx ⁵ Y/N | HAI ⁶ Y/N |
|----------|---------|-----------|-----|-------------------|--------------|--|---------------------|---|--------------|--------------|------------------------------|--------------------|-------------------------|-------------------------|
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Patient forms



Point Prevalence Survey 2016: healthcare-associated infections and antimicrobial use
Patient data, antimicrobial usage



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Hospital code: _____ Ward name/unit ID¹: _____ Survey date: ____/____/____

Collect for all eligible patients

NHS number: _____

Hospital number: _____

Date of birth: ____/____/____ Gender: _____

Admission date: ____/____/____

Consultant/patient specialty²: _____

Surgery since admission (most recent NHSN surgery)?

- No surgery Minimal invasive/non-NHSN surgery
- Unknown NHSN surgery → specify² _____

McCabe score

- Non-fatal disease Ultimately fatal disease
- Rapidly fatal disease Unknown

If neonate, birthweight _____ grams (less than 3m/ NICU)

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

- Central venous catheter: Yes No Unknown
- Peripheral venous catheter: Yes No Unknown
- Urinary catheter: Yes No Unknown
- Intubation: Yes No Unknown

How many antimicrobials is the patient receiving³? _____

If ≥ 1, complete antimicrobial usage data _____

How many active HAIs does the patient have⁴? _____

If ≥ 1, complete HAI data form [over page]

| Anti microbial (generic name) | Route | Dosage per day | | Indication | Infection site notes | Reason documented in notes | Date this AM started | AM changed? (+ reason) | If antibiotic changed: Date AM started for this indication (not site) | Antibiotic Review? (b/n 48-72h after start) |
|----------------------------------|-------|-------------------|-------------------------------|------------|-------------------------|-------------------------------|----------------------|---------------------------|--|--|
| | | Number of doses | Strength per dose (mg/ MU) | | | | | | | |
| | | | | | | | / / | | / / | |
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| | | | | | | | / / | | / / | |
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Route: P: parenteral, O: oral, R: rectal, I: inhalation; Dosage: Number of doses – OD, BD, TDS, QDS, 5 per day, 6 per day, every 18 hours, every 36 hours, every 48 hours, twice per week, three times per week, continuous infusion; Strength of dose in MU or mg (ie if in g convert to mg by x1000); Indication: treatment intention for community (C), long-term care (L) or acute hospital (H) infection; surgical prophylaxis: SP1: single dose, SP2: one day, SP3: >1 day; MP: medical prophylaxis; O: other; UI: Unknown indication; Infection site: see site list, only for CI-LI-HI; Reason in notes: Y/N; AM changed? (+ reason): N=no change; E=escalation; D=De-escalation; S=switch IV to oral; A=adverse effects; OU=changed, other/unknown reason; U=unknown; If changed, date 1* AM started given for the same indication; Antibiotic Review: C=Continue; I=IV to Oral Switch; CH=Change to another antimicrobial; O=OPAT; UNK=Unknown, not dedicated; NA=not applicable (i.e. treatment is less than 2 days)



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Point Prevalence Survey 2016: healthcare-associated infections and antimicrobial use

Antimicrobial usage data



Hospital code: _____ **Ward name/unit ID¹:** _____ **Survey date:** ____/____/____

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

| Anti microbial (generic name) | Route | Dosage per day | | Indication | Infection site | Reason documented in notes | Date this AM started | AM changed? (+ reason) | # antibiotic changed: Date AM started for this indication (not site) | Antibiotic Review? (b/h 48-72h after start) |
|----------------------------------|-------|-----------------|----------------------------|------------|----------------|----------------------------|----------------------|---------------------------|--|---|
| | | Number of doses | Strength per dose (mg/ MU) | | | | | | | |
| | | | | | | | / / | | / / | |
| | | | | | | | / / | | / / | |
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Point Prevalence Survey 2016: healthcare-associated infections and antimicrobial use HAI data



Protecting and improving
the nation's health

Hospital code: _____ Ward name/unit ID¹: _____ Survey date: ____/____/____

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

| | HAI 1 | | | | HAI 2 | | | | HAI 3 | | | |
|---------------------------------------|--|-----------------|-----|-----|--|-----------------|-----|-----|--|-----------------|-----|-----|
| Infection type | | | | | | | | | | | | |
| Invasive device² | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown | | | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown | | | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown | | | |
| Present on admission | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown | | | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown | | | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown | | | |
| Date of onset³ | / / | | | | / / | | | | / / | | | |
| Origin of infection | <input type="checkbox"/> Current hospital <input type="checkbox"/> Other hospital <input type="checkbox"/> Other/ unknown | | | | <input type="checkbox"/> Current hospital <input type="checkbox"/> Other hospital <input type="checkbox"/> Other/ unknown | | | | <input type="checkbox"/> Current hospital <input type="checkbox"/> Other hospital <input type="checkbox"/> Other/ unknown | | | |
| HAI associated to current ward | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown | | | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown | | | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown | | | |
| If BSI: source⁴ | | | | | | | | | | | | |
| | MO code | AMR | | PDR | MO code | AMR | | PDR | MO code | AMR | | PDR |
| | | AB ⁵ | SIR | | | AB ⁵ | SIR | | | AB ⁵ | SIR | |
| Microorganism 1 | | | | | | | | | | | | |
| Microorganism 2 | | | | | | | | | | | | |
| Microorganism 3 | | | | | | | | | | | | |

Definition of patient data

Hospital code. Hospital identifier/code assigned by PHE.

Ward name. Abbreviated name of hospital ward: essential for linking between denominator and HAI/AU data.

Survey date. Date on which data were 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 are provided. If ward data are not provided, it should be added on the patient form.

Initials. For local use only.

NHS number. 10-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.

Gender. Gender of the patient (at time of survey): M (male), F (female), O (other) or UNK.

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

Consultant/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. For healthy babies with mothers on obstetric and gynaecology ward, they should be coded as PEDBAB.

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/non-NHSN surgery (examples see annex); 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 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, eg if the patient has an active HAI, estimate the score the patient had before the infection. Answer categories: non-fatal disease (expected survival at least five years); ultimately fatal disease (expected survival between one and five 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.

Birth weight. Birth weight in grams, to be provided for infants less than three 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.

Central vascular catheter. Patient has central vascular catheter in place on survey date; yes/no/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/unknown.

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

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

How many antimicrobials is the patient receiving? Patient receives at least one systemic antimicrobial agent on the date of the survey (given or planned treatment, including intermittent treatments, eg 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 ≥ 1 antimicrobial, collect antimicrobial use data. Enter 0 if the patient is not receiving antimicrobials.

How many active HAIs does the patient have? Patient has an active healthcare-associated infection on survey date. If patient has ≥ 1 active HAI, collect HAI data. Enter 0 if patient does not have an active HAI.

Antimicrobial use section

Antimicrobial generic name. 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 codebook for included antimicrobial agents.

Route. Route of administration of the antimicrobial agent; **P**=parenteral; **O**=oral; **R**=rectal; **I**=inhalation.

Dosage per day. The main objective of this variable is to provide information to 1) enable comparisons of antimicrobial consumption between Europe and the US, and, 2) enable updating the defined daily doses (DDD) values by the WHO Collaboration Centre for Drug Statistics Methodology (Norwegian Institute of Public Health, www.whoocc.no).

Dose strength. (in milligrams or MU, see codebook) Report dosage as written in the patient records, eg for co-amoxiclav report 625mg, co-amoxiclav 1200mg, piperacillin-tazobactam 4500mg, cotrimoxazole 960mg.

Number of doses: the available options are OD (one per day), BD (two per day), TDS (three per day), QDS (four per day), 5 per day, 6 per day, every 18 hours, every 36 hours, every 48 hours, twice per week, three times per week, continuous infusion.

Indication for antimicrobial use. Patient receives systemic antimicrobials for:

treatment intention: **CI**: community-acquired infection; **LI**: infection acquired in long-term care facility (eg nursing home) or chronic-care hospital; **HI**: acute-hospital-acquired infection.

surgical prophylaxis: **SP1**: single dose; **SP2**: one day; **SP3**: > 1 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 (eg erythromycin use as a prokinetic agent). **UI.** Unknown indication/reason (verified during PPS). **UNK.** Unknown/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).

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=not applicable).

Reason in notes: yes/no. Yes, if the reason for antimicrobial use was documented in the patient chart/notes.

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

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.

N=no change, antimicrobial was not changed.

E=escalation: antimicrobial was escalated (or other antimicrobial was added) on microbiological and/or clinical grounds, ie 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.

D=De-escalation: antimicrobial was de-escalated on microbiological and/or clinical grounds, ie 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).

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, eg IV co-amoxiclav to oral co-amoxiclav or IV levofloxacin to oral ciprofloxacin or IV ceftriazone to oral cefixime.

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

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.

Date first antimicrobial started (if change): Start date of the first antimicrobial prescribed before the current antimicrobial for the same indication if the current antimicrobial replaced a previous one. Mark as NA (not applicable) if there was no change; mark as Unknown if there is no information available. If the antimicrobial was changed more than once for the current indication, report the start date of the first (not the previous) antimicrobial. If the patient received the antimicrobial on admission, record the date of admission. The main objectives of collecting this variable are 1) estimation of the burden of antimicrobial use in acute care hospitals (prevalence to incidence conversion), and, 2) proxy validation of the prevalence of HAIs.

Antibiotic Review? (b/n 48-72h after start of each antibiotic; not from the start of the indication) C=Continue; I=IV to Oral Switch; CH=Change to another antimicrobial; O=OPAT; UNK =Unknown, not dedicated; NA=not applicable (ie treatment with this antibiotic is less than two days)

Healthcare-associated infection data

Case definition code. HCAI case definition codes: see 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 HAI.

Relevant device in situ: yes/no/unknown. To be specified for PN, BSI, NEO-LCBI, NEO-CNSB and UTI only. Relevant invasive device was in situ (even intermittently) within 48 hours for PVC/ CVC (for BSI/ CRI/ CVS-VASC), Intubation (PN) and seven days for UC and UTI before onset of the infection.

Infection present at admission: yes/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/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 two of the current hospitalisation (= HAI 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/nursing-home-associated infections, since only HAI associated with acute care hospital stays are recorded in the ECDC PPS.

HAI associated to current ward. An HAI is associated with the current ward if the infection started on day three 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 HAI 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/space SSI after implant surgery), less than 28 days after discharge for *C. difficile* infections, less than 48 hours (two calendar days) after discharge for other HAIs.

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**), or BSI of (confirmed) unknown origin (**UO**); missing data, no information available=UNK; Secondary BSI reported as separate HAI, 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), I (intermediate), R (resistant) or U (unknown) for the antimicrobial group (preferred) or for tested antimicrobials within the group. When group susceptibility is reported and several antibiotics within the group were tested (e.g. carbapenems (CAR)), report the least susceptible result for the group (e.g. meropenem R + imipenem I = CAR R; Ertapenem is not coded.). When AMR markers are collected according to the PPS I protocol methodology (susceptible vs non-susceptible), report S (susceptible), IR (non-susceptible) or U (unknown), except for MRSA, report non-susceptibility to oxacillin (or equivalent) as R (resistant).

Staphylococcus aureus: OXA, GLY

- MRSA: Susceptibility to oxacillin (OXA) or other marker of methicillin-resistant *S. aureus* (MRSA), such as ceftazidime (FOX), cloxacillin (CLO), dicloxacillin (DIC), flucloxacillin (FLC), methicillin (MET)
- VISA, VRSA: Susceptibility to glycopeptides (GLY): vancomycin (VAN) or teicoplanin (TEC), report the most resistant isolate

Enterococcus spp.: GLY

- VRE: Susceptibility to glycopeptides (GLY): vancomycin (VAN) or teicoplanin (TEC)

Enterobacteriaceae (*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. No PDR =N (susceptible to at least one antimicrobial), Possible PDR = P (I/R to all antimicrobials tested in hospital), Confirmed PDR = C (I/R to all antimicrobials confirmed by reference laboratory), U=Unknown. Source Clin Microbiol Infect. 2012 Mar;18(3):268-81.



Abbreviations (also see codebook)

| | |
|----------|--|
| A&E: | Accident and emergency |
| AM: | Antimicrobial / 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 |
| HAI: | 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 |