TECHNICAL DOCUMENT

Protocol for point prevalence surveys of healthcare-associated infections and antimicrobial use in European long-term care facilities

Version 2.1

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This protocol was commissioned by the European Centre for Disease Prevention and Control (ECDC), coordinated by Pete Kinross and Carl Suetens.

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Eratum: 1 February 2017 – the case definition for superficial incisional surgical site infections (SSSI-C and SSSI-I) has been corrected in Annex 4, by aligning its final sub-bullet point to the appropriate hierarchical level.

Erratum: 14 June 2016 - Figure 4 (page 13) was amended to make it consistent with Annex 1.

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Abbreviations

AMR	Antimicrobial resistance
EEA	European Economic Area
ESAC-NH	European Surveillance of Antimicrobial Consumption in Nursing Homes
EU	European Union
GP	General practitioner
HAI	Healthcare-associated infection
HALT project	Healthcare-associated infections in long-term care facilities project, May–September 2010
HALT-2 project	Healthcare-associated infections and antimicrobial use in long-term care facilities project, April–May 2013
HALT-3 project	Healthcare-associated infections and antimicrobial use in long-term care facilities project, 2016–2017
IPC	Infection prevention and control
IPSE	Improving Patient Safety in Europe project
LTCF	Long-term care facility
NSC	National survey coordinator
PPS	Point prevalence survey
RTI	Respiratory tract infection
SSI	Surgical site infection
UTI	Urinary tract infection

1. Introduction

In 2008, the coordination of surveillance of healthcare-associated infections (HAIs) in Europe was transferred to the European Centre for Disease Prevention and Control (ECDC), which created the Healthcare-Associated Infections Surveillance Network (HAI-Net). A feasibility study of surveillance of HAIs in European nursing homes had already been performed under the Improving Patient Safety in Europe (IPSE) project financed by the European Commission [1].

In December 2008, ECDC initiated surveillance of HAIs and antimicrobial use in European long-term care facilities (LTCFs) under the Healthcare-Associated Infections in Long-Term Care Facilities (HALT) project. The HALT project integrated variables from the European Surveillance of Antimicrobial Consumption in Nursing Homes (ESAC-NH) subproject into a protocol for repeated point prevalence surveys (PPSs) in LTCFs, thus providing an integrated methodology for continued assessment of the prevalence of HAIs, antimicrobial use, and infection prevention and control (IPC) resources in European LTCFs.

From May to September 2010, a first PPS in European LTCFs (HALT project, 2010) collected data from 722 LTCFs across 25 European countries [2]. It showed a prevalence of residents with at least one HAI in participating LTCFs of 2.4%. The crude prevalence of residents receiving at least one antimicrobial agent was 4.3%.

From April to May 2013, a second PPS in European LTCFs (HALT-2 project, 2013) collected data from 1 181 LTCFs in 17 European countries [3]. The HALT-2 project showed prevalence of residents with at least one HAI of 3.4% and a prevalence of residents with at least one antimicrobial agent of 4.4%. The HALT-2 project also included a validation survey.

In May 2015, ECDC launched the third project to support PPSs of HAIs and antimicrobial use in LTCFs (HALT-3 (2016-2017)). The reports, protocols and survey tools from the HALT and HALT-2 projects were adapted and discussed by the HALT-3 management and advisory committees. On 1–2 December 2015, the draft protocol and materials were presented to nominated representatives from EU/EEA Member States at a train-the-trainer workshop, thus enabling these representatives to train other trainers and local survey staff.

This protocol provides national survey coordinators (NSCs) and local data collectors in the HALT-3 project with the methodology, data collection forms and definitions of variables to collect from LTCFs from April–June 2016, September-November 2016, April–June 2017 and/or September–November 2017.

Answers to frequently asked questions (FAQs) from NSCs and local data collectors will be published on the ECDC HAI-Net extranet throughout the HALT-3 project.

A separate validation protocol provides the methodology, data collection forms and definitions of variables for a validation survey in at least one LTCF per EU/EEA Member State, performed by a national validation team on the same day as a primary survey, to estimate the sensitivity and specificity of data collection in that LTCF [4]. These are used to adjust the estimates of the burden of HAIs in European LTCFs.

If an invitation is received by ECDC from a participating EU/EEA Member State, the Project Management Team will arrange a two-day onsite assessment visit together with the corresponding national team. The objectives of the visit are to support the completion of a questionnaire on national data and to accompany the national team during a validation survey [5]. The questionnaire relates to national performance indicators of IPC, the effect of repeated PPSs in LTCFs at national and local level, and the collection of national denominator data. The Project Management Team accompany the national team on a validation survey, to aid completion of the national questionnaire and to qualitatively assess the comparability of the national validation surveys.

The outputs from the PPS of HAIs and antimicrobial use in European LTCFs include a European report as well as feedback reports for each participating LTCF, comparing their data to national and European results; both are distributed to national teams for onward distribution.

2. Objectives

The general objectives of ECDC surveillance of HAIs and antimicrobial use in European LTCFs are:

- to provide EU/EEA Member States and LTCFs with a standardised tool to follow trends in HAIs and antimicrobial use
- to identify priorities for national and local intervention measures and evaluate their implementation in EU/EEA Member States and LTCFs
- to estimate and monitor the burden of HAIs and antimicrobial use in LTCFs at national and European level.

The overall aim of the protocol is to support the implementation of a PPS of HAIs and antimicrobial use in LTCFs, in support of the abovementioned objectives for European surveillance. The specific objectives of the PPSs in European LTCFs are:

- to estimate the prevalence of HAIs and antimicrobial use in European LTCFs
- to measure structure and process indicators of IPC in these LTCFs.

The obtained data are considered useful:

- to quantify the prevalence of HAIs and antimicrobial use in LTCFs, EU/EEA Member States and in the EU/EEA region
- to identify needs for intervention, training and/or additional IPC resources
- to identify priorities for national and local intervention and raise awareness
- to foster the safety of healthcare for residents in LTCFs and the ageing European population in general.

3. Survey design

3.1 Time schedule for the repeated PPSs

Ideally, data should be collected from each LTCF on one single day. In LTCFs with a large number of beds, data collection can be spread over two or more consecutive days. However, all beds in one ward should be surveyed on the same day.

Member States can organise the PPS in LTCFs in their country during one or more of four surveillance periods. If data are collected from a LTCF in more than one of these periods, only data from their first participation should be included in the data sent to ECDC. The four surveillance periods are:

- April–June 2016,
- September–November 2016,
- April–June 2017,
- September–November 2017.

Since data collection for the second ECDC PPS in European acute care hospitals will also take place during these four periods, Member States will have the option to perform both PPSs during the same period, or not. ECDC does not plan to analyse these acute hospital and LTCF data in the same report.

3.2 Survey population

3.2.1 Countries

All EU/EEA Member States are invited to participate through ECDC's surveillance of healthcare-associated infections network (HAI-Net).

3.2.2 National survey coordinators

In each country, one or more national survey coordinators (NSCs) are responsible for the invitation of LTCFs, training activities for data collectors and the organisation of the PPS in participating LTCFs (see section 8: role of the national survey coordinator). Ideally the NSCs should be a nominated ECDC Operational Contact Points (OCP) for Healthcare-Associated Infections in Long-Term Care Facilities (HAI-HALT), either for epidemiology or for the European Surveillance System (TESSy) interactions; or the National Focal Points for Healthcare-Associated infections or their alternates, as ECDC is only authorised by coordinating competent bodies[1] in EU/EEA Member States to contact such designated persons[2].

3.2.3 Eligibility criteria for LTCFs

The term 'long-term care services' refers to the organisation and delivery of a broad range of services and assistance to people who are limited in their ability to function independently on a daily basis, i.e. to autonomously perform the basic activities of daily living, over an extended period of time. Additionally, there is often a need for basic medical services (wound dressing, pain management, medication, health monitoring, prevention, rehabilitation or palliative care). Long-term care comprises a mix of both health and social components, therefore pertaining to both health and social sectors.

LTCFs typically have residents who:

- need constant supervision (24 hours a day)
- need 'high-skilled nursing care', i.e. more than 'basic' nursing care and assistance for daily living activities
- are medically stable and do not need constant 'specialised medical care' (i.e. care administered by specialised physicians)
- do not need invasive medical procedures (e.g. ventilation).

[1] ECDC Competent Bodies http://ecdc.europa.eu/en/aboutus/Competent%20bodies/Pages/Competent_bodies.aspx

[2] ECDC Coordinating Competent Bodies: structures, interactions and terms of reference http://ecdc.europa.eu/en/aboutus/Competent%20bodies/Documents/coordinating-competent-bodies-structures-terms-of-reference-and-interactions-w-Annexes.pdf

LTCF types include:

General nursing homes	In these facilities, residents need medical or skilled nursing and supervision 24h a day. These facilities provide principally care to seniors with severe illnesses or injuries.
Residential homes	In these facilities residents are unable to live independently. They require supervision and assistance for the activities of daily living (ADL). These facilities usually include personal care, housekeeping and three meals a day
Specialised LTCFs	These facilities are specialised in one specific type of care for e.g. physical impairment, chronic diseases such as multiple sclerosis, dementia, psychiatric illnesses, rehabilitation care, palliative care, intensive care
Mixed LTCFs	These facilities provide different types of care in the same facility (a mix of the above mentioned LTCF types).
Other LTCFs	Other facilities, not classifiable among the above mentioned LTCF types.

Remark: This classification does not imply that the characteristics of residents within each facility type are strictly homogeneous.

All types of LTCFs are eligible to participate in the PPS. Afterwards, each participating LTCF will receive individual feedback of their results. To increase the comparability of national data, data from the most similar LTCF types will be aggregated in the main European report for most analyses, if there are sufficient numbers of LTCFs within a type (see 3.3 Recruiting LTCFs to the PPS). In HALT-3, the main results from the LTCF types that are not included in aggregate analyses will be summarised in a separate chapter. In previous surveys, these were mostly 'specialised LTCFs'.

The following facilities should be excluded: hospital long-term care wards, hostel care (hotel without any kind of nursing care), sheltered care houses, day centres, home-based centres, protected living.

3.2.4 Eligible residents

Residents are eligible, and should therefore be included in the survey, if they are:

- living full-time (24 hours a day) in the LTCF
  AND
- present at 8:00 AM on the day of the PPS
  AND
- not discharged from the LTCF at the time of the survey.

Note: Do include residents who meet these criteria and are recorded on the resident administration system if they were temporarily outside the LTCF (e.g. for diagnostic investigations or medical procedures; with family/friends; etc.).

The following residents should be excluded:

- residents not living full-time in the LTCF (e.g. residents from day care centres)
  OR
- residents living full-time in the LTCF but not present at 8:00 AM (e.g. absent for leave or admitted to a hospital)
  OR
- residents hospitalised on the day of the PPS (i.e. inpatient in a hospital with a stay of at least one night)
  OR
- residents who choose not to participate.

Note: Residents receiving chronic ambulatory care on a regular basis in an acute care hospital (e.g. haemodialysis or chemotherapy) should not be excluded from the PPS if they are not hospitalised on the day of the PPS (i.e. hospital stay of at least one night).

3.3 Recruiting LTCFs to the PPS

Data from the most similar LTCF types will be aggregated in the main European report, to promote comparability of national results. In the HALT and HALT-2 projects, the main European PPS reports aggregated data from nursing homes, residential homes and mixed facilities, as these types represented 96% and 89% of the LTCFs that participated in these surveys, respectively. The HALT-3 report will contain one chapter presenting the main results from LTCF types that were not included in the aggregated analyses (e.g. specialised LTCFs). National survey coordinators will receive reports for each participating LTCF, irrespective of their LTCF type.

The PPS data should ideally be acquired from LTCFs that are representative for all LTCFs in the country. The preferred method to acquire a nationally representative sample of LCTFs is systematic random sampling using a national register of LTCFs. There are several published methods to achieve this. One suitable method is described in Section 3.3.2.

Each country may choose to collect data from LTCFs in any or all four of the surveillance periods (i.e. April–June 2016, September–November 2016, April–June 2017 and/or September–November 2017). If an individual LTCF performs the survey more than once in these surveillance periods, it is essential that data from only one of their surveys are included in the database sent to ECDC.

Given the voluntary nature of the PPS, it may not be possible for Member States to recruit LTCFs nationally even though this is preferable. In that scenario, recruitment may be limited to LTCFs from one or more sub-national regions (i.e. regional data).

3.3.1 The number of LTCFs to recruit to the PPS

The recommended minimum number of LTCFs to the PPS recruit in each country is provided in Table 2. Preferably these should be recruited from a systematic random sample of a national register (see section 3.3.2).

The estimation of the sample size residents per country assumed that LTCFs in the current PPS share attributes with those that participated in HALT and HALT-2 projects and the EU register of LTCFs collected for those projects.

The sample size was calculated for each EU/EEA Member State, anticipating a national crude prevalence of four residents with at least one HAI per 100 LTCF beds, with a 95% confidence interval of 3–5% (1% precision), using the OpenEpi[3] website sample size calculator for frequency in a population (http://www.openepi.com/SampleSize/SSPropor.htm; Table 2).

The design effect[4] (DEFF), due to clustering of residents in LTCFs intrinsic to the survey design, was estimated from a dataset containing all LTCFs that participated in the HALT and/or HALT-2 projects, using the Stata 12 software package (survey prefix command 'syv'). DEFF was estimated for the entire dataset (DEFF = 3.9) and for each quintile of LTCF size (see Table 2). The estimation of the number of LTCFs to recruit per country was the number of residents specified by the sample size calculation divided by the mean number of eligible residents per LTCF in each country reported in the register.

If any of these data were unavailable in the register, the denominator size was imputed from the median number of eligible residents per population age 65 years and over (40.3 per 1 000), the number of recommended LTCFs was imputed from the median number of LTCFs per population age 65 years and over (68.7 per 100 000), the DEFF was assumed to be the overall DEFF for the previous two surveys (3.9) and the number of LTCFs to recruit to acquire data on the recommended number of residents was estimated from the median LTCF size in the HALT and HALT-2 projects i.e. 85.1 residents/LTCF.

The national sample representativeness will be categorised in four levels (optimal, good, poor and very poor; Table 1) depending on compliance with the recommended sampling methodology. The evaluation will include all LTCFs for which all eligible residents were included.

Table 1. Criteria to categorise the national representativeness of the LTCF sample for the PPS.

Optimal	• Systematic random sample of at least 25 LTCFs or at least 75% of the number of LTCFs specified in Table 2. • Inclusion of at least 75% of all LTCFs or occupied LTCF beds in the country and recommended sample size (Table 2) achieved
Good	• Selection of at least 25 LTCFs or at least 75% of the number of LTCFs and/or residents specified in Table 2 using another methodology (e.g. voluntary participation); • Recommended sample size not achieved, but inclusion of ≥75% of all LTCFs or occupied LTCF beds in the country.
Poor	• Between 5 and 25 LTCFs included in countries with more than 25 LTCFs and recommended sample size not achieved; • Less than 5 LTCFs included in countries with more than 5 LTCFs but inclusion of 50–75% of all LTCFs or occupied LTCF beds in the country.
Very poor	• Inclusion of less than 5 LTCFs and less than 50% of all LTCFs and less than 50% of all occupied LTCF beds.

3 Dean AG, Sullivan KM, Soe MM. OpenEpi: Open Source Epidemiologic Statistics for Public Health, Version. www.OpenEpi.com, updated 2015/05/04, accessed 2015/11/16.

[4] The design effect (DEFF) of a statistic is the ratio of actual variance for a given sample design over the variance if the residents were selected randomly (i.e. from all LTCFs or from a much larger sample). The DEFF is proportionate to the size of the clusters (i.e. LTCF size) and to the frequency (i.e. prevalence) of the outcome under study (higher for antimicrobial use than for HAIs). Sample size increases proportionally to DEFF to ensure that prevalence can be estimated with same precision, despite the over-dispersion within clusters.

Table 2. Number of LTCFs and residents needed to estimate a HAI prevalence of 4% with 1% precision, by country

Country	Population >65yrs[a]	No. of LTCFs	No. of beds	Average LTCF size (beds)	Estimated DEFF[b]	Recommended sample size (beds)	No. of LTCFs to recruit
Austria	1 527 257	817	72 602	89	3.1	4 482	50
Belgium	1 959 654	1 540	136 272	88	3.1	4 524	51
Bulgaria	1 395 471	33	486	15	2.3	486[e]	33
Croatia	773 141	361	34 540	96	3.1	4 386	46
Cyprus	114 442	92	2 659	29	2.3	2 183	76
Czech Republic	1 767 618	73	17 204	236	5.5	7 473	32
Denmark	999 801	2 600	90 181	35	2.4	3 484	100
Estonia	238 053	203	8 449	42	2.4	3 015	72
Finland	1 018 193	448	19 016	42	2.4	3 286	77
France	11 511 520	7 833	589 960	75	3.1	4 562	61
Germany	17 002 915	12 354	875 549	71	2.4	3 535	50
Greece	2 206 710	ND	ND	ND	3.9	5 662[d]	*67*[c]
Hungary	1 701 675	1 177	57 929	49	2.4	3 453	70
Iceland	41 677	ND	ND	ND	3.9	3 104[de]	*36*[c]
Ireland	562 405	570	34 851	61	2.4	3 397	56
Italy	12 639 829	ND	285 007	ND	3.9	5 724	*67*[c]
Latvia	379 784	82	5 798	71	2.4	2 823	40
Lithuania	542 198	103	5 484	53	2.4	2 791	52
Luxembourg	75 057	60	5 971	100	3.1	3 668	37
Malta	72 278	45	4 622	103	3.1	3 468	34
The Netherlands	2 824 345	1 700	165 000	97	3.1	4 533	47
Norway	790 614	991	41 415	42	2.4	3 419	82
Poland	5 476 620	1 906	123 546	65	2.4	3 499	54
Portugal	2 032 606	178	4 075	23	2.4	2 600	114
Romania	3 258 198	ND	ND	ND	3.9	5 691[d]	*67*[c]
Slovakia	710 222	488	29 052	60	2.4	3 370	57
Slovenia	352 145	90	20 777	231	3.1	4 270	18
Spain	8 262 078	5 490	331 200	60	2.4	3 525	58
Sweden	1 828 283	2 766	101 000	37	2.4	3 490	96
UK – England	9 305 300	17 473	468 658	27	2.3	3 383	126
UK – Northern Ireland	279 100	249	11 708	47	2.4	3 145	67
UK – Scotland	946 800	892	38 164	43	2.4	3 409	80
UK – Wales	600 600	680	22 985	34	2.4	3 327	98
Total	93 196 589	63 224	3 604 224	69	3.9	123 025	2 232

LTCF: Nursing Homes, Residential Homes and Mixed Facilities (only); ND: no data; [a] Source: Eurostat except for UK (UK Office for National Statistics, mid-2013 estimates release MYE7ST2). [b] Design Effect (DEFF) by quintiles of LTCF size (<30 beds: 2.3; 30 to <50 beds: 2.4; 50 to <75 beds: 2.4; 75 to <110 beds: 3.1; >=110 beds: 5.5; Overall: 3.9). [c] Estimated from the median number of eligible residents per LTCF in HALT (2010) and HALT-2 (2013), i.e. 85.1/LTCF. [d] Data for Greece, Iceland and Romania were estimated from data for countries that provided data to HALT (2010) and/or HALT-2 (2013) and those projects' EU register of LTCFs and LTCF beds. [e] All LTCF residents should be recruited to confirm the anticipated prevalence.

3.3.2 Obtaining a systematic random sample of LTCFs from a national register

The probability sampling method described in this section, i.e. sorting a comprehensive national list of LTCFs according to a given attribute (e.g. the number of beds) before selection, ensures that the selected sample represents the national register in terms of that attribute, particularly if the next LTCF in the list is contacted to 'replace' those that decline participation. It is recommendable to sort registers according to more than one attribute, if possible, e.g. LTCF type and size.

1. Obtain a list of all eligible LTCF types (i.e. nursing homes, residential homes and/or mixed facilities) nationally that includes the number of LTCF beds.
2. Rank the list in ascending order of the number of beds from 1 to N.
3. Consult Table 2 to obtain the minimum number of LTCFs that should be recruited to the survey (n).

4. Divide the total number of LTCFs (N) by the number to be sampled (n) to acquire the sampling interval (k), i.e. N/n=k.
5. Choose a random number between 1 and k = i.
6. Select LTCF i, i+k, i+2k, …, i+nk.
7. Invite these selected LTCFs to participate in the PPS.
8. If a LTCF declines the invitation to participate in the PPS, invite the next LTCF on the list, i.e. i+1, i+k+1, i+2k+1, …, i+nk+1. If that LTCF declines to participate, invite the next in the list, and so on.

3.3.3 Non-representative samples and reporting of results

Although representative sampling remains strongly recommended, a comprehensive register of LTCFs may not be available in some EU/EEA Member States. If no national or regional register is available, purposive sampling, such as convenience sampling may be used to recruit LTCFs. If possible, the recruited LTCFs include eligible LTCF types and sizes. Alternative methods to recruit LTCFs, that EU/EEA Member States may choose to follow, include 'convenience' sampling (selection of LTCFs by the PPS coordinating centre), voluntary participation after invitation of all LTCFs and mandatory participation. The LTCF sampling/recruitment method is recorded at the national/regional level and will be categorised in four levels (optimal, good, poor and very poor) during analysis according to the criteria specified in Table 1.

Moreover, some countries may want to perform the PPS in LTCFs from both a nationally representative sample and from voluntary participation, after invitation of all LTCFs. In this case, only data from a nationally representative sample will be included in the European report. However, if all data are submitted, ECDC will provide the national survey coordinators with feedback reports for all participating LTCFs by comparing their results to the total national results. A variable at LTCF level, entered by the national survey coordinator, records whether a LTCF belongs to the representative sample. This variable will aid selection of LTCFs for the European level report.

3.4 Data collectors

Depending on the available resources, data can be collected by local data collectors (e.g. designated physician, infection control doctor/nurse, head nurse, etc.) or local data collectors supported by an external data collector (i.e. person recruited by the national representative, e.g. doctor, infection control nurse).

Both local and external trained data collectors should visit the facility on the day of the PPS to review each resident with the nurse in charge, nurses' aide and healthcare workers of the LTCF, looking for recent symptoms suggestive of infection, examining charts, case notes and drug charts. Residents with suspected infection(s) and residents receiving antimicrobial agents should be further reviewed, and discussed with the attending physician if possible.

It is recommended that extra staff are involved during this period to take into account the extra workload that the PPS is foreseen to generate.

Training material was developed by the HALT-3 coordination group. Training of data collectors is strongly recommended (see section 6 Training).

4. Data collection

Data are collected using two questionnaires, an institutional questionnaire and a resident questionnaire. An **institutional questionnaire** (Annex 1) collects denominator data, structural and functional characteristics (e.g. public/private ownership, presence of qualified nurses, medical coordination) and information about antimicrobial policies and infection control resources in the LTCF. These data will be used for descriptive analyses of the participating LTCFs and their population and to make appropriate adjustments for the LTCF's case mix during comparative analysis at national/regional and European level.

A **ward list (Annex 2; optional, for internal use only)** is provided for data collectors to facilitate their collection of denominator data from the LTCF population on the day of the PPS, for subsequent entry onto the institutional questionnaire.

A **resident questionnaire** (Annex 3) is for each resident that receives at least one antimicrobial agents and/or presents with at least one active infection on the PPS day. The **case definitions of infections (Annex 4)** should be used to identify active HAIs in eligible residents. A **code list for microorganisms (Annex 5)** should be consulted when completing the resident questionnaire, to identify the appropriate codes for detected microorganisms and their antimicrobial resistance profiles.

4.1 Institutional questionnaire (see Annex 1)

The **institutional questionnaire (Annex 1)** collects data relating to each participating LTCF with questions grouped into six sections:

- A – General information,
- B – Denominator data,
- C – Medical care and coordination,
- D – Infection control practice,
- E – Antimicrobial policy and
- F – How was the survey performed in you facility?

It is recommended that the person completing this questionnaire is the person in charge of the facility. If this person cannot answer some of the questions or locate the relevant information, they should request assistance from persons who are able to answer those questions. This is especially relevant for questions relating to antimicrobial policy.

4.1.A – General information

Variable	Description/definition
Facility survey number	LTCF identifier; code allocated by the national coordinating centre.
Qualified nurses available 24 hours a day in the facility	Qualified nurses are available day and night, i.e. physically present and/or contactable by phone/beeper 24 hours a day.
Total number of FTE registered nurses	Total number of full-time equivalent registered (graduated, qualified) nurses working in the LTCF (not only on the day of the PPS). Provide the current situation if possible, or for the most recent available situation. A 'registered nurse' is a nurse who has graduated from a college's nursing program or from a school of nursing and has passed a national licensing exam to obtain a nursing license. Do include 'agency nurses', 'bank nurses', 'interim nurses' or other registered nurses who are not permanently employed for that position in the LTCF. No distinction should be made between the administrative, scientific and/or clinical work of a nurse. Do not include students.
Total number of FTE nursing assistants	Total number of full-time equivalent (FTE) nursing assistants working in the LTCF (not only on the day of the PPS). Provide the current situation if possible, or the most recent available situation. A 'nursing assistant' is also referred to as 'nurses' aide', 'healthcare assistant', 'nursing auxiliary', 'auxiliary nurse', 'patient care assistant' or similar terms. Also include nursing assistants who are not permanently employed for that position in the LTCF. Nursing assistants work under the supervision of nurses or physicians to address the most fundamental elements of a resident's care. In general, they feed, dress, bathe and groom patients, but they can also perform more medically-oriented but basic duties such as measuring and recording temperature, blood pressure, and other vital signs. No distinction should be made between the administrative, scientific and/or clinical work of a nursing assistant. Do not include other licensed health professionals such as dietitians, physiotherapists or speech or occupational therapists, logistic personnel, students of any kind or volunteers who provide basic patient care without pay.

Variable	Description/definition
Total number of resident rooms	Sum of all resident rooms including single rooms and multi-bedded rooms. Public areas, utility rooms, etc. should be excluded.
Total number of single occupancy rooms in the facility	Total number of rooms in the facility that are designated for single occupancy (e.g. rooms with one bed). A room shared by partners should not be considered as a single occupancy room.
Total number of single/private rooms in the facility with individual toilet and washing facilities	Number of single occupancy rooms with individual toilet and washing facilities (sink and/or shower). An individual toilet alone or a commode (toilet chair) is not sufficient to qualify as a 'single occupancy room with individual toilet and washing facilities'. Rooms which have toilet and washing facilities in a communal area should not be counted.

Figure 1. HALT-3 institutional questionnaire: Part A – general information

A – GENERAL INFORMATION

DATE OF THE SURVEY IN YOUR FACILITY └┘└┘ └┘└┘ 201└┘ (dd mm yyyy)

FACILITY STUDY NUMBER (*allotted by your national HALT-3 coordinator*) └┘└┘└┘└┘└┘└┘└┘└┘

OWNERSHIP OF THE FACILITY □ *Public* □ *For profit* □ *Not for profit*

QUALIFIED NURSING CARE AVAILABLE 24/24h IN THE FACILITY □ *Yes* □ *No*

IN THE FACILITY:

Total number of FTE REGISTERED NURSES └┘└┘└┘└┘ FTE registered nurses
Total number of FTE NURSING ASSISTANTS └┘└┘└┘└┘ FTE nursing assistants
Total number of RESIDENT ROOMS └┘└┘└┘└┘ Rooms
Total number of SINGLE OCCUPANCY RESIDENT ROOMS └┘└┘└┘└┘ Single occupancy rooms
Total number of SINGLE OCCUPANCY RESIDENT ROOMS WITH INDIVIDUAL TOILET AND WASHING FACILITIES └┘└┘└┘└┘ Rooms with individual toilet and washing facilities

4.1.B – Denominator data

Variable	Description/definition
Beds in the facility	The total number of resident beds in the LTCF, both occupied and unoccupied beds. Beds shared by partners should be counted as two beds.
Occupied beds	Total number of beds occupied by residents on the day of the PPS. This figure also includes beds occupied by residents who are absent on the day of the PPS due to hospitalisation, on holiday or with family, etc. Beds shared by partners should be counted as two beds.
Eligible residents, present at 8:00 AM and not discharged at the time of the survey	Total number of residents present at 8:00 AM and not discharged at the time of the survey
Age older than 85	Total number of eligible residents older than 85 years on the day of the PPS.
Male resident	Total number of eligible male residents on the day of the PPS.
Residents receiving at least one antimicrobial agent	Total number of eligible residents receiving one or more systemic antimicrobial agents (see 4.3.2) on the day of the PPS.
Residents with at least one infection	Total number of eligible residents with one or more infections (see 4.3.3) on the day of the PPS
Residents with any urinary catheter	Total number of eligible residents with a urinary catheter, i.e. any tube system in place to drain and collect urine from the bladder, e.g. an indwelling urinary catheter, suprapubic or abdominal wall catheter or a cystostomy. External catheters that do not drain urine directly from the bladder (e.g. condom catheters) should not be included.
Residents with any vascular catheter	Total number of eligible residents with a tube system in place to access the vascular system (i.e. venous, arterial, arteriovenous fistulae) on the PPS day, e.g. a peripheral intravenous catheter, an implanted vascular access system, or any other intravascular access system.
Residents with pressure sores	Total number of eligible residents with a pressure sore on the day of the PPS. All grades of pressure sores should be included (e.g. the lowest grade, non-blanching erythema, characterised by discolouration of intact skin not affected by light finger pressure).
Residents with other wounds	Total number of eligible residents with a wound other than a pressure sore on the PPS day, including leg ulcers, traumatic or surgical wounds and insertion sites for percutaneous endoscopic gastrostomy (PEG), tracheostomy, urostomy, colostomy or suprapubic and peritoneal catheters.
Residents disoriented in time and/or space	Total number of eligible residents who suffer from periods of confusion especially relating to time, place or identification of persons (e.g. they cannot find their room, have no idea of time and/or are unable to recognise persons they know very well).
Residents using a wheelchair or that are bedridden	Total number of eligible residents who need a wheelchair or are bedridden on the PPS day.
Residents with surgery in the previous 30 days	Total number of eligible residents who had surgery in the 30 days preceding the PPS. Surgery is defined as a procedure where an incision is made (not just a needle puncture), with breach of mucosa and/or skin (incl. laparoscopic approaches). The procedure does not necessarily have to take place in operating theatres/room, but can also take place in interventional radiology rooms, cardiac catheterisation rooms, endoscopic rooms etc.
Residents with urinary and/or faecal incontinence	Total number of eligible residents with urinary and/or faecal incontinence (i.e. lack of control of the bladder or bowel sphincters resulting in an uncontrolled loss of urine or faeces) necessitating the use of diapers in the 24 hours prior to the PPS day (during the day and/or night). A resident with a urinary catheter should not be considered as incontinent for urine (this indicator is designed to measure work load of the LTCF staff).

Figure 2. HALT-3 institutional questionnaire: Part B – Denominator data

B – DENOMINATOR DATA

This table when completed will summarize the data collected in each ward (ward list) for the total population

IN YOUR FACILITY, ON THE DAY OF THE SURVEY, TOTAL NUMBER OF:

BEDS IN THE FACILITY *(both occupied and non-occupied beds)* ⌊_⌊_⌊_⌊_⌋

OCCUPIED BEDS ⌊_⌊_⌊_⌊_⌋

ELIGIBLE RESIDENTS:

PRESENT AT 8 AM AND NOT DISCHARGED AT THE TIME OF THE SURVEY ⌊_⌊_⌊_⌊_⌋
AGE OVER 85 YEARS ⌊_⌊_⌊_⌊_⌋
MALE RESIDENTS ⌊_⌊_⌊_⌊_⌋
RESIDENTS RECEIVING AT LEAST ONE ANTIMICROBIAL AGENT ⌊_⌊_⌊_⌊_⌋
RESIDENTS WITH AT LEAST ONE INFECTION ⌊_⌊_⌊_⌊_⌋
RESIDENTS WITH ANY URINARY CATHETER ⌊_⌊_⌊_⌊_⌋
RESIDENTS WITH ANY VASCULAR CATHETER ⌊_⌊_⌊_⌊_⌋
RESIDENTS WITH PRESSURE SORES ⌊_⌊_⌊_⌊_⌋
RESIDENTS WITH OTHER WOUNDS ⌊_⌊_⌊_⌊_⌋
RESIDENTS DISORIENTED IN TIME AND/OR SPACE ⌊_⌊_⌊_⌊_⌋
RESIDENTS USING A WHEELCHAIR OR BEDRIDDEN ⌊_⌊_⌊_⌊_⌋
RESIDENTS WITH SURGERY IN THE PREVIOUS 30 DAYS ⌊_⌊_⌊_⌊_⌋
RESIDENTS WITH URINARY AND/OR FAECAL INCONTINENCE ⌊_⌊_⌊_⌊_⌋

4.1.C – Medical care and coordination

Variable	Description/definition
Personal general practitioner (GP)	A medical doctor, chosen by the resident, who provided medical care outside of the hospital environment to the LTCF resident in the years before their LTCF residence.
GP group practice	GPs in one GP practice or a network of single GP practices that collaborate to attend to the everyday medical needs of individuals within a geographical area.
Medical staff employed by the facility	Medical doctors hired by the LTCF management to provide care to the residents. These physicians are not the residents' personal GPs (see above).
Coordinating physician	A medical doctor in charge of the coordination of medical activities and standardisation of practices/policies in the facility.

Figure 3. HALT-3 institutional questionnaire: Part C – medical care and coordination

C – MEDICAL CARE AND COORDINATION

1. Is medical resident care, including antimicrobial prescribing, in the facility provided by the:
   - □ Personal general practitioners (GP) or group practice(s) only
   - □ Medical staff, employed by the facility only
   - □ Both personal GPs/group practice(s) and medical doctor(s) employed by the facility

2. Are medical activities in the facility coordinated by a coordinating medical physician (CP)?
   - □ No, there is no internal or external coordination of the medical activity
   - □ Yes, there is a physician from inside the facility (internal) who coordinates the medical activities
   - □ Yes, there is a physician from outside the facility (external) who coordinates the medical activities
   - □ Yes, there is both a physician from inside and outside the facility (internal and external) who coordinates the medical activities

3. Can any of the following persons consult the medical/clinical records of all residents in the facility?
   - The physician(s) in charge of medical coordination in the facility? □ Yes □ No
   - The nursing staff □ Yes □ No

4.1.D – Infection control practice

Variable	Description/definition
Infection prevention and control policy	A coherent series of precautions and actions to avoid infections and transmission of pathogens within a population.
Person with training in infection prevention and control	'A registered nurse, physician, epidemiologist or medical technologist who helps to prevent healthcare-associated infections by isolating sources of infections and limiting their spread; systematically collects, analyses and interprets health data in order to plan, implement, evaluate and disseminate appropriate public health practices; and trains healthcare staff through instruction and dissemination of information on infection control practices.' (Source: Association for Professionals in Infection Control and Epidemiology) This person can work full-time on infection control and prevention activities or combine this with other duties such as general nursing duty, nursing supervision, quality assurance, etc.
Infection prevention and control (IPC) committee	A multidisciplinary committee consisting of at least the person with training in infection prevention and control (IPC) (IPC practitioner), the administrator, the coordinating physician (if present at the facility), the nursing supervisor(s) or by persons they designate. IPC committee members could also include quality assurance personnel, risk management personnel, representatives from microbiology, surgery, central sterilisation, pharmacy, environmental services, etc. The IPC committee functions may be merged with the performance improvement or patient safety programmes, but IPC must remain identifiable as a distinct programme. The IPC committee should meet regularly to review infection control data, review policies, and monitor programme goals and activities. Written records of meetings should be kept (Source: SHEA/APIC guidelines: Infection prevention and control in the LTCF, 2008).
Litres of hand alcohol	Total number of litres used during the course of the year preceding the PPS.
Hand hygiene training	Education of care professionals (i.e. nurses, nurse aides, doctors, physiotherapists, cleaning staff etc.), especially those new to the LTCF, on at least the importance of hand hygiene, the indications for hand hygiene, the technique and the products to use.
Hand hygiene opportunities	Number of hand hygiene opportunities or indications (moments) measured as part of hand hygiene campaigns or audits. Only the number of observed opportunities needs to be recorded, not how many of these opportunities were observed to be processed correctly (=compliance). According to the WHO, the four moments for hand hygiene in residential facilities should at least include (1) before touching a patient, (2) before a clean/aseptic procedure, (3) after a body fluid exposure risk and (4) after touching a patient. In specialized LTCFs, where residents are mainly cared for in dedicated space with dedicated equipment, moment 5 (i.e. after touching patient surroundings) also applies [6].

Figure 4. HALT-3 institutional questionnaire: Part D – infection control practice

D – INFECTION CONTROL PRACTICE

1. Are there persons with training in infection control/prevention available to the staff of the facility?
□ Yes □ No

2. If a person with training in infection control/prevention is available, is this person:
□ A nurse □ A doctor □ There is both a nurse and a doctor

Is this/are these person(s):
□ Working in the facility (internal)
□ Not working in the facility (external)
□ There is both an internal and an external person

3. In the facility, is/are there:
(Please complete this question even if there is no person with training in infection control/prevention available in the facility)
□ Infection prevention and control training of the nursing and paramedical staff
□ Appropriate training of general practitioners and medical staff in infection prevention and control
□ Development of care protocols
□ Registration of residents colonised/infected with multi-resistant microorganisms
□ Designation of a person responsible for reporting and management of outbreaks
□ Feedback on surveillance results to the nursing/medical staff of the facility
□ Supervision of disinfection and sterilisation of medical and care material
□ Decisions on isolation & additional precautions for residents colonised with resistant microorganisms
□ Offer of annual immunisation for flu to all residents
□ Organisation, control, feedback on hand hygiene in the facility on a regular basis
□ Organisation, control, feedback of a process surveillance/audit of infection policies and procedures (on regular basis)
□ None of the above

4. In the facility, is there an infection control committee (internal or external)? □ Yes □ No

5. How many infection control committee meetings were organized in the previous year?

Total number of meetings last year? └┴┴┴┘ meetings previous year

6. Can the facility ask for help and expertise from an external infection control (IC) team on a formal basis (e.g. IC team from a local hospital)? □ Yes □ No

7. In the facility, is a written protocol available for:
-the management of MRSA and/or other multidrug resistant microorganisms □ Yes □ No
-hand hygiene □ Yes □ No
-the management of urinary catheters □ Yes □ No
-the management of venous catheters/lines □ Yes □ No
-the management of enteral feeding □ Yes □ No

8. Is a surveillance programme of healthcare-associated infections in place in the facility? (annual summary report of number of urinary tract infections, respiratory tract infections, etc.) □ Yes □ No

9. In the facility, which of following products are available for hand hygiene?
Alcohol rub solution □ Yes □ No
Wipes (alcohol) □ Yes □ No
Liquid soap (antiseptic/ other) □ Yes □ No
Bar soap in clinical areas □ Yes □ No

10. Which hand hygiene method is most frequently used in your facility when hands are not soiled (only one answer is possible)?
□ Hand disinfection with an alcohol rub solution
□ Hand washing with water and a non antiseptic soap
□ Hand washing with water and an antiseptic soap

11. How many litres of alcohol rub solution for hand hygiene were used last year?
Total annual consumption in litres └┴┴┴┘ Litres last year

12. Last year, was a hand hygiene training session organized for care professionals of the facility?
□ Yes □ No

13. How many hand hygiene opportunities were there observed in your facility last year?
Number of observed opportunities └┴┴┴┴┴┘ Opportunities last year

4.1.E – Antimicrobial policy

Variable	Description/definition
Restrictive list of antimicrobials to be prescribed	A list with antimicrobial agents which are authorised for prescription, those which should not be used or should not be used for empiric therapy of any infection in the facility. The purpose of this is to preserve certain antimicrobial agents for certain culture-proven infections. In some cases exceptions are allowed with written motivation forms, explaining the reasons for the choice of that antimicrobial agent.
Antimicrobial committee	This committee is in charge of the development of local guidelines and protocols for antibiotic use in the LTCF. The team should comprise (at least) doctors prescribing antimicrobial agents to LTCF residents, a pharmacist, a co-ordinating physician (if present) and an infection prevention and control practitioner and (if possible) a microbiologist.
Written guidelines for appropriate antimicrobial use	Recommendations for empirical and targeted treatment of the most frequent infections, including dosage, administration route and duration of treatment. Commonly a first and second therapy choice is proposed.
Annual antimicrobial consumption	A report on the quantity of antimicrobial agents prescribed/received during the past year, classified by class.
Drug resistance profiles	Follow-up of the evolution of antimicrobial resistance patterns for different micro-organisms in order to orient the choice of antimicrobial agents for treatment. Data are obtained by surveillance of resistance profiles provided by microbiological protocols.
Therapeutic formulary	List of eligible antimicrobial agents by illness, intended as a manual for physicians to guide their prescriptions. The therapeutic formulary should include a specific chapter on antimicrobial therapy.
Urine dipstick test	Tests performed by dipping a paper or cardboard stick into urine to test it for the presence of white blood cells (leukocyte esterase) and/or nitrites. Results are indicated by colour changes on the stick. This test type should not be confused with 'dip slide' tests performed by laboratories to test for the presence of microorganisms in liquids by incubating 'dip slides'.

Figure 5. HALT-3 institutional questionnaire: Part E – antimicrobial policy

E – ANTIMICROBIAL POLICY

1. Does the facility use a 'restrictive list' of antimicrobials to be prescribed? *(prescription requiring permission of a designated person or not to be used)*
   □ Yes □ No

2. If a restrictive list exists, what kinds of antibiotics are restricted?
   □ Carbapenems
   □ 3rd generation cephalosporins
   □ Fluoroquinolones
   □ Vancomycin
   □ Mupirocin
   □ Glycopeptides
   □ Broad-spectrum antibiotics
   □ Intravenously administered antibiotics

3. Which of following elements are present in the facility?
   □ An antimicrobial committee
   □ Annual regular training on appropriate antimicrobial prescribing
   □ Written guidelines for appropriate antimicrobial use (good practice) in the facility
   □ Data available on annual antimicrobial consumption by antimicrobial class
   □ A system to remind healthcare workers of the importance of microbiological samples to inform the best antimicrobial choice
   □ Local (i.e. for that region/locality or national if small country) antimicrobial resistance profile summaries available in the LTCF or in the local General Practitioner surgeries
   □ A system that requires permission from a designated person(s) for prescribing of restricted antimicrobial, not included in local formulary
   □ Advice from a pharmacist for antimicrobials not included in the formulary
   □ A therapeutic formulary, comprising a list of antibiotics
   □ Feedback to the local General Practitioner on antimicrobial consumption in the facility
   □ None of the above

4. If written therapeutic guidelines are present in the facility, are they on:
   - Respiratory tract infections? □ Yes □ No
   - Urinary tract infections? □ Yes □ No
   - Wound and soft tissue infections? □ Yes □ No

5. Do you perform a urine dipstick test for detection of urinary tract infections in the facility?
   □ Routinely □ Sometimes □ Never

6. Is a programme for surveillance of antimicrobial consumption and feedback in place in the facility?
   □ Yes □ No

7. Is a programme for surveillance of resistant microorganisms in place in the facility? *(annual summary report for MRSA, Clostridium difficile, etc)*
   □ Yes □ No

8. How are antimicrobials supplied to your facility? (only **one answer** possible)
   □ Provided by more than one pharmacy
   □ Provided by one pharmacy only
   □ This facility does not acquire antimicrobials directly from pharmacies; antimicrobials are acquired by residents directly (e.g. supplied by the family)

9. How many microbiological laboratories do you work with? (only **one answer** possible)
   □ More than one microbiological laboratory
   □ One single microbiological laboratory
   □ This facility does not send microbiological samples to any laboratories; each visiting general practitioner can work with his microbiological laboratory of choice.

4.1.F – How was the survey performed in your facility?

Figure 6. HALT-3 institutional questionnaire: Part F – how was the survey performed in your facility?

F – HOW WAS THE SURVEY PERFORMED IN YOUR FACILITY?

1. Who collected the HALT-3 data (incl. institutional and resident questionnaires)?
   - □ A physician
   - □ A nurse
   - □ Another person

2. If no physician was involved in the HALT-3 data collection (institutional and resident questionnaires), did a physician validate the data?
   - □ Yes □ No

4.2 Ward list (see Annex 2)

The ward list is a form (Figure 7a; Annex 2) developed to aid data collectors in the collection of denominator data for the institutional questionnaire (Figure 2; Annex 1). Its use is optional and for internal use only (as this ward list may contain personal identifiers of individual residents, ECDC asks that you do not send this ward list to us. Instead, please keep this ward list safely in your LTCF until the end of the HALT-3 project).

Data collectors should collect information from each resident living full-time in the facility, present in the ward at 8:00am and not discharged at the time of the survey (Figure 7a). Once these data have been collected for all wards, data collectors can sum the denominators from each ward (Figure 7b) and transfer these totals to the institutional questionnaire (Figure 2; Annex 1). Facilities that do not have different wards should only complete one ward list.

Instructions:

- List all residents present on the day of the survey in columns 1 and 2.
- Add a code in column 3 that is unique for every resident in the facility. Numbers and/or letters can be used. This survey number should be entered on all forms for that same resident.
- If the resident meets the eligibility criteria (i.e. living full-time in the facility, present at 8am and not discharged at the time of the survey (see 3.2.4)), complete columns 5 to 15 by writing an 'X' if the risk factor or care load indicator is present on the day of the survey.
- Sum the Xs in each column.
- Write the totals of each column in the summary table at the end of the ward list
- Sum the totals of the summary tables in the different ward lists and report the totals in part B of the institutional questionnaire (Figure 2; Annex 1).
- If a resident on the ward list has an X in columns 7 and/or 8b (i.e. they were receiving at least one antimicrobial agent and/or had at least one infection on the day of the survey, complete a resident form for this resident (Annex 3)

Figure 7a. HALT-3 ward list – collection of resident-level data

COMPLETE THIS PART OF THE LIST FOR ALL RESIDENTS IN THE WARD				COMPLETE THIS PART FOR ALL ELIGIBLE RESIDENTS (residents from column 4) Write a X in the column if the condition is TRUE ON THE DAY OF THE SURVEY												
Room & bed number	Resident name	Study number of the resident	Present at 8 AM and not discharged at time of PPS	Age over 85 years	Male resident	Antimicrobial agent	Signs/symptoms of an infection	Infection matching a case definition	Urinary catheter	Vascular catheter	Pressure sore	Other wound	Disorientation in time and/or space	Wheelchair bound or bedridden	Surgery in the previous 30 days	Urinary and/or faecal incontinence
1	2	3	4	5	6	7	8a	8b	9	10	11a	11b	12	13	14	15

Figure 7b. HALT-3 ward list – calculation of denominators

Use this table to add the number of 'X' from each column from each ward list from the facility.

Transfer the total number into Part B of the institutional questionnaire, i.e. 'Denominator Data'

On the day of the PPS, TOTAL number of:	Column	TOTAL NUMBERS
Total number of beds on this ward (total bed capacity)	**1**	
Occupied beds in the ward	**2**	
Eligible residents, present at 8 AM and not discharged at time of PPS	**4**	
Age over 85 years	**5**	
Male residents	**6**	
Residents receiving at least one antimicrobial agent	**7**	
Residents with at least one infection	**8b**	
Residents with any urinary catheter	**9**	
Residents with any vascular catheter	**10**	
Residents with pressure sores	**11a**	
Residents with other wounds	**11b**	
Residents disorientated in time and/or space	**12**	
Residents using wheelchair or being bedridden	**13**	
Residents with surgery in the previous 30 days	**14**	
Residents with urinary and/or faecal incontinence	**15**	

4.3 Resident questionnaire (see Annex 3)

A resident questionnaire has to be completed for each resident:

- receiving at least one systemic antimicrobial agent on the day of the PPS (see 4.3.2), AND/OR
- presenting at least one active infection on the day of the PPS (see 4.3.3)

The form's questions are grouped into three sections: Resident data; 'Part A: Antimicrobial Use' and Part B: Healthcare-Associated Infections'.

4.3.1 Resident data

Variable	Description/definition
Resident survey number	Unique code assigned to the resident by the local data collectors
Gender	Gender of the resident: Male or Female
Birth year	Year the resident was born (YYYY)
Length of stay in the facility	The resident already has lived in the facility for EITHER less than one year OR one year or longer
Admission to a hospital in the last three months	Was the resident admitted to a hospital in the three months preceding the PPS survey date? Only admissions to hospitals – i.e. hospitals with at least one medical or surgical ward - for at least one night should be considered.
Surgery in the previous 30 days	Did the resident undergo surgery in the 30 days preceding the PPS? Surgery is defined as a procedure where an incision is made (not just a needle puncture), with breach of mucosa and/or skin (incl. laparoscopic approaches). The procedure does not necessarily have to take place in operating theatres/room, but can also take place in interventional radiology rooms, cardiac catheterisation rooms, endoscopic rooms etc.
Urinary catheter	Any tube system placed in the body to drain and collect urine from the bladder, e.g. an indwelling urinary catheter, suprapubic or abdominal wall catheter, a cystostomy. External catheters not draining urine directly from the bladder (e.g. condom catheters) should not be included.
Vascular catheter	Any tube system placed in the body to access the vascular (venous, arterial) system, (e.g. a peripheral intravenous catheter, an implanted vascular access system or any other intravascular access system (including arteriovenous fistulae).
Urinary and/or faecal incontinence	Lack of control of the sphincter from bladder or bowel resulting in an uncontrolled loss of urine or faeces and necessitating the use of diapers in the 24 hours prior to the PPS day (during the day and/or night). A resident with a urinary catheter should not be considered as incontinent for urine.
Pressure sores	All grades of pressure sores should be considered, even the lowest grade characterised by discolouration of intact skin not affected by light finger pressure (non-blanching erythema)

Variable	Description/definition
Other wounds	All wounds other than a pressure sore, including leg ulcers, traumatic or surgical wounds and insertion sites for percutaneous endoscopic gastrostomy, tracheostomy, urostomy, colostomy or suprapubic and peritoneal catheters.
Disoriented in time and/or space	Residents who suffer from periods of confusion especially as to time, place or identification of persons (e.g. cognitive impairment).
Mobility	In general, is the resident ambulant (he/she can walk alone with or without canes, crutches, walkers, etc), does he/she need a wheelchair for his/her movement or is he/she bedridden on the PPS day?

Figure 8. HALT-3 resident questionnaire: resident data

RESIDENT DATA

GENDER	☐ Male	☐ Female	
BIRTH YEAR	|__|__|__|__| (YYYY)		
LENGTH OF STAY IN THE FACILITY	☐ Less than one year	☐ One year or longer	
ADMISSION TO A HOSPITAL IN THE LAST 3 MONTHS	☐ Yes	☐ No	
SURGERY IN THE PREVIOUS 30 DAYS	☐ Yes	☐ No	
PRESENCE OF:			
URINARY CATHETER	☐ Yes	☐ No	
VASCULAR CATHETER	☐ Yes	☐ No	
INCONTINENCE (URINARY AND/OR FAECAL)	☐ Yes	☐ No	
WOUNDS			
- PRESSURE SORE	☐ Yes	☐ No	
- OTHER WOUNDS	☐ Yes	☐ No	
DISORIENTATION (IN TIME AND/OR SPACE)	☐ Yes	☐ No	
MOBILITY	☐ Ambulant	☐ Wheelchair	☐ Bedridden

4.3.2 Antimicrobial use data

The following antimicrobial agents should be included if their route of administration is oral, parenteral (intravenous), intramuscular, subcutaneous, inhalation or rectally:

- antibacterial (ATC level J01), antimycotics (J02) and antifungals (D01BA) for systemic use
- antibiotics used as intestinal antiinfectives (A07AA)
- antiprotozoals (P01AB)
- antimycobacterials (J04) when used for treatment of mycobacteria including tuberculosis or as reserve treatment for multidrug-resistant bacteria

The following antimicrobial agents should be excluded:

- Antiviral agents for systemic use; preparations of antimicrobial agents for topical use; antiseptic agents

Collect the following information for each antimicrobial agent the resident receives on the day of the survey:

Variable	Description/definition
Antimicrobial name	Generic or brand name of the antimicrobial. These names should be converted to ATC5 codes by the national survey coordinator.
Administration route	Route of administration of the antimicrobial agent; oral, parenteral (intravenous (IV), intramuscular (IM) or subcutaneous (SC)) or other (e.g. rectal, inhalation).
End date/review date of treatment know	The resident's medical or nursing records clearly state the final date when the antimicrobial agents should be given (end date) or when the antimicrobial agents treatment should be revised by the prescriber (review date).
Type of treatment	Indication for antimicrobial use.
Prophylactic	Antimicrobial agents prescribed to prevent an infection. The resident presented no signs/symptoms of an infection when the antimicrobial agent(s) was prescribed.
Therapeutic	Antimicrobial agents prescribed to treat an infection. The resident presented signs/symptoms of an infection when the treatment was prescribed. Both empirical treatments (i.e. initiation of treatment before the causative pathogen is known) and microbiologically-documented treatments (i.e. with known pathogen known) should be considered.
Antimicrobial given for	Diagnosis group by anatomical site.
Where prescribed	Place where the antimicrobial was prescribed: In this facility (LTCF), in the hospital or elsewhere.

Figure 9. HALT-3 resident questionnaire: Part A – Antimicrobial use

PART A: ANTIMICROBIAL USE				
	ANTIMICROBIAL 1	**ANTIMICROBIAL 2**	**ANTIMICROBIAL 3**	**ANTIMICROBIAL 4**
ANTIMICROBIAL NAME	....	....	....	....
ADMINISTRATION ROUTE *PARENTERAL = IM, IV OR SC*	☐ *Oral* ☐ *Parenteral* ☐ *Other*	☐ *Oral* ☐ *Parenteral* ☐ *Other*	☐ *Oral* ☐ *Parenteral* ☐ *Other*	☐ *Oral* ☐ *Parenteral* ☐ *Other*
END DATE / REVIEW DATE OF TREATMENT KNOWN?	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*
TYPE OF TREATMENT	☐ *Prophylactic* ☐ *Therapeutic*	☐ *Prophylactic* ☐ *Therapeutic*	☐ *Prophylactic* ☐ *Therapeutic*	☐ *Prophylactic* ☐ *Therapeutic*
ANTIMICROBIAL GIVEN FOR	☐ *Urinary tract* ☐ *Genital tract* ☐ *Skin or wound* ☐ *Respiratory tract* ☐ *Gastrointestinal* ☐ *Eye* ☐ *Ear, nose, mouth* ☐ *Surgical site* ☐ *Tuberculosis* ☐ *Systemic infection* ☐ *Unexplained fever* ☐ *Other (specify)*	☐ *Urinary tract* ☐ *Genital tract* ☐ *Skin or wound* ☐ *Respiratory tract* ☐ *Gastrointestinal* ☐ *Eye* ☐ *Ear, nose, mouth* ☐ *Surgical site* ☐ *Tuberculosis* ☐ *Systemic infection* ☐ *Unexplained fever* ☐ *Other (specify)*	☐ *Urinary tract* ☐ *Genital tract* ☐ *Skin or wound* ☐ *Respiratory tract* ☐ *Gastrointestinal* ☐ *Eye* ☐ *Ear, nose, mouth* ☐ *Surgical site* ☐ *Tuberculosis* ☐ *Systemic infection* ☐ *Unexplained fever* ☐ *Other (specify)*	☐ *Urinary tract* ☐ *Genital tract* ☐ *Skin or wound* ☐ *Respiratory tract* ☐ *Gastrointestinal* ☐ *Eye* ☐ *Ear, nose, mouth* ☐ *Surgical site* ☐ *Tuberculosis* ☐ *Systemic infection* ☐ *Unexplained fever* ☐ *Other (specify)* ....
WHERE PRESCRIBED?	☐ *In this facility* ☐ *In the hospital* ☐ *Elsewhere*	☐ *In this facility* ☐ *In the hospital* ☐ *Elsewhere*	☐ *In this facility* ☐ *In the hospital* ☐ *Elsewhere*	☐ *In this facility* ☐ *In the hospital* ☐ *Elsewhere*

4.3.3 Infection data

Recorded the following information for each infection identified using the decision algorithm (see 4.3.3.2 and Annex 4):

Variable	Description/definition
Infection code	See 4.3.3.1 and 4.3.3.2
If 'OTHER', please specify	If infection code='OTHER', please provide more information on the type of infection
Infection present at (re-) admission	Yes = signs/symptoms of the infection were present at admission or re-admission to the LTCF
Date of onset	Date of onset of the infection (dd/mm/yyyy). Not to be recorded if signs/symptoms are present at admission, but should be completed if onset during current stay in the LTCF. 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 the date of onset.
Origin of the infection	See 4.3.3.3 Infection is associated with either (1) current LTCF stay; (2) stay in another LTCF; (3) hospital stay or (4) unknown.

Figure 10. HALT-3 resident questionnaire: Part B – Healthcare-associated infections

PART B: HEALTHCARE-ASSOCIATED INFECTIONS					
		INFECTION 1	INFECTION 2	INFECTION 3	INFECTION 4
INFECTION CODE		⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋
IF 'OTHER', PLEASE SPECIFY		.....	.....	.....	.....
PRESENT AT (RE-)ADMISSION		☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*
DATE OF ONSET (DD/MM/YY)		⌊⌊/⌊⌊/⌊⌊	⌊⌊/⌊⌊/⌊⌊	⌊⌊/⌊⌊/⌊⌊	⌊⌊/⌊⌊/⌊⌊
ORIGIN OF INFECTION		☐ *Current LTCF* ☐ *Other LTCF* ☐ *Hospital* ☐ *Unknown*	☐ *Current LTCF* ☐ *Other LTCF* ☐ *Hospital* ☐ *Unknown*	☐ *Current LTCF* ☐ *Other LTCF* ☐ *Hospital* ☐ *Unknown*	☐ *Current LTCF* ☐ *Other LTCF* ☐ *Hospital* ☐ *Unknown*
A. NAME OF ISOLATED MICROORGANISM (PLEASE USE CODE LIST) B. TESTED ANTIMICROBIAL(S)[1] AND RESISTANCE[2] ONLY FOR STAAUR, ENC***, ACIBAU, PSEAER OR ENTEROBACTERIACEAE (CIT***, ENB***, ESCCOL, KLE***, MOGSPP, PRT***, SER***)	1. A	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋
	B	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋
	2. A	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋
	B	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋
	3. A	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋	⌊⌊⌊⌊⌊⌊⌋
	B	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋	⌊⌊⌊⌋ ⌊⌋ ⌊⌊⌊⌋ ⌊⌋

*[1]Tested antibiotic(s): STAAUR: oxacillin (OXA) or glycopeptides (GLY); ENC***: GLY only; Enterobacteriaceae: 3rd-gen cephalosporins (C3G) or carbapenems (CAR); PSEAER and ACIBAU: CAR only. [2] Resistance: S=sensitive, I=intermediate, R=resistant, U=unknown*

4.3.3.1 'Active healthcare-associated infections'

Data collectors must identify residents presenting signs and/or symptoms of an active infection on the day of the PPS. An active healthcare-associated infection (associated with a stay in a healthcare facility, e.g. LTCF or hospital) is defined as:

A**.** signs/symptoms of the infection:

- are present on the survey date AND are new or acutely worse [a]
  OR
- were present in the two weeks (14 days) prior to the PPS AND were new or acutely worse [a] AND the resident is (still) receiving treatment for that infection on the survey date [b]

AND

B. the onset of symptoms occurred:

- more than 48 hours (i.e. day 3 onwards) after the resident was (re-)admitted to the current LTCF
  OR
- less than 48 hours (i.e. present on admission, on day of admission, or on day 2) after the resident was (re-)admitted to the current LTCF from another healthcare facility (e.g. LTCF or hospital)
  - OR
  - deep and organ/space surgical site infections occurring less than 90 days after implant surgery
    OR
  - other surgical site infections occurring less than 30 days after an operation
    OR
  - *Clostridium difficile* infections occurring less than 28 days after discharge from a healthcare facility (e.g. LTCF or hospital).

Notes: a. Chronic symptoms, such as cough or urinary urgency, are commonly not associated with infection. Non-infectious causes should always be considered before a diagnosis of infection is made. A change in the resident's status is an important indication that an infection is in development.

b. If these signs/symptoms met a case definition for a HAI, that HAI should be recorded on the resident form. Data collectors should investigate the signs/symptoms in the preceding two weeks, e.g. from patient records or by consulting the resident's physician, if practicable.

4.3.3.2 Identifying the infection code using the decision algorithms (Annex 4)

Figure 11. HALT-3 infection decision algorithms (page 1 of 6)

Healthcare-associated infections and antimicrobial use in European long-term care facilities (HALT-3)

CASE DEFINITIONS OF INFECTIONS

IMPORTANT REMARK: All **active infections** present on the day of the survey should be reported. An infection is **active** when signs/symptoms of the infection are present on the survey date **OR** signs/symptoms were present in the past and the resident is (still) receiving treatment for that infection on the survey date. The presence of symptoms and signs in the two weeks (14 days) preceding the PPS day should be verified in order to determine whether the treated infection matches one of the case definitions. Infections can only be reported as 'imported' for residents recently transferred from another healthcare facility (i.e. hospital or other LTCF) and still treated for an infection on the PPS day in the absence of documentation on (all) signs/symptoms that were present in the past.

* Fever: 1) single > 37.8°C oral/tympanic membrane or 2) repeated > 37.2°C oral or > 37.5°C rectal or 3) > 1.1°Cover baseline from any site (oral, tympanic, axillary)

** Leucocytosis: 1) Neutrophilia > 14,000 leucocytes/mm3 or 2) left shift (>6% bands or ≥ 1500 bands/mm3)

§ Acute change in mental status from baseline: Acute onset + fluctuating course + inattention AND either disorganized thinking or altered level of consciousness

§§ Acute functional decline: New 3 point increase in total ADL score (Range 0-28) from baseline based on 7 ADL items (bed mobility, transfer, locomotion, dressing, toilet use, personal hygiene, eating) each scored from 0 (independent) - 4 (total dependence) OR increased dependency defined by scales other than ADL

URINARY TRACT INFECTIONS

❒ Resident without a urinary catheter

SIGNS/SYMPTOMS

*AT LEAST **ONE** OF THE FOLLOWING (①, ② or ③) CRITERIA*:

❒ ① Acute dysuria OR acute pain/swelling or tenderness of the testes, epididymis, or prostate

❒ ② Fever* OR leukocytosis**

AND

One or more of the following:

☐ Acute costovertebral angle pain
☐ Suprapubic pain/tenderness
☐ Gross hematuria
☐ New or marked increase in frequency
☐ New or marked increase in urgency
☐ New or marked increase in incontinence

❒ ③ Two or more (in the absence of fever or leucocytosis):

☐ Frequency (new/increased) ☐ Suprapubic pain
☐ Urgency (new/increased) ☐ Gross hematuria
☐ Incontinence (new/increased)

URINE CULTURE

❒ Not Done, negative or test results unknown
❒ Urine culture done AND:

☐ At least 10^5 cfu/ml of no more than 2 species of micro-organisms in a voided urine sample

OR

☐ At least 10^2 cfu/ml of any number of organisms in a specimen collected by in-and-out catheter

❒ Resident with a urinary catheter

SIGNS/SYMPTOMS

*AT LEAST **ONE** OF THE FOLLOWING (①, ②, ③ or ④) CRITERIA*:

❒ ① Fever*, rigors, OR new onset hypotension with NO alternate site of infection

❒ ② Acute change mental status **§** OR acute functional decline **§§** with NO alternate diagnosis AND leukocytosis**

❒ ③ New onset suprapubic or costovertebral angle pain or tenderness

❒ ④ Purulent discharge around catheter or acute pain, swelling or tenderness of testes, epididymis, or prostate

URINE CULTURE

❒ Not done, negative or test results unknown
❒ Urine culture done AND:

☐ At least 10^5 cfu/ml of any organism(s) in a urinary catheter specimen

INFECTION CONFIRMATION

❒ Signs/symptoms AND urine culture positive: *INFECTION **CONFIRMED** (= **UTI-C**)*
❒ Signs/symptoms AND urine culture not done, negative or results unknown: *INFECTION **PROBABLE** (= **UTI-P**)*
❒ Infection treated on PPS day but no documentation of signs/symptoms *(hospital or other LTCF infections only)* *INFECTION **IMPORTED** (= **UTI-I**)*

By comparing eligible resident's signs/symptoms with those listed in the decision algorithms (Annex 5), data collectors will see whether or not enough signs/symptoms are present to confirm an infection and will enter the relevant code(s) onto Part B of the resident questionnaire within 'infection code'. Therefore, exhaustive searching for signs/symptoms present in residents is crucial.

The decision algorithms used in this survey are based on clinical criteria, i.e. CDC/SHEA case definitions [7] which in turn are based on the McGeer [8] criteria for the surveillance of infections in LTCFs.

Only results of tests/examinations that are available on the survey date should be considered when establishing whether the case definition criteria are fulfilled. Those that are available after the day of the survey should not be considered. Although this will result in some underestimation of the true number of HAI cases, it will ensure comparability between all participating LTCFs and countries.

It may be difficult to locate sufficient documentation of past signs/symptoms in residents who were recently transferred from another healthcare facility (e.g. hospital or other LTCF) and are still receiving treatment (including but not limited to antimicrobial agents). In such cases, the recollection of other LTCF staff members is a sufficient alternative to the use of the case definition algorithms. If none have knowledge of the resident's signs/symptoms (i.e. the condition of the resident prior to (re)admission), then the HAI can be reported as an 'imported' infection (infection code + "-I") without having to meet the HAI case definitions (Annex 5).

As European LTCFs have more limited access to microbiological and laboratory tests than institutions in Canada and the United States of America [7], the case definition for urinary tract infections has two levels: 'probable' and 'confirmed'.

Healthcare-associated infection codes

Infection	Level	Infection code
Urinary tract infections (UTIs)	Confirmed / Probable / Imported	UTI-C / UTI-P / UTI-I
Respiratory tract infections (RTIs) • Common cold syndromes/pharyngitis • Influenza-like illness ('Flu') • Pneumonia • Other lower RTI	 Confirmed / Imported Confirmed / Imported Confirmed / Imported Confirmed / Imported	 COLD-C / COLD-I FLU-C / FLU-I PNEU-C / PNEU-I LRTI-C / LRTI-I
Surgical site infections (SSIs) • Superficial incisional SSI • Deep incisional SSI • Organ/space SSI	 Confirmed / Imported Confirmed / Imported Confirmed / Imported	 SSSI-C / SSSI-I DSSI-C / DSSI-I OSSI-C / OSSI-I
Skin infections • Cellulitis/soft tissue/wound infection • Scabies • Herpes simplex or herpes zoster infection • Fungal infection	 Confirmed / Imported Confirmed / Imported Confirmed / Imported Confirmed / Imported	 SKIN-C / SKIN-I SCAB-C / SCAB-I HERP-C / HERP-I FUNG-C / FUNG-I
Gastrointestinal tract infections • Gastroenteritis • *Clostridium difficile* infection	 Confirmed / Imported Confirmed / Imported	 GE-C / GE-I CDI-C / CDI-I
Eye, ear, nose and mouth infections • Conjunctivitis • Ear infection • Sinusitis • Mouth infection or oral candidiasis	 Confirmed / Imported Confirmed / Imported Confirmed / Imported Confirmed / Imported	 CONJ-C / CONJ-I EAR-C / EAR-I SINU-C / SINU-I ORAL-CORAL-I
Bloodstream infections	Confirmed / Imported	BSI-C / BSI-I
Unexplained febrile episode	Confirmed / Imported	FUO-C / FUO-I
Other infection(s)		OTHER

Definitions of key terms used in the decision algorithms (Annex 4)

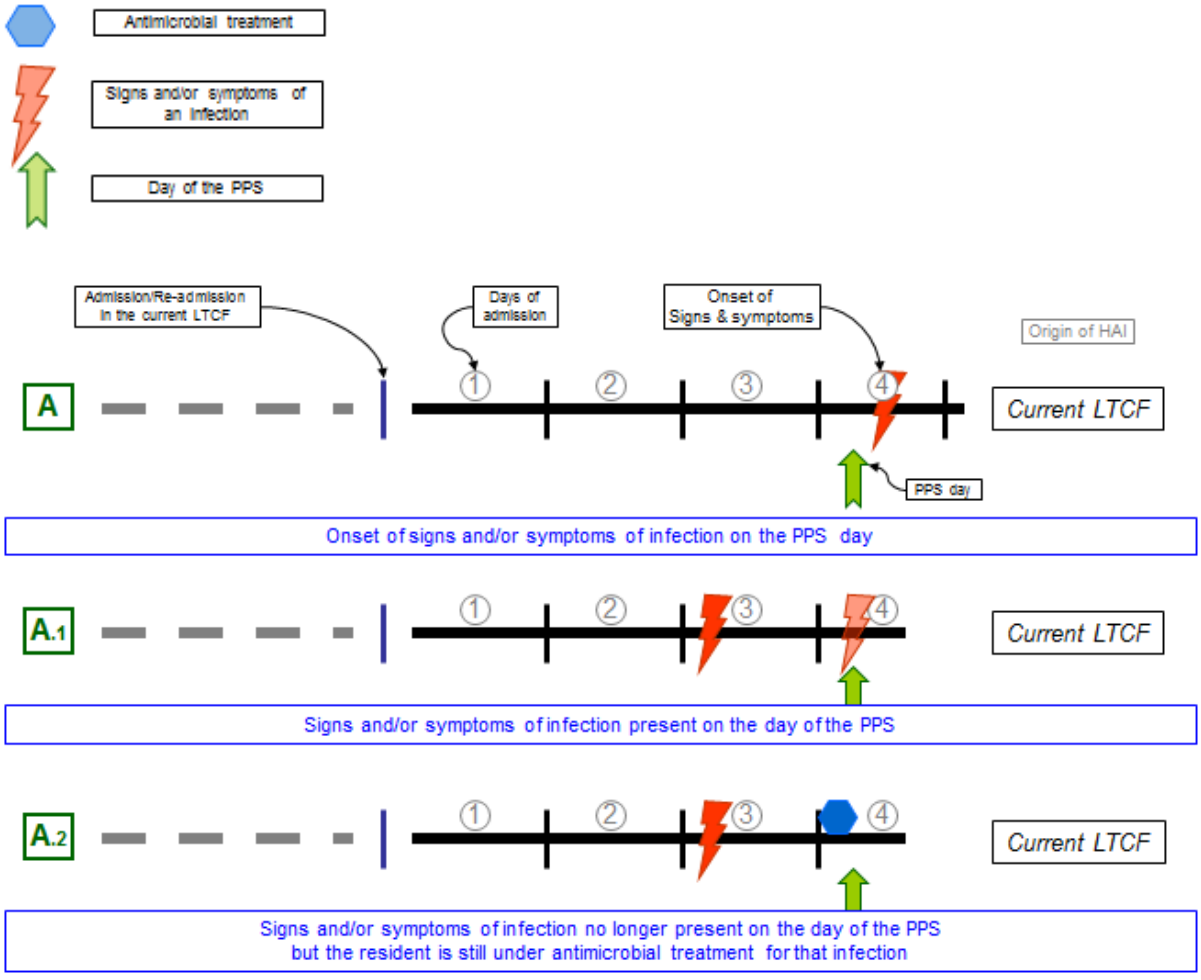
Key terms	Description/definition
Fever	1.Single >37.8°C oral/tympanic membrane* OR 2. Repeated >37.2°C oral or >37.5°C rectal OR 3. >1.1°C over baseline from any site (oral, tympanic, axillary) * tympanic membrane = membrane that separates the external ear from the middle ear.
Leucocytosis	1. Neutrophilia > 14 000 leucocytes/mm^3 *OR* 2. left shift (>6% bands or ≥ 1500 bands/mm^3) {Stone, 2012 #113}
Acute change in mental status	Acute onset + fluctuating course + inattention AND either disorganised thinking or altered level of consciousness
Acute functional decline	New three-point increase in total ADL score (Range 0–28) from baseline based on seven ADL items (bed mobility, transfer, locomotion, dressing, toilet use, personal hygiene, eating) each scored from 0 (independent) to 4 (total dependence) OR increased dependency defined by scales other than ADL
Urinary tract infection	Can be an infection of the kidney, ureter, bladder or urethra
Costovertebral angle pain	Pain in the area of the back overlying the kidney (between the 12th rib and the spine)
Suprapubic pain/tenderness	Pain or tenderness in the area above the pubis
Respiratory tract infection	Can be an infection of the upper or lower respiratory tract
Upper respiratory tract infection	Infection of the (naso-)pharynx ((naso-)pharyngitis) or tonsils (tonsillitis)
Lower respiratory tract infection	Infection of the trachea and bronchus (bronchitis), bronchiole (bronchiolitis) or lung and alveoli (pneumonia)
Lymphadenopathy	Disease of the lymph nodes (swollen or enlarged)
Infiltrate	Deposition of fluid (e.g. blood, pus, etc.) in tissues and cells
Sputum	Secretion expectorated from the lower respiratory tract (not to be confused with saliva)
Pleuritic chest pain	Pain in the chest during inhalation which can cause fast and superficial breathing to decrease the pain
Surgical site infections (SSIs)	Infections occurring within 30 days after the operation if no implant is left in place, or deep and organ/space infections within three months if implant is still in place
Superficial incisional SSI	Infection involves only skin and subcutaneous tissue of the incision
Deep incisional SSI	Infection appears to be related to the operation and infection involves deep soft tissue (e.g. fascia, muscle) of the incision
Organ/space SSI	Infection appears to be related to the operation and infection involves any part of the anatomy (e.g. organs and spaces) other than the incision which was opened or manipulated during an operation
Skin infections	
Cellulitis	Infection of the connective tissue
Soft tissues	Tissues that connect support or surround other structures or organs (muscles, tendons, ligaments, nerves, blood vessels, fat, fibrous tissues, fascia and membranes)
Maculopapular rash	Rash characterised by spots and bumps
Herpes simplex	Disease caused by a virus leading to a rash (often around the lips and nose) with groups of blisters containing fluid which soon dry out
Herpes zoster	Disease caused by a virus; mostly painful blister-shaped rash in areas where many sensory nerves are present (e.g. face, chest, shoulders and hip)
Scabies	Contagious and heavy itching disease of the skin caused by a mite
Gastrointestinal infection	Infection of the stomach and/or intestines
Clostridium difficile (CD)	*C. difficile* (gram-positive sporulating bacilli); can cause persistent diarrhoea and ulcero-haemorrhagic colitis
Toxic megacolon	Life-threatening complication that causes widening (dilation) of the large intestine and symptoms such as abdominal pain, distension, tenderness, fever, rapid heart rate and can even lead to shock
Pseudomembranous colitis	A cause of antibiotic-associated diarrhoea (often caused by *C. difficile*) characterised by abdominal cramps, bloody stools, fever and diarrhoea
Eye infection	
Conjunctival erythema	Redness of the conjunctiva (mucous membrane lining the eyelid)

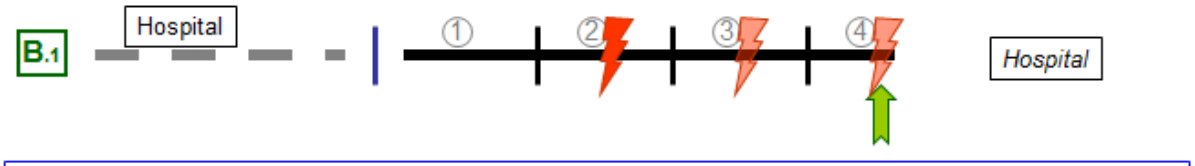
4.3.3.3 Identifying the origin of infection

The following diagrams are designed to facilitate the allocation of residents with an 'active HAI' to one of the four categories of 'origin of the infection'.

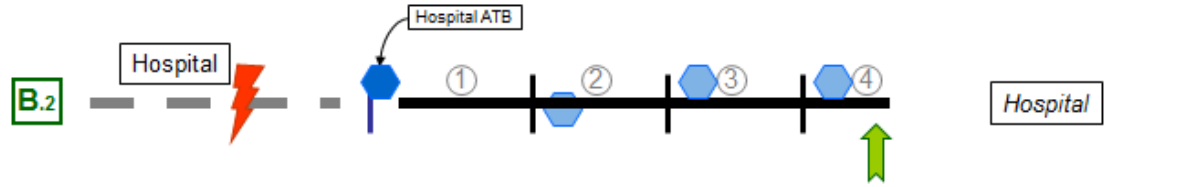
NOTE:

- A HAI is associated with the current LTCF if the infection started on day 3 or later after (re-)admission to the current LTCF (where the date of admission to the LTCF is day 1).
- According to the definition of an 'active HAI', infections that started on day 1 or 2 (2 calendar days) should be excluded if the resident is (re-)admitted to the LTCF after a community-stay
- A surgical site infection is associated with a hospital if the SSI occurred within 30 days after an operation where no implant was left in place, or within 90 days for deep and organ/space SSI after an operation where an implant was left in place.
- *Clostridium difficile* infections can be associated to a hospital or other LTCF if the onset of the signs/symptoms occurred within 28 days after (re)admission from that hospital or other LTCF.



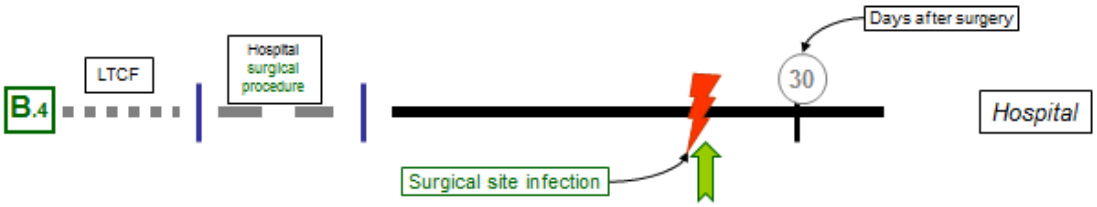


Onset of signs and/or symptoms occurred within two full calendar days after (re)admission from a hospital

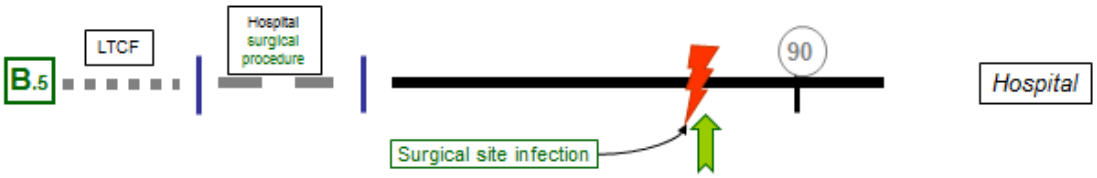


Onset of signs and/or symptoms occurred in the hospital prior to discharge
but the resident is still under antimicrobial treatment at (re)admission and on the PPS day

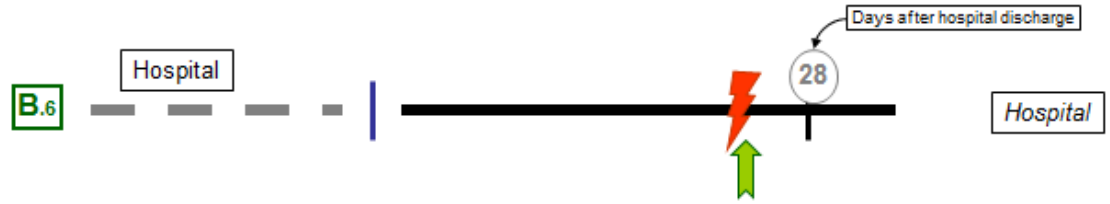
Onset of signs and/or symptoms occurred in the hospital prior to discharge but the infection is resolved and there is no associated antimicrobial treatment at the moment of (re)admission to the LTCF.



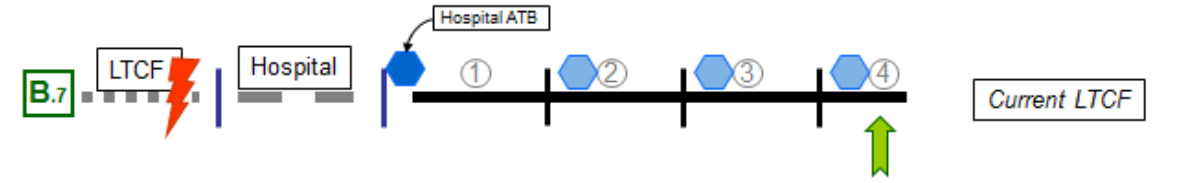
Onset of signs and/or symptoms of a surgical site infection occurred
within 30 days after an operation where *no implant was left in place*.



Onset of signs and/or symptoms of a surgical site infection occurred
within 90 days after the operationwhere *an implant was left in place*.

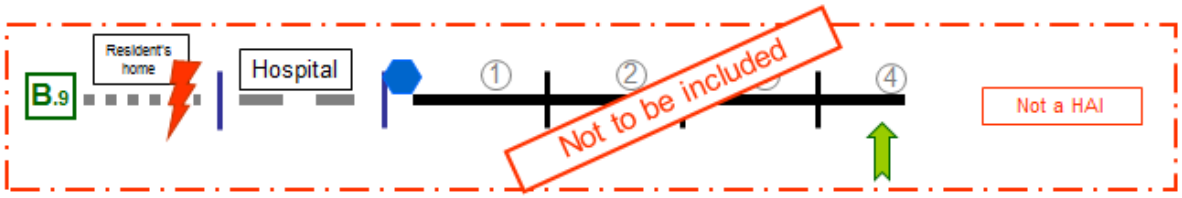


In case the onset of signs and/or symptoms of a *Clostrium difficile* infection occurs within 28 days after (re)admission from a hospital, the infection should be considered as hospital associated.



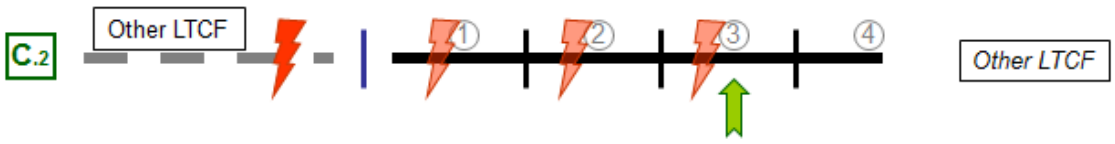
Onset of signs and/or symptoms occurred in the current LTCF prior to hospital admission but the resident is still under antimicrobial treatment at (re)admission and on the PPS day

Onset of signs and/or symptoms occurred in another LTCF prior to hospital admission but the resident is still under antimicrobial treatment at (re)admission to the current LTCF and on the PPS day



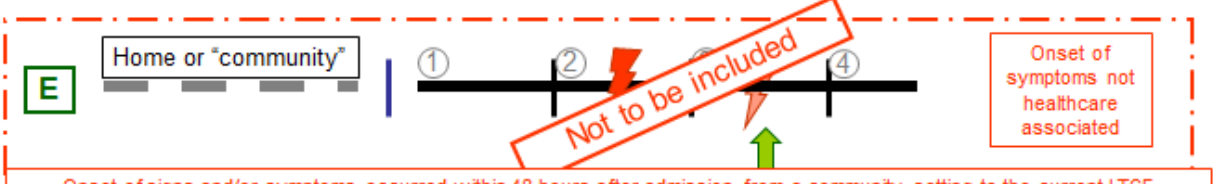
Onset of signs and/or symptoms occurred in a non-healthcare setting (resident's home).

Onset of signs and/or symptoms occurred within 48 hours after admission from another LTCF to the current LTCF



Onset of signs and/or symptoms occurred in another LTCF and the infection is still active at admission to the current LTCF

Onset of signs and/or symptoms occurred within 48 hours after admission to the current LTCF.
It was verified that the infection was not acquired in the community



Onset of signs and/or symptoms occurred within 48 hours after admission from a community setting to the current LTCF

4.3.4 Isolated microorganism and antimicrobial resistance (see Annex 5)

Data on the isolated microorganism and antimicrobial resistance are collected in Part B – Healthcare-associated infections of the resident questionnaire. It is recognised that there is a low frequency of laboratory testing of clinical samples from LTCFs in Europe, and differences between the antimicrobial susceptibility testing protocols used by those laboratories.

Collect microbiological results available on the survey date (do not wait for results that are unavailable on the survey date). Specify up to three isolated microorganisms, using the microorganism code list (Annex 4). If no microbiological result is available on the day of the PPS, one of the following options should be selected:

_NOEXA	EXAMINATION NOT DONE	No diagnostic sample taken, no microbiological examination done
_NA	RESULTS NOT AVAILABLE	The results of the microbiological examination are not (yet) available or cannot be found
_NONID	MICROORGANISM NOT IDENTIFIED	Evidence exists that a microbiological examination has been done, but the microorganism cannot be correctly classified
_STERI	STERILE EXAMINATION	A microbiological examination has been done, but the result was negative (e.g. negative culture)

Five groups of selected bacteria (highlighted in red in the microorganism code list) should have their antimicrobial resistance reported according to their resistance profile as indicated in the table below.

Antimicrobial resistance codes and profiles

Microorganism	Tested antibiotic	Antimicrobial resistance			
Staphylococcus aureus (STAAUR)	Oxacillin (OXA)	Susceptible (S)	–	Resistant (R)	Unknown (U)
	Glycopeptides (GLY)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
Enterococcus* species** (ENC)	Glycopeptides (GLY)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
Enterobacteriaceae[1], including: *Escherichia coli (ESCCOL)* *Klebsiella* species (KLE***) *Enterobacter* species (ENB***) *Proteus* species (PRT***) *Citrobacter* species (CIT***) *Serratia* species (SER***) *Morganella* species (MOGSPP)	Third-generation cephalosporins (C3G)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
	Carbapenems (CAR)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
Pseudomonas aeruginosa (PSEAER)	Carbapenems (CAR)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
Acinetobacter baumannii (ACIBAU)	Carbapenems (CAR)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)

[1] *Antimicrobial resistance markers are not collected for other Enterobacteriaceae (e.g. Hafnia spp., Salmonella spp., Shigella spp., Yersinia spp.)*
OXA: susceptibility to oxacillin, or other marker of meticillin-resistant S. aureus (MRSA), such as cefoxitin, cloxacillin, dicloxacillin, flucloxacillin, meticillin;
GLY: susceptibility to glycopeptides: vancomycin or teicoplanin;
C3G: susceptibility to third-generation cephalosporins: cefotaxime, ceftriaxone, ceftazidime;
CAR: susceptibility to carbapenems: imipenem, meropenem, doripenem.

Figure 12. HALT-3 resident questionnaire: Part B – Healthcare-associated infections – isolated microorganism and its antimicrobial resistance

A. NAME OF ISOLATED MICROORGANISM (PLEASE USE CODE LIST) B. TESTED ANTIMICROBIAL(S)[1] AND RESISTANCE[2] ONLY FOR STAAUR, ENC***, ACIBAU, PSEAER OR ENTEROBACTERIACEAE (CIT***, ENB***, ESCCOL, KLE***, MOGSPP, PRT***, SER***)	1. A				
	B				
	2. A				
	B				
	3. A				
	B				

*[1] Tested antibiotic(s): STAAUR: oxacillin (OXA) or glycopeptides (GLY); ENC***: GLY only; Enterobacteriaceae: 3rd-gen cephalosporins (C3G) or carbapenems (CAR); PSEAER and ACIBAU: CAR only. [2] Resistance: S=sensitive, I=intermediate, R=resistant, U=unknown*

5. Data delivery

5.1 Software

A stand-alone software programme developed for the HALT-3 project may be used for data entry at local (LTCF application) or national (NSC application) level. National survey coordinators (NSCs) are encouraged to offer this software to LTCFs so they can enter their data into the software. A user guide provided with the application assists the local data collector or person designated in the LTCF during software installation and data entry.

Once all data for an LTCF are entered into the software, a summary report with preliminary results can be automatically generated for that LTCF.

All data are stored on the local computer rather than a central database. Therefore data need to be exported. By clicking on this function in the menu, a zip file will be created that can be sent to the NSC.

NSCs either import all zip files received from their participating LTCFs into the software, or enter the data into the NSC ('national coordination') application themselves. NSCs can use their application to view all national data and check for errors. If needed, changes should be made using the software (rather than directly on the database file) and ATC codes can be added for the antimicrobial agents. The NSC application also allows NSCs to generate (new) LTCF summary reports. Once all data is checked, NSCs should create a national database using the software's export function.

On request, the software can be delivered in a language other than English. To achieve this, NSCs should contact ECDC at HAI-Net@ecdc.europa.eu and subsequently arrange to translate text in an Excel file.

ECDC can be contacted at HAI-Net@ecdc.europa.eu regarding any problems encountered during use of the software.

5.2 Deadline for data delivery

The national databases should, in each Member State, be sent to the country institution designated by the country's Coordinating Competent Body[5]. These institutions are then requested to upload the data to the European Surveillance System (TESSy) at ECDC, according to the same methodology used for other communicable diseases and related special health issues within Decision 1082/2013/EU[6]. The deadlines for data submission will be communicated to participating NSCs by ECDC.

5.3 Data analysis and feedback

The European database, containing data from all national databases, will be checked for errors and inconsistencies by ECDC. Individual feedback reports (in English) will be generated for each participating LTCF and sent to the NSC for further distribution (e.g. to each participating LTCF). ECDC can be contacted at HAI-Net@ecdc.europa.eu to request translated LTCF feedback reports, which will require the NSC to arrange translation of text in an Excel file.

A European report will be prepared using aggregated results, sent to NSCs from each participating country for verification and subsequently published on the ECDC website.

5.4 Data ownership

NSCs are encouraged to publish their data in international peer-reviewed journals and/or present their results at international conferences. The work done by the NSCs and the LTCFs should be acknowledged, e.g. by adding 'on behalf of the national networks' to the author list and/or by thanking all NSCs by name in the acknowledgements section. ECDC should be acknowledged in all scientific publications (including posters and oral communications).

All analyses and outputs, including data other than their own country's data, should be performed in consultation and in agreement with ECDC. All scientific outputs should be communicated to ECDC in advance of publication; these may be referred to on the ECDC website, and/or in other public outputs.

[5] European Centre for Disease Prevention and Control. Information on the Competent Bodies. http://ecdc.europa.eu/en/aboutus/Competent%20bodies/Pages/Competent_bodies.aspx

[6] DECISION No 1082/2013/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 22 October 2013 on serious cross-border threats to health and repealing Decision No 2119/98/EC

6. Training

A train-the-trainer workshop was held during the first HAI-HALT network meeting (December 2015) in Stockholm, Sweden attended by nominated persons from 26 EU/EEA Member States. Training material for the local/external data collectors is available from ECDC. It is recommended that national/regional survey coordinators organise at least one one-day information and training session for LTCFs participating in the PPS prior to the national/regional survey.

7. On-site assessments of IPC situation and needs including a validation survey

In collaboration with the advisory committee, the project coordination group developed a methodology to:

- collect additional qualitative information on the infection prevention and control needs and challenges in LTCFs to allow better interpretation of the structured information collected at the institutional level during the survey, and on the effect of repeated point prevalence surveys of HAIs and antimicrobial use in LTCFs at national and local level
- perform a qualitative assessment of the validity of the survey data collected in the country, with special emphasis on the method of case ascertainment, diagnostic capacity in LTCFs, access to available data sources during the survey including the availability of microbiological results, implementation of case definitions for HAIs in LTCFs and validity of reported structure and process indicators on infection prevention and control and antimicrobial stewardship.

EU/EEA Member States participating to the 2016–2017 PPS will be asked to participate in the on-site assessment (a two-day visit).

Together with an expert, designated by the project coordination group, the national/regional PPS coordination teams are to meet with representatives of at least one LTCF and:

- perform a structured qualitative assessment according to the on-site assessment methodology [5]
- implement the validation methodology [4].

A short report of each country visit will be produced by the project coordination group and shared with the country. The information collected during the on-site assessments and validation survey will be put in databases and analysed. For more information see 'on-site assessment and validation protocol', available from HAI-Net@ecdc.europa.eu [5].

8. Role of the national survey coordinator

National survey coordinators (NSCs) are crucial determinants of the success of repeated PPSs.

Their tasks before PPS data collection include the following:

- select and invite LTCFs to participate, including LTCFs to participate in the validation survey
- make a list of all participating LTCFs and to group them by LTCF type
- participate in the train-the-trainer workshop held during the first HAI-HALT network meeting 2015
- organise at least a one-day information and training session for LTCFs participating in PPS
- distribute the data collection tools (e.g. HALT software)
- assist LTCFs during data collection (helpdesk)
- (if required) translate PPS data collection tools and letters into national languages.

Their tasks after PPS data collection include the following:

- collect and enter local LTCF data and check the national database
- export the national database and submit the data to ECDC. ECDC will convert the HALT data to the HAIHALT TESSy format. Data will be pre-uploaded in TESSy by ECDC, and EU Member States will receive the converted national data in TESSy format from ECDC to identify any necessary data updates/replacement
- distribute the feedback forms to the participating LTCF, translation of these is possible if the national representative provides a translated Excel file
- communicate national results, e.g. at (inter)national scientific meetings.

9. Ethical considerations

Member States will have different requirements for ethical approval for a PPS in LTCFs. The experience from the HALT (2010) and HALT-2 (2013) projects is that some countries required approval from an ethics committee. Some of the committees requested that written consent be obtained from each resident with a HAI or receiving an antimicrobial agent on the day of the PPS, or if not possible (e.g. in case of cognitive impairment) from a 'proxy' such as a carer or a medical professional. Data collectors in these Member States found that it was relatively feasible to acquire the signatures, as simply explaining the necessity of the PPS to the resident or their 'proxy' was sufficient.

Confidentiality of LTCF data and resident data is assured by:

- NSCs attributing an LTCF survey number to each participating LTCF. The participating LTCFs will not be identifiable by other LTCFs/persons since all reports and presentations will only use LTCF survey numbers and never LTCF names. The key to the LTCF names from the LTCF survey number will not be sent to ECDC.
- A unique resident survey number will be allocated to each resident for whom a questionnaire is completed. Patient identifiers are not stored in the software and should not be written on the data collection forms.

The ward list (optional, for internal use) for the primary HALT-3 PPS protocol includes resident identifiers. It must be kept in the LTCF in a secure and confidential manner and should be destroyed at the end of the HALT-3 project, i.e. December 2018.

Data collected within the framework of the HALT-3 project should not be used for purposes other than those described in the objectives of the present protocol.

10. References

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3. European Centre for Disease Prevention and Control (ECDC). Point prevalence survey of healthcare-associated infections and antimicrobial use in European long-term care facilities. April–May 2013. Stockholm: ECDC. 2014.
4. European Centre for Disease Prevention and Control (ECDC). Protocol for validation of point prevalence surveys of healthcare-associated infections and antimicrobial use in European long-term care facilities. 2016 – 2017. Version v1.1. Stockholm: ECDC. 2016.
5. European Centre for Disease Prevention and Control (ECDC). Protocol for national onsite assessment during the HALT-3 project. 2016-2017. Stockholm: ECDC. 2016.
6. World Health Organization. Hand hygiene in outpatient and home-based care and long-term care facilities: a guide to the application of the WHO multimodal hand hygiene improvement strategy and the "My Five Moments For Hand Hygiene" approach. 2012. Available here: http://www.who.int/gpsc/5may/EN_GPSC1_PSP_HH_Outpatient_care/en/.
7. Stone ND, Ashraf MS, Calder J, Crnich CJ, Crossley K, Drinka PJ, et al; for the Society for Healthcare Epidemiology Long-Term Care Special Interest Group. Surveillance definitions of infections in long-term care facilities: Revisiting the McGeer criteria. Infect Control Hosp Epidemiol. 2012;10:965-977.
8. McGeer A, Campbell B, Emori TG, Hierholzer WJ, Jackson MM, Nicolle LE, et al.. Definitions of infection for surveillance in long-term care facilities. Am J Infect Control. 1991;19:1-7.

11. Contact information

For questions relating to use of this protocol, please contact the HALT-3 Management Team (HALT@wiv-isp.be). The HAI-Net extranet (URL: https://extranet.ecdc.europa.eu/HAINet/) contains a Question and Answer section, particularly suited to those who may perform a validation survey, collect primary PPS data or provide training to primary data collectors. All ECDC 'Operational Contact Points' for 'Healthcare-Associated Infections In Long-Term Care Facilities (HAI-HALT)' and 'National Focal Point for Healthcare-associated infections (ARHAI Programme)' do have access to the extranet and may request that ECDC provides access to other named individuals.

Annex 1. Institutional questionnaire

Healthcare-associated infections and antimicrobial use
in European long-term care facilities (HALT-3)

INSTITUTIONAL QUESTIONNAIRE

Remark: It is **essential** that each facility enrolled in HALT-3 completes this questionnaire as it collects vital data. We recommend that the person completing this questionnaire is the person in charge of the facility. If this person cannot answer some of the questions or locate the relevant information, they should request assistance from persons who are able to answer those questions. **This is especially relevant for questions relating to antimicrobial policy**.

A – GENERAL INFORMATION

DATE OF THE SURVEY IN YOUR FACILITY ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋ 201⌊_⌋ (dd mm yyyy)

FACILITY STUDY NUMBER (*allotted by your national HALT-3 coordinator*) ⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋⌊_⌋

OWNERSHIP OF THE FACILITY ☐ *Public* ☐ *For profit* ☐ *Not for profit*

QUALIFIED NURSING CARE AVAILABLE 24/24h IN THE FACILITY ☐ *Yes* ☐ *No*

IN THE FACILITY:

Total number of FTE REGISTERED NURSES ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ FTE registered nurses

Total number of FTE NURSING ASSISTANTS ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ FTE nursing assistants

Total number of RESIDENT ROOMS ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ Rooms

Total number of SINGLE OCCUPANCY RESIDENT ROOMS ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ Single occupancy rooms

Total number of SINGLE OCCUPANCY RESIDENT ROOMS WITH INDIVIDUAL TOILET AND WASHING FACILITIES ⌊_⌋⌊_⌋⌊_⌋⌊_⌋ Rooms with individual toilet and washing facilities

B – DENOMINATOR DATA

This table when completed will summarize the data collected in each ward (ward list) for the total population

IN YOUR FACILITY, ON THE DAY OF THE SURVEY, TOTAL NUMBER OF:

BEDS IN THE FACILITY *(both occupied and non-occupied beds)* ⌊_⌋⌊_⌋⌊_⌋⌊_⌋

OCCUPIED BEDS ⌊_⌋⌊_⌋⌊_⌋⌊_⌋

ELIGIBLE RESIDENTS:

- PRESENT AT 8 AM AND NOT DISCHARGED AT THE TIME OF THE SURVEY ⌊_⌋⌊_⌋⌊_⌋⌊_⌋
- AGE OVER 85 YEARS ⌊_⌋⌊_⌋⌊_⌋⌊_⌋
- MALE RESIDENTS ⌊_⌋⌊_⌋⌊_⌋⌊_⌋
- RESIDENTS RECEIVING AT LEAST ONE ANTIMICROBIAL AGENT ⌊_⌋⌊_⌋⌊_⌋⌊_⌋
- RESIDENTS WITH AT LEAST ONE INFECTION ⌊_⌋⌊_⌋⌊_⌋⌊_⌋
- RESIDENTS WITH ANY URINARY CATHETER ⌊_⌋⌊_⌋⌊_⌋⌊_⌋
- RESIDENTS WITH ANY VASCULAR CATHETER ⌊_⌋⌊_⌋⌊_⌋⌊_⌋

RESIDENTS WITH PRESSURE SORES ⌊_⌊_⌊_⌊_⌋

RESIDENTS WITH OTHER WOUNDS ⌊_⌊_⌊_⌊_⌋

RESIDENTS DISORIENTED IN TIME AND/OR SPACE ⌊_⌊_⌊_⌊_⌋

RESIDENTS USING A WHEELCHAIR OR BEDRIDDEN ⌊_⌊_⌊_⌊_⌋

RESIDENTS WITH SURGERY IN THE PREVIOUS 30 DAYS ⌊_⌊_⌊_⌊_⌋

RESIDENTS WITH URINARY AND/OR FAECAL INCONTINENCE ⌊_⌊_⌊_⌊_⌋

C – MEDICAL CARE AND COORDINATION

1. Is medical resident care, including antimicrobial prescribing, in the facility provided by the:

☐ Personal general practitioners (GP) or group practice(s) only

☐ Medical staff, employed by the facility only

☐ Both personal GPs/group practice(s) and medical doctor(s) employed by the facility

2. Are medical activities in the facility coordinated by a coordinating medical physician (CP)?

☐ No, there is no internal or external coordination of the medical activity

☐ Yes, there is a physician from inside the facility (internal) who coordinates the medical activities

☐ Yes, there is a physician from outside the facility (external) who coordinates the medical activities

☐ Yes, there is both a physician from inside and outside the facility (internal and external) who coordinates the medical activities

3. Can any of the following persons consult the medical/clinical records of all residents in the facility?

The physician(s) in charge of medical coordination in the facility?	☐ Yes	☐ No
The nursing staff	☐ Yes	☐ No

D – INFECTION CONTROL PRACTICE

1. Are there persons <u>with training in infection control/prevention</u> available to the staff of the facility?

☐ Yes ☐ No

2. If a person with training in infection control/prevention is available, is this person:

☐ A nurse ☐ A doctor ☐ There is both a nurse and a doctor

Is this/are these person(s):

☐ Working in the facility (internal)

☐ Not working in the facility (external)

☐ There is both an internal and an external person

3. In the facility, is/are there:
(Please complete this question even if there is no person with training in infection control/prevention available in the facility)

☐ Infection prevention and control training of the nursing and paramedical staff

☐ Appropriate training of general practitioners and medical staff in infection prevention and control

☐ Development of care protocols

☐ Registration of residents colonized/infected with multi-resistant microorganisms

☐ Designation of a person responsible for reporting and management of outbreaks

☐ Feedback on surveillance results to the nursing/medical staff of the facility

☐ Supervision of disinfection and sterilization of medical and care material

☐ Decisions on isolation & additional precautions for residents colonized with resistant microorganisms

☐ Offer of annual immunisation for flu to all residents

☐ Organization, control, feedback on hand hygiene in the facility on a regular basis

☐ Organization, control, feedback of a process surveillance/audit of infection policies and procedures (on regular basis)

☐ None of the above

4. In the facility, is there an infection control committee (internal or external)? ☐ Yes ☐ No

5. How many infection control committee meetings were organized in the previous year?

Total number of meetings last year? ⌊_⌊_⌊_⌋ meetings previous year

6. Can the facility ask for help and expertise from an external infection control (IC) team on a formal basis (e.g. IC team from a local hospital)? ☐ Yes ☐ No

7. In the facility, is a written protocol available for:

- the management of MRSA and/or other multidrug resistant microorganisms ☐ Yes ☐ No
- hand hygiene ☐ Yes ☐ No
- the management of urinary catheters ☐ Yes ☐ No
- the management of venous catheters/lines ☐ Yes ☐ No
- the management of enteral feeding ☐ Yes ☐ No

8. Is a surveillance programme of healthcare-associated infections in place in the facility? (annual summary report of number of urinary tract infections, respiratory tract infections, etc…)

☐ Yes ☐ No

9. In the facility, which of following products are available for hand hygiene?

- Alcohol rub solution ☐ Yes ☐ No
- Wipes (alcohol) ☐ Yes ☐ No
- Liquid soap (antiseptic/ other) ☐ Yes ☐ No
- Bar soap in clinical areas ☐ Yes ☐ No

10. Which hand hygiene method is most frequently used in your facility <u>when hands are not soiled</u> (only **one answer** is possible)?

☐ Hand disinfection with an alcohol rub solution

☐ Hand washing with water and a non antiseptic soap

☐ Hand washing with water and an antiseptic soap

11. How many litres of alcohol rub solution for hand hygiene were used last year?
Total annual consumption in litres └┴┴┴┘ Litres last year

12. Last year, was a hand hygiene training session organized for care professionals of the facility?

☐ Yes ☐ No

13. How many hand hygiene opportunities were there observed in your facility last year?
Number of observed opportunities └┴┴┴┴┴┘ Opportunities last year

E – ANTIMICROBIAL POLICY

1. Does the facility use a 'restrictive list' of antimicrobials to be prescribed? *(prescription requiring permission of a designated person or not to be used)*

☐ Yes ☐ No

2. If a restrictive list exists, what kinds of antibiotics are restricted?

☐ Carbapenems

☐ 3rd generation cephalosporins

☐ Fluoroquinolones

☐ Vancomycin

☐ Mupirocin

☐ Glycopeptides

☐ Broad-spectrum antibiotics

☐ Intravenously administered antibiotics

3. Which of following elements are present in the facility?

☐ An antimicrobial committee

☐ Annual regular training on appropriate antimicrobial prescribing

☐ Written guidelines for appropriate antimicrobial use (good practice) in the facility

☐ Data available on annual antimicrobial consumption by antimicrobial class

☐ A system to remind healthcare workers of the importance of microbiological samples to inform the best antimicrobial choice

☐ Local (i.e. for that region/locality or national if small country) antimicrobial resistance profile summaries available in the LTCF or in the local General Practitioner surgeries

☐ A system that requires permission from a designated person(s) for prescribing of restricted antimicrobial, not included in local formulary

☐ Advice from a pharmacist for antimicrobials not included in the formulary

☐ A therapeutic formulary, comprising a list of antibiotics

☐ Feedback to the local General Practitioner on antimicrobial consumption in the facility

☐ None of the above

4. If written therapeutic guidelines are present in the facility, are they on:

- Respiratory tract infections? ☐ Yes ☐ No
- Urinary tract infections? ☐ Yes ☐ No
- Wound and soft tissue infections? ☐ Yes ☐ No

5. Do you perform a urine dipstick test for detection of urinary tract infections in the facility?

☐ Routinely ☐ Sometimes ☐ Never

6. Is a programme for surveillance of antimicrobial consumption and feedback in place in the facility?

☐ Yes ☐ No

7. Is a programme for surveillance of resistant microorganisms in place in the facility? (*annual summary report for MRSA, Clostridium difficile, etc)*

☐ Yes ☐ No

8. How are antimicrobials supplied to your facility? (only **one answer** possible)

☐ Provided by more than one pharmacy

☐ Provided by one pharmacy only

☐ This facility does not acquire antimicrobials directly from pharmacies; antimicrobials are acquired by residents directly (e.g. supplied by the family)

9. How many microbiological laboratories do you work with? (only **one answer** possible)

☐ More than one microbiological laboratory

☐ One single microbiological laboratory

☐ This facility does not send microbiological samples to any laboratories; each visiting general practitioner can work with his microbiological laboratory of choice.

F – HOW WAS THE SURVEY PERFORMED IN YOUR FACILITY?

1. Who collected the HALT-3 data (incl. institutional and resident questionnaires)?

☐ A physician

☐ A nurse

☐ Another person

2. If no physician was involved in the HALT-3 data collection (institutional and resident questionnaires), did a physician validate the data?

☐ Yes ☐ No

Annex 2. Ward list (for internal use only)*

HALT-3: WARD LIST

PPS DENOMINATOR DATA BY WARD (for internal use only)*

DATE OF THE PPS IN YOUR FACILITY ..../..../..... FACILITY STUDY NUMBER.....

NAME OF THE WARD: .....

HOW MANY BEDS IN THIS WARD? (INCLUDES BOTH OCCUPIED AND NON-OCCUPIED BEDS):..... *beds*

The ward list is a form developed to aid surveyors' collection of denominator data for the Institutional Questionnaire. Its use is not mandatory, i.e. it is optional.

The surveillance protocol specifies that surveyors should collect information from each resident eligible resident, i.e. those living full-time in the facility, present in the ward at 8am and not discharged at the time of the survey. This ward list collects data from each resident. Once these data have been collected for all wards, surveyors can sum the denominators from each ward and transfer these totals to the institutional questionnaire. Facilities that do not have different wards only need to complete one ward list.

Instructions:

- List all residents in columns 1 and 2.
- Add a code in column 3 that is unique for every resident in the facility. Numbers and/or letters can be used. This resident survey number should be entered on all forms for the same resident.
- If the resident meets the eligibility criteria (i.e. living full-time in the facility, present at 8:00 am and not discharged at the time of the survey),
  complete columns 5 to 15 by writing an 'X' if the risk factor or care load indicator is present on the day of the survey.
- Sum the Xs in each column.
- Write the totals of each column in the summary table at the end of the ward list.
- Sum the totals of the summary tables in the different ward lists and report the totals in part B of the institutional questionnaire.
- If a resident on the ward list has an X in columns 7 and/or 8b (i.e. they were receiving at least one antimicrobial agent and/or had at least one infection on the day of the survey, complete a resident form for this resident.

*As this ward list may contain personal identifiers of individual residents, ECDC asks that you do not send this ward list to us. Instead, please keep this ward list safely in your LTCF until the end of the HALT-3 project.

COMPLETE THIS PART OF THE LIST FOR ALL RESIDENTS IN THE WARD				COMPLETE THIS PART FOR ALL ELIGIBLE RESIDENTS (residents from column 4) Write a X in the column if the condition is TRUE ON THE DAY OF THE SURVEY												
Room & bed number	Resident name	Study number of the resident	Present at 8 AM and not discharged at time of PPS	Age over 85 years	Male resident	Antimicrobial agent	Signs/symptoms of an infection	Infection matching a case definition	Urinary catheter	Vascular catheter	Pressure sore	Other wound	Disorientation in time and/or space	Wheelchair bound or bedridden	Surgery in the previous 30 days	Urinary and/or faecal incontinence
1	2	3	4	5	6	7	8a	8b	9	10	11a	11b	12	13	14	15

SUMMARY TABLE: TOTAL NUMBERS FOR THIS WARD

Use this table to add the number of 'X' from each column from each ward list from the facility.

Transfer the total number into Part B of the institutional questionnaire, i.e. 'Denominator Data'

On the day of the PPS, TOTAL number of:	Column	TOTAL NUMBERS
Total number of beds on this ward (total bed capacity)	**1**	
Occupied beds in the ward	**2**	
Eligible residents, present at 8 AM and not discharged at time of PPS	**4**	
Age over 85 years	**5**	
Male residents	**6**	
Residents receiving at least one antimicrobial agent	**7**	
Residents with at least one infection	**8b**	
Residents with any urinary catheter	**9**	
Residents with any vascular catheter	**10**	
Residents with pressure sores	**11a**	
Residents with other wounds	**11b**	
Residents disorientated in time and/or space	**12**	
Residents using wheelchair or being bedridden	**13**	
Residents with surgery in the previous 30 days	**14**	
Residents with urinary and/or faecal incontinence	**15**	

Keep this ward list safely in your LTCF until the end of the HALT-3 project (December 2018)

Annex 3. Resident questionnaire

Healthcare-associated infections and antimicrobial use in European long-term care facilities (HALT-3)

RESIDENT QUESTIONNAIRE

RESIDENT DATA

GENDER	☐ *Male*	☐ *Female*	
BIRTH YEAR	|__|__|__|__| *(YYYY)*		
LENGTH OF STAY IN THE FACILITY	☐ *Less than one year*	☐ *One year or longer*	
ADMISSION TO A HOSPITAL IN THE LAST 3 MONTHS	☐ *Yes*	☐ *No*	
SURGERY IN THE PREVIOUS 30 DAYS	☐ *Yes*	☐ *No*	
PRESENCE OF:			
URINARY CATHETER	☐ *Yes*	☐ *No*	
VASCULAR CATHETER	☐ *Yes*	☐ *No*	
INCONTINENCE (URINARY AND/OR FAECAL)	☐ *Yes*	☐ *No*	
WOUNDS - PRESSURE SORE	☐ *Yes*	☐ *No*	
- OTHER WOUNDS	☐ *Yes*	☐ *No*	
DISORIENTATION (IN TIME AND/OR SPACE)	☐ *Yes*	☐ *No*	
MOBILITY	☐ *Ambulant*	☐ *Wheelchair*	☐ *Bedridden*

On the day of the survey, the resident:

☐ *RECEIVES AN **ANTIMICROBIAL AGENT*** → ***COMPLETE PART A***

This includes: (i) Residents receiving prophylactic antimicrobials
***OR** (ii) Residents receiving therapeutic antimicrobials*

☐ *PRESENTS CONFIRMED OR PROBABLE **INFECTION(S)*** → ***COMPLETE PART B***

*Residents with infection(s) **AND** resident not receiving antimicrobials*

☐ *BOTH: **ANTIMICROBIAL USE** AND **INFECTION(S)*** → ***COMPLETE PART A & B***

This includes: (i) Residents with infection(s) AND receiving antimicrobials today whether or not linked to same infection site
***OR** (ii) Residents whose signs/symptoms of an infection have resolved but who are still receiving antimicrobials for that infection*

PART A: ANTIMICROBIAL USE				
	ANTIMICROBIAL 1	**ANTIMICROBIAL 2**	**ANTIMICROBIAL 3**	**ANTIMICROBIAL 4**
ANTIMICROBIAL NAME	....	....	....	....
ADMINISTRATION ROUTE *PARENTERAL = IM, IV OR SC*	☐ *Oral* ☐ *Parenteral* ☐ *Other*	☐ *Oral* ☐ *Parenteral* ☐ *Other*	☐ *Oral* ☐ *Parenteral* ☐ *Other*	☐ *Oral* ☐ *Parenteral* ☐ *Other*
END DATE / REVIEW DATE OF TREATMENT KNOWN?	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*
TYPE OF TREATMENT	☐ *Prophylactic* ☐ *Therapeutic*	☐ *Prophylactic* ☐ *Therapeutic*	☐ *Prophylactic* ☐ *Therapeutic*	☐ *Prophylactic* ☐ *Therapeutic*
ANTIMICROBIAL GIVEN FOR	☐ *Urinary tract* ☐ *Genital tract* ☐ *Skin or wound* ☐ *Respiratory tract* ☐ *Gastrointestinal* ☐ *Eye* ☐ *Ear, nose, mouth* ☐ *Surgical site* ☐ *Tuberculosis* ☐ *Systemic infection* ☐ *Unexplained fever* ☐ *Other (specify)*	☐ *Urinary tract* ☐ *Genital tract* ☐ *Skin or wound* ☐ *Respiratory tract* ☐ *Gastrointestinal* ☐ *Eye* ☐ *Ear, nose, mouth* ☐ *Surgical site* ☐ *Tuberculosis* ☐ *Systemic infection* ☐ *Unexplained fever* ☐ *Other (specify)*	☐ *Urinary tract* ☐ *Genital tract* ☐ *Skin or wound* ☐ *Respiratory tract* ☐ *Gastrointestinal* ☐ *Eye* ☐ *Ear, nose, mouth* ☐ *Surgical site* ☐ *Tuberculosis* ☐ *Systemic infection* ☐ *Unexplained fever* ☐ *Other (specify)*	☐ *Urinary tract* ☐ *Genital tract* ☐ *Skin or wound* ☐ *Respiratory tract* ☐ *Gastrointestinal* ☐ *Eye* ☐ *Ear, nose, mouth* ☐ *Surgical site* ☐ *Tuberculosis* ☐ *Systemic infection* ☐ *Unexplained fever* ☐ *Other (specify)* ....
WHERE PRESCRIBED?	☐ *In this facility* ☐ *In the hospital* ☐ *Elsewhere*	☐ *In this facility* ☐ *In the hospital* ☐ *Elsewhere*	☐ *In this facility* ☐ *In the hospital* ☐ *Elsewhere*	☐ *In this facility* ☐ *In the hospital* ☐ *Elsewhere*

PART B: HEALTHCARE-ASSOCIATED INFECTIONS					
		INFECTION 1	**INFECTION 2**	**INFECTION 3**	**INFECTION 4**
INFECTION CODE		|_|_|_|_|_|_|	|_|_|_|_|_|_|	|_|_|_|_|_|_|	|_|_|_|_|_|_|
IF 'OTHER', PLEASE SPECIFY		....	....	....	....
PRESENT AT (RE-)ADMISSION		☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*	☐ *No* ☐ *Yes*
DATE OF ONSET (DD/MM/YY)		|_|_|/|_|_|/|_|_|	|_|_|/|_|_|/|_|_|	|_|_|/|_|_|/|_|_|	|_|_|/|_|_|/|_|_|
ORIGIN OF INFECTION		☐ *Current LTCF* ☐ *Other LTCF* ☐ *Hospital* ☐ *Unknown*	☐ *Current LTCF* ☐ *Other LTCF* ☐ *Hospital* ☐ *Unknown*	☐ *Current LTCF* ☐ *Other LTCF* ☐ *Hospital* ☐ *Unknown*	☐ *Current LTCF* ☐ *Other LTCF* ☐ *Hospital* ☐ *Unknown*
A. NAME OF ISOLATED MICROORGANISM (PLEASE USE CODE LIST)	1. A	|_|_|_|_|_|_|	|_|_|_|_|_|_|	|_|_|_|_|_|_|	|_|_|_|_|_|_|
	B	|_|_|_| |_| |_|_|_| |_|	|_|_|_| |_| |_|_|_| |_|	|_|_|_| |_| |_|_|_| |_|	|_|_|_| |_| |_|_|_| |_|
B. TESTED ANTIMICROBIAL(S)[1] AND RESISTANCE[2]	2. A	|_|_|_|_|_|_|	|_|_|_|_|_|_|	|_|_|_|_|_|_|	|_|_|_|_|_|_|
ONLY FOR STAAUR, ENC***, ACIBAU, PSEAER OR ENTEROBACTERIACEAE (CIT***, ENB***, ESCCOL, KLE***, MOGSPP, PRT***, SER***)	B	|_|_|_| |_| |_|_|_| |_|	|_|_|_| |_| |_|_|_| |_|	|_|_|_| |_| |_|_|_| |_|	|_|_|_| |_| |_|_|_| |_|
	3. A	|_|_|_|_|_|_|	|_|_|_|_|_|_|	|_|_|_|_|_|_|	|_|_|_|_|_|_|
	B	|_|_|_| |_| |_|_|_| |_|	|_|_|_| |_| |_|_|_| |_|	|_|_|_| |_| |_|_|_| |_|	|_|_|_| |_| |_|_|_| |_|

*[1] Tested antibiotic(s): STAAUR: oxacillin (OXA) or glycopeptides (GLY); ENC***: GLY only; Enterobacteriaceae: 3rd-gen cephalosporins (C3G) or carbapenems (CAR); PSEAER and ACIBAU: CAR only. [2] Resistance: S=sensitive, I=intermediate, R=resistant, U=unknown*

Annex 4. Case definitions of infections

Healthcare-associated infections and antimicrobial use in European long-term care facilities (HALT-3)

CASE DEFINITIONS OF INFECTIONS

IMPORTANT REMARK: All **active infections** present on the day of the survey should be reported. An infection is **active** when signs/symptoms of the infection are present on the survey date **OR** signs/symptoms were present in the past and the resident is (still) receiving treatment for that infection on the survey date. The presence of symptoms and signs in the two weeks (14 days) preceding the PPS day should be verified in order to determine whether the treated infection matches one of the case definitions. Infections can only be reported as 'imported' for residents recently transferred from another healthcare facility (i.e. hospital or other LTCF) and still treated for an infection on the PPS day in the absence of documentation on (all) signs/symptoms that were present in the past.

* Fever: 1) single > 37.8°C oral/tympanic membrane or 2) repeated > 37.2°C oral or > 37.5°C rectal or 3) > 1.1°Cover baseline from any site (oral, tympanic, axillary)

** Leucocytosis: 1) Neutrophilia > 14,000 leucocytes/mm3 or 2) left shift (>6% bands or ≥ 1500 bands/mm3)

§ Acute change in mental status from baseline: Acute onset + fluctuating course + inattention AND either disorganized thinking or altered level of consciousness

§§ Acute functional decline: New 3 point increase in total ADL score (Range 0-28) from baseline based on 7 ADL items (bed mobility, transfer, locomotion, dressing, toilet use, personal hygiene, eating) each scored from 0 (independent) - 4 (total dependence) OR increased dependency defined by scales other than ADL

URINARY TRACT INFECTIONS

❒ Resident without a urinary catheter

SIGNS/SYMPTOMS

*AT LEAST **ONE** OF THE FOLLOWING (*1, 2 *or* 3) *CRITERIA*:

❒ 1 Acute dysuria OR acute pain/swelling or tenderness of the testes, epididymis, or prostate

❒ 2 Fever* OR leukocytosis**

AND

One or more of the following:

☐ Acute costovertebral angle pain
☐ Suprapubic pain/tenderness
☐ Gross hematuria
☐ New or marked increase in frequency
☐ New or marked increase in urgency
☐ New or marked increase in incontinence

❒ 3 Two or more (in the absence of fever or leucocytosis):

☐ Frequency (new/increased) ☐ Suprapubic pain
☐ Urgency (new/increased) ☐ Gross hematuria
☐ Incontinence (new/increased)

URINE CULTURE

❒ Not Done, negative or test results unknown
❒ Urine culture done AND:
☐ At least 10^5 cfu/ml of no more than 2 species of micro-organisms in a voided urine sample
OR
☐ At least 10^2 cfu/ml of any number of organisms in a specimen collected by in-and-out catheter

❒ Resident with a urinary catheter

SIGNS/SYMPTOMS

*AT LEAST **ONE** OF THE FOLLOWING (*1, 2, 3 *or* 4) *CRITERIA*:

❒ 1 Fever*, rigors, OR new onset hypotension with NO alternate site of infection
❒ 2 Acute change mental status **§** OR acute functional decline **§§** with NO alternate diagnosis AND leukocytosis**
❒ 3 New onset suprapubic or costovertebral angle pain or tenderness
❒ 4 Purulent discharge around catheter or acute pain, swelling or tenderness of testes, epididymis, or prostate

URINE CULTURE

❒ Not done, negative or test results unknown
❒ Urine culture done AND:
☐ At least 10^5 cfu/ml of any organism(s) in a urinary catheter specimen

INFECTION CONFIRMATION

❒ Signs/symptoms AND urine culture positive: *INFECTION **CONFIRMED** (= **UTI-C**)*
❒ Signs/symptoms AND urine culture not done, negative or results unknown: *INFECTION **PROBABLE** (= **UTI-P**)*
❒ Infection treated on PPS day but no documentation of signs/symptoms *(hospital or other LTCF infections only)* *INFECTION **IMPORTED** (= **UTI-I**)*

RESPIRATORY TRACT INFECTIONS

COMMON COLD or PHARYNGITIS

*AT LEAST **TWO** OF THE FOLLOWING CRITERIA*:

- ❒ Runny nose or sneezing
- ❒ Stuffy nose (i.e. congestion)
- ❒ Sore throat or hoarseness or difficulty in swallowing
- ❒ Dry cough
- ❒ Swollen or tender glands in the neck (cervical lymphadenopathy)

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION **CONFIRMED*** (= **COLD-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION **IMPORTED*** *(hospital or other LTCF only)* (= **COLD-I**)

***FLU** diagnosis can be made also outside the Flu season*

***BOTH** OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ Fever *(for definition see top of page 1)*
  AND
- ❒ At least **three** of the following:
  - ☐ Chills
  - ☐ New headache or eye pain
  - ☐ Myalgias or body aches
  - ☐ Malaise or loss of appetite
  - ☐ Sore throat
  - ☐ New or increased dry cough

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION **CONFIRMED*** (= **FLU-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION **IMPORTED*** *(hospital or other LTCF only)* (= **FLU-I**)

LOWER RESPIRATORY TRACT INFECTIONS

- ❒ Resident **with** a POSITIVE chest x-ray for pneumonia or a new infiltrate

SIGNS/SYMPTOMS

***BOTH** OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ At least **one** of respiratory signs or symptoms:
  - ☐ New or increased cough
  - ☐ New/increased sputum production
  - ☐ 0_2 saturation < 94% or reduced >3% from baseline
  - ☐ Abnormal lung examination (new or changed)
  - ☐ Pleuritic chest pain
  - ☐ Respiratory rate ≥ 25 breaths/min

  AND
- ❒ One or more constitutional signs/symptoms (fever, leucocytosis, confusion, acute functional decline; *for definitions see top of page 1* **§§**)

INFECTION CONFIRMATION

- ❒ Signs/symptoms criteria met AND chest x-ray positive: *PNEUMONIA INFECTION **CONFIRMED** (= **PNEU-C**)*
- ❒ Infection treated on PPS day but no documentation of signs/symptoms *(hospital or other LTCF only)*: *PNEUMONIA INFECTION **IMPORTED** (= **PNEU-I**)*

- ❒ Resident **without** a POSITIVE chest x-ray for pneumonia or a new infiltrate OR chest x-ray not done

SIGNS/SYMPTOMS

***BOTH** OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ At least **two** of respiratory signs or symptoms:
  - ☐ New or increased cough
  - ☐ New/increased sputum production
  - ☐ O_2 saturation < 94% or reduced >3% from baseline
  - ☐ Abnormal lung examination (new or changed)
  - ☐ Pleuritic chest pain
  - ☐ Respiratory rate ≥ 25 breaths/min

  AND
- ❒ One or more constitutional signs/symptoms (fever, leucocytosis, confusion, acute functional decline; *for definitions see top of page 1* **§§**)

Absence of other conditions such as chronic hearth failure that could account for symptoms

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *OTHER LOWER RTI **CONFIRMED** (= **LRTI-C**)*
- ❒ Infection treated on PPS day but no documentation of signs/symptoms *(hospital or other LTCF only)*: *OTHER LOWER RTI **IMPORTED** (= **LRTI-I**)*

SKIN INFECTIONS

CELLULITIS/SOFT TISSUE/WOUND INFECTIONS

ONE *OF THE FOLLOWING (*1 or 2) *CRITERIA MUST BE MET:*

- ❒ 1 Pus at a wound, skin, or soft tissue site
- ❒ 2 Four or more new or increasing signs/symptoms at affected site:
  - ☐ Heat
  - ☐ Tenderness or pain
  - ☐ Redness
  - ☐ Serous drainage
  - ☐ Swelling
  - ☐ One constitutional sign/symptom (fever, leucocytosis, confusion, acute functional decline; *for definitions see top of page 1)*

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **SKIN-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **SKIN-I**)

SCABIES

BOTH *OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ Maculopapular and/or itching rash

AND

- ❒ At least **one** of the following:
  - ☐ Physician diagnosis
  - ☐ Laboratory confirmation (positive scraping or biopsy)
  - ☐ Epidemiological linkage to a case of scabies with lab confirmation

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **SCAB-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **SCAB-I**)

NOTE:
If the infection matches one of the Surgical Site Infection (SSI) definitions, please give priority to the SSI. Do not apply another case definition for the same infection.

HERPES SIMPLEX OR ZOSTER INFECTION

BOTH *OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ A vesicular rash

AND

- ❒ Physician diagnosis or laboratory confirmation

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **HERP-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **HERP-I**)

FUNGAL INFECTION

BOTH *OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ Characteristic rash or skin lesions

AND

- ❒ Physician diagnosis or lab confirmed fungal pathogen from scraping or biopsy

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **FUNG-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **FUNG-I**)

SURGICAL SITE INFECTIONS

Infection occurs within 30 days after the operation if no implant is left in place, or within three months if implant is in place

SUPERFICIAL INCISIONAL

BOTH *OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ Infection involves only skin and subcutaneous tissue of the incision

AND

- ❒ At least **one** of the following:
  - ☐ Purulent drainage with or without laboratory confirmation, from the superficial incision
  - ☐ Organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision
  - ☐ At least one of the following signs or symptoms of infection:
    - ☐ Tenderness or pain
    - ☐ Localised swelling
    - ☐ Redness
    - ☐ Heat
  - ☐ Superficial incisional SSI made by a surgeon or attending physician

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **SSSI-C**)
- ❒ Infection treated on PPS day but no documentation of signs/ symptoms *(hospital or other LTCF only)*: *INFECTION* ***IMPORTED*** (= **SSSI-I**)

DEEP INCISIONAL

BOTH *OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ Infection appears to be related to the operation and infection involves deep soft tissue (e.g. fascia, muscle) of the incision

AND

- ❒ At least **one** of the following:
  - ☐ Purulent drainage from the deep incision but not from the organ/space component of the surgical site
  - ☐ A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or symptoms: fever (> 38 °C), localised pain or tenderness, unless incision is culture-negative.
  - ☐ An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.
  - ☐ Diagnosis of deep incisional SSI made by a surgeon or attending physician

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **DSSI-C**)
- ❒ Infection treated on PPS day but no documentation of signs/ symptoms *(hospital or other LTCF only)*: *INFECTION* ***IMPORTED*** (= **DSSI-I**)

ORGAN/SPACE

BOTH *OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ Infection appears to be related to the operation and infection involves any part of the anatomy (e.g. organs and spaces) other than the incision which was opened or manipulated during an operation

AND

- ❒ At least **one** of the following:
  - ☐ Purulent drainage from a drain that is placed through a stab wound into the organ/space
  - ☐ Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
  - ☐ An abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination
  - ☐ Diagnosis of organ/space SSI made by a surgeon or attending physician

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **OSSI-C**)
- ❒ Infection treated on PPS day but no documentation of signs/ symptoms *(hospital or other LTCF only)*: *INFECTION* ***IMPORTED*** (= **OSSI-I**)

NOTE:
If the infection matches one of the Surgical Site Infection (SSI) definitions, please give priority to the SSI. Do not apply another case definition for the same infection.

EYE, EAR, NOSE AND MOUTH INFECTIONS

CONJUNCTIVITIS

ONE *OF THE FOLLOWING (*1*,* 2 *or* 3*) CRITERIA MUST BE MET:*

- ❒ 1 Pus appearing from one or both eyes, present for at least 24 hours
- ❒ 2 New or increased conjunctival erythema, with or without itching
- ❒ 3 New or increased conjunctival pain, present for at least 24 hours

Symptoms must not be due to allergy or trauma to the conjunctiva

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **CONJ-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **CONJ-I**)

EAR

ONE *OF THE FOLLOWING (*1 *or* 2*) CRITERIA MUST BE MET:*

- ❒ 1 Diagnosis by a physician of any ear infection
- ❒ 2 New drainage from one or both ears (non-purulent drainage must be accompanied by additional symptoms, such as ear pain or redness)

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **EAR-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **EAR-I**)

SINUSITIS

- ❒ Sinusitis diagnosed by physician

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **SINU-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **SINU-I**)

ORAL CANDIDIASIS

BOTH *OF THE FOLLOWING CRITERIA MUST BE MET:*

- ❒ Presence of raised white patches on inflamed mucosa OR plaques on oral mucosa

AND

- ❒ Diagnosed by a dentist or a physician

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **ORAL-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **ORAL-I**)

=

GASTROINTESTINAL INFECTIONS

GASTROENTERITIS

ONE *OF FOLLOWING (*1, 2 *or* 3) *CRITERIA MUST BE MET:*

- ❒ 1 Diarrhoea, three or more liquid or watery stools above normal baseline for the resident in 24-hr period
- ❒ 2 Vomiting, two or more episodes in 24-hr period
- ❒ 3 **Both** of the following:
  - ☐ Positive stool specimen for bacterial or viral pathogen

  AND
  - ☐ At least one of the following: nausea, vomiting, abdominal pain or tenderness, diarrhoea

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **GE-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **GE-I**)

CLOSTRIDIUM DIFFICILE INFECTION

ONE *OF FOLLOWING (*1, 2 *or* 3) *CRITERIA MUST BE MET:*

- ❒ 1 Diarrhoeal stools or toxic megacolon **AND** a positive laboratory assay for *C. difficile* toxin A and/or B in stools or a toxin-producing *C. difficile* organism detected in stool via culture or other means e.g. a positive PCR result
- ❒ 2 Pseudomembranous colitis revealed by lower gastro-intestinal endoscopy
- ❒ 3 Colonic histopathology characteristic of *C. difficile* infection (with or without diarrhoea) on a specimen obtained during endoscopy or colectomy

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **CDI-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **CDI-I**)

BLOODSTREAM INFECTIONS

ONE *OF THE FOLLOWING (*1 *or* 2) *CRITERIA MUST BE MET:*

- ❒ 1 Two or more blood cultures positive for the same organism
- ❒ 2 A single blood culture documented with an organism thought not to be a contaminant

AND

At least **one** of the following:

- ☐ Fever *(for definition see top of page 1)*
- ☐ New hypothermia (<34.5° C, or does not register on the thermometer being used)
- ☐ A drop in systolic blood pressure of >30 mm Hg from baseline
- ☐ Worsening mental or functional status

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **BSI-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **BSI-I**)

UNEXPLAINED FEVER

- ❒ The resident must have documentation in the medical record of fever *(for definition see top of page 1)* on two or more occasions at least 12 hours apart in any 3-day period, with no known infectious or non-infectious cause

INFECTION CONFIRMATION

- ❒ Infection criteria fully met: *INFECTION* ***CONFIRMED*** (= **FUO-C**)
- ❒ Infection treated on PPS day but no documentation of signs/symptoms: *INFECTION* ***IMPORTED*** *(hospital or other LTCF only)* (= **FUO-I**)

OTHER INFECTION(S)

Please specify (= **OTHER**)

Annex 5. Code list with microorganisms

INSTRUCTIONS

Only report microbiological results that are available on the survey date. Do not report microbiological results that become available after the day of the survey. This ensures comparability of data collection between LTCFs and countries.

STEP ONE

Specify up to three isolated microorganisms, using the microorganism code list (see below).

If no microbiological result is available on the day of the PPS, one of the following options should be selected:

_NOEXA	EXAMINATION NOT DONE	No diagnostic sample taken, no microbiological examination done
_NA	RESULTS NOT AVAILABLE	The results of the microbiological examination are not (yet) available or cannot be found
_NONID	MICROORGANISM NOT IDENTIFIED	Evidence exists that a microbiological examination has been done, but the micro-organism cannot be correctly classified
_STERI	STERILE EXAMINATION	A microbiological examination has been done, but the result was negative (e.g. negative culture)

STEP TWO

For each reported microorganism HIGHLIGHTED IN RED, indicate the susceptibility using the table below.

Microorganism	Tested antibiotic[2]	Antimicrobial resistance			
Staphylococcus aureus (STAAUR)	Oxacillin (OXA)	Susceptible (S)	–	Resistant (R)	Unknown (U)
	Glycopeptides (GLY)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
Enterococcus* species** (ENC)	Glycopeptides (GLY)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
Enterobacteriaceae[1], including: *Escherichia coli (ESCCOL)* *Klebsiella* species (KLE***) *Enterobacter* species (ENB***) *Proteus* species (PRT***) *Citrobacter* species (CIT***) *Serratia* species (SER***) *Morganella* species (MOGSPP)	Third-generation cephalosporins (C3G)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
	Carbapenems (CAR)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
Pseudomonas aeruginosa (PSEAER)	Carbapenems (CAR)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)
Acinetobacter baumannii (ACIBAU)	Carbapenems (CAR)	Susceptible (S)	Intermediate (I)	Resistant (R)	Unknown (U)

[1] Antimicrobial resistance markers are not collected for other Enterobacteriaceae (e.g. Hafnia spp., Salmonella spp., Shigella spp., Yersinia spp.) [2]OXA: susceptibility to oxacillin, or other marker of MRSA, such as cefoxitin, cloxacillin, dicloxacillin, flucloxacillin, meticillin; GLY: susceptibility to glycopeptides: vancomycin or teicoplanin; C3G: susceptibility to third-generation cephalosporins: cefotaxime, ceftriaxone, ceftazidime; CAR: susceptibility to carbapenems: imipenem, meropenem, doripenem.

EXAMPLE:

PART B: HEALTHCARE-ASSOCIATED INFECTIONS					
		INFECTION 1	INFECTION 2	INFECTION 3	INFECTION 4
INFECTION CODE		UTI-C	SKIN-C	COLD-C	
A. NAME OF ISOLATED MICROORGANISM (PLEASE USE CODE LIST) B. TESTED ANTIMICROBIAL(S) AND RESISTANCE ONLY FOR STAAUR, ENC***, ACIBAU, PSEAER OR ENTEROBACTERIACEAE (CIT***, ENB***, ESCCOL, KLE***, MOGSPP, PRT***, SER***)	1. A	ESCCOL	STAAUR	_NOEXA	
	B	C3G S CAR U	OXA S GLY S		
	2. A	ENCFAE	STRHCG		
	B	GLY S			
	3. A		PSEAER		
	B		CAR U		

CODE	NAME OF THE MICROORGANISM
	- A -
ACHSPP	ACHROMOBACTER SPECIES
ACIBAU	ACINETOBACTER BAUMANNII
ACICAL	ACINETOBACTER CALCOACETICUS
ACIHAE	ACINETOBACTER HAEMOLYTICUS
ACILWO	ACINETOBACTER LWOFFII
ACINSP	ACINETOBACTER SPECIES, *not specified*
ACIOTH	ACINETOBACTER SPECIES, *other*
ACTSPP	ACTINOMYCES SPECIES
AEMSPP	AEROMONAS SPECIES
AGRSPP	AGROBACTERIUM SPECIES
ALCSPP	ALCALIGENES SPECIES
ANANSP	ANAEROBES, *not specified*
ANAOTH	ANAEROBES, *other*
ASPFUM	ASPERGILLUS FUMIGATUS
ASPNIG	ASPERGILLUS NIGER
ASPNSP	ASPERGILLUS SPECIES, *not specified*
ASPOTH	ASPERGILLUS SPECIES, *other*
	- B -
GNBNSP	BACILLI, GRAM NEGATIVE, *not specified*
GNBOTH	BACILLI, GRAM NEGATIVE, NON ENTEROBACTERIACEAE, *other*
GPBNSP	BACILLI, GRAM POSITIVE, *not specified*
GPBOTH	BACILLI, GRAM POSITIVE, *other*
BACSPP	BACILLUS SPECIES
BCTOTH	BACTERIA, *other*
BATFRA	BACTEROIDES FRAGILIS
BATOTH	BACTEROIDES, *other*
BURCEP	BURKHOLDERIA CEPACIA
	- C -
CAMSPP	CAMPYLOBACTER SPECIES
CANALB	CANDIDA ALBICANS
CANGLA	CANDIDA GLABRATA

CODE	NAME OF THE MICROORGANISM
CANKRU	CANDIDA KRUSEI
CANPAR	CANDIDA PARAPSILOSIS
CANNSP	CANDIDA SPECIES, *not specified*
CANOTH	CANDIDA SPECIES, *other*
CANTRO	CANDIDA TROPICALIS
CHLSPP	CHLAMYDIA SPECIES
CITFRE	CITROBACTER FREUNDII
CITDIV	CITROBACTER KOSERI (EX. DIVERSUS)
CITNSP	CITROBACTER SPECIES, *not specified*
CITOTH	CITROBACTER SPECIES, *other*
CLODIF	CLOSTRIDIUM DIFFICILE
CLOOTH	CLOSTRIDIUM, *other*
GNCNSP	COCCI, GRAM NEGATIVE, *not specified*
GNCOTH	COCCI, GRAM NEGATIVE, *other*
GPCNSP	COCCI, GRAM POSITIVE, *not specified*
GPCOTH	COCCI, GRAM POSITIVE, *other*
CORSPP	CORYNEBACTERIUM SPECIES
- E -	
ENBAER	ENTEROBACTER AEROGENES
ENBAGG	ENTEROBACTER AGGLOMERANS
ENBCLO	ENTEROBACTER CLOACAE
ENBGER	ENTEROBACTER GERGOVIAE
ENBSAK	ENTEROBACTER SAKAZAKII
ENBNSP	ENTEROBACTER SPECIES, *not specified*
ENBOTH	ENTEROBACTER SPECIES, *other*
ETBNSP	ENTEROBACTERIACEAE, *not specified*
ETBOTH	ENTEROBACTERIACEAE, *other*
ENCFAE	ENTEROCOCCUS FAECALIS
ENCFAI	ENTEROCOCCUS FAECIUM
ENCNSP	ENTEROCOCCUS SPECIES, *not specified*
ENCOTH	ENTEROCOCCUS SPECIES, *other*
ESCCOL	ESCHERICHIA COLI
- F -	
FILOTH	FILAMENTS, *other*
FLASPP	FLAVOBACTERIUM SPECIES
FUNOTH	FUNGI, *other*
- G -	
GARSPP	GARDNERELLA SPECIES
- H -	
HAEINF	HAEMOPHILUS INFLUENZAE
HAEPAI	HAEMOPHILUS PARAINFLUENZAE
HAENSP	HAEMOPHILUS SPECIES, *not specified*
HAEOTH	HAEMOPHILUS SPECIES, *other*
HAFSPP	HAFNIA SPECIES
HELPYL	HELICOBACTER PYLORI
- K -	
KLEOXY	KLEBSIELLA OXYTOCA
KLEPNE	KLEBSIELLA PNEUMONIAE
KLENSP	KLEBSIELLA SPECIES, *not specified*
KLEOTH	KLEBSIELLA SPECIES, *other*
- L -	

CODE	NAME OF THE MICROORGANISM
LACSPP	LACTOBACILLUS SPECIES
LEGSPP	LEGIONELLA SPECIES
LISMON	LISTERIA MONOCYTOGENES
	- M -
MORCAT	MORAXELLA CATHARRALIS
MORNSP	MORAXELLA SPECIES, *not specified*
MOROTH	MORAXELLA SPECIES, *other*
MOGSPP	MORGANELLA SPECIES
MYCATY	MYCOBACTERIUM, atypical
MYCTUB	MYCOBACTERIUM TUBERCULOSIS COMPLEX
MYPSPP	MYCOPLASMA SPECIES
	- N -
NEIMEN	NEISSERIA MENINGITIDIS
NEINSP	NEISSERIA SPECIES, *not specified*
NEIOTH	NEISSERIA SPECIES, *other*
NOCSPP	NOCARDIA SPECIES
	- P -
PAROTH	PARASITES, *other*
PASSPP	PASTEURELLA SPECIES
PRESPP	PREVOTELLA SPECIES
PROSPP	PROPIONIBACTERIUM SPECIES
PRTMIR	PROTEUS MIRABILIS
PRTNSP	PROTEUS SPECIES, *not specified*
PRTOTH	PROTEUS SPECIES, *other*
PRTVUL	PROTEUS VULGARIS
PRVSPP	PROVIDENCIA SPECIES
PSENSP	PSEUDOMONADACEAE FAMILY, *not specified*
PSEOTH	PSEUDOMONADACEAE FAMILY, *other*
PSEAER	PSEUDOMONAS AERUGINOSA
	- S -
SALENT	SALMONELLA ENTERITIDIS
SALNSP	SALMONELLA SPECIES, *not specified*
SALOTH	SALMONELLA SPECIES, *other*
SALTYM	SALMONELLA TYPHIMURIUM
SALTYP	SALMONELLA TYPHI or PARATYPHI
SERLIQ	SERRATIA LIQUEFACIENS
SERMAR	SERRATIA MARCESCENS
SERNSP	SERRATIA SPECIES, *not specified*
SEROTH	SERRATIA SPECIES, *other*
SHISPP	SHIGELLA SPECIES
STAAUR	STAPHYLOCOCCUS AUREUS
STAEPI	STAPHYLOCOCCUS EPIDERMIDIS
STAHAE	STAPHYLOCOCCUS HAEMOLYTICUS
STACNS	STAPHYLOCOCCI, COAGULASE-NEGATIVE, *not specified*
STAOTH	STAPHYLOCOCCI, COAGULASE-NEGATIVE (CNS), *other*
STANSP	STAPHYLOCOCCUS SPECIES, *not specified*
STEMAL	STENOTROPHOMONAS MALTOPHILIA
STRHCG	STREPTOCOCCAE, HAEMOLYTIC (C, G), *other*
STRAGA	STREPTOCOCCUS AGALACTIAE (B)
STRPNE	STREPTOCOCCUS PNEUMONIAE
STRPYO	STREPTOCOCCUS PYOGENES (A)

CODE	NAME OF THE MICROORGANISM
STRNSP	STREPTOCOCCUS SPECIES, *not specified*
STROTH	STREPTOCOCCUS SPECIES, *other*
	- V -
VIRADV	ADENOVIRUS
VIRCMV	CYTOMEGALOVIRUS (CMV)
VIRENT	ENTEROVIRUS (POLIO, COXSACKIE, ECHO)
VIRHAV	HEPATITIS A VIRUS
VIRHBV	HEPATITIS B VIRUS
VIRHCV	HEPATITIS C VIRUS
VIRHIV	HUMAN IMMUNODEFICIENCY VIRUS (HIV)
VIRHSV	HERPES SIMPLEX VIRUS
VIRINA	INFLUENZA A VIRUS
VIRINB	INFLUENZA B VIRUS
VIRINC	INFLUENZA C VIRUS
VIRNOR	NOROVIRUS
VIRPIV	PARAINFLUENZAVIRUS
VIRRHI	RHINOVIRUS
VIRROT	ROTAVIRUS
VIRRSV	RESPIRATORY SYNCYTIAL VIRUS (RSV)
VIRSAR	SARS-CORONAVIRUS
VIRVZV	VARICELLA-ZOSTER VIRUS
VIRNSP	VIRUS, *not specified*
VIROTH	VIRUS, *other*
	- Y -
YEAOTH	YEASTS, *other*
YERSPP	YERSINIA SPECIES