TESSy - The European Surveillance System

Reporting Protocol for Electronic Health Record-based surveillance of Bloodstream Infections (EHR-BSI), version 1.0

Contents

How to use this document

This Reporting Protocol provides information for reporting countries' data managers in three main sections:

- *Introduction* – contains aims, objectives, record types and case definitions together with other key definitions
- *Reporting to TESSy* – contains guidelines on how to prepare data for submission to TESSy, deadlines for data submission, subject-specific information (e.g. new changes to metadata), and links to further information.
- *Annex* – contains:
    - The metadata set for the subject(s) covered by this Reporting Protocol.

Finding further information

 Paragraphs denoted by the information icon tell where you can find further information.

Updated links to all the schedules, documentation and training materials mentioned in this Reporting Protocol are included in the *TESSy Technical Guidelines & Tools* (see the menu 'Technical Guidelines and Tools' when logged in TESSy), including:

- Metadata sets and history.
- Tutorials for data transformation using respectively Excel and Access.
- TESSy user documentation.
- *CSV* and *XML* transport protocols.

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Introduction

This Reporting Protocol describes data collection for Electronic health record-based bloodstream infection (EHR-BSI) surveillance in the EU/EEA countries. The data collection approach aims to align with the most recent datasets with the European surveillance of healthcare-associated infections (HAIs) and antimicrobial resistance (AMR) as well as the transition to EpiPulse Cases (EPC) foreseen in 2026.

Aim

The aim of this reporting protocol and the metadata set is to support the timely and complete reporting of key information for surveillance of bloodstream infections at local, regional/national and European level by providing flexible options for uploading aggregated or case-based EHR-BSI data to ECDC.

Objectives

Through routinely collected data from EHR, and by automatising/semi-automatising as much as possible specific processes within the surveillance systems, the project aims to monitor (surveillance and alert):

1) Incidence of healthcare-associated BSI
2) Possible pan-drug resistance (PDR) in BSIs
3) Emerging pathogens in BSIs (e.g., *C. auris*)
4) AMR data according to EARS-Net protocol

Data reported to ECDC focus mainly on objective 1, especially if reporting aggregate data, whilst the local/regional/national level may achieve additional objectives at the given level where the case-based data is available (e.g. if the case-based data is available only at the local level, the more detailed analysis are only possible at that level; the objectives 2, 3 and/or 4 may be addressed only with the case-based data).

Record types

Aggregated data on BSIs can be reported annually at the national, regional, hospital or laboratory level. The data may also be reported within a shorter specified time period (e.g. quarter/month) and aggregated at hospital-unit and/or specialty levels. ECDC HAI-Net recommends reporting case-based data by hospital and with specialty-specific denominator data aggregation to allow for stratified epidemiological analysis.

Case-based reporting of BSIs is also possible. In this case, a set of epidemiological variables is collected to further characterise the cases to reach objectives 2, 3 and/or 4.

The EHR-BSI protocol metadata (RecordType 'EHRBSI') contains five possible datasets in hierarchical levels, which can be divided into aggregated and case-based reporting sets (case-based reporting includes aggregated denominators and other items, see below). The $-sign below indicates the hierarchical relations between the levels, and the relation between levels is indicated with RecordId-ParentId-pairs. This approach is selected as it is commonly used in ECDC HAI-Net surveillance, and to avoid duplication of information on hospitals, denominators, patients and isolates occurring in single wide 'flat' files, especially if the data volume grows substantially. The national/regional coordination level may organise their data(base) in the format suggested below, but in case of different data organisation at the national/regional level, ECDC may aid in formatting the data to the ECDC aggregated or case-based format.

During the first years of the EHR-BSI, data may be submitted to ECDC annually, but the data upload remains open also for more frequent data submission.

Both for aggregated and case-based data:

- Level 'EHRBSI' includes data referring to national, regional, hospital or laboratory level. It may include one record for each hospital to which the reported cases are admitted/associated, or for each laboratory in which the cases are identified, and which need to be collected only once for each hospital or laboratory. Note that aggregation by both HospitalId and LaboratoryCode is best used if the hospital and laboratory services fully overlap, therefore please choose the most applicable stratification.

  Note: In case of reporting national- or regional-level aggregated cases, both HospitalId and LaboratoryCode variables may be left empty, and reporting can be done for single indicators for the entire participating country or region (using GeoLocation variable with NUTS-2 code to indicate the region).

  This level is required.

- Level 'EHRBSI$Denom' allows the reporting of more detailed denominator data as well as aggregated BSI data by different available stratifications for each hospital/laboratory included in the 'EHRBSI'.

  This level is optional but it is recommended at the national/regional coordination level to collect the stratified denominator data for a more granular incidence estimation by hospital and units and/or specialties by chosen time unit (e.g. year/quarter/month).

Case-based data only:

- Level 'EHRBSI$Patient' allows the reporting of detailed data on the patients with BSIs for each hospital or laboratory included in the 'EHRBSI', including date of admission, basic patient characteristics such as age, sex and specialty.

  This level is optional but it is recommended at the national/regional coordination level to collect the data on patients that allow detailed estimation of healthcare-associated BSIs based on their admission date and the date of specimen for each isolate (see below).

- Level 'EHRBSI$Patient$Isolate' allows the reporting of detailed data on the isolates for each patient with BSIs included in the 'EHRBSI$Patient', including date of specimen and other basic isolate characteristics.

  This level is optional but it is recommended at the national/regional coordination level to collect the data on isolates that allow detailed estimation of hospital-onset healthcare-associated BSIs based on the date of specimen and the patient date of admission, as well as the isolated microorganism(s) (see above).

- Level 'EHRBSI$Patient$Isolate$Res' allows the reporting of detailed data on antimicrobial susceptibility testing (AST) results for each bloodstream isolate included in the 'EHRBSI$Patient$Isolate'. The file allows AST reporting in a similar fashion to existing HAI-Net modules and/or EARS-Net, and all of the variables at this level are optional.

  This level is optional but it is recommended at the national/regional coordination level to collect data on AST that allow detailed estimation of antimicrobial resistance in BSIs in each participating hospital.

Case definitions

The case definition for BSIs and other key definitions are given below. These definitions can be used to filter the data from a more complete set of patient-blood culture isolate data either at the national/regional coordination level, or in the ECDC analysis. These definitions may also be used if reporting aggregate data from the national or regional coordination level to ECDC.

BSI cases and episodes

The case definition is simplified from the official *EU case definition* for BSIs:

One positive blood culture for a recognised pathogen

OR

Two positive blood cultures for the same species/subtype of common skin contaminant* (from 2 separate blood samples, within three calendar days (the first date of specimen = day one)

***Common skin contaminants/Common commensals:** These are currently defined in the CDC's National Healthcare Safety Network (NHSN) Common Commensals microorganism list, version February 2024:
https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.cdc.gov%2Fnhsn%2Fxls%2Fmaster-organism-com-commensals-lists.xlsx&wdOrigin=BROWSELINK

Date of onset is relevant when assessing BSI episodes and shall be defined as the first date of specimen collection with pathogen or first date of specimen collection with common skin contaminant that is a part of a set of at least two cultures.

BSI episode is then defined for each BSI matching the case definition as a 14-day period defined starting from the date of onset (date of onset = day one). In case the same species/subtype is reported multiples times within the 14-day episode, these recurring isolates are considered to be part of the same episode.

Note: as many countries might choose to report aggregated or filtered data for different episode duration(s), most often 30 days, we include a variable to report the whether the episode duration used in each system(s).

Polymicrobial episode is defined as an episode in which more than one species/subtype are isolated within three calendar days from the date of onset (from the first positive blood culture). In case of reporting of different species/subtype after three or more calendar days after the date of onset, a new 14-day BSI episode is initiated.

Healthcare-associated and hospital-onset healthcare-associated BSIs

Episode definitions for healthcare-associated (HA)-BSI, hospital-onset HA-BSI and imported HA-BSI

A BSI episode is defined as HA-BSI episode if the date of onset is on day three or later of the hospital admission (date of admission = day one) or within three calendar days after a discharge from a healthcare facility (date of discharge = day one).

- A BSI episode is defined as a hospital-onset HA-BSI episode if the date of onset is on day 3 or later of the hospital admission (date of admission = day one).
- A BSI episode is defined as an imported HA-BSI episode, i.e. episodes with readmission for BSI, if the date of onset is within three calendar days after a discharge from a healthcare facility (date of discharge = day one).

Community-associated (CA) episode

Those BSI episodes in non-hospitalised patients or patients hospitalised (but not transferred from another healthcare facility) with date of onset before day three of hospitalisation (date of admission = day one).

Reporting to EpiPulse Cases (TESSy)

When, what and how to report

Suggested deadline for reporting:

30 November 2025 for all record types for the 2024 (and/or earlier surveillance years) aggregated or case-based data. 31 March 2026 for all record types for the 2025.

Preparing data

Batch reporting by file upload (CSV or XML format) requires that once the data has been exported from your national database it needs to be in a format that EpiPulse Cases (TESSy) can accept (see 'checking metadata').

Checking metadata

The EpiPulse Cases (TESSy) metadata define the fields and valid data formats for input for a given subject.

To ensure data can be saved correctly in EpiPulse Cases (TESSy), please check the data are correctly formatted according to the most recent metadata set.

Changes to the metadata for the subject of this Reporting Protocol are described in:

- *Changes to current metadata* – changes since the last Reporting Protocol.
- *Annex Metadata change history* – all preceding changes.

It is especially important to focus on:

Field formats

Many fields require that data are formatted in a specific way. For example, dates must be in the **YYYY-MM-DD** format; dates in the DD/MM/YYYY format will be rejected.

Coded values

Some fields only permit the use of specific values (coded values). For example, **M**, **F**, or **OTH** are the coded values for *Sex* and any other value in a *Sex* field will be rejected.

Missing values

Missing values should be simply coded as missing; values such as **N/A** or **UNK** will not be allowed.

The metadata file contains all the definitions and rules you need to comply with to format your data correctly for every subject (usually a disease). The file can be downloaded as an Excel file from the EpiPulse Cases (TESSy) documents website.

By filtering the fields in the file by subject, you can see the fields required for your subject and the rules applying to these fields.

The *Tessy User Guide* provides an overview of how you work with the metadata file, and the TESSy user documentation provides in-depth details on metadata.

Submitting your data

The TESSy / Upload page is accessible from the EpiPulse > **Report** > **Cases menu**. Data are submitted through the EpiPulse Cases web interface (go to **Upload**). Previously reported data can be found through the review tab. The TESSy / Review page is accessible from the EpiPulse > **Manage** > **Edit case / Case validation** menu.

The *EpiPulse Cases (Tessy) User Guide* provides an overview of how you submit files to TESSy and in-depth descriptions of all the upload methods.

Finalising your submission

The compliance of your data with the validation rules in the metadata is checked automatically during the data upload process.

The result of your upload – i.e., rejected or validated – is displayed immediately after the check in the **Validation details** webpage has completed. Please review the result carefully:

- If your file has been rejected, there will be a message explaining each instance of non-compliance with the metadata that you need to correct.
- If your file has been validated, there might be warnings and remarks relating to possible data quality issues or to potential overwriting of existing records that you should consider.

When you file has been validated and you are satisfied that all corrections have been made, please ensure prompt approval – unapproved uploads can block the approval of other uploads.

- The EpiPulse Cases (TESSy) user documentation provides information on reviewing validation results and adjusting reporting periods to avoid overwriting existing records.
- General training and guidance on reporting is available on the *EpiPulse Cases (TESSy) website*. A training video on reporting for example COVID-19 data is available in the *ECDC virtual academy*.

Navigating EpiPulse cases platform

Below is presented a mapping of the pages from TESSy to the EpiPulse Portal menu:

The TESSy / Upload page: **Report** > **Cases menu**.
The TESSy / Review page: **Manage** > **Edit case / Case validation** menu.
The TESSy / Query page: **Explore** > **Download data** menu.
The TESSy / Reports page: **Explore** > **Surveillance Dashboards / Reports** > **Legacy reports**
The TESSy / Data Sources: **Report** > **Surveillance system descriptors**
The TESSy / My profile page: **My profile and preference**
TESSy / Documents page: **Collaborate** > **TESSy Help & Docs**

Relevant menu items are highlighted in yellow below.

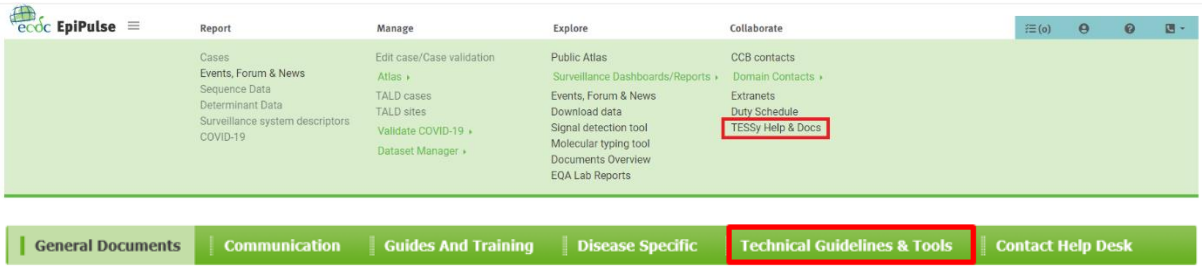
TESSy/EpiPulse Cases Help Desk

Email:	*TESSy@ecdc.europa.eu*
Telephone number:	**+46-(0)8-5860 1601**
Availability:	9:00 – 16:00 Stockholm time, Monday to Friday (except ECDC Holidays)

Annex

Revisions of metadata sets

The most recent metadata set is available from the EpiPulse website under "TESSy Help & Docs" technical guidelines and tools tab (as shown below).



Current record type versions

Table 2 shows the current record type versions in use for reporting data to TESSy.

Table 2: EHRBSI record type version

Record type	Type of data	Record type version
EHRBSI	Aggregated by hospital, laboratory, **or** at the national or regional level. Please choose the most applicable stratification; hospital-level stratification is recommended. Subsequent, hierarchical levels of the data are **optional**, and allow reporting of more detailed stratified aggregate denominator and/or indicator data, and/or full case-based data with additional details.	1

EHRBSI metadata – Aggregated and case-based reporting level 'EHRBSI'

´EHRBSI´ level is **mandatory** to be used for all reporting of EHRBSI data. This level may be reported alone if only providing high-level aggregated data by hospitals, laboratories, or only data at national or regional level, with no further stratifications.

Common TESSy variables (referring to the structure of the relational CSV/XML files)

Record Identifier (mandatory)
Field: RecordId
Coding: Text (max. 80 characters)

Unique identifier for each record within and across the national surveillance system – Member State selected and generated. Please include year/surveillance period in the RecordId to avoid duplication between years/surveillance periods.

Record type (mandatory)
Field: RecordType
Coding: EHRBSI

The record type defines the structure and the format of the data reported. The record types are defined by ECDC and are related to the subject. Only valid combinations of subject, record type and data source are accepted.

Record type version
Field: RecordTypeVersion
Coding: Numeric

The version of the record type defines the current structure of the data reported. If no RecordTypeVersion is provided in the batch, it is set automatically with current version of the Record type (Table 2). This variable is not mandatory as TESSy concludes the record type version from the metadata set indicated by default. However, RecordTypeVersion is required when no metadata set is provided at upload or when a RecordTypeVersion, other than the current one, needs to be used.

Subject (mandatory)
Field: Subject
Coding: EHRBSI

The subject describes the disease to be reported.

Status (mandatory)
Field: Status
Coded value list: [Statuses]
Coding: NEW/UPDATE
DELETE

The field 'Status' is used for updating data; the default is 'New/Update'. By choosing 'Delete' the selected record (or batch of data) will remain in TESSy but be marked as inactive; this data can be used to reconstruct data for a given date in the past.

Data source (mandatory)

Field: DataSource
Coded value list: [Data sources]

Coding: Pre-assigned as [ISO-2 CountryCode]-EHRBSI to each country; can be modified by National Focal Point.

The data source specifies the surveillance system from which the data originates and is generated and revised/updated by the national focal point in each Member State. The descriptions of the surveillance systems submitted to TESSy (*section Data Sources*) should include details about case definition used and should be kept up to date and will be used to assist with data interpretation.

Reporting country (mandatory)
Field: ReportingCountry
Coded value list: [Countries]

Coding: International organization for standardization (ISO) 3166-1-alpha-2, (two-letter code)

This variable identifies the country reporting the case.

Date used for statistics (mandatory)
Field: DateUsedForStatistics
Coding: yyyy-mm-dd
yyyy

Date of the start of this surveillance period. Possible to also report the surveillance year 'yyyy'.

Variables on hospital and surveillance system characteristics

Hospital identifier
Field: HospitalId
Coding: Text (max. 80 characters)

Unique identifier for each hospital – MS selected and generated. It is recommended to keep the same Hospital Identifier across all ARHAI surveillance protocols (PPS, ICU, ESAC-Net, EARS-Net) and from one year to another. Note that both HospitalId and LaboratoryCode may only be used if the hospital and laboratory services fully overlap. To be omitted if only reporting national level aggregated data.

Laboratory code
Field: LaboratoryCode
Coded value list: [LaboratoryCodeAMR]

Laboratory code unique for each laboratory within the country. Use the EARS-Net LaboratoryCodes. To add new codes, please contact TESSy helpdesk. Recommended format is '[ReportingCountry]-[code of three characters]'. LaboratoryCode can also be reported separately at the isolate level, if reporting case-based data. Note that both HospitalId and LaboratoryCode may only be used if the hospital and laboratory services fully overlap. To be omitted if only reporting national level aggregated data.

Geographical location

Field: GeoLocation
Coding: Text (max. 80 characters)
Code of the isolate acquisition location, or otherwise the hospital or laboratory location. If possible, provide the NUTS-2 code.

Hospital size
Field: HospitalSize
Coding: Numerical (0 –)

Number of beds in the hospital. Only to be included if reporting data by participating hospitals.

Hospital type
Field: HospitalType
Coded value list: [HospitalType]
Coding: PRIM = Primary level (district hospital or first-level referral)
SEC = Secondary level (provincial hospital)
SPEC = Specialist/Other
TERT = Tertiary level (regional or tertiary-level hospital)

Type of the hospital (at sample collection). Only to be included if reporting data by participating hospitals.

Primary level = Often referred to as a district hospital or first-level referral. Has few specialities, mainly internal medicine, obstetrics-gynaecology, paediatrics, and general surgery, or only general practice; limited laboratory services are available for general, but not for specialized pathological analysis; bed capacity ranges from 30 to 200 beds.
Secondary level = Often referred to as provincial hospital. Highly differentiated by function with five to ten clinical specialities; bed capacity ranging from 200 to 800 beds.
Tertiary level = Often referred to as central, regional or tertiary-level hospital. Highly specialized staff and technical equipment, e.g., cardiology, ICU and specialized imaging units; clinical services are highly differentiated by function; may have teaching activities; bed capacity ranges from 300 to 1 500 beds.

Current degree of automation of surveillance of HA-BSI
Field: ESurvBSI
Coded value list: [AutomationDegree]
Coding: 0 = Fully manual
1 = Automated denominator
2 = Semi-automated
3 = Fully automated
4 = Other
9 = Not performed

Current degree of automation of surveillance of healthcare-associated bloodstream infections.

Regarding the use of computer-based systems for the collection and processing of EHR-based data for surveillance, the degree of automation could be considered:
Fully manual: if EHR-based data collection and processing are entirely manual, with no computer-assisted program or code;
Automated denominator: if EHR-based data collection and processing for denominator output data are entirely carried out with, synchronous or asynchronous, computer-assisted program or code, and not requiring any manual input;

Semi-automated: if EHR-based data collection and processing required both manual input (process control and/or review) and, synchronous or asynchronous, computer-assisted program or code;
Fully automated: if EHR-based data collection and processing are entirely based on, synchronous or asynchronous, computer-assisted program or code;
Not performed: if no automation procedure or plan for automation is in place (e.g. due to technical challenges of implementation, or due to non-digitalisation of existing medical/clinical data sources).

Level of data aggregation
Field: AggregationLevel
Coded value list: [AggrLevel]
Coding: HOSP = At local hospital level
LAB = At local laboratory level
REG = At regional level
NAT = At national level

If providing aggregated data, at what level was the data aggregation performed (e.g. did the local level sent only aggregated data to the national level, or did the national level aggregate the data from full case-based data submitted by the local level)?

Duration of BSI episode
Field: EpisodeDuration
Coding: Numerical (0 – 365)

Definition of episode duration in days, used in the aggregate reporting or in data filtering if reporting case-based data.

Terminology / classification system in use for clinical data in EHRs
Field: ClinicalTerminology
Coded value list: [ClinicalCodeSystem]
Coding: ICD-9 = International Classification of Diseases, 9th edition
ICD-10 = International Classification of Diseases, 10th edition
ICD-10-CM =International Classification of Diseases, 10th edition, Clinical Modification
ICD-10-PCS = International Classification of Diseases, 10th edition, Procedure Coding System
ICD-10-GM = International Classification of Diseases, German Modification
ICD-11 = International Classification of Diseases, 11th edition, Foundation
ICD-11-MMS = International Classification of Diseases, 11th edition, MMS linearisation
SNOMED-CT = Systematized Nomenclature of Medicine - Clinical Terms
DRG = Diagnosis Related Groups
G-DRG = Diagnosis Related Groups, German
MS-DRG = Medicare Severity Diagnosis Related Groups
OPCS-4 = Office of Population Censuses and Surveys - Classification of Surgical Operations and Procedures, 4th revision
HCPCS = Healthcare Common Procedure Coding System
CPT = Current Procedural Terminology
OTH = Other

Which terminology / classification system is currently used at the hospital level to collect the clinical data in EHR used to gather EHRBSI data? Please choose only one, as the one that is mainly /primarily used for clinical data collection in EHRs.

Specification of the terminology / classification system in use for clinical data in EHRs
Field: ClinicalTerminologySpec
Coding: Text

If reporting 'OTH' in the ClinicalTerminology, please specify the code system used.

Terminology / classification system in use for microbiological data in EHRs
Field: MicrobiologicalTerminology
Coded value list: [MicroorganismCodeSystem]
Coding: SNOMED-CT = Systematized Nomenclature of Medicine - Clinical Terms
NCBI-TAXON = National Center for Biotechnology Information (NCBI) Organisms Taxonomy
WHONET = WHO Collaborating Centre for Surveillance of Antimicrobial Resistance - Microorganism List
WHOCARE-EXT = ECDC WHOCARE Microorganims List, Extended
WHOCARE-COMP = ECDC WHOCARE Microorganims List, Complete
LOINC = Logical Observation Identifiers Names and Codes
NPU = Nomenclature for Properties and Units
OTH = Other

Which terminology / classification system is currently used at the hospital/laboratory level to collect the microbiological data in EHR used to gather EHRBSI data? Please choose only one, as the one that is mainly /primarily used for microbiological data collection in EHRs.

Specification of the terminology / classification system in use for microbiological data in EHRs
Field: MicrobiologicalTerminologySpec
Coding: Text

If reporting 'OTH' in the ClinicalTerminology, please specify the code system used.

Variables on high-level aggregated indicators and denominators

Number of blood culture sets
Field: NumberOfBloodCultureSets
Coding: Numerical (0 –)

Number of blood culture sets per year. Provide data for previous year or the most recently available data.

Number of discharges (or admissions) per surveillance period
Field: NumberOfHospitalDischarges
Coding: Numerical (0 – 999 999)

Number of hospital discharges (or admissions if discharges not available) for specified surveillance period; if possible, provide the number for the included wards only. Only to be included if reporting data by participating hospitals.

Number of patient-days per surveillance period
Field: NumberOfHospitalPatientDays
Coding: Numerical (0 –)

Number of patient days (bed days) for the same surveillance period and the same wards as the number of discharges/admissions. Only to be included if reporting data by participating hospitals.

Estimated proportion of the national or regional population covered by the surveillance
Field: ProportionPopulationCovered
Coding: Numerical (0 – 1)

Best available estimate for the proportion of the national or regional population covered by the surveillance in the specific period. Use '.' as decimal delimiter, e.g. 0.32. Recommended to be included if other denominators cannot be reported.

Number of hospital-onset HA-BSIs
Field: NumberOfHOHABSIs
Coding: Numerical (0 –)

Number of Hospital-onset HA-BSIs in the current hospital/admission, i.e. episodes with the first date of specimen is on day three or later of the hospital admission (date of admission = day one). May be excluded if not possible to report hospital-onset HA-BSIs (but not reaching objective 1 of the surveillance) and/or if reporting case-based data.

Number of imported HA-BSIs
Field: NumberOfImportedHABSIs
Coding: Numerical (0 –)

Number of imported healthcare-associated BSIs, i.e. episodes with readmission for BSI within three calendar days after a discharge from a healthcare facility (date of discharge = day one). May be excluded from reporting if not possible to collect data on imported HA-BSIs and/or if reporting case-based data.

Number of total BSIs
Field: NumberOfTotalBSIs
Coding: Numerical (0 –)

Number of BSIs within the surveillance period i.e. total episodes with positive blood culture from day one regardless of origin of symptoms and regardless of hospitalisation. May be used alone if not possible to report hospital-onset HA-BSIs. May be excluded if reporting case-based data.

EHRBSI metadata – Aggregated and case-based reporting level ´EHRBSI$Denom'

´EHRBSI$Denom´ is **optional** and may be used together with ´EHRBSI' if reporting stratified denominator data and/or stratified data on BSIs.

Common TESSy variables (referring to the structure of the relational CSV/XML files)

Record Identifier (mandatory)
Field: RecordId
Coding: Text (max. 80 characters)

Unique identifier for each record in the denominator file – Member State selected and generated.

Parent Identifier (mandatory)
Field: ParentId
Coding: Text (max. 80 characters)

The corresponding "parent identifier" for each record (RecordId in the 'EHRBSI')

Variables for stratified aggregated indicators and denominators

End date of this surveillance period (mandatory)
Field: PeriodEnd
Coding: yyyy-mm-dd

Start date of this surveillance period (mandatory)
Field: PeriodStart
Coding: yyyy-mm-dd

Unit Identifier
Field: UnitId
Coding: Text (max. 80 characters)

Unique identifier for each unit (Abbreviated Ward Name) within an hospital, should remain identical in different surveillance periods/years. Should be identical to corresponding UnitId in the patient file, if provided.

Specialty of the Unit (Ward)
Field: UnitSpecialtyShort
Coded value list: [UnitSpecialtyWard]
Coding: GER = Geriatrics
GO = Gynecology/Obstetrics
ICU = Intensive Care
LTC = Long-term care
MED = Medicine
MIX = Mixed
NEO = Neonatal
OTH = Other
PED = Pediatric
PSY = Psychiatry
RHB = Rehabilitation
SUR = Surgery

Main ward specialty (>=80% of patients belong to this specialty). If less then 80%, choose mixed ward (MIX).

Number of discharges (or admissions) per surveillance period per selected stratification
Field: NumberOfSpecHospitalDischarges
Coding: Numerical (0 –)

Number of hospital discharges (or admissions if discharges not available) for specified surveillance period; if possible, provide the number for the included wards only. Only to be included if reporting data by participating hospitals.

Number of patient-days per surveillance period per selected stratification
Field: NumberOfSpecHospitalPatientDays
Coding: Numerical (0 –)

Number of patient days (bed days) for the same surveillance period and the same wards as the number of discharges/admissions. Only to be included if reporting data by participating hospitals.

Number of hospital-onset HA-BSIs per selected stratification
Field: NumberOfSpecHOHABSIs
Coding: Numerical (0 –)

Number of Hospital-onset HA-BSIs in the current hospital/admission, i.e. episodes with the first date of specimen is on day three or later of the hospital admission (date of admission = day one) for the selected stratification. May be excluded if reporting case-based data.

Number of imported HA-BSIs per selected stratification
Field: NumberOfSpecImportedHABSIs
Coding: Numerical (0 –)

Number of imported healthcare-associated BSIs, i.e. episodes with readmission for BSI within three calendar days after a discharge from a healthcare facility (date of discharge = day one) for the selected stratification. May be excluded from reporting if not possible to collect data on imported HA-BSIs. May be excluded if reporting case-based data.

Number of total BSIs per selected stratification
Field: NumberOfSpecTotalBSIs
Coding: Numerical (0 –)

Number of BSIs within the surveillance period i.e. total episodes with positive blood culture from day one regardless of origin of symptoms and regardless of hospitalisation for the selected stratification. May be excluded if reporting case-based data.

EHRBSI metadata – Case-based reporting level 'EHRBSI$Patient'

´EHRBSI$Patient´is **optional** and may be used together with ´EHRBSI' if reporting case-based data on BSIs and is used to report information related to the patient.

Common TESSy variables (referring to the structure of the relational CSV/XML files)

Record Identifier (mandatory)
Field: RecordId
Coding: Text (max. 80 characters)

Unique identifier for each record in the denominator file – Member State selected and generated.

Parent Identifier (mandatory)

Field: ParentId
Coding: Text (max 80 characters)

The corresponding "parent identifier" for each record (RecordId in the ´EHRBSI´).

Variables for patient information

Unit Identifier
Field: UnitId
Coding: Text (max. 80 characters)

Unique identifier for each unit (Abbreviated Ward Name) within an hospital, should remain identical in different surveillance periods/years. Should be identical to corresponding UnitId in the stratified denominator file, if provided.

Specialty of the Unit (Ward)
Field: UnitSpecialtyShort
Coded value list: [UnitSpecialtyWard]
Coding: GER = Geriatrics
GO = Gynecology/Obstetrics
ICU = Intensive Care
LTC = Long-term care
MED = Medicine
MIX = Mixed
NEO = Neonatal
OTH = Other
PED = Pediatric
PSY = Psychiatry
RHB = Rehabilitation
SUR = Surgery

Main ward specialty (>=80% of patients belong to this specialty). If less then 80%, choose mixed ward (MIX). If more detailed level is available, please use PatientSpecialty instead of UnitSpecialty.

Consultant/Patient specialty
Field: PatientSpecialty
Coded value list: [SpecialtyHAI]
Coding: See the coded value list SpecialtyHAI in the metadataset.

A detailed level of patient specialty, if available.

Date of admission current ward
Field: DateOfAdmissionCurrentWard
Coding: yyyy-mm-dd

Date of admission to the current ward (usually the ward/specialty where the sample is taken). In case no hospital admission, report empty.

Patient identifier (mandatory)

Field: PatientId
Coding: Text

Anonymous code assigned by hospital for each specific patient, unique within hospital. May be for example a simple patient counter from 1 to n. Allows both letters and numbers.

Age
Field: Age
Coding: Numerical (0 – 120)

Numeric code for each patient, unique within hospital. Anonymous code assigned by hospital to specify the patient.

Sex at birth
Field: Sex
Coded value list: [Sex]
Coding: F = Female
M = Male
OTH = Other

Sex at birth.

Origin of patient
Field: PatientType
Coded value list: [PatientTypes]
Coding: INPAT = Admitted (Inpatient)
OTH = Other (e.g. emergency room)
OUTPAT = Outpatient

Origin of patient.

Date of hospital admission
Field: DateOfHospitalAdmission
Coding: yyyy-mm-dd

Date of admission to the hospital. In case no hospital admission, report empty.

Date of hospital discharge
Field: DateOfHospitalDischarge
Coding: yyyy-mm-dd
UNK = Unknown
NA = Not applicable

Date of discharge from the hospital.

Patient outcome
Field: OutcomeOfCase
Coded value list: [Outcome]
Coding: A = Alive
D = Died

Patient status at discharge or at end of follow-up.

Primary code for hospital discharge or admission
Field: HospitalisationCode
Coding: Text (max. 80 characters)

The hospitalisation should be interpreted as the hospital episode where the BSI episode was identified. Primary code used for the admission event of the patient (last updated primary discharge or admission (in this order) code should be used in case it was changed from the initial admission event).

Example 1 Code: "269464000"
Example 2 Code: "C34.1"

Primary code label of admission event of the patient
Field: HospitalisationCodeLabel
Coding: Text (max. 256 characters)

Full name specification or label of the primary code of admission event of the patient (if a standard terminology / classification / code system is used for the primary code, please use the corresponding label or full name specification of the terminology / classification / code system for the code in use; If the terminology / classification / code system is used with a country-specific language or translation, please provide the corresponding English full name specification or label if available).

Example 1 CodeLabel: "Malignant neoplasm of upper lobe, bronchus or lung (disorder)"
Example 2 CodeLabel: "Malignant neoplasm: Upper lobe, bronchus or lung"

Code system of the primary code of the admission event of the patient
Field: HospitalisationAdmissionCodeSystem
Coded value list: [ClinicalCodesystem]
Coding: ICD-9 = International Classification of Diseases, 9th edition
ICD-10 = International Classification of Diseases, 10th edition
ICD-10-CM =International Classification of Diseases, 10th edition, Clinical Modification
ICD-10-PCS = International Classification of Diseases, 10th edition, Procedure Coding System
ICD-10-GM = International Classification of Diseases, German Modification
ICD-11 = International Classification of Diseases, 11th edition, Foundation
ICD-11-MMS = International Classification of Diseases, 11th edition, MMS linearisation
SNOMED-CT = Systematized Nomenclature of Medicine - Clinical Terms
DRG = Diagnosis Related Groups
G-DRG = Diagnosis Related Groups, German
MS-DRG = Medicare Severity Diagnosis Related Groups
OPCS-4 = Office of Population Censuses and Surveys - Classification of Surgical Operations and Procedures, 4th revision
HCPCS = Healthcare Common Procedure Coding System
CPT = Current Procedural Terminology
OTH = Other

Terminology / classification / code system used for the primary code of the admission event of the patient.

Example 1 CodeSystem: "SNOMED-CT"
Example 2 CodeSystem: "ICD-10"

Specification of the code system of the primary code of the admission event of the patient

Field: HospitalisationAdmissionCodeSystemSpec
Coding: Text

If reporting 'OTH' in the HospitalisationAdmissionCodeSystem, please specify the code system used.

Code system version of the primary code of the admission event of the patient
Field: HospitalisationCodeSystemVersion
Coding: Text (max. 80 characters)

Terminology / classification / code system version used for the primary code of the admission event of the patient.

Example 1 CodeSystemVersion: "2024-04-01"
Example 2 CodeSystemVersion: "2019"

Previous admission to a healthcare facility
Field: PreviousAdmission
Coded value list: [PreviousAdmission]
Coding: CURR = Current hospital
LTCF = Long-term care facility
OHOSP = Other acute care hospital
OTH = Other
NO = No previous admission

Recent admission within three calendar days (date of discharge = day one) to a healthcare facility, prior to the current admission.

EHRBSI metadata – Case-based reporting level 'EHRBSI$Patient$Isolate'

´EHRBSI$Patient$Isolate' is **optional** and may be used together with ´EHRBSI' and ´EHRBSI$Patient´ if reporting case-based data on BSIs and is used to report information related to the microbiological sample/isolate.

Common TESSy variables (referring to the structure of the relational CSV/XML files)

Record Identifier (mandatory)
Field: RecordId
Coding: Text (max. 80 characters)

Unique identifier for each record in the denominator file – Member State selected and generated.

Parent Identifier (mandatory)
Field: ParentId
Coding: Text (max. 80 characters)

The corresponding "parent identifier" for each record (RecordId in the ´EHRBSI$Patient´).

Variables for the information on the isolate

Date of specimen collection
Field: DateOfSpecCollection
Coding: yyyy-mm-dd

Date of specimen collection.

Laboratory code
Field: LaboratoryCode
Coded value list: [LaboratoryCodeAMR]

Laboratory code unique for each labortory within the country. Use the EARS-Net LaboratoryCodes. To add new codes, please contact TESSy helpdesk. Recommended format is '[ReportingCountry]-[code of three characters]'. LaboratoryCode can also be reported separately at the isolate level, if reporting case-based data. Note that both HospitalId and LaboratoryCode may only be used if the hospital and laboratory services fully overlap. To be omitted if only reporting national level aggregated data.

Isolate Identifier
Field: IsolateId
Coding: Text (max. 80 characters)

Isolate identifier unique for each isolate within laboratory and year.

Specimen type
Field: Specimen
Coded value list: [SpecimenAMR]
Coding: BLOOD = Blood
CSF = Cerebrospinal fluid

Isolate source. The variable is included in case reporting CSF isolates as in EARS-Net and to include further possibility for other specimen types.

Code of the microorganism responsible for the BSI episode
Field: MicroorganismCode
Coding: Text (max. 80 characters)

Code representing the microorganism responsible for the BSI episode.
Example 1 Code: "3491000146109"
Example 2 Code: "498019"
Example 3 Code: "LA32402-2"

Code label of the microorganism responsible for the BSI episode
Field: MicroorganismCodeLabel
Coding: Text (max. 256 characters)

Full name specification or label of the code representing the microorganism responsible for the BSI episode (if a standard terminology / classification / code system is used for the primary code, please use the corresponding label or full name specification of the terminology / classification / code system for the code in use; If the terminology / classification / code system is used with a country-specific language or translation, please provide the corresponding English full name specification or label if available).
Example 1 CodeLabel: "Candida auris (organism)"
Example 2 CodeLabel: "Candida auris"
Example 3 CodeLabel: "Candida auris"

Code system that includes the code of the microorganism responsible for the BSI episode
Field: MicroorganismCodeSystem
Coded value list: [MicroorganismCodeSystem]
Coding: SNOMED-CT = Systematized Nomenclature of Medicine - Clinical Terms
NCBI-TAXON = National Center for Biotechnology Information (NCBI) Organisms Taxonomy
WHONET = WHO Collaborating Centre for Surveillance of Antimicrobial Resistance - Microorganism List
WHOCARE-EXT = ECDC WHOCARE Microorganims List, Extended
WHOCARE-COMP = ECDC WHOCARE Microorganims List, Complete
LOINC = Logical Observation Identifiers Names and Codes
NPU = Nomenclature for Properties and Units
OTH = Other

Terminology / classification / code system used for the code of the microorganism responsible for the BSI episode.
Example 1 CodeSystem: "SNOMED-CT"
Example 2 CodeSystem: "NCBI-TAXON"
Example 3 CodeSystem: "LOINC"

Specification of the code system that includes the code of the microorganism responsible for the BSI episode
Field: MicroorganismCodeSystemSpec
Coding: Text

If reporting 'OTH' in the MicroorganismCodeSystem, please specify the terminology used.

Code system version that includes the code of the microorganism responsible for the BSI episode
Field: MicroorganismCodeSystemVersion
Coding: Text (max 80 characters)

Terminology / classification / code system version used for the code of the microorganism responsible for the BSI episode.

Example 1 CodeSystemVersion: "2024-04-01"
Example 2 CodeSystemVersion: ""
Example 3 CodeSystemVersion: "2.77"

EHRBSI metadata – Case-based reporting level 'EHRBSI$Patient$Isolate$Res'

´EHRBSI$Patient$Isolate$Res' is **optional** and may be used together with ´EHRBSI', ´EHRBSI$Patient´ and ´EHRBSI$Patient$Isolate´ if reporting case-based data on BSIs including antimicrobial resistance results. This level is used to report information related to the antimicrobial susceptibility testing of the microbiological sample/isolate. The level and all variables are optional, also for case-based reporting.

Common TESSy variables (referring to the structure of the relational CSV/XML files)

Record Identifier (mandatory)
Field: RecordId
Coding: Text (max. 80 characters)

Unique identifier for each record in the denominator file – Member State selected and generated.

Parent Identifier (mandatory)
Field: ParentId
Coding: Text (max. 80 characters)

The corresponding "parent identifier" for each record (RecordId in the ´EHRBSI$Patient$Isolate´).

Variables for the results on the antimicrobial susceptibility testing

Antibiotic code
Field: Antibiotic
Coded value list: [AntibioticHAI]
Coding: See the coded value list AntibioticHAI in the metadataset

Antibiotic code tested for susceptibility.

SIR
Field: SIR
Coded value list: [SIREHR]
Coding: I = Susceptible, increased exposure
IR = Intermediate or Resistant (non-susceptible, old classification)
R = Resistant
S = Susceptible, standard dose

Final interpretation result of all different susceptibility tests performed, based on EUCAST breakpoints.

PCR mec-gene
Field: ResultPCRmec
Coded value list: [PosNeg]
Coding: NEG = Negative
POS = Positive

Detection of PCR mecA gene (only if STAAUR [WHOCARE]).

PBP2a-agglutination

Field: ResultPbp2aAggl
Coded value list: [PosNeg]
Coding: NEG = Negative
POS = Positive

Detection of PBP2a-agglutination (only if STAAUR [WHOCARE]).

ESBL present
Field: ResultESBL
Coded value list: [PosNeg]
Coding: NEG = Negative
POS = Positive

Detection of Extended-Spectrum Beta-Lactamase (ESBL) (only if ESCCOL or KLEPNE [WHOCARE]).

Carbapenemase
Field: ResultCarbapenemase
Coded value list: [PosNeg]
Coding: NEG = Negative
POS = Positive

Detection of Carbapenemases (only if ESCCOL or KLEPNE or PSEAER or ACISPP [WHOCARE]).

Zone value
Field: ZoneValue
Coding: Numerical (0 – 99 999)

Zone (Value in mm).

Interpretation of zone test
Field: ZoneSIR
Coding: Coded value list: [SIR]
Coding: I = Susceptible, increased exposure
R = Resistant
S = Susceptible, standard dosing regimen

Zone sign
Field: ZoneSusceptibilitySign
Coding: Coded value list: [Sign3]
Coding: <= : Less than or equal
= : Equal
> : Greater than
>= : Greater than or equal

Zone (> < =). This field can indicate if a Zone test value is the exact value "equal to" (=); "equal to or less than" the value (<= value); "greater than" the value (>value); or "equal to or greater than" the value (>=value). The value is indicated in the following field.

MIC sign
Field: MICSusceptibilitySign
Coding: Coded value list: [Sign3]
Coding: <= : Less than or equal
= : Equal
> : Greater than
>= : Greater than or equal

MIC (> < =). This field can indicate if a MIC-value is the exact value "equal to" (=); "equal to or less than" the value (<= value); "greater than" the value (>value); or "equal to or greater than" the value (>=value). The value is indicated in the following field.

MIC value
Field: MICValue
Coding: Numerical (0 – 99 999)

MIC (Value in mg/l). Use '.' as decimal delimiter, e.g. 0.25.

Interpretation of MIC test
Field: MICSIR
Coding: Coded value list: [SIR]
Coding: I = Susceptible, increased exposure
R = Resistant
S = Susceptible, standard dosing regimen

Interpretation result of the MIC susceptibility test performed.

Gradient strip sign
Field: GradSusceptibilitySign
Coding: Coded value list: [Sign3]
Coding: <= : Less than or equal
= : Equal
> : Greater than
>= : Greater than or equal

Gradient strip (> < =). This field can indicate if a value of the zone diameter of the gradient strip is the exact value "equal to" (=); "equal to or less than" the value (<= value); "greater than" the value (>value); or "equal to or greater than" the value (>=value). The value is indicated in the following field.

Gradient strip value
Field: GradValue
Coding: Numerical (0 – 99 999)

Gradient strip value (Value in mg/l). Use '.' as decimal delimiter, e.g. 0.25.

Interpretation of the gradient strip test
Field: GradSIR
Coding: Coded value list: [SIR]
Coding: I = Susceptible, increased exposure
R = Resistant

S = Susceptible, standard dosing regimen

Interpretation result of the gradient strip test performed.

Disk load
Field: ZoneTestDiskLoad
Coding: Text (max. 80 characters)

Disk load (only if Zone). This field can be used to mention the load of the gentamicin disk used, the field can be used for the disk load of other antibiotics too. Please mention the value and the Units (e.g. mcg, Units or IU).

Reference Guidelines SIR
Field: ReferenceGuidelinesSIR
Coding: Coded value list: [ReferenceGuidelinesSIR]
Coding: CLSI = Clinical and Laboratory Standards Institute
EUCAST = European Committee on Antimicrobial Susceptibility Testing
NAT = National guidelines
OTH = Other

Reference guidelines used for antimicrobial susceptibility testing breakpoint(s). The variable is kept to enable data validation.