I. Overview of J-SIPHE ................................................................. 1
   Background and purpose ......................................................... 1
   Operation ............................................................................. 1
   Registered data ................................................................... 1
   Annual report ...................................................................... 1

II. Data registration items ...................................................... 2
   Basic information (Site information) ......................................... 2
   AST-related/Infection treatment information ............................... 2
   AMU information .................................................................. 2
   ICT-related information ......................................................... 3
   CLABSI/CAUTI information (HAI information) ......................... 3
   SSI information (HAI information) ............................................. 3
   NICU information (HAI information) ......................................... 3
   Microorganisms and resistant bacteria information ..................... 4

III. Summary of data aggregation results ................................. 5
   Basic information (Site information) ......................................... 5
   AST-related/Infectious disease treatment information .................. 9
   AMU information .................................................................. 17
   CLABSI/CAUTI information (HAI information) ......................... 33
   SSI information (HAI information) ............................................. 36
   Microorganisms and resistant bacteria information ..................... 37

IV. Reference at the end of the document ................................. 55
   List of ward codes .................................................................. 55
   List of surgical procedure codes (in reference to the document of JANIS) ........................................................................ 55
   List of antimicrobial drugs .................................................... 57
   List of microorganisms and resistant bacteria .............................. 59
   List of bacteria in contaminated samples ................................... 60
   How to read box plots ............................................................. 61
   List of abbreviations ................................................................ 62
CONTENTS OF FIGURES

Table 1 Participating sites ......................................................................................................................................... 5
Table 2 Distribution of the number of beds, patient-days, hospitalizations, and average length of stay at participating sites ........................................................................................................................................... 5
Table 3 Participating sites subject to aggregation by prefecture .................................................................................. 8

Figure 1 Geographical distribution of participating sites .......................................................................................... 7
Figure 2 Distribution of the number of infectious disease consultations per 1,000 patient-days ......................... 9
Figure 3 Distribution of the number of infectious disease consultant physicians per 100 beds ......................... 9
Figure 4 Number of personnel in the AST by job type per 100 beds .................................................................. 10
Figure 5 Number of certified pharmacists in the AST per 100 beds .................................................................. 10
Figure 6 Distribution of the number of consultations with the AST per 1,000 patient-days .............................. 11
Figure 7 Distribution of the number of proposals from the AST per 1,000 patient-days .................................. 11
Figure 8 Proportion of implementation of a blood culture testing system .......................................................... 12
Figure 9 Proportion of adoption of antimicrobial drugs subject to antimicrobial stewardship ....................... 13
Figure 10 Proportion of antimicrobial stewardship intervention framework ......................................................... 14
Figure 11 Proportion of adoption of drugs subject to TDM .................................................................................... 15
Figure 12 Proportion of a measurement system for the blood concentration of drugs subject to TDM .......... 16
Figure 13 Distribution of the TDM implementation rate ......................................................................................... 16
Figure 14 Distribution of AUD (injection) .................................................................................................................. 17
Figure 15 Distribution of DOT (injection) .................................................................................................................. 18
Figure 16 Distribution of AUD/ DOT ....................................................................................................................... 19
Figure 17 Distribution of AUD (oral) ....................................................................................................................... 20
Figure 18 Distribution of DOT (oral) ....................................................................................................................... 21
Figure 19 Distribution of AUD/ DOT (oral) ............................................................................................................... 22
Figure 20 Distribution of AUD (injection + oral) ..................................................................................................... 23
Figure 21 Distribution of DOT (injection + oral) ..................................................................................................... 24
Figure 22 Distribution of AUD/ DOT (injection + oral) ........................................................................................... 25
Figure 23 Number of personnel in the ICT by job type per 100 beds ................................................................. 26
Figure 24 Number of qualified personnel in the ICT by job type per 100 beds ............................................... 26
Figure 25 Proportion of implementation of an ICT monitoring system for resistant bacteria detected cases ......................... 27
Figure 26 Distribution of amount of hand sanitizer used per 1,000 patient-days (L) ........................................ 27
Figure 27 Distribution amount of hand sanitizer used (L) by ward function per 1,000 patient-days .................. 28
Figure 28 Distribution of overall hand hygiene compliance rate ........................................................................ 28
Figure 29 Distribution of overall hand hygiene compliance rate by entering/leaving rooms ............................. 29
Figure 30 Distribution of hand hygiene compliance rate by job type ................................................................... 29
Figure 31 Distribution of hand hygiene compliance rate at the time of entering/leaving rooms by job type ................. 30
Figure 32 Distribution of hand hygiene compliance rate by ward function .......................................................... 30
Figure 33 Distribution of hand hygiene compliance rate at the time of entering/leaving rooms by ward function ................................................. 31
Figure 34 Distribution of WHO Hand Hygiene Self-Assessment Framework: 5 major components .................. 32
Figure 35 Distribution of WHO Hand Hygiene Self-Assessment Framework: Leadership criteria ..................... 32
Figure 36 Distribution of the incidence of CLABSI: LCBI + CSEP by ward function ........................................... 33
Figure 37 Distribution of incidence of CLABSI: LCBI by ward function ............................................................ 33
Figure 38 Distribution of the ratio of central line use by ward function .............................................................. 34
Figure 39 Distribution of the incidence of CAUTI by ward function ................................................................. 34
Figure 40 Distribution of the ratio of urethral catheter use by ward function ...................................................... 35
Figure 41 Number of surgeries and incidence of surgical site infection (SSI) by surgical procedure ............... 36
Figure 42 Proportion of detection methods for *Clostridioides difficile* infection (CDI) diagnosis .......................... 37
Figure 43 Distribution of the number of CDI tests performed per 10,000 patient-days .......................................... 38
Figure 44 Distribution of the number of CDI episodes per 10,000 patient-days ....................................................... 38
Figure 45 Distribution of the number of major bacteria detected per 10,000 patient-days (total number) ................................................................. 39
Figure 46 Distribution of the number of major bacteria detected per 10,000 patient-days (new detection) ................................................................. 40
Figure 47 Distribution of the number of major bacteria detected per 10,000 patient-days (nosocomial) ......................... 41
Figure 48 Distribution of the number of resistant bacteria detected per 10,000 patient-days (total number) .................... 42
Figure 49 Distribution of the number of resistant bacteria detected per 10,000 patient-days (new detection) .................. 43
Figure 50 Distribution of the number of resistant bacteria detected per 10,000 patient-days (nosocomial) ................. 44
Figure 51 Distribution of the number of episodes of bloodstream infection caused by major bacteria per 10,000 patient-days (total number) ......................... 45
Figure 52 Distribution of number of episodes of bloodstream infection caused by major bacteria per 10,000 patient-days (nosocomial) ............................................ 47
Figure 53 Distribution of the number of episodes of bloodstream infection caused by resistant bacteria per 10,000 patient-days (total number) ................................. 49
Figure 54 Distribution of the number of episodes of bloodstream infection caused by resistant bacteria per 10,000 patient-days (nosocomial) ............................................ 50
Figure 55 Distribution of the proportion of patients with newly detected methicillin-resistant *Staphylococcus aureus* (MRSA) ................................................................................. 51
Figure 56 Distribution of the number of blood cultures submitted per 1,000 patient-days ............................................ 51
Figure 57 Distribution of the rate of multiple sets of blood cultures ........................................................................ 52
Figure 58 Distribution of the positive rate of blood cultures ........................................................................ 52
Figure 59 Distribution of the rate of contaminated blood cultures ........................................................................ 53
Figure 60 Antibiogram ............................................................................................................................................. 54
I. Overview of J-SIPHE

Background and purpose

In 2015, the World Health Organization (WHO) General Assembly adopted a global action plan on antimicrobial resistance (AMR) and called on Member States to develop their own action plans. In response, the Government of Japan formulated an Antimicrobial Resistance (AMR) Action Plan in 2016. The AMR Action Plan calls for efforts in areas such as public awareness, education, surveillance, monitoring (drug resistance and doses of antimicrobial drugs), infection prevention and control, and antimicrobial stewardship. Regarding the prevention and control of infections, the promotion of infection prevention and control in medical and long-term nursing care, as well as the promotion of regional cooperation are also advocated. Based on these circumstances, the Antimicrobial Resistance (AMR) Clinical Reference Center, a project commissioned by the Ministry of Health, Labour and Welfare, took the initiative in developing a system called the Japan Surveillance for Infection Prevention and Healthcare Epidemiology (J-SIPHE; hereinafter, called "this system") to be used in countermeasures against AMR at medical institutions. The purpose of this system is to aggregate information regarding infection treatment, measures, and structures for infection prevention, healthcare-associated infection information, major/resistant bacteria information, information on bloodstream infections due to these bacteria, and antimicrobial drug information at participating sites nationwide, and to help these participating sites and their local communities to utilize this information. It also serves as a benchmark for Japan through the aggregation of data.

Operation

The system is operated and managed by the AMR Clinical Reference Center in the National Center for Global Health and Medicine. The AMR Clinical Reference Center was established in April 2017 as a project commissioned by the Ministry of Health, Labour and Welfare, to promote measures against antimicrobial resistance (AMR) based on the "Antimicrobial Resistance (AMR) Action Plan." In addition, the J-SIPHE expert committee, which comprises experts in various fields related to this system deliberates surveillance items, rules, research, etc. from a professional viewpoint.

Registered data

This system accumulates multiple sets of data on antimicrobial resistance (AMR) measures registered by participating sites. These accumulated data are used in various efforts such as use at participating sites, community-based infection control networks, and in a network of related sites. In order to effectively utilize the accumulated data, the AMR Clinical Reference Center, which operates this system, organizes and aggregates data on an annual basis, and prepares an annual report to provide information (public information) to medical institutions. The important accumulated data are stored by the J-SIPHE office at the Center, and utilized for research and other activities related to antimicrobial resistance (AMR) measures under the audit of the J-SIPHE experts.

Annual report

This annual report is prepared based on the data registered by the participating sites using this system, in accordance with the following criteria.

1. Raw data* from January to December of the previous year at the time of data aggregation are used.
2. Raw data* of participating sites that registered data at least one month during the target period are used.
3. The annual report adopts a unique method of aggregation/representation.
4. Some data registration items are not included in the annual report.
5. Figures and tables are generated for sites with calculable data.
6. Data by which sites are likely to be identified are not shown.
7. Registration data with very limited information, extreme outliers, and obviously misregistered data are excluded from the aggregation.

* Raw data: Data registered in this system by participating sites
II. Data registration items

The J-SIPHE data registration items are listed below.

**Basic information (Site information)**
- Number of beds
- Additional reimbursement for infection prevention category
- Presence/absence of additional reimbursement for antimicrobial stewardship support
- Presence/absence of consultation system for infections
- Working status of physicians in a consultation system for infections
- Patient-days
- Patient-days by ward
- Hospitalizations
- Average length of stay

**AST-related/Infection treatment information**
- Number of infectious disease consultant physicians
- Number of infectious disease specialists among infectious disease consultant physicians
- Number of pediatric infectious disease specialists among infectious disease consultant physicians
- Number of infectious disease consultations (recorded in medical charts)
- Number of bedside consultations among infectious disease consultations (recorded in medical charts)
- Number of consultations for children among infectious disease consultations (recorded in medical charts)
- Presence/absence of AST system
- Number of healthcare professionals belonging to the AST
- Number of qualified pharmacists belonging to the AST
- Number of consultations with the AST
- Number of proposals from the AST
- Presence/absence of system for starting incubation of collected blood culture bottles
- Presence/absence of system for conducting Gram staining for positive blood culture
- Presence/absence of monitoring system by the Department of Infectious Diseases, ICT, and AST for patients with positive blood cultures
- Antimicrobial agents adopted in the antimicrobial stewardship support program
- Antimicrobial agents subject to antimicrobial stewardship support
- Details of the antimicrobial stewardship support
- Number of patients starting treatment with drugs subject to TDM
- Number of patients undergoing TDM among drugs subject to TDM
- Presence/absence of staff training aimed at antimicrobial stewardship
- Number of staff training sessions for antimicrobial stewardship

**AMU information**
- Dose of each antimicrobial drug used
- Days of each antimicrobial drug used
- Number of patients using each antimicrobial drug
ICT-related information

- Number of healthcare professionals belonging to the ICT
- Number of qualified medical professionals belonging to the ICT
- Monitoring system for resistant bacteria detected cases
- Monitoring system for influenza-like symptom cases
- Number of patients with influenza-like symptoms
- Monitoring system for gastroenteritis
- Number of patients with gastroenteritis symptoms
- Amount of hand sanitizer used (by ward)
- Number of hand hygiene moments upon entry into rooms (by job type/ward)
- Number of hand hygiene events upon entry into rooms (by job type/ward)
- Score of the WHO Hand Hygiene Self-Assessment Framework

CLABSI/ CAUTI information (HAI information)

- Total days of central line use (by ward)
- Number of episodes of LCBI/CSEP (by ward)
- Total days of urethral catheters used (by ward)
- Number of cases of CAUTI (by ward)

SSI information (HAI information)

- Surgical procedure code
- Presence/absence of endoscope
- Number of surgeries
- Number of SSI (by risk index)

NICU information (HAI information)

- Number of beds in the NICU
- Number of beds in the GCU
- Presence/absence of pediatric surgery
- Presence/absence of cardiovascular surgery
- Presence/absence of neurosurgery
- Presence/absence of MRSA active surveillance system
- Frequency of MRSA active surveillance
- Number of newly detected MRSA cases
- Presence/absence of monitoring of the number of device-related infections
- Total days of central line used (by birth weight category)
- Number of LCBI (by birth weight category)
- Number of CSEP (by birth weight category)
Microorganisms and resistant bacteria information

- Number of patients with a positive diagnostic test for CDI
- Primary detection methods for CDI diagnosis
- Number of tests performed for CDI diagnosis
- Number of total detections, new detections, and in-hospital detections by major bacterium
- Number of total detections, new detections, and in-hospital detections by resistant bacterium
- Total number of episodes and number of episodes of nosocomial bloodstream infection by major bacterium
- Total number of episodes and number of episodes of nosocomial bloodstream infection by resistant bacterium
- Number of patients with MRSA detected by type of sample
- Number of patients with S. aureus detected by type of samples
- Number of submitted blood cultures submitted from patients aged 15 years or older
- Number of submitted blood cultures with only one set from patients aged 15 years or older
- Number of blood culture sets with positive results submitted from patients aged 15 years or older
- Number of contaminated blood culture sets submitted from patients aged 15 years or older
- Number of blood cultures submitted from patients aged younger than 15 years old
- Number of submitted blood cultures with only one set from patients aged younger than 15 years old
- Number of blood culture sets with positive results submitted from patients aged younger than 15 years old
- Number of contaminated blood culture sets submitted from patients aged younger than 15 years old

*Of the above items, some data are not included in the annual report due to insufficient information, etc.*
III. Summary of data aggregation results

The figures and tables for each item were aggregated and calculated on a site-by-site basis, using data from January through December 2021 from sites that had been registered as of August 25, 2022, among sites approved for participation by December 31, 2021.

For information on how to read box plots and explanations of abbreviations, see “How to read box plots” in “Reference at the end of the document.”

Basic information (Site information)

The table below shows the basic information from participating sites as of December 31, 2021.

<table>
<thead>
<tr>
<th>Item</th>
<th>Participating sites</th>
<th>Additional reimbursement for infection prevention 1</th>
<th>Additional reimbursement for infection prevention 2</th>
<th>Sites not claiming additional reimbursement for infection prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>818</td>
<td>66.9(%)</td>
<td>32.2(%)</td>
<td>1(%)</td>
</tr>
<tr>
<td>AST-related/Infectious disease treatment information</td>
<td>421</td>
<td>81.5(%)</td>
<td>17.8(%)</td>
<td>0.7(%)</td>
</tr>
<tr>
<td>AMU information</td>
<td>785</td>
<td>67.5(%)</td>
<td>31.7(%)</td>
<td>0.8(%)</td>
</tr>
<tr>
<td>ICT-related information</td>
<td>534</td>
<td>70.2(%)</td>
<td>28.8(%)</td>
<td>0.9(%)</td>
</tr>
<tr>
<td>HAI information</td>
<td>349</td>
<td>82.2(%)</td>
<td>17.5(%)</td>
<td>0.3(%)</td>
</tr>
<tr>
<td>CLABS/ CAUTI information</td>
<td>285</td>
<td>82.8(%)</td>
<td>16.8(%)</td>
<td>0.4(%)</td>
</tr>
<tr>
<td>SSI information</td>
<td>237</td>
<td>85.7(%)</td>
<td>14.3(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>NICU information</td>
<td>55</td>
<td>85.5(%)</td>
<td>14.5(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>Microorganisms and resistant bacteria information</td>
<td>651</td>
<td>68.2(%)</td>
<td>31.2(%)</td>
<td>0.6(%)</td>
</tr>
</tbody>
</table>

(Based on data from participating sites as of December 31, 2021)
* “Participating sites” indicates the number of sites approved for participation by December 31, 2021.
* “Additional reimbursement for infection prevention 1” indicates the proportion of sites where the Additional reimbursement for infection prevention 1 is calculated.
* “Additional reimbursement for infection prevention 2” indicates the proportion of sites where the Additional reimbursement for infection prevention 2 is calculated.
* “Sites not claiming additional reimbursement for infection prevention” indicates the proportion of sites where an additional reimbursement for infection prevention is not calculated.
* At least one item was arbitrarily selected.

Note: The additional reimbursement for infection prevention category was changed to the additional reimbursement for improvement of infection prevention category, due to the revision of medical service fees in April 2022. Additional reimbursement for infection prevention 3 was newly added.

Table 2 Distribution of the number of beds, patient-days, hospitalizations, and average length of stay at participating sites

<table>
<thead>
<tr>
<th>Item</th>
<th>Index</th>
<th>Minimum</th>
<th>1st quartile</th>
<th>Median</th>
<th>3rd quartile</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>All sites</td>
<td>Number of beds/month</td>
<td>35</td>
<td>184</td>
<td>301</td>
<td>480</td>
<td>1275</td>
</tr>
<tr>
<td>Patient-days/month</td>
<td>562.7</td>
<td>4227.2</td>
<td>6866.3</td>
<td>10892.9</td>
<td>32136.8</td>
<td></td>
</tr>
<tr>
<td>Hospitalizations/month</td>
<td>8.3</td>
<td>140.3</td>
<td>372</td>
<td>826</td>
<td>2335.5</td>
<td></td>
</tr>
<tr>
<td>Average length of stay/month</td>
<td>2.8</td>
<td>11.8</td>
<td>14</td>
<td>19.7</td>
<td>695</td>
<td></td>
</tr>
<tr>
<td>AST-related/Infection treatment information</td>
<td>Number of beds/month</td>
<td>35</td>
<td>231.9</td>
<td>357</td>
<td>512.2</td>
<td>1275</td>
</tr>
<tr>
<td>Patient-days/month</td>
<td>565.8</td>
<td>4815.7</td>
<td>7408.7</td>
<td>11481.2</td>
<td>32136.8</td>
<td></td>
</tr>
<tr>
<td>Hospitalizations/month</td>
<td>10.2</td>
<td>251.8</td>
<td>532.8</td>
<td>987.6</td>
<td>2199.9</td>
<td></td>
</tr>
<tr>
<td>Average length of stay/month</td>
<td>5</td>
<td>11.6</td>
<td>13.2</td>
<td>16.8</td>
<td>429.3</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Index</td>
<td>Minimum</td>
<td>1st quartile</td>
<td>Median</td>
<td>3rd quartile</td>
<td>Maximum</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------</td>
<td>---------</td>
<td>--------------</td>
<td>--------</td>
<td>--------------</td>
<td>---------</td>
</tr>
<tr>
<td>AMU information</td>
<td>Number of beds/month</td>
<td>35</td>
<td>187.5</td>
<td>304</td>
<td>484.5</td>
<td>1275</td>
</tr>
<tr>
<td></td>
<td>Patient-days/month</td>
<td>402.6</td>
<td>4066.5</td>
<td>6404.2</td>
<td>10534.1</td>
<td>32136.8</td>
</tr>
<tr>
<td></td>
<td>Hospitalizations/month</td>
<td>8.3</td>
<td>148.2</td>
<td>378.8</td>
<td>843.6</td>
<td>2335.5</td>
</tr>
<tr>
<td></td>
<td>Average length of stay/month</td>
<td>2.8</td>
<td>11.8</td>
<td>13.9</td>
<td>19.6</td>
<td>695</td>
</tr>
<tr>
<td>HAI information</td>
<td>Number of beds/month</td>
<td>35</td>
<td>213</td>
<td>331</td>
<td>500</td>
<td>1160</td>
</tr>
<tr>
<td></td>
<td>Patient-days/month</td>
<td>565.8</td>
<td>4724.2</td>
<td>7185.1</td>
<td>10925.1</td>
<td>25036.7</td>
</tr>
<tr>
<td></td>
<td>Hospitalizations/month</td>
<td>23.7</td>
<td>238.9</td>
<td>479.7</td>
<td>958.6</td>
<td>2094.2</td>
</tr>
<tr>
<td></td>
<td>Average length of stay/month</td>
<td>5</td>
<td>11.3</td>
<td>13.1</td>
<td>17</td>
<td>343.9</td>
</tr>
<tr>
<td>CLABSI/CAUTI information</td>
<td>Number of beds/month</td>
<td>35</td>
<td>210</td>
<td>329</td>
<td>500</td>
<td>1160</td>
</tr>
<tr>
<td></td>
<td>Patient-days/month</td>
<td>565.8</td>
<td>4696.5</td>
<td>7265.9</td>
<td>10742.1</td>
<td>25036.7</td>
</tr>
<tr>
<td></td>
<td>Hospitalizations/month</td>
<td>23.7</td>
<td>225</td>
<td>505</td>
<td>906.2</td>
<td>2094.2</td>
</tr>
<tr>
<td></td>
<td>Average length of stay/month</td>
<td>5</td>
<td>11.4</td>
<td>13.2</td>
<td>17</td>
<td>343.9</td>
</tr>
<tr>
<td>NICU information</td>
<td>Number of beds/month</td>
<td>50</td>
<td>260</td>
<td>473</td>
<td>615</td>
<td>1160</td>
</tr>
<tr>
<td></td>
<td>Patient-days/month</td>
<td>944.2</td>
<td>5714.7</td>
<td>9053.8</td>
<td>13498.7</td>
<td>24629.7</td>
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<tr>
<td></td>
<td>Hospitalizations/month</td>
<td>23.7</td>
<td>364.9</td>
<td>801.8</td>
<td>1151.7</td>
<td>1965.6</td>
</tr>
<tr>
<td></td>
<td>Average length of stay/month</td>
<td>7.2</td>
<td>11.1</td>
<td>12.3</td>
<td>13.7</td>
<td>33.9</td>
</tr>
<tr>
<td>SSI information</td>
<td>Number of beds/month</td>
<td>45</td>
<td>227.5</td>
<td>360</td>
<td>504</td>
<td>1160</td>
</tr>
<tr>
<td></td>
<td>Patient-days/month</td>
<td>691.7</td>
<td>4972.1</td>
<td>7527.7</td>
<td>11417.7</td>
<td>25036.7</td>
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<td>306.4</td>
<td>554.2</td>
<td>1022.6</td>
<td>1965.6</td>
</tr>
<tr>
<td></td>
<td>Average length of stay/month</td>
<td>5</td>
<td>11.1</td>
<td>12.8</td>
<td>15.9</td>
<td>225.8</td>
</tr>
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<td>ICT-related information</td>
<td>Number of beds/month</td>
<td>35</td>
<td>189.5</td>
<td>306</td>
<td>484.5</td>
<td>1275</td>
</tr>
<tr>
<td></td>
<td>Patient-days/month</td>
<td>402.6</td>
<td>4071.8</td>
<td>6578.8</td>
<td>10515.6</td>
<td>32136.8</td>
</tr>
<tr>
<td></td>
<td>Hospitalizations/month</td>
<td>8.3</td>
<td>153.8</td>
<td>395.2</td>
<td>843.6</td>
<td>2335.5</td>
</tr>
<tr>
<td></td>
<td>Average length of stay/month</td>
<td>5</td>
<td>11.8</td>
<td>13.9</td>
<td>19.4</td>
<td>695</td>
</tr>
<tr>
<td>Microorganisms and resistant bacteria</td>
<td>Number of beds/month</td>
<td>35</td>
<td>191</td>
<td>305</td>
<td>488.5</td>
<td>1275</td>
</tr>
<tr>
<td>information</td>
<td>Patient-days/month</td>
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<td>4126</td>
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<td>843.6</td>
<td>2335.5</td>
</tr>
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<td></td>
<td>Average length of stay/month</td>
<td>5</td>
<td>11.7</td>
<td>13.9</td>
<td>19.6</td>
<td>695</td>
</tr>
</tbody>
</table>

(Based on data from January to December 2021, as of August 25, 2022)

* Sites with registration of basic information for each item.
* “Number of beds” indicates the value obtained by summing the number of beds for each registered month and dividing the result by the number of registered months.
* “Patient-days” indicates the value obtained by summing the patient-days for each registered month, and dividing the result by the number of registered months.
* “Hospitalizations” indicates the value obtained by summing the number of inpatients for each registered month, and dividing the result by the number of registered months.
* “Average length of stay” indicates the value obtained by summing the average length of hospital stay for each registered month, and dividing the result by the number of registered months.
Distribution of participating sites

Figure 1 Geographical distribution of participating sites

(Based on data from participating sites as of December 31, 2021)
<table>
<thead>
<tr>
<th>Prefecture code</th>
<th>Prefecture</th>
<th>Participating sites</th>
<th>Additional reimbursement for infection prevention 1</th>
<th>Additional reimbursement for infection prevention 2</th>
<th>Sites not claiming additional reimbursement for infection prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hokkaido</td>
<td>49</td>
<td>79.6(%)</td>
<td>16.3(%)</td>
<td>4.1(%)</td>
</tr>
<tr>
<td>2</td>
<td>Aomori</td>
<td>8</td>
<td>62.5(%)</td>
<td>25(%)</td>
<td>12.5(%)</td>
</tr>
<tr>
<td>3</td>
<td>Iwate</td>
<td>1</td>
<td>100(%)</td>
<td>0(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>4</td>
<td>Miyagi</td>
<td>10</td>
<td>70(%)</td>
<td>30(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>5</td>
<td>Akita</td>
<td>11</td>
<td>72.7(%)</td>
<td>27.3(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>6</td>
<td>Yamagata</td>
<td>2</td>
<td>100(%)</td>
<td>0(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>7</td>
<td>Fukushima</td>
<td>13</td>
<td>69.2(%)</td>
<td>23.1(%)</td>
<td>7.7(%)</td>
</tr>
<tr>
<td>8</td>
<td>Ibaraki</td>
<td>7</td>
<td>100(%)</td>
<td>0(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>9</td>
<td>Tochigi</td>
<td>5</td>
<td>100(%)</td>
<td>0(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>10</td>
<td>Gunma</td>
<td>7</td>
<td>85.7(%)</td>
<td>14.3(%)</td>
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<tr>
<td>11</td>
<td>Saitama</td>
<td>24</td>
<td>75(%)</td>
<td>25(%)</td>
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<tr>
<td>12</td>
<td>Chiba</td>
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<td>5.3(%)</td>
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<tr>
<td>13</td>
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<td>Kanagawa</td>
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<tr>
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<td>33.3(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>16</td>
<td>Toyama</td>
<td>7</td>
<td>85.7(%)</td>
<td>14.3(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>17</td>
<td>Ishikawa</td>
<td>13</td>
<td>61.5(%)</td>
<td>38.5(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>18</td>
<td>Fukui</td>
<td>13</td>
<td>53.8(%)</td>
<td>46.2(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>19</td>
<td>Yamanashi</td>
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<td>66.7(%)</td>
<td>33.3(%)</td>
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<td>20</td>
<td>Nagano</td>
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<td>6.7(%)</td>
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<td>Gifu</td>
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<td>57.9(%)</td>
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<td>1.8(%)</td>
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<td>47.8(%)</td>
<td>4.3(%)</td>
</tr>
<tr>
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<td>Shiga</td>
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<td>100(%)</td>
<td>0(%)</td>
<td>0(%)</td>
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<tr>
<td>26</td>
<td>Kyoto</td>
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</tr>
<tr>
<td>27</td>
<td>Osaka</td>
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<tr>
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<td>Hyogo</td>
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<tr>
<td>29</td>
<td>Nara</td>
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<td>0(%)</td>
<td>0(%)</td>
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<tr>
<td>30</td>
<td>Wakayama</td>
<td>9</td>
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<tr>
<td>31</td>
<td>Tottori</td>
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</tr>
<tr>
<td>32</td>
<td>Shimane</td>
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<td>0(%)</td>
<td>0(%)</td>
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</tr>
<tr>
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<td>Yamaguchi</td>
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<td>36</td>
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<td>0(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>37</td>
<td>Kagawa</td>
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<td>0(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>38</td>
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</tr>
<tr>
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<td>Kochi</td>
<td>4</td>
<td>75(%)</td>
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</tr>
<tr>
<td>40</td>
<td>Fukuoka</td>
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<td>66.7(%)</td>
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<td>43</td>
<td>Kumamoto</td>
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<tr>
<td>44</td>
<td>Oita</td>
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<td>38.5(%)</td>
<td>61.5(%)</td>
<td>0(%)</td>
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<tr>
<td>45</td>
<td>Miyazaki</td>
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<td>0(%)</td>
<td>0(%)</td>
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<tr>
<td>46</td>
<td>Kagoshima</td>
<td>3</td>
<td>100(%)</td>
<td>0(%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>47</td>
<td>Okinawa</td>
<td>9</td>
<td>77.8(%)</td>
<td>22.2(%)</td>
<td>0(%)</td>
</tr>
</tbody>
</table>

(Based on data from January to December 2021, as of August 25, 2022)
* "Participating sites" indicates the number of sites approved for participation by December 31, 2021.
* "Additional reimbursement for infection prevention 1" indicates the proportion of sites where the Additional reimbursement for infection prevention 1 is calculated.
* "Additional reimbursement for infection prevention 2" indicates the proportion of sites where the Additional reimbursement for infection prevention 2 is calculated.
* "Sites not claiming additional reimbursement for infection prevention" indicates the proportion of sites where an additional reimbursement for infection prevention is not calculated.
Note: The additional reimbursement for infection prevention category was changed to the additional reimbursement for improvement of infection prevention category, due to the revision of medical service fees in April 2022. Additional reimbursement for infection prevention 3 was newly added.
AST-related/Infectious disease treatment information

The data were aggregated and calculated using the registered data for AST-related/infection treatment information of sites that participated by December 31, 2021.

Number of infectious disease consultations per 1,000 patient-days

Figure 2 Distribution of the number of infectious disease consultations per 1,000 patient-days

-Based on data from January to December 2021, as of August 25, 2022-

* The value was obtained by dividing the number of infectious disease consultations by patient-days and multiplying the result by 1,000.
* “Recorded in medical charts” represents consultations with records in medical charts.
* “Bedside consultations” include consultations conducted up to bedside consultation, among cases recorded in medical charts.

Number of infectious disease consultant physicians per 100 beds

Figure 3 Distribution of the number of infectious disease consultant physicians per 100 beds

-Based on data from January to December 2021, as of August 25, 2022-

* The value was obtained by dividing the number of infectious disease consultant physicians by the number of beds and multiplying the result by 100.
* An infectious disease specialist is an infectious disease consultant who has a specialist license for infectious diseases.
Number of personnel in the AST by job type per 100 beds

Figure 4 Number of personnel in the AST by job type per 100 beds

(Based on data from January to December 2021, as of August 25, 2022)
* The value was obtained by dividing the number of personnel belonging to the AST by the number of beds and multiplying the result by 100.
* The job types are classified into “physician,” “nurse,” “pharmacist,” and “laboratory technician”.
* Dedicated staff (0.8 < FTE) devote 80% or more of their working hours, regular staff (0.5 < FTE < 0.8) devote 50% or more of their working hours, and concurrent workers (FTE < 0.5) are also engaged in work for routine operations.
* If staff members in each job type do not belong to AST, the corresponding number at the site was counted as 0.

Number of certified pharmacists in the AST per 100 beds

Figure 5 Number of certified pharmacists in the AST per 100 beds

(Based on data from January to December 2021, as of August 25, 2022)
* The value was obtained by dividing the number of certified pharmacists per 100 beds in the AST by the number of beds and multiplying the result by 100.
* A certified pharmacist indicates a pharmacist who has certification for antimicrobial chemotherapy or infection control, or as an infection control specialist.
* A double-licensed person is counted as a single individual.
* Dedicated staff (0.8 < FTE) devote 80% or more of their working hours, regular staff (0.5 < FTE < 0.8) devote 50% or more of their working hours, and concurrent workers (FTE < 0.5) are also engaged in work for routine operations.
* If no certified pharmacists belong to the AST, the number at the site was counted as 0.
Number of consultations with the AST per 1,000 patient-days

Figure 6 Distribution of the number of consultations with the AST per 1,000 patient-days

(Number of consultations with the AST / Patient-days x 1,000)

(Based on data from January to December 2021, as of August 25, 2022)
* The value was obtained by dividing the number of AST consultations by patient-days and multiplying the result by 1,000.
* The number of consultations with the AST refers to the number of cases in which feedback (introduction, discontinuation, or change of antimicrobials) by an AST was provided, upon consultation/inquiry from attending physicians, etc.
* Note that one patient is counted only once.

Number of proposals from the AST per 1,000 patient-days

Figure 7 Distribution of the number of proposals from the AST per 1,000 patient-days

(Number of proposals from the AST / Patient-days x 1,000)

(Based on data from January to December 2021, as of August 25, 2022)
* The value was obtained by dividing the number of proposals from the AST by patient-days and multiplying the result by 1,000.
* The number of proposals from the AST refers to the number of cases in which antimicrobial stewardship was proposed by the AST, based on monitoring of the use of specified antimicrobials/bacteremia without consultations from attending physicians.
* Note that one patient is counted only once.
Blood culture testing system

Figure 8 Proportion of implementation of a blood culture testing system

- A system where the culturing of collected blood can be started at the hospital: 132 Present, 37 Absent
- A system where Gram staining can be conducted at the time of positive blood culture detection: 133 Present, 36 Absent
- Surveillance system by the department of infectious disease, ICT and AST for patients with positive blood cultures: 145 Present, 24 Absent

(Based on data from January to December 2021, as of August 25, 2022)

* Proportion of implementation of a system where the culturing of collected blood can be started at the hospital.
* Proportion of implementation of a system where Gram staining can be conducted at the time of positive blood culture detection.
Adoption of drugs subject to antimicrobial stewardship

Figure 9 Proportion of adoption of antimicrobial drugs subject to antimicrobial stewardship

(Based on data from January to December 2021, as of August 25, 2022)

* Proportion of adoption by drug category.
Status of antimicrobial stewardship intervention framework

Figure 10 Proportion of antimicrobial stewardship intervention framework

(Based on data from January to December 2021, as of August 25, 2022)

* Proportion of intervention framework by drug category.

* PAF stands for prospective audit and feedback in infection treatment.
Adoption of drugs subject to TDM

Figure 11 Proportion of adoption of drugs subject to TDM

(Based on data from January to December 2021, as of August 25, 2022)

* Proportion of adoption by drug category of TDM.
**Measurement system for the blood concentration of drugs subject to TDM**

**Figure 12 Proportion of a measurement system for the blood concentration of drugs subject to TDM**

![Graph showing the proportion of implementation of a measurement system for blood concentration by intended drug category.](image)

- Proportion of implementation of a measurement system for blood concentration by intended drug category.
- The measurement system for blood concentration is categorized into “in-hospital measurement,” “out-of-hospital measurement,” and “no system for measurement.”

**TDM implementation rate**

**Figure 13 Distribution of the TDM implementation rate**

![Bar graph showing the distribution of TDM implementation rate.](image)

- Proportion of the number of patients undergoing TDM, among those who started antimicrobial drugs.
- Data of sites with 5 or more patients who started administration of the antimicrobial drug during the target period were included.
The data were aggregated and calculated using an application, using data extracted from the “Inpatient EF Integration File” within the registered AMU information of sites that participated by December 31, 2021.

### AUD (injection)

#### Figure 14 Distribution of AUD (injection)

<table>
<thead>
<tr>
<th>Category</th>
<th>DDDs (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penicillins (n=645)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>1st-generation cephalosporins (n=635)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>2nd-generation cephalosporins (n=484)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>3rd-generation cephalosporins (n=645)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>4th-generation cephalosporins (n=571)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Oxacephems (n=382)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Cephemycins (n=592)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Ceftolozane/Tazobactam (n=0)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Carbapenems (n=638)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Monobactams (n=112)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Glycopeptides (n=633)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Oxazolidinones (n=429)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Arbekacin (n=181)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Daptomycin (n=422)</td>
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</tr>
<tr>
<td>Quinolones (n=618)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Aminoglycosides (n=585)</td>
<td><img src="image" alt="Graph" /></td>
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<tr>
<td>Tetracyclines (n=607)</td>
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</tr>
<tr>
<td>Lincomycins (n=606)</td>
<td><img src="image" alt="Graph" /></td>
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<tr>
<td>Macrolides (n=400)</td>
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</tr>
<tr>
<td>Sulfamethoxazole/Trimethoprim (n=272)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
<tr>
<td>Metronidazole (n=421)</td>
<td><img src="image" alt="Graph" /></td>
</tr>
</tbody>
</table>

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the DDDs (dose/DDD) by patient-days and multiplying the result by 100.
* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.
* Refer to the list of antimicrobial drugs for drug class/category.
**DOT (Injection)**

Figure 15 Distribution of DOT (Injection)

- Penicillins (n=645)
- 1st-generation cephalosporins (n=635)
- 2nd-generation cephalosporins (n=484)
- 3rd-generation cephalosporins (n=645)
- 4th-generation cephalosporins (n=571)
- Oxacephems (n=382)
- Cephamycins (n=592)
- Ceftolozane/Tazobactam (n=0)
- Carbapenems (n=638)
- Monobactams (n=112)
- Glycopeptides (n=633)
- Oxazolidinones (n=429)
- Arbekacin (n=181)
- Daptomycin (n=422)
- Quinolones (n=618)
- Aminoglycosides (n=585)
- Tetracyclines (n=607)
- Lincomycins (n=606)
- Macrolides (n=400)
- Sulfamethoxazole/Trimethoprim (n=272)
- Metronidazole (n=421)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the total treatment days by patient-days and multiplying the result by 100.
* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.
* Refer to the list of antimicrobial drugs for drug class/category.
**AUD/ DOT (injection)**

Figure 16 Distribution of AUD/ DOT

(Based on data from January to December 2021, as of August 25, 2022)

* Ratio of AUD (injection) and DOT (injection)

* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.

* Refer to the list of antimicrobial drugs for drug class/category.
AUD (oral)

Figure 17 Distribution of AUD (oral)

- Penicillins (n=640)
- 1st-generation cephalosporins (n=406)
- 2nd-generation cephalosporins (n=415)
- 3rd-generation cephalosporins (n=598)
- Carbapenems (n=45)
- Penems (n=307)
- Oxazolidinones (n=340)
- Quinolones (n=645)
- Aminoglycosides (n=334)
- Tetracyclines (n=630)
- Lincomycins (n=401)
- Macrolides (n=643)
- Sulfamethoxazole/Trimethoprim (n=640)
- Metronidazole (n=601)
- Vancomycin (n=554)
- Fidaxomicin (n=140)

Antifungals (n=592)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the DDDs (dose/DDD) by patient-days and multiplying the result by 100.
* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.
* Refer to the list of antimicrobial drugs for drug class/category.
Figure 18 Distribution of DOT (oral)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the total treatment days by patient-days and multiplying the result by 100.
* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.
* Refer to the list of antimicrobial drugs for drug class/category.
Figure 19: Distribution of AUD/ DOT (oral)

(Based on data from January to December 2021, as of August 25, 2022)

* Ratio of AUD (oral) and DOT (oral)
* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.
* Refer to the list of antimicrobial drugs for drug class/category.
Figure 20 Distribution of AUD (injection + oral)

Penicillins (n=645)
1st-generation cephalosporins (n=638)
2nd-generation cephalosporins (n=577)
3rd-generation cephalosporins (n=645)
4th-generation cephalosporins (n=571)
Oxacephems (n=382)
Cephamycins (n=592)
Ceftolozane/Tazobactam (n=0)
Carbapenems (n=638)
Penems (n=307)
Monobactams (n=112)
Glycopeptides (n=633)
Oxazolidinones (n=467)
Arbekacin (n=181)
Daptomycin (n=422)
Quinolones (n=645)
Aminoglycosides (n=596)
Tetracyclines (n=635)
Lincomycins (n=612)
Macrolides (n=643)
Sulfamethoxazole/Trimethoprim (n=640)
Metronidazole (n=606)
Vancomycin (n=554)
Fidaxomicin (n=140)

Antifungals (n=613)

AUD (injection + oral)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the total of the DDDs (dose/DDD) of injection and oral drugs by patient-days and multiplying the result by 100.
* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.
* Refer to the list of antimicrobial drugs for drug class/category.
Figure 21 Distribution of DOT (injection + oral)

Penicillins (n=645)
1st-generation cephalosporins (n=638)
2nd-generation cephalosporins (n=577)
3rd-generation cephalosporins (n=645)
4th-generation cephalosporins (n=571)
Oxacephems (n=382)
Cephamycins (n=592)
Ceftolozane/Tazobactam (n=0)
Carbapenems (n=638)
Penems (n=307)
Monobactams (n=112)
Glycopeptides (n=633)
Oxazolidinones (n=467)
Arbekacin (n=181)
Daptomycin (n=422)
Quinolones (n=645)
Aminoglycosides (n=596)
Tetracyclines (n=635)
Lincomycins (n=612)
Macrolides (n=643)
Sulfamethoxazole/Trimethoprim (n=640)
Metronidazole (n=606)
Vancomycin (n=554)
Fidaxomicin (n=140)

Antifungals (n=613)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by the total treatment days with injection and oral drugs by patient-days, and multiplying the result by 100.
* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.
* Refer to the list of antimicrobial drugs for drug class/category.
AUD/ DOT (injection + oral)

Figure 22 Distribution of AUD/ DOT (injection + oral)

- Penicillins (n=645)
- 1st-generation cephalosporins (n=638)
- 2nd-generation cephalosporins (n=577)
- 3rd-generation cephalosporins (n=645)
- 4th-generation cephalosporins (n=571)
- Oxacephems (n=382)
- Cephemycins (n=592)
- Ceftolozane/Tazobactam (n=0)
- Carbapenems (n=638)
- Penems (n=307)
- Monobactams (n=112)
- Glycopeptides (n=633)
- Oxazolidinones (n=467)
- Arbekacin (n=181)
- Daptomycin (n=422)
- Quinolones (n=645)
- Aminoglycosides (n=596)
- Tetracyclines (n=635)
- Lincomycins (n=612)
- Macrolides (n=643)
- Sulfamethoxazole/Trimethoprim (n=640)
- Metronidazole (n=606)
- Vancomycin (n=554)
- Fidaxomicin (n=140)

Antifungals (n=613)

* Ratio of AUD (injection + oral) and DOT (injection + oral)
* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.
* Refer to the list of antimicrobial drugs for drug class/category.
The data were aggregated and calculated using the registered data of the ICT-related information of sites that participated by December 31, 2021.

**Number of personnel in the ICT by job type per 100 beds**

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of personnel belonging to the ICT by the number of beds and multiplying the result by 100.
* The job types are classified into “physician,” “nurse,” “pharmacist,” and “laboratory technician.”
* Dedicated staff devote 80% or more of their working hours, regular staff devote 50% or more of their working hours, and concurrent workers are also engaged in work for routine operations.
* If staff members in each job type do not belong to ICT, the corresponding number at the site was counted as 0.

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**Number of qualified personnel in the ICT by job type per 100 beds**

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of qualified personnel belonging to an ICT in each job type by the number of beds and multiplying the result by 100. If no staff members in a job type belong to the ICT, the number at the site was counted 0.
* Certified staff indicates a healthcare professional who is an infection control doctor, an infection care specialist nurse, a certificated infection control nurse or a nurse who has completed the relevant professional training specified in medical service fees, a certified infection control certified pharmacist or infection control specialist pharmacist, a certified infection control control clinical microbiology laboratory technician, or a certified clinical microbiology laboratory technician.
* A double-licensed person is counted as a single individual.
* Dedicated staff (0.8 < FTE) devote 80% or more of their working hours, regular staff (0.5 < FTE < 0.8)devote 50% or more of their working hours, and concurrent workers (FTE < 0.5) are also engaged in work for routine operations.
* If there are no qualified personnel in the ICT, the number at the site was counted as 0.
**ICT monitoring system for resistant bacteria detected cases**

Figure 25 Proportion of implementation of an ICT monitoring system for resistant bacteria detected cases

![Proportion of implementation of an ICT monitoring system for resistant bacteria detected cases](image)

(Based on data from January to December 2021, as of August 25, 2022)

* Proportion of implementation of an ICT monitoring system for resistant bacteria

* The resistant organisms monitored at sites include MRSA, ESBL-producing bacteria, CRE (CPE), C. difficile, MDRP, MDRA, PRSP, VRE, VRSA, and other microorganisms designated as resistant organisms by specialists at each site.

**Amount of hand sanitizer used per 1,000 patient-days (L)**

Figure 26 Distribution of amount of hand sanitizer used per 1,000 patient-days (L)

![Distribution of amount of hand sanitizer used per 1,000 patient-days (L)](image)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the amount of hand sanitizer used by patient-days and multiplying the result by 1,000.

* Data were registered by the participating site arbitrarily selected ward.

* Data of sites where registration was made with the amount of hand sanitizer dispensed before actual consumption were also included.

* The amount of hand sanitizer used in departments without inpatient facilities such as outpatient clinics, operating rooms, or dialysis rooms is not included.
**Amount of hand sanitizer used (L) by ward function per 1,000 patient-days**

Figure 27 Distribution amount of hand sanitizer used (L) by ward function per 1,000 patient-days

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the amount of hand sanitizer used by patient-days and multiplying the result by 1,000.
* Participating sites optionally selected wards.
* The amount of hand sanitizer used in departments without inpatient facilities such as outpatient clinics, operating rooms, or dialysis rooms is not included.
* Data of sites where registration was made with the amount of hand sanitizer dispensed before actual consumption were also included.
* Critical care wards: Calculated using ward codes JC01, JC02, JC03, JC04, JC05, JC06, JC07, and JC08.
* General wards (internal medicine, surgery, pediatrics, etc.): Calculated using ward codes JG01, JG02, JG03, JG04, JG05, JG06, JG07, and JG08.
* Other wards (psychiatry, palliative care, rehabilitation, recuperation, dementia, disabled, etc., tuberculosis, and other special): Calculated using ward codes JE01, JE02, JE03, JE04, JE05, JE06, JE07, JE08, JE09, and JE11.
* Refer to the list of ward codes for ward codes by ward function.

**Overall hand hygiene compliance rate**

Figure 28 Distribution of overall hand hygiene compliance rate

(Based on data from January to December 2021, as of August 25, 2022)

* Proportion of performed hand hygiene actions, among the total number of opportunities in hand hygiene monitoring.
* Data at sites where the number of opportunities during hand hygiene monitoring is 100 or more were included.
Overall hand hygiene compliance rate by entering/leaving rooms

**Figure 29 Distribution of overall hand hygiene compliance rate by entering/leaving rooms**

- Overall (n=49)

(Based on data from January to December 2021, as of August 25, 2022)
* Proportion of performed hand hygiene actions, among the total number of opportunities in hand hygiene monitoring
* Data at sites where the number of opportunities during hand hygiene monitoring is 100 or more were included.

Hand hygiene compliance rate by job type

**Figure 30 Distribution of hand hygiene compliance rate by job type**

- Physician (n=24)
- Nurse (n=50)
- Others (n=25)

(Based on data from January to December 2021, as of August 25, 2022)
* Proportion of performed hand hygiene actions, among the total number of opportunities in hand hygiene monitoring
* Data at sites where the number of opportunities during hand hygiene monitoring is 100 or more were included.
Hand hygiene compliance rate at the time of entering/leaving rooms by job type

Figure 31 Distribution of hand hygiene compliance rate at the time of entering/leaving rooms by job type

* Proportion of performed hand hygiene actions, among the total number of opportunities in hand hygiene monitoring.
* Data at sites where the number of opportunities during hand hygiene monitoring is 100 or more were included.
* The point of care starts when entering the room.
* The point of care ends when leaving the room.

Hand hygiene compliance rate by ward function

Figure 32 Distribution of hand hygiene compliance rate by ward function

* Proportion of performed hand hygiene actions, among the total number of opportunities in hand hygiene monitoring.
* Data at sites where the number of opportunities during hand hygiene monitoring is 100 or more were included.
* Critical care wards: Calculated using ward codes JC01, JC02, JC03, JC04, JC05, JC06, JC07, and JC08.
* General wards (internal medicine, surgery, pediatrics, etc.): Calculated using ward codes JG01, JG02, JG03, JG04, JG05, JG06, JG07, and JG08.
* Other wards (psychiatry, palliative care, rehabilitation, recuperation, dementia, disabled, etc., tuberculosis, and other special): Calculated using ward codes JE01, JE02, JE03, JE04, JE05, JE06, JE07, JE08, JE09, JE10, and JE11
* Refer to the list of ward codes for ward codes by ward function.
Hand hygiene compliance rate at the time of entering/leaving rooms by ward function

Figure 33 Distribution of hand hygiene compliance rate at the time of entering/leaving rooms by ward function

<table>
<thead>
<tr>
<th>Ward Function</th>
<th>Compliance Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical care wards</td>
<td></td>
</tr>
<tr>
<td>General wards</td>
<td></td>
</tr>
<tr>
<td>Other wards</td>
<td></td>
</tr>
</tbody>
</table>

(Based on data from January to December 2021, as of August 25, 2022)
* Proportion of performed hand hygiene actions, among the total number of opportunities in hand hygiene monitoring
* Data at sites where the number of opportunities during hand hygiene monitoring is 100 or more were included.
* The point of care starts when entering the room.
* The point of care ends when leaving the room.
* Critical care wards: Calculated using ward codes JC01, JC02, JC03, JC04, JC05, JC06, JC07, and JC08.
* General wards (internal medicine, surgery, pediatrics, etc.): Calculated using ward codes JG01, JG02, JG03, JG04, JG05, JG06, JG07, and JG08.
* Other wards (psychiatry, palliative care, rehabilitation, recuperation, dementia, disabled, etc., tuberculosis, and other special): Calculated using ward codes JE01, JE02, JE03, JE04, JE05, JE06, JE07, JE08, JE09, JE10, and JE11
* Refer to the list of ward codes for ward codes by ward function.
WHO Hand Hygiene Self-Assessment Framework: 5 major components

Figure 34 Distribution of WHO Hand Hygiene Self-Assessment Framework: 5 major components

- Calculated based on the latest registered data during the target period for aggregation.
- The WHO Hand Hygiene Self-Assessment Framework 2010 was used.

WHO Self-Assessment of Hand Hygiene Framework: Leadership criteria

Figure 35 Distribution of WHO Hand Hygiene Self-Assessment Framework: Leadership criteria

- Calculated based on the latest registered data during the target period for aggregation.
- Only sites that scored a total of ≥ 376 for the 5 major components of the WHO Self-Assessment of Hand Hygiene Framework were included.
The data were aggregated and calculated using the registered data of CLABSI/CAUTI information (HAI information) of sites that participated by December 31, 2021.

**Incidence of CLABSI: LCBI + CSEP by ward function**

*Figure 36 Distribution of the incidence of CLABSI: LCBI + CSEP by ward function*

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the total number of cases of laboratory confirmed bloodstream infection (LCBI) and clinical sepsis (CSEP) by the total number of patients using central lines, and multiplying the result by 1,000.

* Critical care wards: Calculated using ward codes JC01, JC02, JC03, JC04, JC05, JC06, JC07, and JC08.

* General wards (internal medicine, surgery, pediatrics, etc.): Calculated using ward codes JG01, JG02, JG03, JG04, JG05, JG06, JG07, and JG08.

* Other wards (psychiatry, palliative care, rehabilitation, recuperation, dementia, disabled, etc., tuberculosis, and other special): Calculated using ward codes JE01, JE02, JE03, JE04, JE05, JE06, JE07, JE08, JE09, JE10, and JE11.

* Refer to the list of ward codes for ward codes by ward function.

**Incidence of CLABSI: LCBI by ward function**

*Figure 37 Distribution of incidence of CLABSI: LCBI by ward function*

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the total number of cases of laboratory confirmed bloodstream infection (LCBI) by the total number of patients using central lines and multiplying the result by 1,000.

* Critical care wards: Calculated using ward codes JC01, JC02, JC03, JC04, JC05, JC06, JC07, and JC08.

* General wards (internal medicine, surgery, pediatrics, etc.): Calculated using ward codes JG01, JG02, JG03, JG04, JG05, JG06, JG07, and JG08.

* Other wards (psychiatry, palliative care, rehabilitation, recuperation, dementia, disabled, etc., tuberculosis, and other special): Calculated using ward codes JE01, JE02, JE03, JE04, JE05, JE06, JE07, JE08, JE09, JE10, and JE11.

* Refer to the list of ward codes for ward codes by ward function.
**Ratio of central line use by ward function**

**Figure 38 Distribution of the ratio of central line use by ward function**

(Based on data from January to December 2021, as of August 25, 2022)

* Proportion of all patients using central lines in patient-days.
* Critical care wards: Calculated using ward codes JC01, JC02, JC03, JC04, JC05, JC06, JC07, and JC08.
* General wards (internal medicine, surgery, pediatrics, etc.): Calculated using ward codes JG01, JG02, JG03, JG04, JG05, JG06, JG07, and JG08.
* Other wards (psychiatry, palliative care, rehabilitation, recuperation, dementia, disabled, etc., tuberculosis, and other special): Calculated using ward codes JE01, JE02, JE03, JE04, JE05, JE06, JE07, JE08, JE09, JE10, and JE11
* Refer to the list of ward codes for ward codes by ward function.

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**Incidence of CAUTI by ward function**

**Figure 39 Distribution of the incidence of CAUTI by ward function**

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the total number of cases of CAUTI by the total number of patients using urethral catheters and multiplying the result by 1,000.
* Critical care wards: Calculated using ward codes JC01, JC02, JC03, JC04, JC05, JC06, JC07, and JC08.
* General wards (internal medicine, surgery, pediatrics, etc.): Calculated using ward codes JG01, JG02, JG03, JG04, JG05, JG06, JG07, and JG08.
* Other wards (psychiatry, palliative care, rehabilitation, recuperation, dementia, disabled, etc., tuberculosis, and other special): Calculated using ward codes JE01, JE02, JE03, JE04, JE05, JE06, JE07, JE08, JE09, JE10, and JE11
* Refer to the list of ward codes for ward codes by ward function.
Ratio of urethral catheter use by ward function

Figure 40 Distribution of the ratio of urethral catheter use by ward function

<table>
<thead>
<tr>
<th>Ward Function</th>
<th>Proportion</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical care wards (n=44)</td>
<td></td>
<td>Calculated using ward codes JC01, JC02, JC03, JC04, JC05, JC06, JC07, and JC08.</td>
</tr>
<tr>
<td>General wards (n=79)</td>
<td></td>
<td>Calculated using ward codes JG01, JG02, JG03, JG04, JG05, JG06, JG07, and JG08.</td>
</tr>
<tr>
<td>Other wards (n=56)</td>
<td></td>
<td>Calculated using ward codes JE01, JE02, JE03, JE04, JE05, JE06, JE07, JE08, JE09, JE10, and JE11.</td>
</tr>
</tbody>
</table>

(Based on data from January to December 2021, as of August 25, 2022)
* Proportion of total patients using urethral catheters in patient-days
* Critical care wards: Calculated using ward codes JC01, JC02, JC03, JC04, JC05, JC06, JC07, and JC08.
* General wards (internal medicine, surgery, pediatrics, etc.): Calculated using ward codes JG01, JG02, JG03, JG04, JG05, JG06, JG07, and JG08.
* Other wards (psychiatry, palliative care, rehabilitation, recuperation, dementia, disabled, etc., tuberculosis, and other special): Calculated using ward codes JE01, JE02, JE03, JE04, JE05, JE06, JE07, JE08, JE09, JE10, and JE11.
* Refer to the list of ward codes for ward codes by ward function.
The data were aggregated and calculated using the registered data for SSI information (HAI information) of sites that participated by December 31, 2021.

**Number of surgeries and incidence of SSI by surgical procedure**

(Based on data from January to December 2021, as of August 25, 2022)

* The number of surgeries and incidence of SSI among those surgeries, by surgical procedure.
* Data that conformed to the NHSN criteria were used.
* No adjustment made according to with or without endoscope.
* No adjustment by risk index.
* Surgical procedures with ≥ 100 records were included.
* See the List of surgical procedure codes (in reference to the documents of the JANIS for surgical procedure codes).
Microorganisms and resistant bacteria information

The data were aggregated and calculated using the registered data of the microorganisms and resistant bacteria information of sites that participated by December 31, 2021. The number of bloodstream infections caused by major bacteria indicates the number of patients in whose blood samples the major bacteria specified by this system were detected. The number of bloodstream infections caused by resistant bacteria indicates the number of patients in whose blood samples the resistant bacteria specified by this system were detected.

Detection methods for *Clostridioides difficile* infection (CDI) diagnosis

**Figure 42 Proportion of detection methods for *Clostridioides difficile* infection (CDI) diagnosis**

- **A.** Only toxin is confirmed by immunochromatography. When the result is positive, *CDI* is diagnosed. If the result is negative, the test is completed.
- **B.** Only toxin is confirmed by immunochromatography. When the result is positive, *CDI* is diagnosed. When the result is negative, toxin is determined by immunochromatography using cultured colonies. If both results are negative, the test is completed.
- **C.** Both glutamate dehydrogenase (GDH) and toxin are confirmed by immunochromatography. When both GDH and toxin are positive, *CDI* is diagnosed. If GDH is positive and toxin is negative, *CDI* is not diagnosed and the test is completed.
- **D.** Both GDH and toxin are confirmed by immunochromatography. When both GDH and toxin are positive, *CDI* is diagnosed. If GDH is positive and toxin is negative, toxin is determined by immunochromatography using cultured colonies. If both are negative, the test is completed.
- **E.** Both GDH and toxin are confirmed by immunochromatography. When both GDH and toxin are positive, *CDI* is diagnosed. If GDH is positive and toxin is negative, toxin is determined using a fecal toxin gene test. If the result is negative, the test is completed.
- **F.** Only toxin is confirmed using a fecal toxin gene test. When the result is positive, *CDI* is diagnosed. If the result is negative, the test is completed.
- **G.** Others

(Based on data from January to December 2021, as of August 25, 2022)

* The proportions of the test methods used to diagnose *CDI*.
* The test methods that are normally used are shown.
**Number of CDI tests performed per 10,000 patient-days**

* Figure 43 Distribution of the number of CDI tests performed per 10,000 patient-days

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of patients tested for CDI by patient-days and multiplying the result by 10,000.
* Sites with 0 tests were included regardless of whether there was an eligible patient for inclusion.

**Number of CDI episodes per 10,000 patient-days**

* Figure 44 Distribution of the number of CDI episodes per 10,000 patient-days

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of patients diagnosed with CDI in hospitals by the total patient-days and multiplying the result by 10,000.
* Sites with 0 occurrences were included regardless of whether a test was conducted.
* Multiple detections within the previous 14 days for the same patient were processed as duplicate data.
Number of major bacteria detected per 10,000 patient-days (total number)

Figure 45 Distribution of the number of major bacteria detected per 10,000 patient-days (total number)

- Staphylococcus aureus (n=419)
- Staphylococcus epidermidis (n=422)
- Streptococcus pneumoniae (n=422)
- Enterococcus faecalis (n=422)
- Enterococcus faecium (n=422)
- Escherichia coli (n=423)
- Klebsiella pneumoniae (n=422)
- Klebsiella oxytoca (n=422)
- Klebsiella aerogenes (n=419)
- Enterobacter cloacae complex (n=419)
- Enterobacter spp. (n=422)
- Proteus mirabilis (n=422)
- Serratia marcescens (n=422)
- Pseudomonas aeruginosa (n=423)
- Acinetobacter spp. (n=422)

(Based on data from January to December 2021, as of August 25, 2022)
* The value was obtained by dividing the number of patients in which bacteria were detected by patient-days and multiplying the result by 10,000.
* [Total number] Counted once even in cases where multiple detections were made in 1 patient per month, by bacterium.
* Data registered via the “reduced information file of the JANIS Clinical Division” were used.
* Summarized by bacterium. Sites with no data were excluded.
Number of major bacteria detected per 10,000 patient-days (new detection)

Figure 46 Distribution of the number of major bacteria detected per 10,000 patient-days (new detection)

* The value was obtained by dividing the number of patients in which bacteria were detected by patient-days and multiplying the result by 10,000.
* [New detection] Counted once even in cases where multiple detections were made in 1 patient per 90 days, by bacterium.
* Data registered via the “reduced information file of the JANIS Clinical Division” were used.
* Summarized by bacterium. Sites with no data were excluded.

(Based on data from January to December 2021, as of August 25, 2022)
Number of major bacteria detected per 10,000 patient-days (nosocomial)

Figure 47 Distribution of the number of major bacteria detected per 10,000 patient-days (nosocomial)

- Staphylococcus aureus (n=180)
- Staphylococcus epidermidis (n=180)
- Streptococcus pneumoniae (n=180)
- Enterococcus faecalis (n=180)
- Enterococcus faecium (n=180)
- Escherichia coli (n=181)
- Klebsiella pneumoniae (n=180)
- Klebsiella oxytoca (n=180)
- Klebsiella aerogenes (n=180)
- Enterobacter cloacae complex (n=180)
- Enterobacter spp. (n=180)
- Proteus mirabilis (n=180)
- Serratia marcescens (n=180)
- Pseudomonas aeruginosa (n=181)
- Acinetobacter spp. (n=180)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of patients in which bacteria were detected by patient-days and multiplying the result by 10,000.
* [Nosocomial] Multiple detections per 90 days were processed as duplicate data, by bacterium. Patients with detected bacteria submitted on and after Day 4 of hospitalization were counted.
* Data registered via the “reduced information file of the JANIS Clinical Division” were used.
* Summarized by bacterium. Sites with no data were excluded.
**Number of resistant bacteria detected per 10,000 patient-days (total number)**

![Distribution of the number of resistant bacteria detected per 10,000 patient-days (total number)](image)

- MRSA (n=423)
- VRSA (n=422)
- VRE (n=422)
- PRSP (n=422)
- Carbapenem-resistant *Pseudomonas aeruginosa* (n=422)
- Drug-resistant *Pseudomonas aeruginosa* (n=422)
- MDRP (n=422)
- Drug-resistant *Acinetobacter spp.* (n=422)
- MDRA (n=422)
- CRE (n=422)
- 3rd-generation Cephalosporin-resistant *Klebsiella pneumoniae* (n=422)
- 3rd-generation Cephalosporin-resistant *Escherichia coli* (n=422)
- Fluoroquinolone-resistant *Escherichia coli* (n=422)

**Number of resistant bacteria detected per 10,000 patient-days : total number**
(Number of resistant bacteria detected / Patient-days x 10,000)

(Based on data from January to December 2021, as of August 25, 2022)
* The value was obtained by dividing the number of patients in which bacteria were detected by patient-days and multiplying the result by 10,000.
* [Total number] Counted once even in cases where multiple detections were made in 1 patient per month, by bacterium.
* Data registered via the “reduced information file of the JANIS Clinical Division” were used.
* Summarized by bacterium. Sites with no data were excluded.
Number of resistant bacteria detected per 10,000 patient-days (new detection)

Figure 49 Distribution of the number of resistant bacteria detected per 10,000 patient-days (new detection)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of patients in which bacteria were detected by patient-days and multiplying the result by 10,000.
* [New detection] Counted once even in cases where multiple detections were made in 1 patient per 90 days, by bacterium.
* Data registered via the “reduced information file of the JANIS Clinical Division” were used.
* Summarized by bacterium. Sites with no data were excluded.
Number of resistant bacteria detected per 10,000 patient-days (nosocomial)

Figure 50 Distribution of the number of resistant bacteria detected per 10,000 patient-days (nosocomial)

MRSA (n=181)
VRSA (n=180)
VRE (n=180)
PRSP (n=180)

Carbapenem-resistant
* Pseudomonas aeruginosa (n=180)

Drug-resistant
* Pseudomonas aeruginosa (n=180)
MDRP (n=180)

Drug-resistant
* Acinetobacter spp. (n=180)
MDRA (n=180)

CRE (n=180)

3rd-generation Cephalosporin-resistant Klebsiella pneumoniae (n=180)
3rd-generation Cephalosporin-resistant *Escherichia coli* (n=180)
Fluoroquinolone-resistant *Escherichia coli* (n=180)

Number of resistant bacteria detected per 10,000 patient-days: nosocomial
(Number of resistant bacteria detected / Patient-days x 10,000)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of patients in which bacteria were detected by patient-days and multiplying the result by 10,000.
* [Nosocomial] Multiple detections per 90 days were processed as duplicate data, by bacterium. Patients with detected bacteria submitted on and after Day 4 of hospitalization were counted.
* Data registered via the “reduced information file of the JANIS Clinical Division” were used.
* Summarized by bacterium. Sites with no data were excluded.
Number of episodes of bloodstream infection caused by major bacteria per 10,000 patient-days (total number)

Figure 51 Distribution of the number of episodes of bloodstream infection caused by major bacteria per 10,000 patient-days (total number)

- Staphylococcus aureus (n=416)
- Coagulase-negative staphylococci (including S. epidermidis) (n=419)
- Streptococcus pneumoniae (n=419)
- Streptococcus pyogenes (n=419)
- Streptococcus agalactiae (n=419)
- Group C β-Streptococcus (n=419)
- Group G β-Streptococcus (n=419)
- Enterococcus faecalis (n=419)
- Enterococcus faecium (n=419)
- Escherichia coli (n=419)
- Klebsiella pneumoniae (n=419)
- Klebsiella oxytoca (n=419)
- Klebsiella aerogenes (n=416)
- Enterobacter cloacae complex (n=416)
(Based on data from January to December 2021, as of August 25, 2022)
* The value was obtained by dividing the number of patients for which bacteria were detected in blood samples by patient-days and multiplying the result by 10,000.
* [Total number] Counted once even in cases where multiple detections were made in 1 patient per month, by bacterium.
* Contaminated samples were excluded from the count.
* Data registered via the “reduced information file of the JANIS Clinical Division” were used.
* Summarized by bacterium. Sites with no data were excluded.
Number of episodes of bloodstream infection caused by major bacteria per 10,000 patient-days (nosocomial)

Figure 52 Distribution of number of episodes of bloodstream infection caused by major bacteria per 10,000 patient-days (nosocomial)

- *Staphylococcus aureus* (n=180)
- Coagulase-negative staphylococci (including *S. epidermidis*) (n=180)
- *Streptococcus pneumoniae* (n=180)
- *Streptococcus pyogenes* (n=180)
- *Streptococcus agalactiae* (n=180)
- Group C β-Streptococcus (n=180)
- Group G β-Streptococcus (n=180)
- *Enterococcus faecalis* (n=180)
- *Enterococcus faecium* (n=180)
- *Escherichia coli* (n=180)
- *Klebsiella pneumoniae* (n=180)
- *Klebsiella oxytoca* (n=180)
- *Klebsiella aerogenes* (n=180)
- *Enterobacter cloacae* complex (n=180)

Number of episodes of bloodstream infection caused by major bacteria per 10,000 patient-days: nosocomial
(Number of episodes of bloodstream infection caused by major bacteria / Patient-days x 10,000)
<table>
<thead>
<tr>
<th>Bacterial Species</th>
<th>Number of Episodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterobacter spp. (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Citrobacter spp. (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Proteus mirabilis (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Serratia marcescens (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Acinetobacter spp. (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Candida spp. (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Candida albicans (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Candida tropicalis (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Candida glabrata (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Candida parapsilosis (n=180)</td>
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</tr>
<tr>
<td>Candida krusei (n=180)</td>
<td>0</td>
</tr>
<tr>
<td>Candida guilliermondii (n=180)</td>
<td>0</td>
</tr>
</tbody>
</table>

Number of episodes of bloodstream infection caused by major bacteria per 10,000 patient-days: nosocomial
(Number of episodes of bloodstream infection caused by major bacteria / Patient-days x 10,000)

(Based on data from January to December 2021, as of August 25, 2022)
* The value was obtained by dividing the number of patients for which bacteria were detected in blood samples by patient-days and multiplying the result by 10,000.
* [Nosocomial] Patients with detected bacteria submitted on and after Day 4 of hospitalization were counted.
* Contaminated samples were excluded from the count.
* Data registered via the “reduced information file of the JANIS Clinical Division” were used.
* Summarized by bacterium. Sites with no data were excluded.
Number of episodes of bloodstream infection caused by resistant bacteria per 10,000 patient-days (total number)

Figure 53 Distribution of the number of episodes of bloodstream infection caused by resistant bacteria per 10,000 patient-days (total number)

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Number (n=419)</th>
<th>Episodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VRSA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VRE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRSP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbapenem-resistant</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug-resistant</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDRP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug-resistant</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Acinetobacter spp.</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDRA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd-generation Cephalosporin-resistant Klebsiella pneumoniae</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=419)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd-generation Cephalosporin-resistant Escherichia coli</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=419)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluoroquinolone-resistant Escherichia coli</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n=419)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of episodes of bloodstream infection caused by resistant bacteria per 10,000 patient-days: total number
(Number of episodes of bloodstream infection caused by resistant bacteria / Patient-days x 10,000)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of patients for which bacteria were detected in blood samples by patient-days and multiplying the result by 10,000.
* [Total number] Counted once even in cases where multiple detections were made in 1 patient per month, by bacterium.
* Contaminated samples were excluded from the count.
* Data registered via the “reduced information file of the JANIS Clinical Division” were used.
* Summarized by bacterium. Sites with no data were excluded.
Number of episodes of bloodstream infection caused by resistant bacteria per 10,000 patient-days (nosocomial)

Figure 54 Distribution of the number of episodes of bloodstream infection caused by resistant bacteria per 10,000 patient-days (nosocomial)

<table>
<thead>
<tr>
<th>Bacteria</th>
<th>Episodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>VRSA (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>VRE (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>PRSP (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>Carbapenem-resistant Pseudomonas aeruginosa (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>Drug-resistant Pseudomonas aeruginosa (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>MDRP (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>Drug-resistant Acinetobacter spp. (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>MDRA (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>CRE (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>3rd-generation Cephalosporin-resistant Klebsiella pneumoniae (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>3rd-generation Cephalosporin-resistant Escherichia coli (n=180)</td>
<td>![Graph]</td>
</tr>
<tr>
<td>Fluoroquinolone-resistant Escherichia coli (n=180)</td>
<td>![Graph]</td>
</tr>
</tbody>
</table>

Number of episodes of bloodstream infection caused by resistant bacteria per 10,000 patient-days: nosocomial
(Number of episodes of bloodstream infection caused by resistant bacteria / Patient-days x 10,000)

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of patients for which bacteria were detected in blood samples by patient-days and multiplying the result by 10,000.

* [Nosocomial] Patients with detected bacteria submitted on and after Day 4 of hospitalization were counted.

* Contaminated samples were excluded from the count.

* Data registered via the “reduced information file of the JANIS Clinical Division” were used.

* Summarized by bacterium. Sites with no data were excluded.
Proportion of methicillin-resistant *Staphylococcus aureus* (MRSA) detection

Figure 55: Distribution of the proportion of patients with newly detected methicillin-resistant *Staphylococcus aureus* (MRSA)

- Pleural effusion samples (n=187)
- Joint fluid samples (n=202)
- Cerebrospinal fluid samples (n=78)
- Blood samples (n=417)
- All inpatient samples (n=437)

(Based on data from January to December 2021, as of August 25, 2022)

* Proportion of patients with newly detected methicillin-resistant *Staphylococcus aureus* (MRSA), among those with newly detected *S. aureus*
* Patients with detected *S. aureus* or methicillin-resistant *Staphylococcus aureus* (MRSA) were counted only once, even in cases where multiple detections were confirmed in a patient within the previous 90 days.
* If methicillin-resistant *Staphylococcus aureus* (MRSA) was detected once in a patient, the patient was considered as with MRSA.

Number of blood cultures submitted per 1,000 patient-days

Figure 56: Distribution of the number of blood cultures submitted per 1,000 patient-days

(Based on data from January to December 2021, as of August 25, 2022)

* The value was obtained by dividing the number of submitted blood cultures by patient-days and multiplying the result by 1,000.
Rate of multiple sets of blood cultures

Figure 57 Distribution of the rate of multiple sets of blood cultures

*(Based on data from January to December 2021, as of August 25, 2022)*

* The value obtained by subtracting the number of submissions of only 1 set from the total number of submitted blood cultures, and dividing by the total number of blood cultures submitted.

* Sites with registered data for 20 or more submitted blood cultures during the target period.

Positive rate of blood cultures

Figure 58 Distribution of the positive rate of blood cultures

*(Based on data from January to December 2021, as of August 25, 2022)*

* Proportion of the number of blood culture sets with a positive result, among the blood cultures submitted.

* Contaminated samples were counted as positive.

* Sites with registered data for 20 or more submitted blood cultures during the target period.
Rate of contaminated blood cultures

Figure 59 Distribution of the rate of contaminated blood cultures

- All patients (n=401)
- Patients aged ≥ 15 years (n=401)
- Patients aged < 15 years (n=261)

(Number of contaminated blood cultures / Number of blood cultures submitted)

(Based on data from January to December 2021, as of August 25, 2022)

* Proportion of the number of contaminated blood culture sets among the blood cultures submitted.
* Contaminated sets were determined and counted using a fixed algorithm.
* Sites with registered data for 20 or more submitted blood cultures during the target period.
### Table of antibiogram

<table>
<thead>
<tr>
<th>Name of bacterium</th>
<th>No. of Target strains</th>
<th>PCG</th>
<th>AMP/ CVA</th>
<th>MPIPC</th>
<th>CEZ</th>
<th>IPM/ C</th>
<th>EM</th>
<th>CLODM</th>
<th>LVFX</th>
<th>VCM</th>
<th>TEIC</th>
<th>LZD</th>
<th>SMZ/ TMP</th>
<th>MINO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus</td>
<td>126582</td>
<td>34.3</td>
<td>83.0</td>
<td>-</td>
<td>85.8</td>
<td>92.7</td>
<td>55.5</td>
<td>88.4</td>
<td>59.1</td>
<td>100.0</td>
<td>100.0</td>
<td>97.1</td>
<td>93.2</td>
<td></td>
</tr>
<tr>
<td>Methicillin-sensitive Staphylococcus aureus (MSSA)</td>
<td>82934</td>
<td>52.7</td>
<td>99.9</td>
<td>-</td>
<td>100.0</td>
<td>100.0</td>
<td>75.6</td>
<td>97.2</td>
<td>83.3</td>
<td>-</td>
<td>-</td>
<td>97.2</td>
<td>99.7</td>
<td></td>
</tr>
<tr>
<td>Methicillin-resistant Staphylococcus aureus (MRSA)</td>
<td>47113</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>17.5</td>
<td>71.6</td>
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<td>100.0</td>
<td>100.0</td>
<td>97.0</td>
<td>81.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coagulase negative Staphylococcus (CNS)</td>
<td>59707</td>
<td>26.6</td>
<td>-</td>
<td>42.3</td>
<td>-</td>
<td>55.2</td>
<td>82.9</td>
<td>48.6</td>
<td>100.0</td>
<td>97.5</td>
<td>99.9</td>
<td>86.2</td>
<td>96.2</td>
<td></td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>15867</td>
<td>6.3</td>
<td>68.5</td>
<td>84.2</td>
<td>93.8</td>
<td>52.5</td>
<td>86.3</td>
<td>79.4</td>
<td>98.8</td>
<td>92.1</td>
<td>94.7</td>
<td>92.8</td>
<td>99.8</td>
<td>97.0</td>
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<tr>
<td>Klebsiella pneumonia</td>
<td>58467</td>
<td>6.3</td>
<td>68.5</td>
<td>84.2</td>
<td>93.8</td>
<td>52.5</td>
<td>86.3</td>
<td>79.4</td>
<td>98.8</td>
<td>92.1</td>
<td>94.7</td>
<td>92.8</td>
<td>99.8</td>
<td>97.0</td>
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<tr>
<td>Klebsiella oxytoca</td>
<td>20199</td>
<td>11.2</td>
<td>77.5</td>
<td>32.8</td>
<td>85.2</td>
<td>4.6</td>
<td>1.0</td>
<td>2.0</td>
<td>1.0</td>
<td>7.5</td>
<td>69.9</td>
<td>71.2</td>
<td>65.6</td>
<td>99.5</td>
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<tr>
<td>Enterobacter cloacae</td>
<td>19571</td>
<td>1.1</td>
<td>47.2</td>
<td>91.3</td>
<td>96.4</td>
<td>53.0</td>
<td>88.1</td>
<td>81.8</td>
<td>97.1</td>
<td>94.3</td>
<td>94.5</td>
<td>94.2</td>
<td>99.0</td>
<td>90.0</td>
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<tr>
<td>Klebsiella aerogenes</td>
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<td>11.5</td>
<td>77.3</td>
<td>49.7</td>
<td>85.4</td>
<td>5.0</td>
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<td>6.7</td>
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<tr>
<td>Proteus mirabilis</td>
<td>12915</td>
<td>78.3</td>
<td>81.8</td>
<td>66.9</td>
<td>95.5</td>
<td>50.1</td>
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<tr>
<td>Proteus vulgaris</td>
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<td>93.9</td>
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<td>78.3</td>
<td>64.3</td>
<td>97.6</td>
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<td>87.8</td>
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<tr>
<td>Citrobacter freundii</td>
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<td>92.5</td>
<td>19.1</td>
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<td>49.8</td>
<td>76.0</td>
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<td>91.8</td>
<td>97.1</td>
<td>94.3</td>
<td>94.5</td>
<td>94.2</td>
<td>96.8</td>
</tr>
<tr>
<td>Stenotrophomonas maltophilia</td>
<td>11248</td>
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<td>86.5</td>
<td>14.8</td>
<td>94.5</td>
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<td>0.1</td>
<td>0.1</td>
<td>83.2</td>
<td>83.9</td>
<td>81.6</td>
<td>94.2</td>
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<td>99.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of bacterium</th>
<th>Target strains</th>
<th>PCG</th>
<th>AMP/ CVA</th>
<th>MPIPC</th>
<th>CEZ</th>
<th>IPM/ C</th>
<th>EM</th>
<th>CLODM</th>
<th>LVFX</th>
<th>VCM</th>
<th>TEIC</th>
<th>LZD</th>
<th>SMZ/ TMP</th>
<th>MINO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>52716</td>
<td>90.2</td>
<td>92.6</td>
<td>93.4</td>
<td>93.5</td>
<td>82.7</td>
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<td>98.2</td>
<td>90.8</td>
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</tr>
<tr>
<td>Acinetobacter baumannii</td>
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<td>87.9</td>
<td>90.5</td>
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<td>99.0</td>
<td>99.9</td>
<td>88.5</td>
<td>92.7</td>
<td>90.9</td>
<td>84.8</td>
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</tr>
<tr>
<td>Acinetobacter spp.</td>
<td>7913</td>
<td>80.3</td>
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<td>91.8</td>
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<td>90.7</td>
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<td>Stenotrophomonas maltophilia</td>
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<td>Haemophilus influenzae</td>
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<td>99.1</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

* The data for the single year 2021, which had been registered as of August 25, 2022 were used to generate the antibiogram.
* The information was derived from the reduced information file of the JANIS Clinical Division of participating sites.
* Samples from both inpatients and outpatients are included without distinction. The data were aggregated using the JANIS “S•I•R” criteria, which conform to CLSI 2012 (M100-S22).
* SI that cannot be classified as intermediate (I) or susceptibility (S) is not included in the numerator or aggregated in the denominator.
* The proportion was calculated with the total of susceptibility (S) of bacteria as the numerator and the total of values other than susceptibility (S) as the denominator.

(However, Cefazolin (CEZ) is handled as follows. CEZ*1: The numerator includes “S” and “SI,” while the denominator includes all values that can be aggregated. CEZ*2: The numerator includes only “S,” while the denominator includes all values that can be aggregated other than “SI.”)
### IV. Reference at the end of the document

#### List of ward codes

<table>
<thead>
<tr>
<th>Ward code</th>
<th>Ward category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC01</td>
<td>ICU/ CCU</td>
<td></td>
</tr>
<tr>
<td>JC02</td>
<td>ICU/ CCU (ICU includes patients with burns)</td>
<td></td>
</tr>
<tr>
<td>JC03</td>
<td>PICU</td>
<td></td>
</tr>
<tr>
<td>JC04</td>
<td>NICU</td>
<td></td>
</tr>
<tr>
<td>JC05</td>
<td>SCU</td>
<td></td>
</tr>
<tr>
<td>JC06</td>
<td>HCU</td>
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<td>JC07</td>
<td>GCU</td>
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<tr>
<td>JC08</td>
<td>Emergency ward</td>
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<td>JG01</td>
<td>Surgical and internal medicine ward</td>
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</tr>
<tr>
<td>JG02</td>
<td>Internal medicine ward</td>
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</tr>
<tr>
<td>JG03</td>
<td>Surgical ward</td>
<td></td>
</tr>
<tr>
<td>JG04</td>
<td>Oncology/hematology ward</td>
<td></td>
</tr>
<tr>
<td>JG05</td>
<td>Obstetrics/gynecology ward</td>
<td></td>
</tr>
<tr>
<td>JG06</td>
<td>Pediatric ward</td>
<td></td>
</tr>
<tr>
<td>JG07</td>
<td>Pediatric ward with pediatric surgery</td>
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</tr>
<tr>
<td>JG08</td>
<td>General wards not otherwise classified</td>
<td></td>
</tr>
<tr>
<td>JE01</td>
<td>Psychiatric ward</td>
<td></td>
</tr>
<tr>
<td>JE02</td>
<td>Palliative care ward</td>
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</tr>
<tr>
<td>JE03</td>
<td>Recovery rehabilitation ward</td>
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</tr>
<tr>
<td>JE04</td>
<td>Recuperation ward</td>
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</tr>
<tr>
<td>JE05</td>
<td>General ward for people with disabilities</td>
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</tr>
<tr>
<td>JE06</td>
<td>Special disease ward</td>
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<tr>
<td>JE07</td>
<td>Dementia treatment ward</td>
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<td>JE08</td>
<td>Community-based integrated care ward</td>
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<tr>
<td>JE09</td>
<td>Clinic with beds</td>
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<td>JE10</td>
<td>Tuberculosis/infectious disease ward</td>
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<tr>
<td>JE11</td>
<td>Special ward not otherwise classified</td>
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#### List of surgical procedure codes (in reference to the document of JANIS)

<table>
<thead>
<tr>
<th>Code</th>
<th>Surgical procedures</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA</td>
<td>Abdominal aortic repair</td>
<td>Resection of abdominal aorta with anastomosis or replacement</td>
</tr>
<tr>
<td>AAE</td>
<td>Abdominal aortic endovascular surgery</td>
<td>Endovascular stent placement for abdominal aortic aneurysm</td>
</tr>
<tr>
<td>AMP</td>
<td>Limb amputation</td>
<td>Total or partial disarticulation or amputation of an upper or lower limb including the fingers or toes</td>
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<tr>
<td>APPY</td>
<td>Appendix surgery</td>
<td>Appendectomy (excluding those performed in association with other surgical procedures)</td>
</tr>
<tr>
<td>AVSD</td>
<td>Shunt for dialysis</td>
<td>Arteriovenous anastomosis for renal dialysis</td>
</tr>
<tr>
<td>BILI-L</td>
<td>Hepatectomy without biliary reconstruction</td>
<td>Hepatectomy without biliary reconstruction</td>
</tr>
<tr>
<td>BILI-PD</td>
<td>Pancreatoduodenectomy</td>
<td>Pancreatoduodenectomy</td>
</tr>
<tr>
<td>BILI-O</td>
<td>Other hepatobiliary and pancreatic surgeries</td>
<td>Hepatobiliary and pancreatic surgery (hepatectomy without biliary reconstruction, pancreatectoduodenectomy, and surgeries involving only the gallbladder are not included)</td>
</tr>
<tr>
<td>BRST</td>
<td>Breast surgery</td>
<td>Breast lesion or tissue excision. Including radical resection, atypical resection, quadrantectomy, local excision, incisional biopsy, and mammoplasty.</td>
</tr>
<tr>
<td>Code</td>
<td>Surgical procedures</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
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<td>-------------</td>
</tr>
<tr>
<td>CARD</td>
<td>Cardiac surgery</td>
<td>Heart valve or septum thoracotomy. Coronary artery bypass graft, vascular surgery, cardiac transplantation, and pacemaker implantation are not included.</td>
</tr>
<tr>
<td>CEA</td>
<td>Carotid endarterectomy</td>
<td>Carotid endarterectomy</td>
</tr>
<tr>
<td>CBGB</td>
<td>Coronary artery bypass graft with both chest and donor site incisions. Thoracotomy for direct cardiac revascularization. Including collection of an appropriate vein from the site of graft harvesting.</td>
<td></td>
</tr>
<tr>
<td>CBGC</td>
<td>Coronary artery bypass grafts with chest incision only</td>
<td>Thoracotomy for direct revascularization of the heart using the internal mammary artery, etc.</td>
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<tr>
<td>CHOL</td>
<td>Gallbladder surgery Cholecystectomy and cholecystotomy</td>
<td></td>
</tr>
<tr>
<td>COLO</td>
<td>Colon surgery Incision/resection or anastomosis of the large intestine. Anastomosis of the large/small intestine are included. Rectal surgeries are not included.</td>
<td></td>
</tr>
<tr>
<td>CRAN</td>
<td>Craniotomy Incision of the skull for excision/repair or examination of the brain. Puncture is not included.</td>
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<tr>
<td>CSEC</td>
<td>Cesarean section Obstetric delivery by cesarean section</td>
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</tr>
<tr>
<td>ESOP</td>
<td>Esophageal surgery Surgery involving resection/reconstruction of the esophagus</td>
<td></td>
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<tr>
<td>FUSN</td>
<td>Spinal fusion Fusion of the spine</td>
<td></td>
</tr>
<tr>
<td>FX</td>
<td>Open reduction of fracture Open reduction of a fracture or dislocation of a long bone requiring internal or external fixation. Replacement of a joint prosthesis is not included.</td>
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<tr>
<td>GAST-D</td>
<td>Distal gastrectomy Distal gastrectomy, B-I/B-II reconstruction</td>
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</tr>
<tr>
<td>GAST-T</td>
<td>Total gastrectomy Total gastrectomy</td>
<td></td>
</tr>
<tr>
<td>GAST-O</td>
<td>Other gastrectomy Incision or resection of the stomach (distal and total gastrectomy are excluded). Vagotomy and fundoplication are not included.</td>
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</tr>
<tr>
<td>HER</td>
<td>Herniorrhaphy Groin/femur/umbilicus or anterior abdominal wall hernia repair. Diaphragmatic hernia, esophageal hiatal hernia, and other hernias are not included.</td>
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</tr>
<tr>
<td>HPRO</td>
<td>Hip prosthesis Hip arthroplasty</td>
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<tr>
<td>HTP</td>
<td>Heart transplant Transplantation of the heart</td>
<td></td>
</tr>
<tr>
<td>HYST</td>
<td>Abdominal hysterectomy Hysterectomy with abdominal incision</td>
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</tr>
<tr>
<td>KPRO</td>
<td>Knee prosthesis Knee arthroplasty</td>
<td></td>
</tr>
<tr>
<td>KTP</td>
<td>Kidney transplant Transplantation of the kidney</td>
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</tr>
<tr>
<td>LAM</td>
<td>Laminectomy Examination or decompression of the spinal cord by resection/incision of the spinal tissues</td>
<td></td>
</tr>
<tr>
<td>LTP</td>
<td>Liver transplant Transplantation of the liver</td>
<td></td>
</tr>
<tr>
<td>NECK</td>
<td>Neck surgery Major larynx resection or incision, and radical neck dissection. Surgeries of the thyroid and parathyroid gland are not included.</td>
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<tr>
<td>NEPH</td>
<td>Kidney surgery With or without resection or manipulation of the kidney, or resection of related tissues.</td>
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<tr>
<td>OVRY</td>
<td>Ovarian surgery Surgery of the ovaries and related tissues</td>
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<tr>
<td>PACE</td>
<td>Pacemaker surgery Placement/manipulation or replacement of pacemaker</td>
<td></td>
</tr>
<tr>
<td>PRST</td>
<td>Prostate surgery Suprapubic, retropubic, radical or perineal prostatectomy. Transurethral prostatectomy is not included.</td>
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<tr>
<td>PVBY</td>
<td>Peripheral vascular bypass surgery Bypass surgery of a peripheral vessel</td>
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</tr>
<tr>
<td>REC</td>
<td>Rectal surgery Surgery of the rectum</td>
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<tr>
<td>RFUSN</td>
<td>Spinal re-fusion Re-fusion of the spine</td>
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<tr>
<td>SB</td>
<td>Small bowel surgery Incision or resection of the small bowel. Small and large bowel anastomoses are not included.</td>
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<tr>
<td>SPLE</td>
<td>Spleen surgery Resection or manipulation of the spleen</td>
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<tr>
<td>TAA</td>
<td>Thoracic aortic surgery Surgical procedures to manipulate the thoracic aorta</td>
<td></td>
</tr>
<tr>
<td>TAE</td>
<td>Thoracic aortic endovascular surgery Surgical procedures to manipulate the thoracic vessels</td>
<td></td>
</tr>
<tr>
<td>THOR</td>
<td>Thoracic surgery Other surgical procedures of the chest not involving the heart or blood vessels. Pneumonectomy and diaphragmatic and esophageal hiatal hernia repair are included.</td>
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<tr>
<td>THYR</td>
<td>Thyroid and/or parathyroid surgery Resection or manipulation of the thyroid or parathyroid gland</td>
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<tr>
<td>VARX</td>
<td>Varicose vein surgery of the lower limbs Removal of a varicose vein in the lower limbs</td>
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<tr>
<td>WHYS</td>
<td>Vaginal hysterectomy Hysterectomy by colpotomy or episiotomy</td>
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</tr>
<tr>
<td>VSHN</td>
<td>Ventricular shunt Including cerebroventricular shunting and correction and removal of shunt</td>
<td></td>
</tr>
<tr>
<td>XLAP</td>
<td>Abdominal surgery Abdominal surgeries without manipulation of the gastrointestinal tract or biliary system</td>
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</table>
### List of antimicrobial drugs

<table>
<thead>
<tr>
<th>Drug class name</th>
<th>Category</th>
<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td><strong>Penicillins</strong></td>
<td>Injection</td>
<td>Benzylpenicillin (Inj.)</td>
<td>PCG</td>
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<td>Injection</td>
<td>Ampicillin (Inj.)</td>
<td>ABPC</td>
</tr>
<tr>
<td></td>
<td>Injection</td>
<td>Piperacillin (Inj.)</td>
<td>PIPC</td>
</tr>
<tr>
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<td>Injection</td>
<td>Ampicillin/cloxacillin (Inj.)</td>
<td>ABPC/MCIPC</td>
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<tr>
<td></td>
<td>Injection</td>
<td>Ampicillin/sulbactam (Inj.)</td>
<td>ABPC/SBT</td>
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<tr>
<td></td>
<td>Injection</td>
<td>Piperacillin/tazobactam (Inj.)</td>
<td>PIPC/TAZ</td>
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<tr>
<td><strong>First-generation cephalosporins</strong></td>
<td>Injection</td>
<td>Cefazolin (Inj.)</td>
<td>CEZ</td>
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<tr>
<td></td>
<td>Injection</td>
<td>Cephalothin (Inj.)</td>
<td>CET</td>
</tr>
<tr>
<td><strong>Second-generation cephalosporins</strong></td>
<td>Injection</td>
<td>Cefotiam (Inj.)</td>
<td>CTM</td>
</tr>
<tr>
<td><strong>Third-generation cephalosporins</strong></td>
<td>Injection</td>
<td>Cefotaxime (Inj.)</td>
<td>CTX</td>
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<td></td>
<td>Injection</td>
<td>Ceftriaxime (Inj.)</td>
<td>CTRX</td>
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<td></td>
<td>Injection</td>
<td>Cefmenoxime (Inj.)</td>
<td>CMX</td>
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<td>Injection</td>
<td>Cefoperazone/sulbactam (Inj.)</td>
<td>CPZ/SBT</td>
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<td>Cefepime (Inj.)</td>
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<td>Cefozopran (Inj.)</td>
<td>CZOP</td>
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<tr>
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<td>Flomoxef (Inj.)</td>
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<tr>
<td><strong>Cephamycins</strong></td>
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<tr>
<td><strong>Ceftolozane/tazobactam</strong></td>
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<td>Panipenem/betamipron (Inj.)</td>
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<td><strong>Monobactams</strong></td>
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<td>Daptomycin (Inj.)</td>
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<td>Injection</td>
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<td>Injection</td>
<td>Tobramycin (Inj.)</td>
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<td><strong>Tetracyclines</strong></td>
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<td>Tigecycline (Inj.)</td>
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<tr>
<td>Drug class name</td>
<td>Category</td>
<td>Name of antimicrobial drug</td>
<td>Abbreviation</td>
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<tr>
<td>--------------------------</td>
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<td>Sulfamethoxazole/trimethoprim</td>
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<td>Sulfamethoxazole/trimethoprim (Inj.)</td>
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<tr>
<td>Metronidazole</td>
<td>Injection</td>
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**Antifungals**

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<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Injection</td>
<td>Amphotericin B (Inj.)</td>
<td>AMPH-B</td>
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<tr>
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<td>Injection</td>
<td>Itraconazole (Inj.)</td>
<td>ITCZ</td>
</tr>
<tr>
<td></td>
<td>Injection</td>
<td>Caspofungin (Inj.)</td>
<td>CPFG</td>
</tr>
<tr>
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<td>Injection</td>
<td>Fluconazole (Inj.)</td>
<td>FLCZ</td>
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<td>Injection</td>
<td>Posaconazole (Inj.)</td>
<td>PSCZ</td>
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<td>Injection</td>
<td>Fosfluconazole (Inj.)</td>
<td>F-FLCZ</td>
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<td>Injection</td>
<td>Voriconazole (Inj.)</td>
<td>VRCZ</td>
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<tr>
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<td>Injection</td>
<td>Micafungin (Inj.)</td>
<td>MCFG</td>
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<td>Injection</td>
<td>Miconazole (Inj.)</td>
<td>MCZ</td>
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<tr>
<td></td>
<td>Injection</td>
<td>Liposomal amphotericin B (Inj.)</td>
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</table>

**Penicillins**

<table>
<thead>
<tr>
<th>Drug class name</th>
<th>Category</th>
<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oral</td>
<td>Benzylpenicillin benzathine (po)</td>
<td>DBECPCG</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Ampicillin (po)</td>
<td>ABPC</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Bacampicillin (po)</td>
<td>BAPC</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Amoxicillin (po)</td>
<td>AMPC</td>
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<td>Oral</td>
<td>Sultamicillin (po)</td>
<td>SBTPC</td>
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<tr>
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<td>Oral</td>
<td>Ampicillin/cloxacillin (po)</td>
<td>ABPC/MCIPC</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Amoxicillin/clavulanic acid (2:1) (po)</td>
<td>AMPC/CVA</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Amoxicillin/clavulanic acid (14:1) (po)</td>
<td>AMPC/CVA</td>
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</tbody>
</table>

**First-generation cephalosporins**

<table>
<thead>
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<th>Drug class name</th>
<th>Category</th>
<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oral</td>
<td>Cefalexin/comboination granules (po)</td>
<td>CEX</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Cefuroxidine (po)</td>
<td>CXD</td>
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</table>

**Second-generation cephalosporins**

<table>
<thead>
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<th>Drug class name</th>
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<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oral</td>
<td>Cefaclor/comboination granules (po)</td>
<td>CCL</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Cefotiam (po)</td>
<td>CTM</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Cefuroxime (po)</td>
<td>CXM-AX</td>
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**Third-generation cephalosporins**

<table>
<thead>
<tr>
<th>Drug class name</th>
<th>Category</th>
<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oral</td>
<td>Cefixime (po)</td>
<td>CFIX</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Cefcapene (po)</td>
<td>CFPN-PI</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Cefditoren (po)</td>
<td>CDTR-PI</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Cefdinir (po)</td>
<td>CFDN</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Ceftibuten (po)</td>
<td>CETB</td>
</tr>
<tr>
<td></td>
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<td>Cefteram (po)</td>
<td>CFTM-PI</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Cefpodoxime (po)</td>
<td>CPDX-PR</td>
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</table>

**Carbapenems**

<table>
<thead>
<tr>
<th>Drug class name</th>
<th>Category</th>
<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Oral</td>
<td>Tebipenem pivoxil (po)</td>
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**Penems**

<table>
<thead>
<tr>
<th>Drug class name</th>
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<th>Abbreviation</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Faropenem (po)</td>
<td>FRPM</td>
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**Oxazolidinones**

<table>
<thead>
<tr>
<th>Drug class name</th>
<th>Category</th>
<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oral</td>
<td>Tedizolid (po)</td>
<td>TGD</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Linezolid (po)</td>
<td>LZX</td>
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**Quinolones**

<table>
<thead>
<tr>
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<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oral</td>
<td>Ofloxacin (po)</td>
<td>OFLX</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Levofoxacin (po)</td>
<td>LVFX</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Garenoxacin (po)</td>
<td>GRNX</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Sitafloxacin (po)</td>
<td>STFX</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Ciprofloxacin (po)</td>
<td>CFX</td>
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<td></td>
<td>Oral</td>
<td>Tossufloxacin (po)</td>
<td>TFLX</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Norfloxacin (po)</td>
<td>NFLX</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Prulifloxacin (po)</td>
<td>PUFX</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Moxifloxacin (po)</td>
<td>MFLX</td>
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### Drug class name

<table>
<thead>
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<th>Drug class name</th>
<th>Category</th>
<th>Name of antimicrobial drug</th>
<th>Abbreviation</th>
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</thead>
<tbody>
<tr>
<td>Quinolones</td>
<td>Oral</td>
<td>Lomefloxacin (po)</td>
<td>LFLX</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Lascufloxacin (po)</td>
<td>LSFX</td>
</tr>
<tr>
<td>Aminoglycosides</td>
<td>Oral</td>
<td>Kanamycin (po)</td>
<td>KM</td>
</tr>
<tr>
<td>Tetracyclines</td>
<td>Oral</td>
<td>Tetracycline (po)</td>
<td>TC</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Demethy/chlortetracycline (po)</td>
<td>DMCTC</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Doxycycline (po)</td>
<td>DOXY</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Minocycline (po)</td>
<td>MINO</td>
</tr>
<tr>
<td>Lincomycins</td>
<td>Oral</td>
<td>Clindamycin (po)</td>
<td>CLDM</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Lincomycin (po)</td>
<td>LCM</td>
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<tr>
<td>Macrolides</td>
<td>Oral</td>
<td>Azithromycin (po)</td>
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<td>Oral</td>
<td>Erythromycin (po)</td>
<td>EM</td>
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<tr>
<td></td>
<td>Oral</td>
<td>Clarithromycin (po)</td>
<td>CAM</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Josamycin (po)</td>
<td>JM</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Acetyl-spiramycin (po)</td>
<td>AC-SPM</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Roxithromycin (po)</td>
<td>RXM</td>
</tr>
<tr>
<td>Sulfamethoxazole/trimethoprim</td>
<td>Oral</td>
<td>Sulfamethoxazole/trimethoprim (po)</td>
<td>SMZ/TMP</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>Oral</td>
<td>Metronidazole (po)</td>
<td>MNZ</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>Oral</td>
<td>Vancomycin (po)</td>
<td>VCM</td>
</tr>
<tr>
<td>Fidaxomicin</td>
<td>Oral</td>
<td>Fidaxomicin (po)</td>
<td>FDX</td>
</tr>
<tr>
<td>Antifungals</td>
<td>Oral</td>
<td>Fluconazole (po)</td>
<td>FLCZ</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Flucytosine (po)</td>
<td>5-FC</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Itraconazole (po)</td>
<td>IT CZ</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Posaconazole (po)</td>
<td>PSCZ</td>
</tr>
<tr>
<td></td>
<td>Oral</td>
<td>Voriconazole (po)</td>
<td>VRCZ</td>
</tr>
</tbody>
</table>

### List of microorganisms and resistant bacteria

#### Situation concerning the detection of major bacteria/resistant bacteria

<table>
<thead>
<tr>
<th>Name of major bacterium</th>
<th>Name of resistant bacterium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acinetobacter spp.</td>
<td>Multidrug-resistant Acinetobacter</td>
</tr>
<tr>
<td>Enterobacter cloacae complex</td>
<td>Multidrug-resistant Pseudomonas aeruginosa</td>
</tr>
<tr>
<td>Enterobacter spp.</td>
<td>CRE: Carbapenem-Resistant Enterobacteriaceae</td>
</tr>
<tr>
<td>Enterococcus faecalis</td>
<td>MDR: Multidrug-resistant Acinetobacter spp.</td>
</tr>
<tr>
<td>Enterococcus faecium</td>
<td>MDRP: Multidrug-resistant P. aeruginosa</td>
</tr>
<tr>
<td>Escherichia coli</td>
<td>MRSA: Methicillin-resistant S. aureus</td>
</tr>
<tr>
<td>Klebsiella aerogenes</td>
<td>PRSP: Penicillin-resistant S. pneumonia</td>
</tr>
<tr>
<td>Klebsiella oxytoca</td>
<td>VRE: Vancomycin-resident Enterococcus spp.</td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>VRSA: Vancomycin-resistant S.aureus</td>
</tr>
<tr>
<td>Proteus mirabilis</td>
<td>Carbapenem-resistant Pseudomonas aeruginosa</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>Fluoroquinolone-resistant Escherichia coli</td>
</tr>
<tr>
<td>Serratia marcescen</td>
<td>3rd Generation Cephalosporin-resistant Escherichia coli</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>3rd Generation Cephalosporin-resistant Klebsiella pneumoniae</td>
</tr>
<tr>
<td>Staphylococcus epidermidis</td>
<td></td>
</tr>
<tr>
<td>Streptococcus pneumoniae</td>
<td></td>
</tr>
</tbody>
</table>
### Situation concerning the occurrence of bloodstream infection

<table>
<thead>
<tr>
<th>Name of major bacterium causing bloodstream infection</th>
<th>Name of resistant bacterium causing bloodstream infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acinetobacter spp.</td>
<td>Multidrug-resistant Acinetobacter</td>
</tr>
<tr>
<td>Candida spp.</td>
<td>Multidrug-resistant Pseudomonas aeruginosa</td>
</tr>
<tr>
<td>Candida albicans</td>
<td>CRE: Carbapenem-Resistant Enterobacteriaceae</td>
</tr>
<tr>
<td>Candida tropicalis</td>
<td>MDRA: Multidrug-resistant Acinetobacter spp.</td>
</tr>
<tr>
<td>Candida glabrata</td>
<td>MDRP: Multidrug-resistant P. aeruginosa</td>
</tr>
<tr>
<td>Candida parapsilosis</td>
<td>MRSA: Methicillin-resistant S. aureus</td>
</tr>
<tr>
<td>Candida krusei</td>
<td>PRSP: Penicillin-resistant S. pneumoniae</td>
</tr>
<tr>
<td>Candida guilliermondi</td>
<td>VRE: Vancomycin-resistant Enterococcus spp.</td>
</tr>
<tr>
<td>Citrobacter spp.</td>
<td>VRSA: Vancomycin-resistant S. aureus</td>
</tr>
<tr>
<td>CNS (including S. epidermidis)</td>
<td>Carbenem-resistant Pseudomonas aeruginosa</td>
</tr>
<tr>
<td>Group C β-Streptococcus</td>
<td>Fluoroquinolone-resistant Escherichia coli</td>
</tr>
<tr>
<td>Enterobacter spp.</td>
<td>3rd Generation Cephalosporin-resistant Escherichia coli</td>
</tr>
<tr>
<td>Enterobacter cloacae complex</td>
<td>3rd Generation Cephalosporin-resistant Klebsiella pneumonia</td>
</tr>
<tr>
<td>Enterococcus faecalis</td>
<td></td>
</tr>
<tr>
<td>Enterococcus faecium</td>
<td></td>
</tr>
<tr>
<td>Escherichia coli</td>
<td></td>
</tr>
<tr>
<td>Group G β-Streptococcus</td>
<td></td>
</tr>
<tr>
<td>Klebsiella aerogenes</td>
<td></td>
</tr>
<tr>
<td>Klebsiella oxytoca</td>
<td></td>
</tr>
<tr>
<td>Klebsiella pneumonia</td>
<td></td>
</tr>
<tr>
<td>Proteus mirabilis</td>
<td></td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td></td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td></td>
</tr>
<tr>
<td>Serratia marcescens</td>
<td></td>
</tr>
<tr>
<td>Streptococcus agalactiae</td>
<td></td>
</tr>
<tr>
<td>Streptococcus pneumonia</td>
<td></td>
</tr>
<tr>
<td>Streptococcus pyogenes</td>
<td></td>
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</tbody>
</table>

### List of bacteria in contaminated samples

<table>
<thead>
<tr>
<th>Name of bacteria</th>
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</thead>
<tbody>
<tr>
<td>Staphylococcus sp.</td>
</tr>
<tr>
<td>Staphylococcus, coagulase negative (CNS)</td>
</tr>
<tr>
<td>Staphylococcus epidermidis</td>
</tr>
<tr>
<td>Staphylococcus saprophyticus subsp. saprophyticus</td>
</tr>
<tr>
<td>Staphylococcus hominis subsp. hominis</td>
</tr>
<tr>
<td>Staphylococcus warneri</td>
</tr>
<tr>
<td>Staphylococcus lentus</td>
</tr>
<tr>
<td>Staphylococcus auricularis</td>
</tr>
<tr>
<td>Staphylococcus simulans</td>
</tr>
<tr>
<td>Staphylococcus cohnii subsp. cohnii</td>
</tr>
<tr>
<td>Staphylococcus xylosus</td>
</tr>
<tr>
<td>Staphylococcus sciuri subsp. sciuri</td>
</tr>
<tr>
<td>Staphylococcus intermedius</td>
</tr>
<tr>
<td>Staphylococcus hyicus</td>
</tr>
<tr>
<td>Staphylococcus haemolyticus</td>
</tr>
</tbody>
</table>
### Name of bacteria

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staphylococcus capitis subsp. capitis</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Propionibacterium sp.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Propionibacterium acnes</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Corynebacterium sp.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Corynebacterium diphtheriae</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Corynebacterium jeikeium</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Bacillus sp.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Bacillus cereus</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Bacillus subtilis subsp. subtilis</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Bacillus anthracis</strong></td>
<td></td>
</tr>
</tbody>
</table>

### How to read box plots

Box plots were generated based on data from medical institutions. Outliers were plotted as individual points, and the upper and lower ends of whiskers represent the maximum and minimum values of the outlier criteria. Values falling within the box plot are not shown in the plot.

- **Outlier criterion (lower limit)** = $Q1 - 1.5 \times (Q3 - Q1)$
- **Outlier criterion (upper limit)** = $Q3 + 1.5 \times (Q3 - Q1)$

* $Q1$: 1st quartile, $Q3$: 3rd quartile
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full and non-abbreviated name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMR</td>
<td>Antimicrobial Resistance</td>
</tr>
<tr>
<td>AMU</td>
<td>Antimicrobial Use</td>
</tr>
<tr>
<td>ASP</td>
<td>Antimicrobial Stewardship Program</td>
</tr>
<tr>
<td>AST</td>
<td>Antimicrobial Stewardship Team</td>
</tr>
<tr>
<td>AUD</td>
<td>Antimicrobial Use Density</td>
</tr>
<tr>
<td>CAUTI</td>
<td>Catheter-associated Urinary Tract Infection</td>
</tr>
<tr>
<td>CDI</td>
<td><em>Clostridioides difficile</em> Infection</td>
</tr>
<tr>
<td>CLABSI</td>
<td>Central Line-associated Blood Stream Infection</td>
</tr>
<tr>
<td>CSEP</td>
<td>Clinical Sepsis</td>
</tr>
<tr>
<td>DDD</td>
<td>Defined Daily Dose</td>
</tr>
<tr>
<td>DOT</td>
<td>Days of Therapy</td>
</tr>
<tr>
<td>GCU</td>
<td>Growing Care Unit</td>
</tr>
<tr>
<td>HCU</td>
<td>High Care Unit</td>
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<tr>
<td>ICT</td>
<td>Infection Control Team</td>
</tr>
<tr>
<td>ICU</td>
<td>Intensive Care Unit</td>
</tr>
<tr>
<td>JANIS</td>
<td>Japan Nosocomial Infections Surveillance</td>
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<tr>
<td>LCBI</td>
<td>Laboratory Confirmed Bloodstream Infection</td>
</tr>
<tr>
<td>NICU</td>
<td>Neonatal Intensive Care Unit</td>
</tr>
<tr>
<td>PAF</td>
<td>Prospective Audit and Feedback</td>
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<tr>
<td>PICU</td>
<td>Pediatric Intensive Care Unit</td>
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<td>SSI</td>
<td>Surgical Site Infection</td>
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<tr>
<td>SCU</td>
<td>Stroke Care Unit</td>
</tr>
<tr>
<td>TDM</td>
<td>Therapeutic Drug Monitoring</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</table>
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