National Center for Global Health and Medicine,
AMR Clinical Reference Center

Japan Surveillance for Infection Prevention and Healthcare Epidemiology

J-SIPHE

Annual Report 2022

J-SIPHE
感染対策連携共通プラットフォーム

2022.1-2022.12
Published Nov 2023

National Center for Global Health and Medicine, AMR Clinical Reference Center

Japan Surveillance for Infection Prevention and Healthcare Epidemiology (J-SIPHE) Annual Report 2022

2022.1-2022.12
Published Nov.2023

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. List of abbreviations

AMR	Antimicrobial Resistance
AMRCRC	AMR Clinical Reference Center
AMU	Antimicrobial Use
AST	Antimicrobial Stewardship Team
AUD	Antimicrobial Use Density
CAUTI	Catheter-associated Urinary Tract Infection
CDI	*Clostridioides Difficile* Infection
CLABSI	Central Line-associated Blood Stream Infection
CRE	Carbapenem-Resistant *Enterobacteriaceae*
CSEP	Clinical Sepsis
DDD	Defined Daily Dose
DOT	Days of Therapy
FTE	Full Time Equivalent
GCU	Growing Care Unit
HAI	Healthcare-Associated Infections
HCU	High Care Unit
ICT	Infection Control Team
ICU	Intensive Care Unit
IPC	Infection Prevention and Control
JANIS	Japan Nosocomial Infections Surveillance
LCBI	Laboratory Confirmed Bloodstream Infection
MDRA	Multidrug-resistant *Acinetobacter* spp
MDRP	Multidrug-resistant *P. aeruginosa*
MRSA	Methicillin-resistant *Staphylococcus aureus*
NAP	National Action Plan
NICU	Neonatal Intensive Care Unit
PAF	Prospective Audit and Feedback
PICU	Pediatric Intensive Care Unit
PRSP	Penicillin-resistant *S. pneumoniae*
SSI	Surgical Site Infection
SCU	Stroke Care Unit
TDM	Therapeutic Drug Monitoring
VRE	Vancomycin-resistant *Enterococcus* spp.
VRSA	Vancomycin-resistant *S. aureus*
WHO	World Health Organization

II. Overview of J-SIPHE

Background and purpose

In 2015, the World Health Organization (WHO) General Assembly endorsed a global action plan on antimicrobial resistance (AMR). A year later, in 2016, the global action plan was reaffirmed as the world's blueprint for tackling AMR during the 71st session of the United Nations General Assembly, where 193 Heads of State including Japan adopted the resolution. In response the Government of Japan has developed and implemented its own national action plan (NAP) to combat AMR. This plan has committed Japan to action in six key areas including professional education and public engagement, surveillance and monitoring, infection prevention and control (IPC), antimicrobial stewardship, research, and international collaboration. IPC has always been a key element of high quality and safe care, especially since the COVID-19 pandemic. Therefore, measuring and evaluating IPC practices in medical and long-term nursing care settings and promoting regional and national cooperation have strongly been advocated in the NAP against AMR.

Operation

To facilitate the above set goals the Ministry of Health, Labour and Welfare of Japan commissioned the AMR Clinical Reference Center (AMRCRC), an organization established in April 2017 at the National Center for Global Health and Medicine. To better track, measure, and tackle AMR in healthcare at local, regional, and national level the AMRCRC launched a system called the Japan Surveillance for Infection Prevention and Healthcare Epidemiology (J-SIPHE; hereinafter referred to as "this system"). This system aggregates epidemiological information on IPC measures, healthcare-associated infections (HAI), occurrence of AMR bacteria and associated blood stream infections, and antimicrobial use (AMU) at participating sites nationwide.

Data registration

This system not only collects multiple sets of important AMR measures (see section III. Data registration items) recorded by participating sites, it represents the delivery of a shared platform providing tools and real time data which individual sites can use to progress towards improving patient care, IPC practices and achieve the national standards. The data is cleaned, organized, and safely stored at the J-SIPHE office. The J-SIPHE expert committee at the AMRCRC in charge of this system is comprised of a multidisciplinary team of experts in their field who continuously strive to improve surveillance and monitoring processes. The resulting large scale data aggregation is then consolidated and summarized on an annual basis to evaluate, compare, and make progress towards achieving the goals set out in the NAP against AMR.
The annual report is made publicly available on the J-SIPHE website for better public engagement and used for continuous professional education at medical institutions. This system also aims to be the national benchmark when addressing AMR, fostering regional and national collaboration amongst participating sites.

Annual Report

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

1. Raw data* ranging from January to December of the previous year at the time of data aggregation are used.
2. The raw data* of participating sites are used that entered data for at least one month during the target period.
3. The annual report adopts a unique data aggregation and representation method.
4. Not all data registration items are 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**

III. Data registration items

The following items are part of the J-SIPHE data collection system:

Basic site information

- Number of beds
- Additional healthcare reimbursement for IPC practices
- Presence/absence of additional reimbursement for antimicrobial stewardship support
- Presence/absence of infectious disease consultations
- Working status of physicians in a consultation system for infections
- Patient days
- Patient days by ward
- Hospitalizations
- Average length of stay

AST and 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*
- Number of bedside consultations for infectious diseases*
- Number of pediatric consultations for infectious diseases*
- Presence/absence of AST
- Number of healthcare professionals that form part of the AST
- Number of qualified pharmacists that form part of the AST
- Number of consultations with the AST
- Number of recommendations made by the AST
- Presence/absence of system for starting incubation of blood culture bottles
- Presence/absence of system for conducting Gram staining for positive blood culture
- Presence/absence of a follow-up system by the Department of Infectious Diseases, Infection Control Team (ICT), and AST for patients with a positive blood culture
- Antimicrobial agents included in the antimicrobial stewardship support program
- Antimicrobial agents subject to antimicrobial stewardship support
- Details of the antimicrobial stewardship support available
- Number of patients starting treatment with drugs subject to therapeutic drug monitoring (TDM)
- Number of patients undergoing TDM among drugs subject to TDM
- Presence/absence of staff training on antimicrobial stewardship
- Number of staff training sessions on antimicrobial stewardship

Information on AMU

- Dose of each antimicrobial drug used
- Days of each antimicrobial drug used
- Number of patients using each antimicrobial drug

*** Referring to all consultations recorded in the medical charts.**

Information about the ICT

- Number of healthcare professionals that form part of the ICT
- Number of qualified medical professionals that form part of the ICT
- Monitoring system for detecting cases of resistant bacteria
- Monitoring system for influenza-like 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 in clinical areas (by job type/ward)
- Number of hand hygiene events in clinical areas (by job type/ward)
- WHO Hand Hygiene Self-Assessment Framework scores

Information on Device-Associated HAIs

- Total number of days of central line placement (by ward)
- Number of Laboratory Confirmed Bloodstream Infections (LCBI) /Clinical Sepsis (CSEP) (by ward)
- Total number of days of urethral catheter placement (by ward)
- Number of Catheter-associated urinary tract infections (CAUTI) (by ward)

Information on SSI – (HAI)

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

Information on the NICU - (HAI)

- Number of NICU beds
- Number of Growing Care Unit (GCU) beds
- Presence/absence of pediatric surgery
- Presence/absence of pediatric cardiovascular surgery
- Presence/absence of pediatric neurosurgery
- Presence/absence of an active Methicillin-resistant Staphylococcus aureus (MRSA) 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 number of days of central line placement (by birth weight category)
- Number of LCBI (by birth weight category)
- Number of CSEP cases (by birth weight category)

Information on microorganisms and resistant bacteria

- Number of patients with a positive diagnostic test for *Clostridioides Difficile* Infection (CDI)
- Primary detection methods for a CDI diagnosis
- Number of tests performed for a 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 that are MRSA positive by sample type
- Number of patients with *S. aureus* detected by sample type
- Number of blood cultures submitted from patients aged 15 years or older
- Number of blood cultures submitted 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 14 years or younger
- Number of blood cultures submitted with only one set from patients aged 14 years or younger
- Number of blood culture sets with positive results submitted from patients aged 14 years or younger
- Number of contaminated blood culture sets submitted from patients aged 14 years or younger

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

IV. Summary of data aggregation results

The figures and tables for each item were aggregated and calculated on a site-by-site basis, using data ranging from January to December 2022 from sites that had been registered as of August 28, 2023, among sites approved for participation by December 31, 2022.
Refer to the appendix for an explanation on how to read box plots.

Basic site information

Table 1 and Table 2 show summary data of the facility information for all the participating sites based on data registered from January 1, 2022 until December 31, 2022 .

Table 1 Basic registered data for participating sites by IPC additional reimbursement type

Item	Participating sites	Additional healthcare reimbursement for IPC type 1	Additional healthcare reimbursement for IPC type 2	Additional healthcare reimbursement for IPC type 3	Sites not claiming additional healthcare reimbursement for IPC
Total	1876	868	493	487	28
AST-related/Infectious disease treatment information	894	572	152	158	12
AMU information	1787	841	464	459	23
ICT-related information	1381	662	346	355	18
HAI information	716	488	118	100	10
CLABS/ CAUTI information	620	416	103	94	7
SSI information	453	343	62	44	4
NICU information	111	81	13	17	0
Microorganisms and resistant bacteria information	1543	744	394	391	14

(Based on data from participating sites as of December 31, 2022)
* Eligible facilities were those approved for participation by December 31, 2022.

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

Item	Index	Minimum	1st quartile	Median	3rd quartile	Maximum
All sites	Number of beds/month	15	129.8	214	382.2	1376
	Patient days/month	40	2939.5	4945.8	8435.2	40590.8
	Hospitalizations/month	0.7	67.7	192	564.2	2722.9
	Average length of stay/month	2	12.3	16.9	34.7	1678.3
AST-related/ Infection treatment information	Number of beds/month	15	178.2	300	450	1376
	Patient days/month	245.7	3831.6	6406.5	10087.5	40590.8
	Hospitalizations/month	0.7	120.2	373.4	779.2	2722.9
	Average length of stay/month	2	11.6	14.2	20.5	1678.3
AMU information	Number of beds/month	15	130.5	219	389.5	1376
	Patient days/month	213.9	3000	4975.2	8523.4	40590.8
	Hospitalizations/month	0.7	68.9	200.3	588.5	2722.9
	Average length of stay/month	2	12.3	16.7	33.4	1678.3

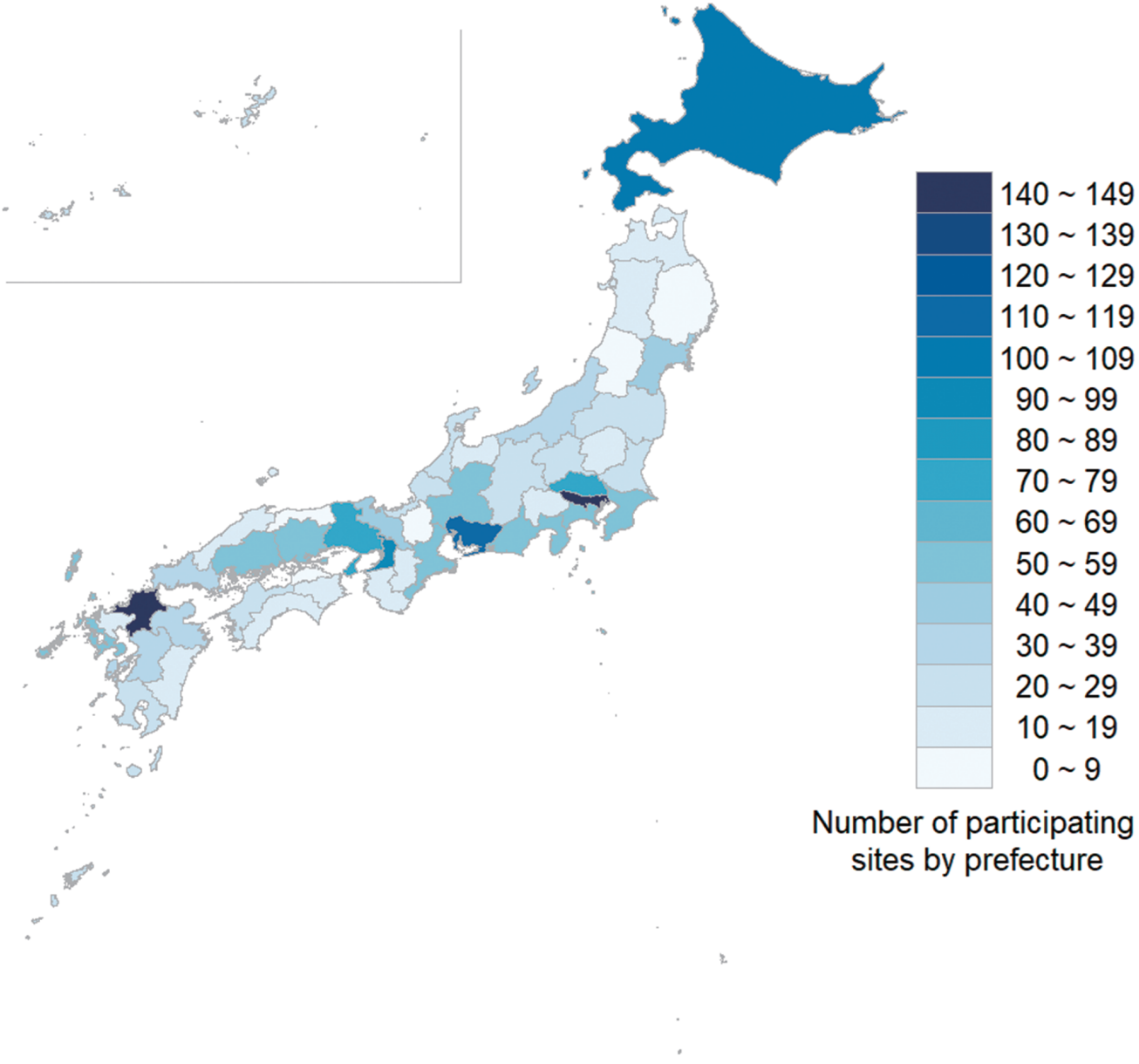
Item	Index	Minimum	1st quartile	Median	3rd quartile	Maximum
HAI information	Number of beds/month	18	183	301	466	1376
	Patient days/month	213.9	4033.2	6414	10323.5	40590.8
	Hospitalizations/month	7.1	143.6	395.2	809.6	2621
	Average length of stay/month	3.8	11.4	13.7	19.8	790.4
Device associated infection information	Number of beds/month	18	180	300	458	1376
	Patient days/month	365.4	3964.7	6338	10258.9	40590.8
	Hospitalizations/month	7.1	132.5	376	783.2	2621
	Average length of stay/month	3.8	11.6	14	20.7	790.4
NICU information	Number of beds/month	37	241.2	500	639	1160
	Patient days/month	620.1	4843.9	10664.4	14583.2	24681.1
	Hospitalizations/month	8.2	225.6	915.9	1183.1	2076.3
	Average length of stay/month	5.1	10.7	12.4	14.7	790.4
SSI information	Number of beds/month	18	200	331	500	1376
	Patient days/month	213.9	4582.8	7006.4	11034.4	40590.8
	Hospitalizations/month	8.2	249	499.7	956.1	2621
	Average length of stay/month	3.8	11	13	16.7	790.4
ICT-related information	Number of beds/month	15	130	225.5	399	1376
	Patient days/month	40	3010.7	4998.6	8613.1	40590.8
	Hospitalizations/month	2.8	68.7	206.5	617.8	2621
	Average length of stay/month	3.8	12.3	16.6	32.5	1553.7
Microorganisms and resistant bacteria information	Number of beds/month	15	135.2	225.5	396	1376
	Patient days/month	223.3	3056.1	5022	8604.2	40590.8
	Hospitalizations/month	0.7	71.4	211.2	609.8	2621
	Average length of stay/month	2	12.3	16.7	32.8	1678.3

(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 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 nationwide

Figure 1 Map of Japan showing the geographical number of participating sites by prefecture.



(Based on data from participating sites as of December 31, 2022)
* Eligible facilities were those approved for participation by December 31, 2022.

Table 3 Summary of participating sites subject to aggregation by prefecture and IPC additional reimbursement type

Prefecture code	Prefecture	Participating sites	Additional healthcare reimbursement for IPC type 1	Additional healthcare reimbursement IPC type 2	Additional healthcare reimbursement for IPC type 3	Sites not claiming additional healthcare reimbursement for IPC
1	Hokkaido	104	53	32	17	2
2	Aomori	12	8	1	2	1
3	Iwate	8	4	1	3	0
4	Miyagi	46	17	7	19	3
5	Akita	16	10	3	3	0
6	Yamagata	6	4	0	2	0
7	Fukushima	30	12	11	6	1
8	Ibaraki	26	15	7	4	0
9	Tochigi	11	9	1	1	0
10	Gunma	21	12	1	8	0
11	Saitama	73	27	29	16	1
12	Chiba	55	32	12	10	1
13	Tokyo	144	76	28	39	1
14	Kanagawa	59	40	11	8	0
15	Niigata	38	12	12	13	1
16	Toyama	16	8	5	3	0
17	Ishikawa	25	14	6	4	1
18	Fukui	29	12	14	3	0
19	Yamanashi	14	3	9	0	2
20	Nagano	27	21	4	2	0
21	Gifu	59	25	18	16	0
22	Shizuoka	57	31	9	17	0
23	Aichi	117	49	24	43	1
24	Mie	55	20	10	22	3
25	Shiga	8	6	1	1	0
26	Kyoto	45	22	13	10	0
27	Osaka	94	54	24	16	0
28	Hyogo	77	38	23	16	0
29	Nara	14	8	6	0	0
30	Wakayama	15	8	3	3	1
31	Tottori	4	3	0	1	0
32	Shimane	11	6	4	1	0
33	Okayama	53	13	19	18	3
34	Hiroshima	58	25	16	17	0
35	Yamaguchi	36	12	8	16	0
36	Tokushima	16	9	2	5	0
37	Kagawa	5	5	0	0	0
38	Ehime	28	16	8	4	0
39	Kochi	16	7	2	7	0
40	Fukuoka	141	44	29	65	3
41	Saga	19	8	8	3	0
42	Nagasaki	51	14	27	9	1
43	Kumamoto	40	15	17	8	0
44	Oita	35	10	14	9	2
45	Miyazaki	11	8	3	0	0
46	Kagoshima	29	10	7	12	0
47	Okinawa	22	13	4	5	0

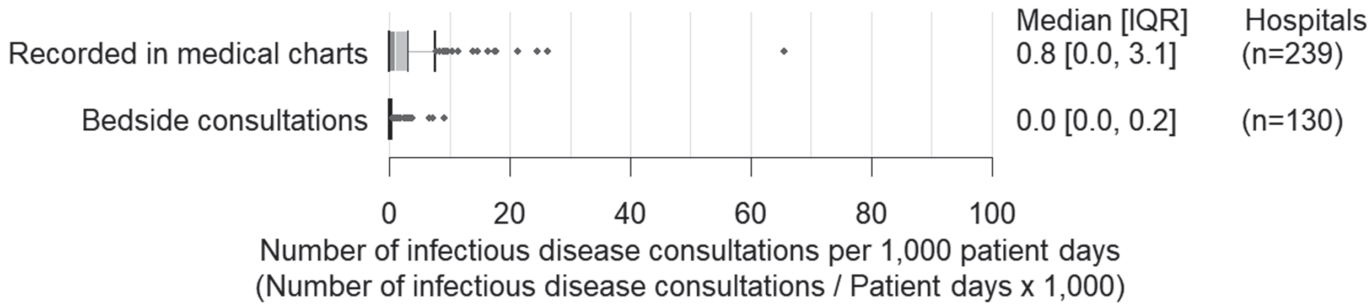
(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.

AST and Infection treatment information

The data were aggregated and calculated using the registered data for AST and Infection treatment information.

Figure 2 Number of infectious disease consultations per 1,000 patient days

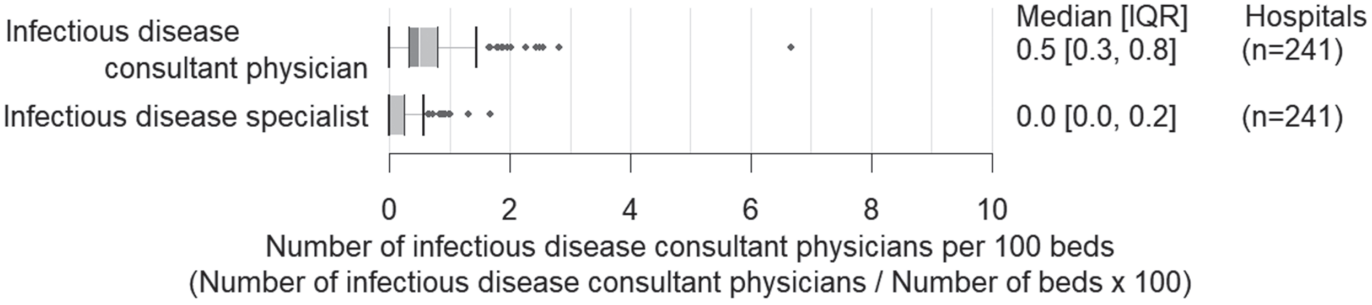
Box plot showing the number of infectious disease consultations per 1,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* The value was obtained by dividing the number of infectious disease consultations by patient days and multiplying the result by 1,000.
* An infectious disease consultation is defined as a consultation by a physician.
* Multiple consultations per patient are defined as one consultation. However, different consultations are counted separately.
* "Recorded in medical charts" represents consultations with records in medical charts.
* "Bedside consultations" include consultations conducted at the bedside, for cases recorded in medical the charts.

Figure 3 Number of infectious disease consultant physicians per 100 beds

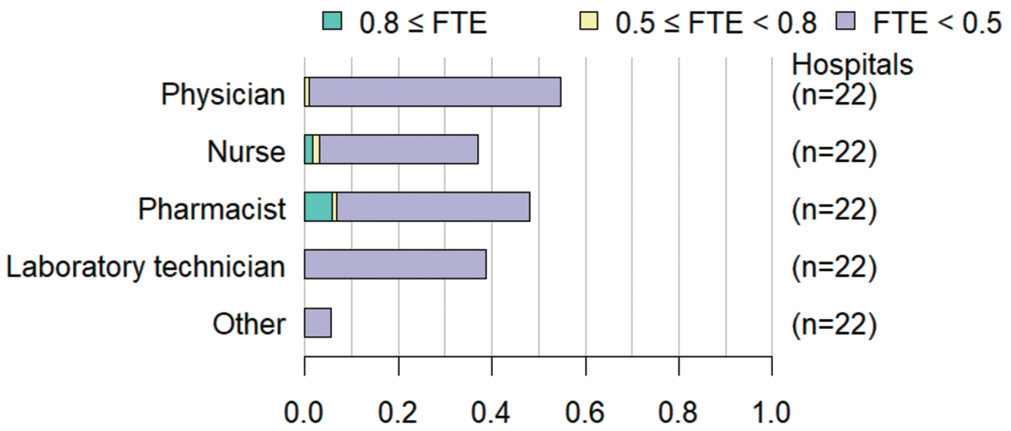
Box plot showing the number of infectious disease consultant physicians per 100 beds.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.
* The number of infectious disease consultants includes the number of infectious disease specialists.

Figure 4 Number of personnel that form part of the AST by job type per 100 beds

Bar chart showing the number of personnel that form part of the AST by full time equivalent (FTE) job type per 100 beds.

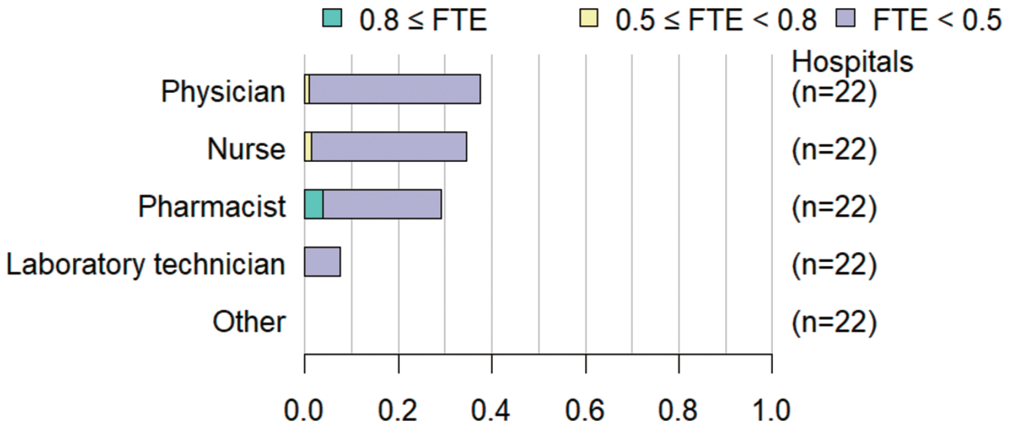


Number of personnel that form part of the AST by job type per 100 beds
(Number of personnel that form part of the AST / Number of beds ×100)

(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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”.
* Staff dedicate either 0.8 ≤ FTE (80% or more of their working hours), 0.5 <FTE < 0.8 (devote 50% or more) or FTE ≤ 0.5 (devote less than 50%) to AST work.
* If staff members in each job type do not belong to the AST, the corresponding number at the site was counted as 0.

Figure 5 Number of qualified personnel that form part of the AST by job type per 100 beds

Bar chart showing the number of qualified personnel that form part of the AST by FTE job type per 100 beds.

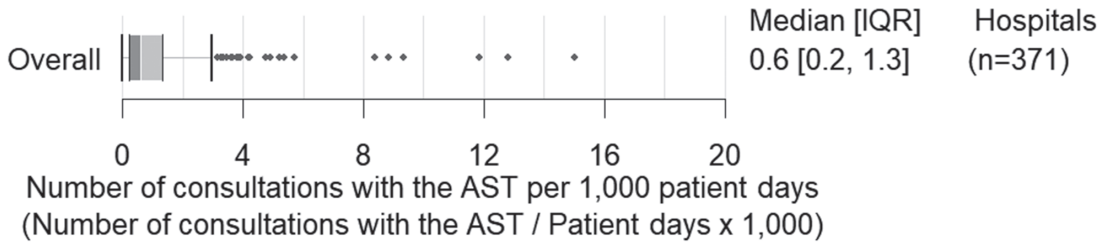


Number of qualified personnel that form part of the AST by job type per 100 beds
(Number of qualified personnel that form part of the AST / Number of beds ×100)

(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.
* 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, antimicrobial chemotherapy or infection control specialist pharmacist, a certified infection control clinical microbiology laboratory technician, or a certified clinical microbiology laboratory technician.
* A double-licensed professional is counted as a single individual.
* Staff dedicate either 0.8 ≤ FTE (80% or more of their working hours), 0.5 <FTE < 0.8 (devote 50% or more) or FTE ≤ 0.5 (devote less than 50%) to AST work.
* If no certified pharmacists is part of the AST, the number at the site was counted as 0.

Figure 6 Number of consultations with the AST per 1,000 patient days

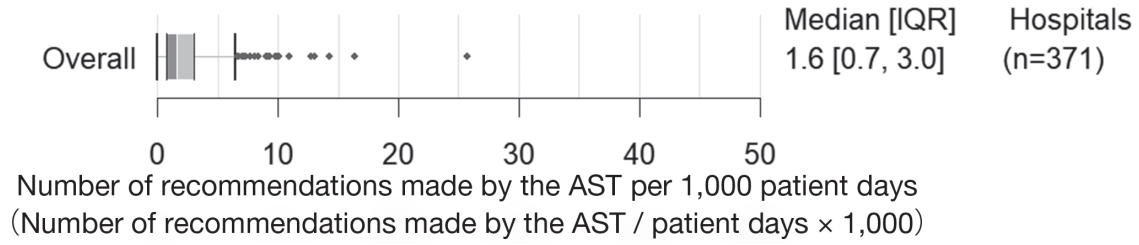
Box plot showing the overall number of consultations with the AST per 1,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 a change of management plan was recommended by a member of the AST upon consultation/inquiry from attending physicians, etc.
* Note that each patient is only counted once.

Figure 7 Number of recommendations made by the AST per 1,000 patient days

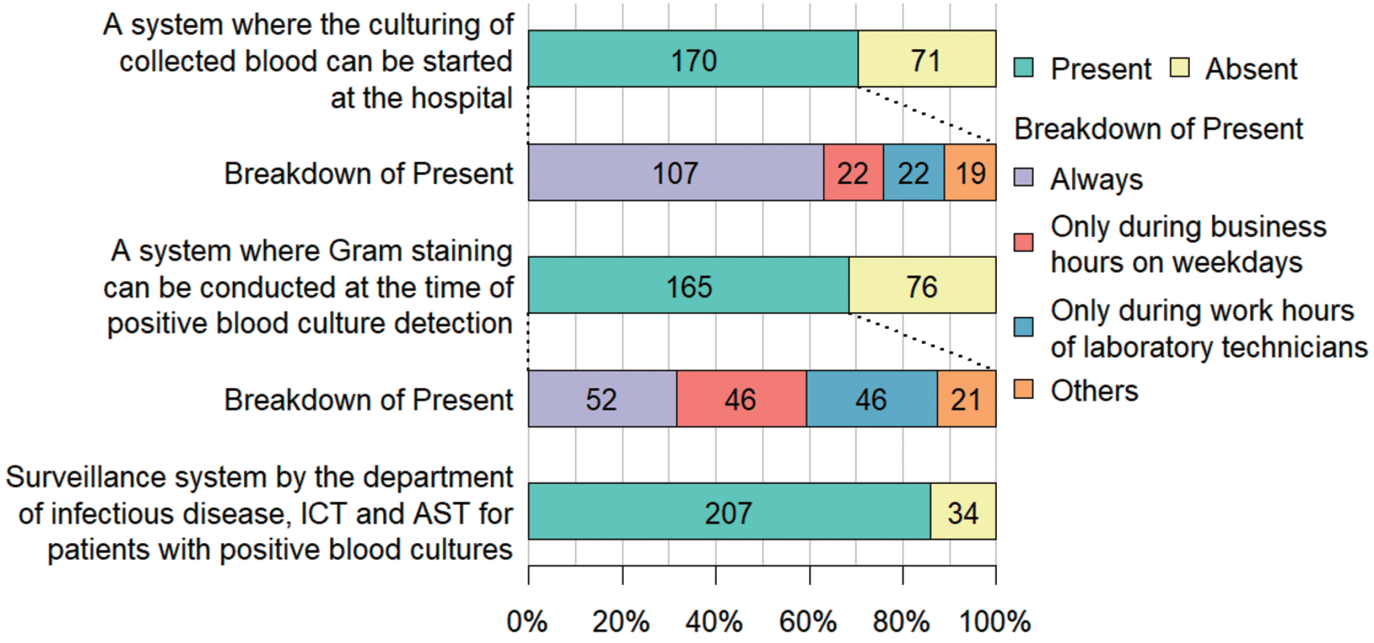
Box plot showing the number of recommendations made by the AST per 1,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* The value was obtained by dividing the number of recommendations made by the AST by patient days and multiplying the result by 1,000.
* The number of recommendations made by the AST refers to the number of cases in which a change of management plan was proposed by the AST, based on monitoring of the use of specified antimicrobials/bacteremia without consultations from attending physicians.
* Note that each patient is only counted once.

Figure 8 Blood culture testing system

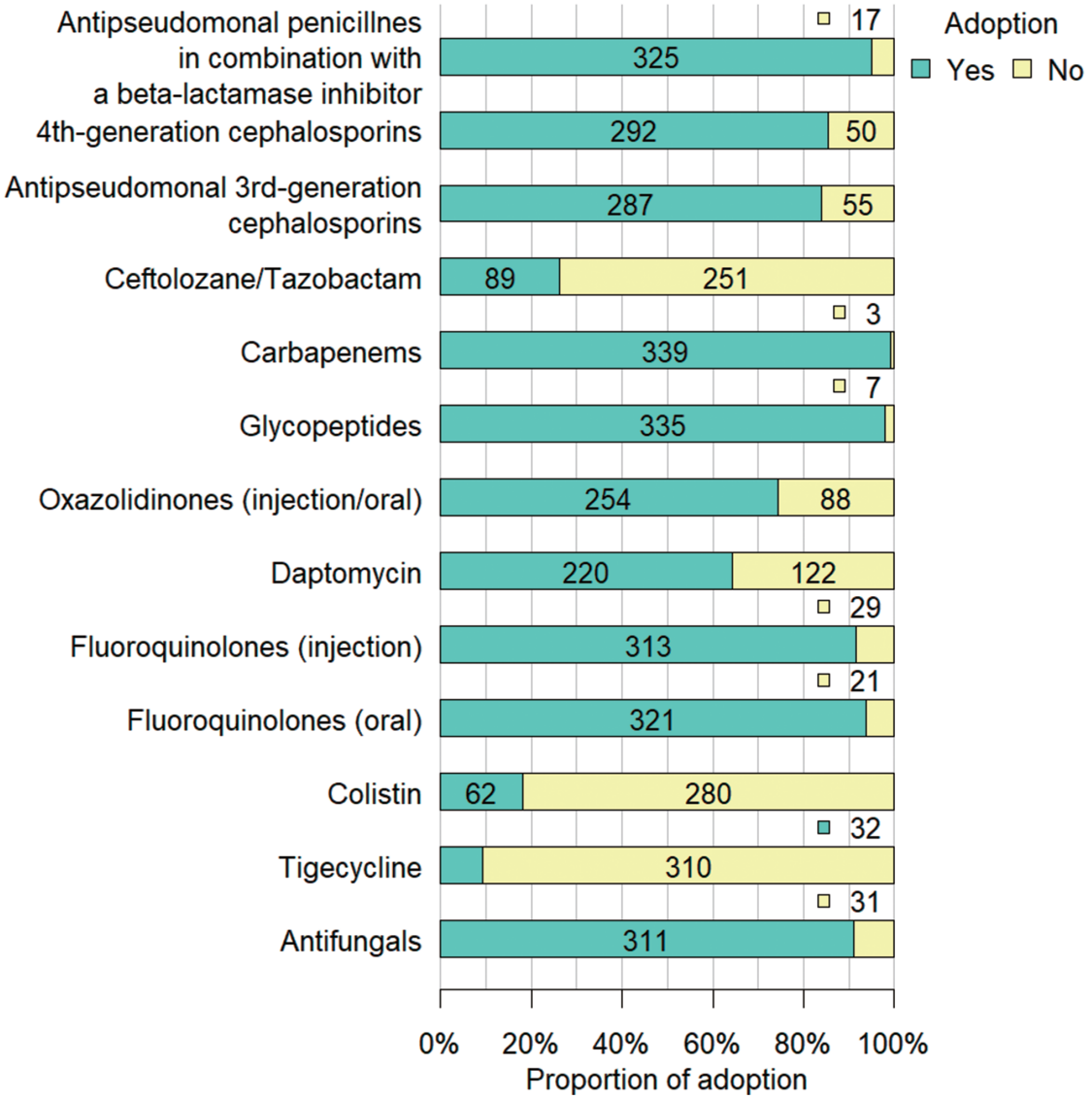
Bar chart showing the proportion of blood culture testing systems and timeframes available in numbers and percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Proportion of hospitals that have available facilities to analyze blood culture samples on site.
* Proportion of sites that have available facilities to carry out Gram staining at the time of positive blood culture detection.
* Proportion of patients who are followed up by the infectious disease department, ICT, or AST for a positive blood culture result.

Figure 9 Adoption of drugs subject to antimicrobial stewardship

Bar chart showing the proportion of antimicrobial agents that are subject to antimicrobial stewardship by antimicrobial category in numbers and percentages (%).

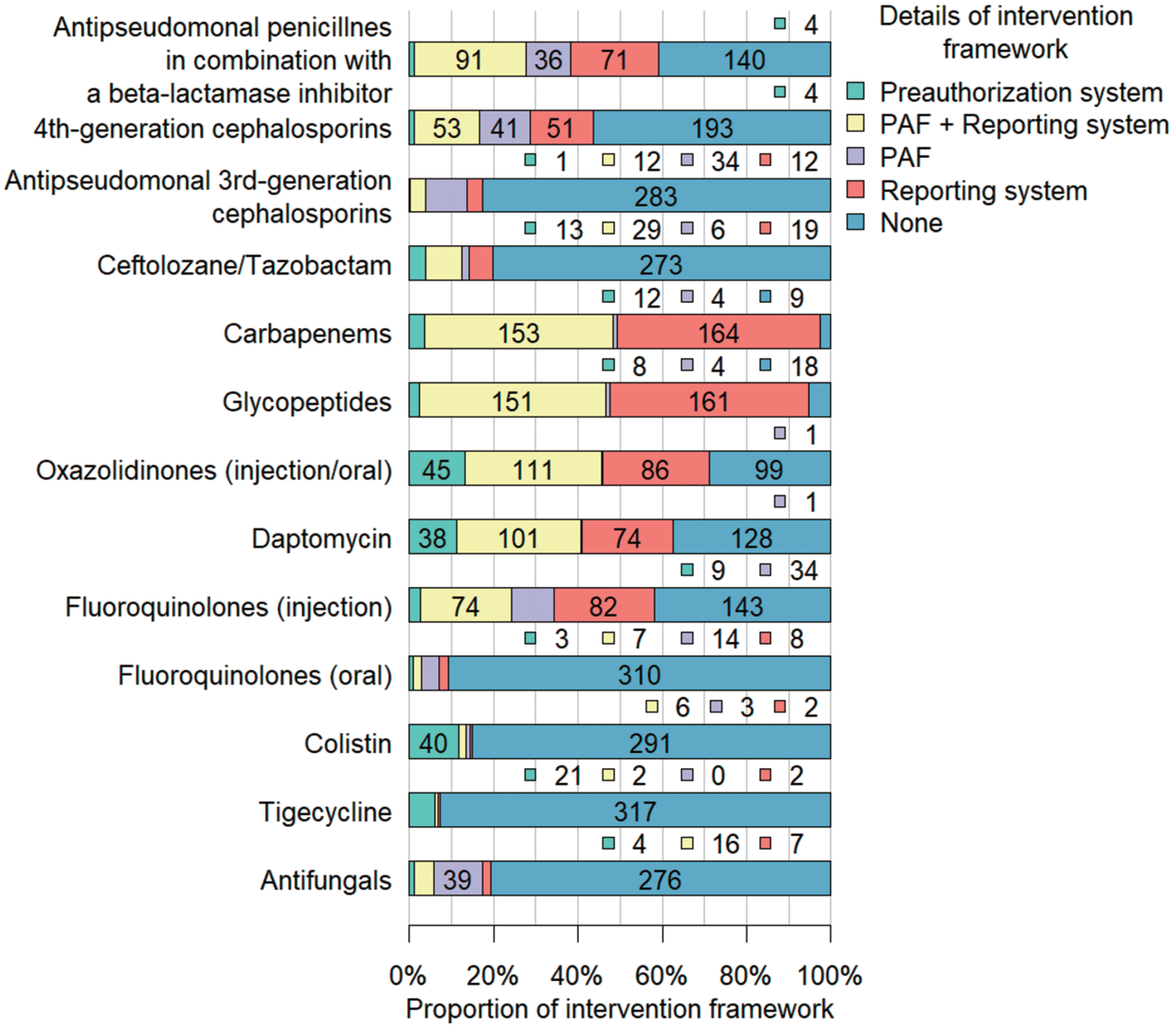


(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 2022.
* Proportion of adoption by drug category.

Figure 10 Existing antimicrobial stewardship strategies

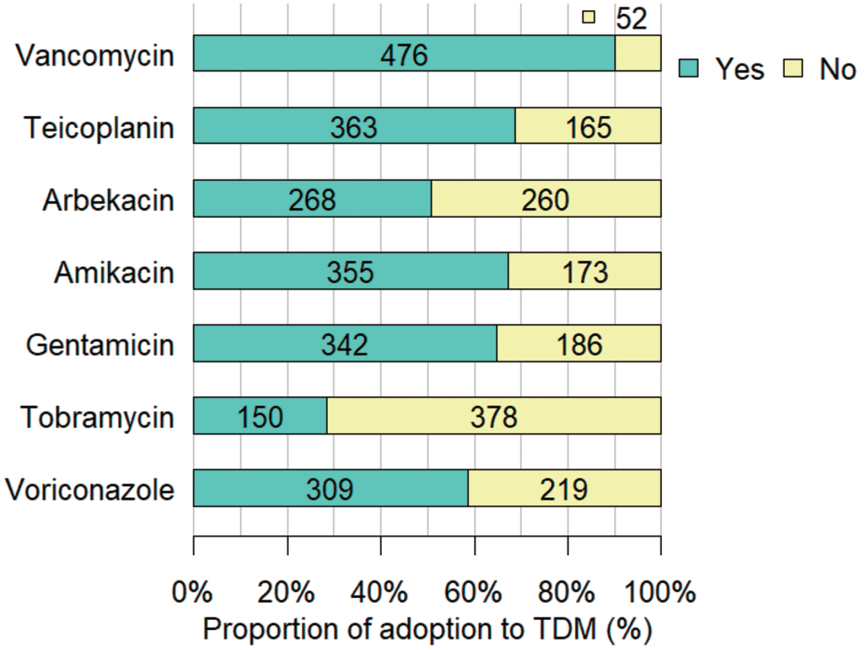
Bar chart showing the proportion of existing antimicrobial stewardship strategies by antimicrobial class in numbers and percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Proportion of antimicrobial stewardship strategy by drug category.
* PAF stands for prospective audit and feedback in infection treatment.

Figure 11 TDM of antimicrobials

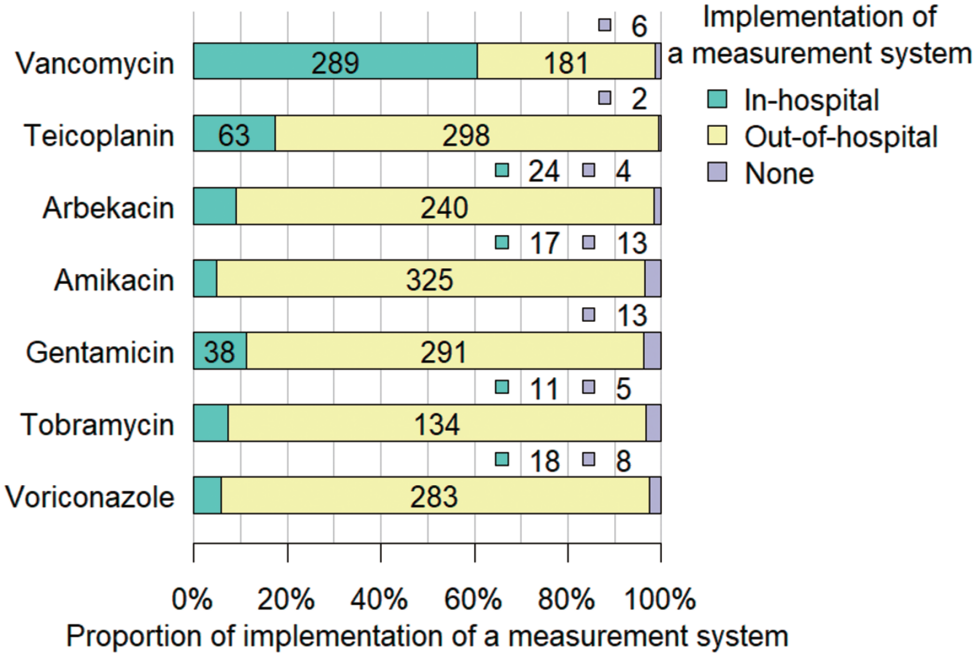
Bar chart showing the proportion of antimicrobials subject to TDM by drug category in numbers and percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Proportion of adoption by drug category of TDM.

Figure 12 Implementation system to measure the blood concentration of antimicrobials subject to TDM

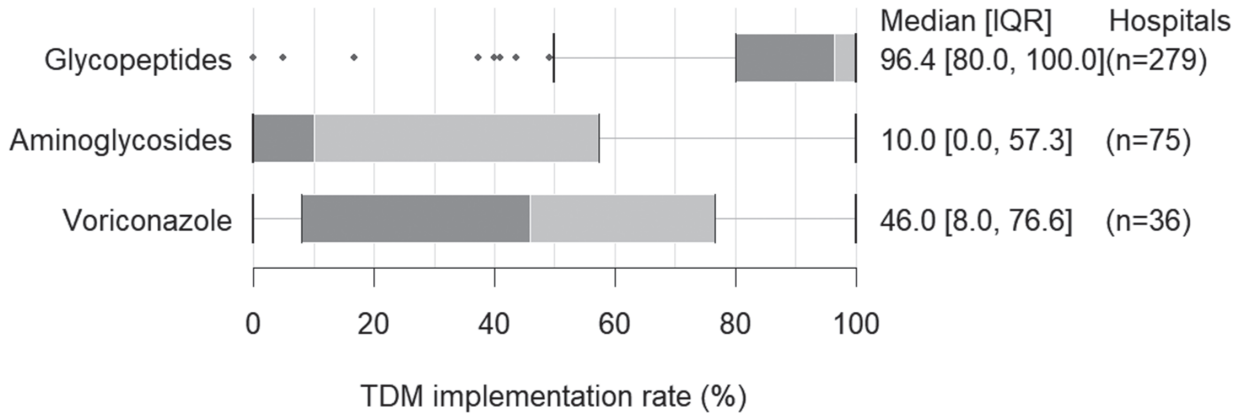
Bar chart showing what system is available in hospitals to measure blood concentration levels of antimicrobials by drug category in numbers and percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* 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.”

Figure 13 TDM implementation rate

Box plot showing the TDM implementation rate in percentages (%).



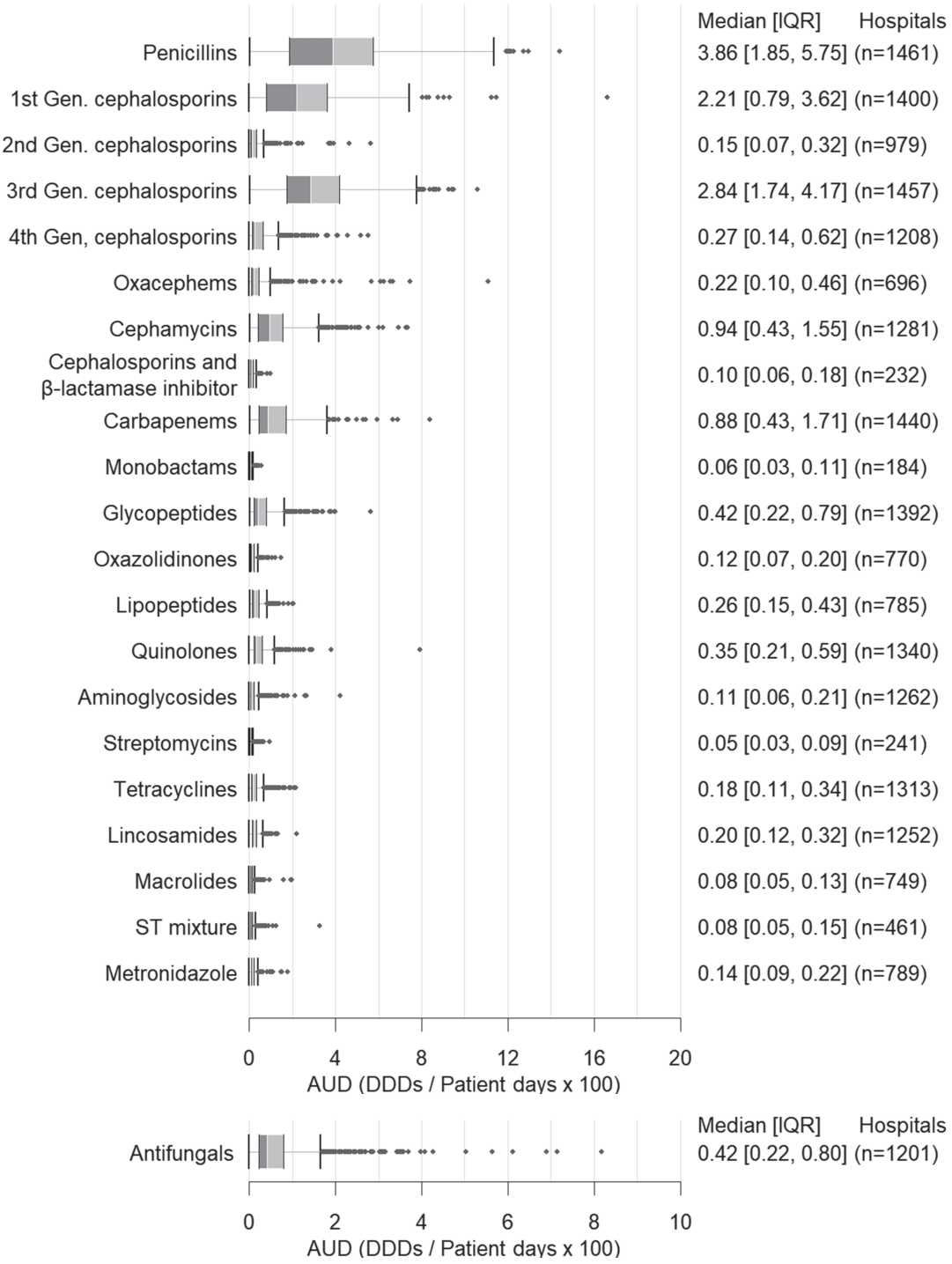
(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Proportion of the number of patients undergoing TDM, among those who started antimicrobial drugs.
* Data of sites with 5 or more patients who started administration of the antimicrobial drug during the target period were included.

Information on AMU

The data were aggregated and calculated using an application, data was extracted from the "Inpatient EF Integration File" within the registered information on AMU.

Figure 14 AUD (injection)

Box plot showing the AUD for each antimicrobial class given by injection

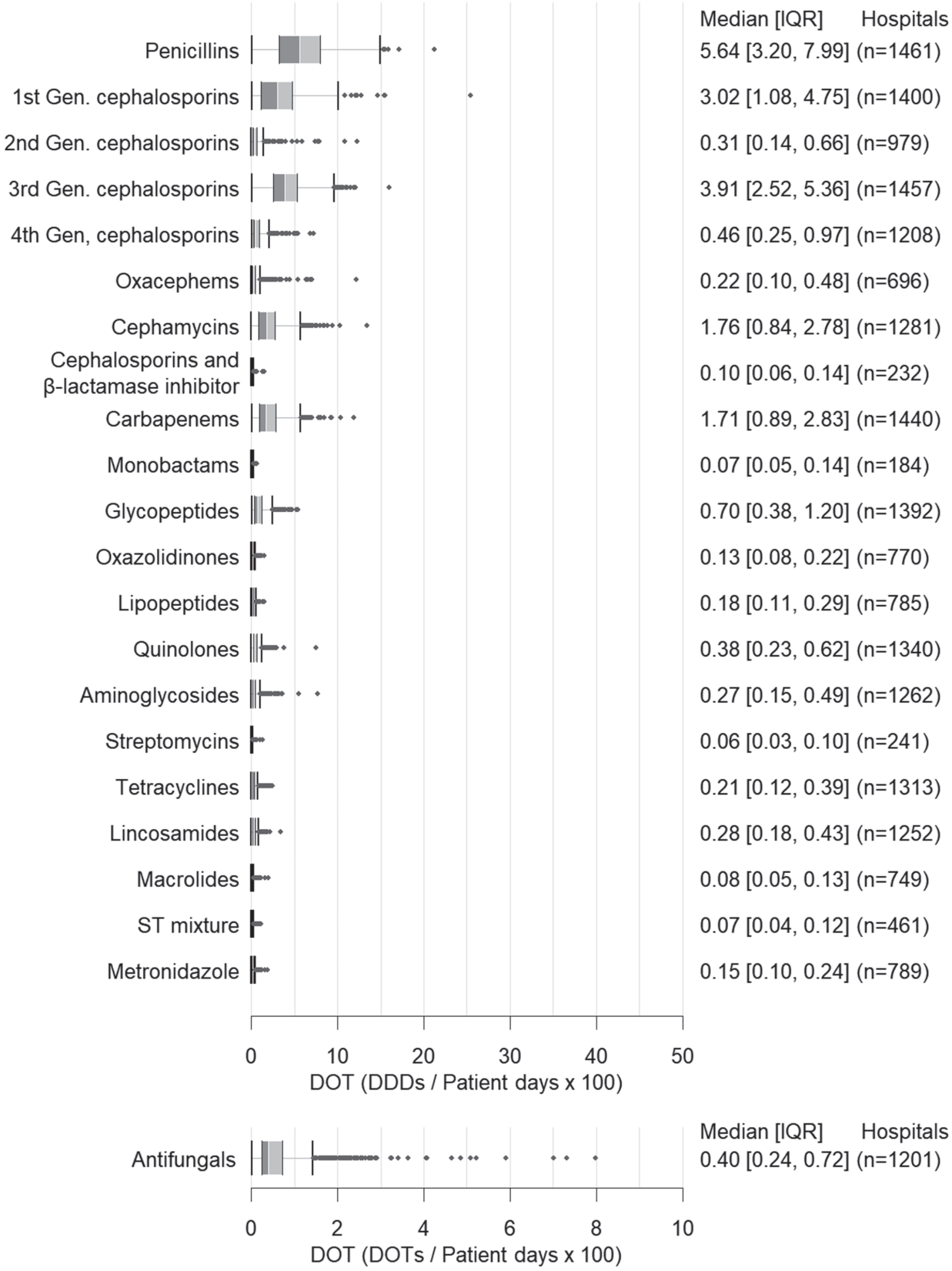


(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 2022.
* The value was obtained by dividing the dose by the defined daily dose (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 in the appendix for drug class/category.

Figure 15 DOT (injection)

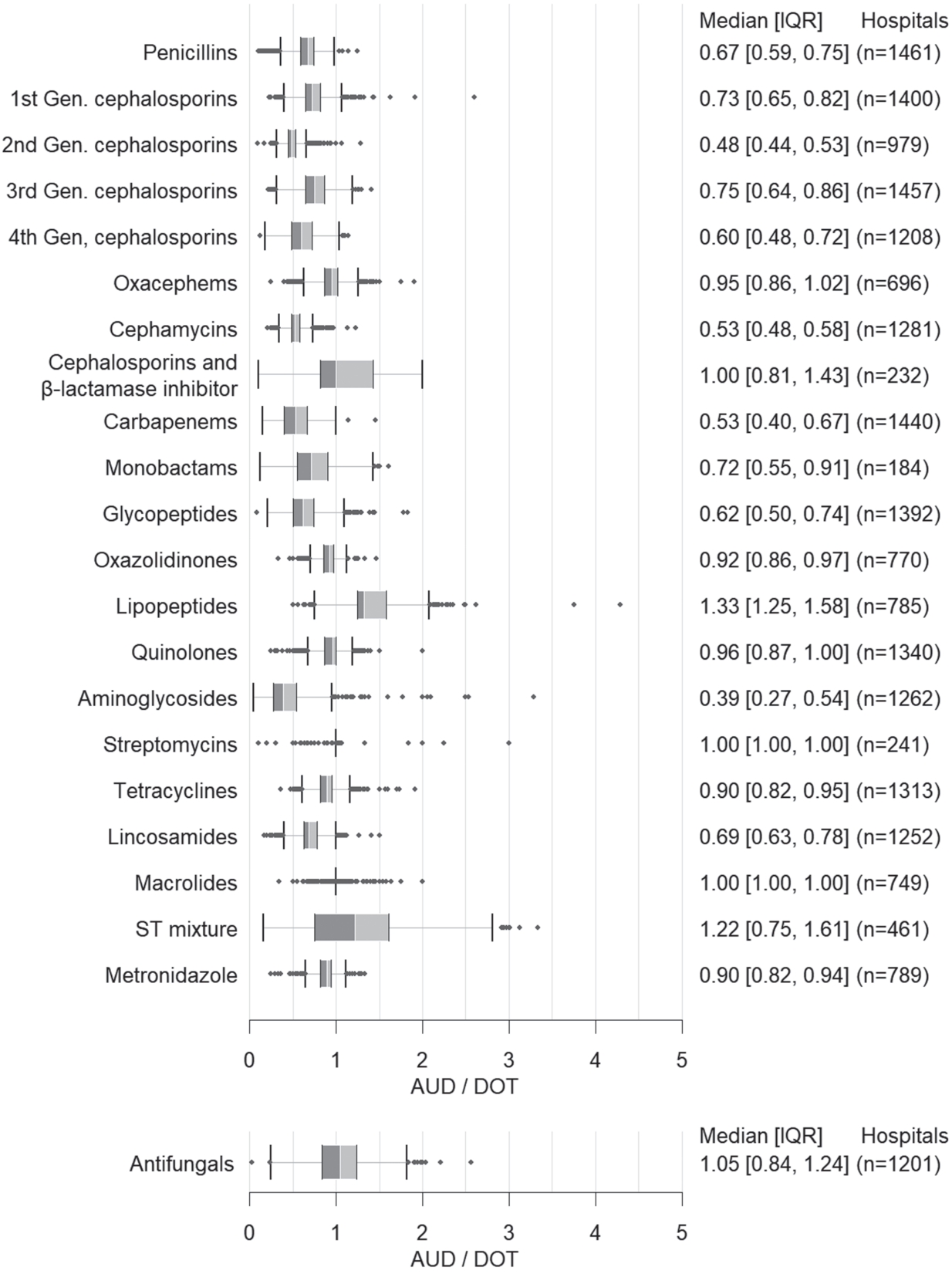
Box plot showing the distribution of DOT for each antimicrobial class given by injection.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for drug class/category.

Figure 16 AUD/ DOT (injection)

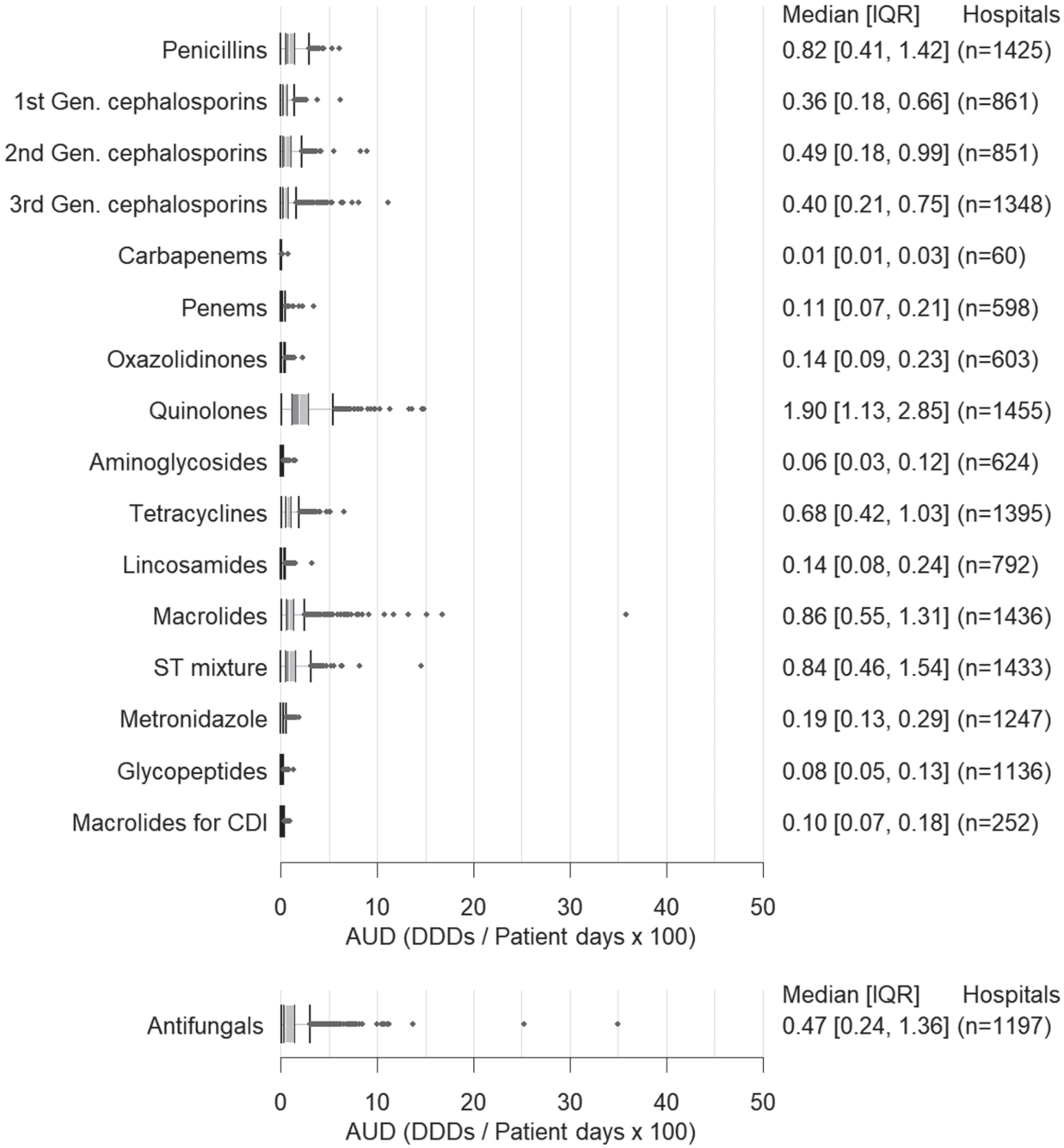
Box plot showing the AUD to DOT ratio for each antimicrobial class given by injection.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for drug class/category

Figure 17 AUD (oral)

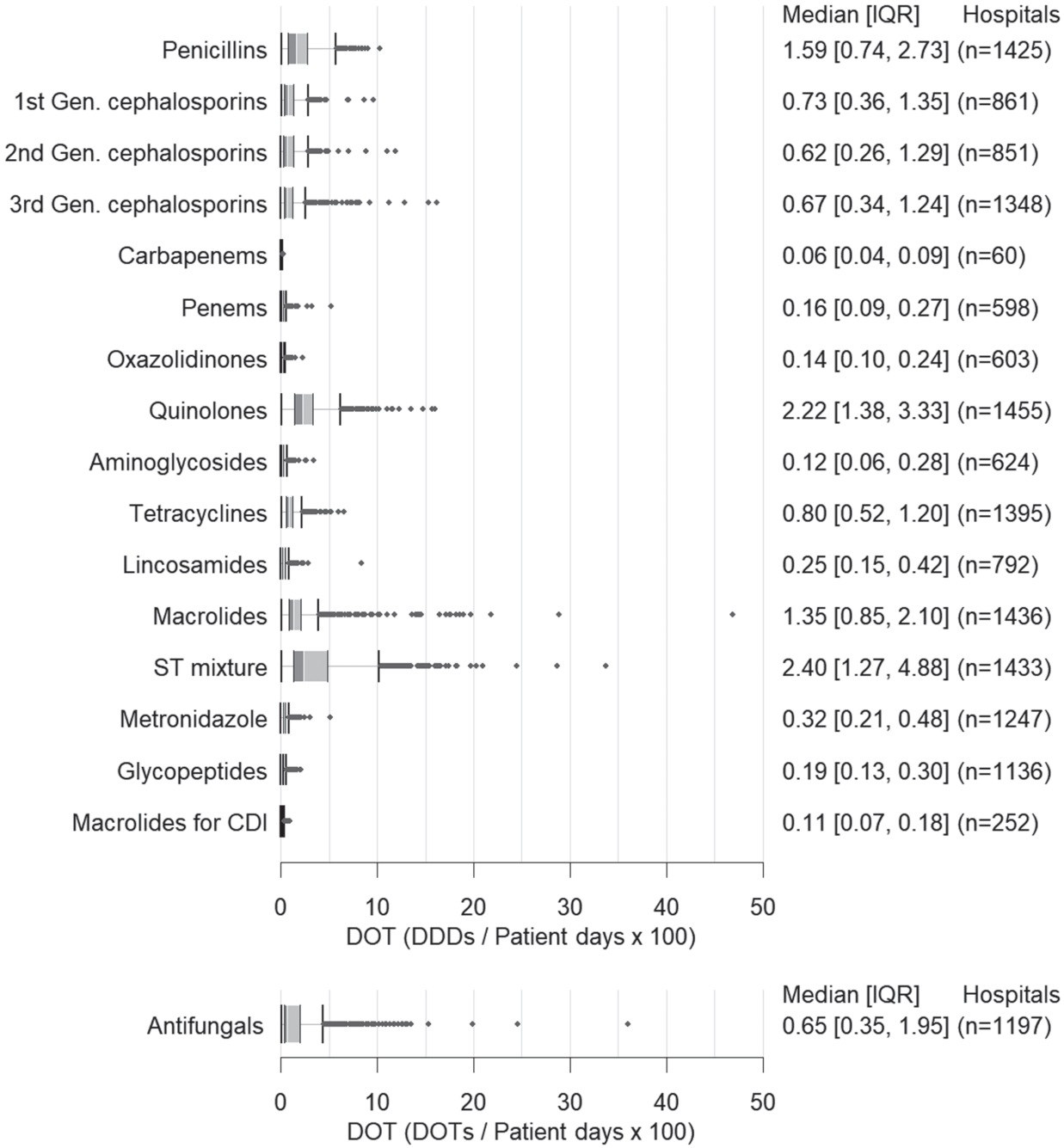
Box plot showing the AUD for each antimicrobial class given oral.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for drug class/category.

Figure 18 DOT (oral)

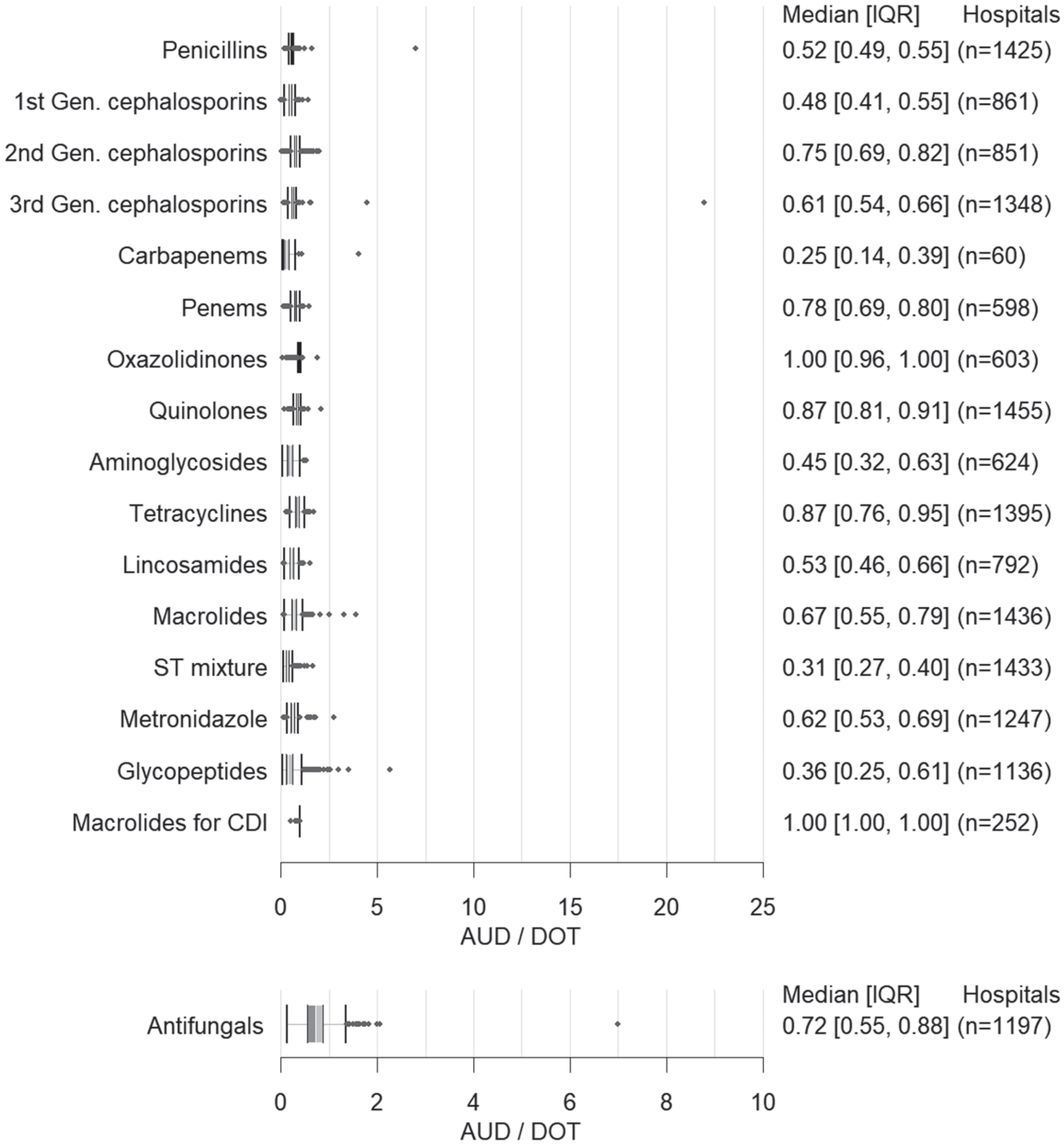
Box plot showing the DOT for each antimicrobial class given oral.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for drug class/category.

Figure 19 AUD/ DOT (oral)

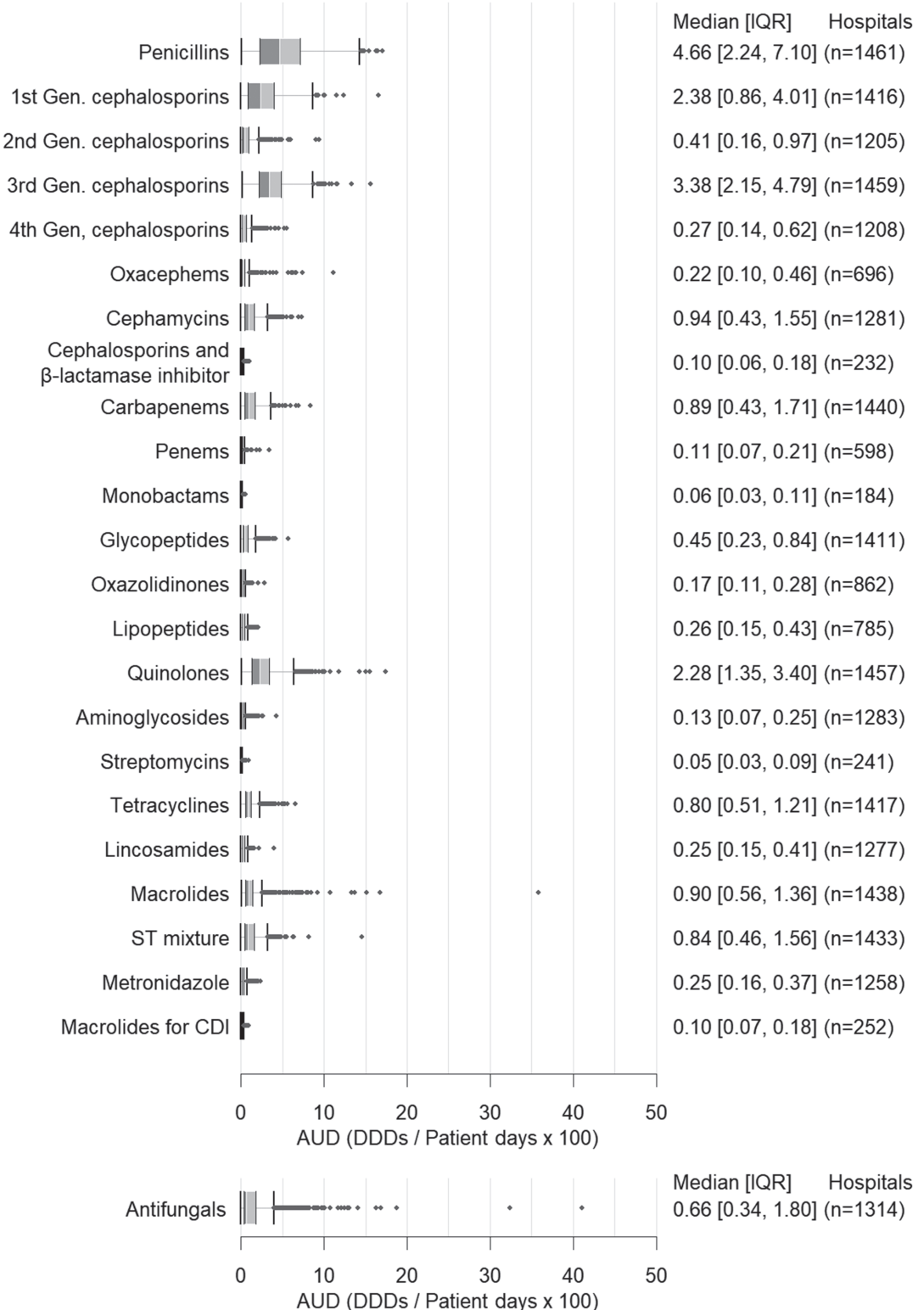
Box plot showing the AUD to DOT ratio for each antimicrobial class given oral.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for drug class/category.

Figure 20 AUD (injection + oral)

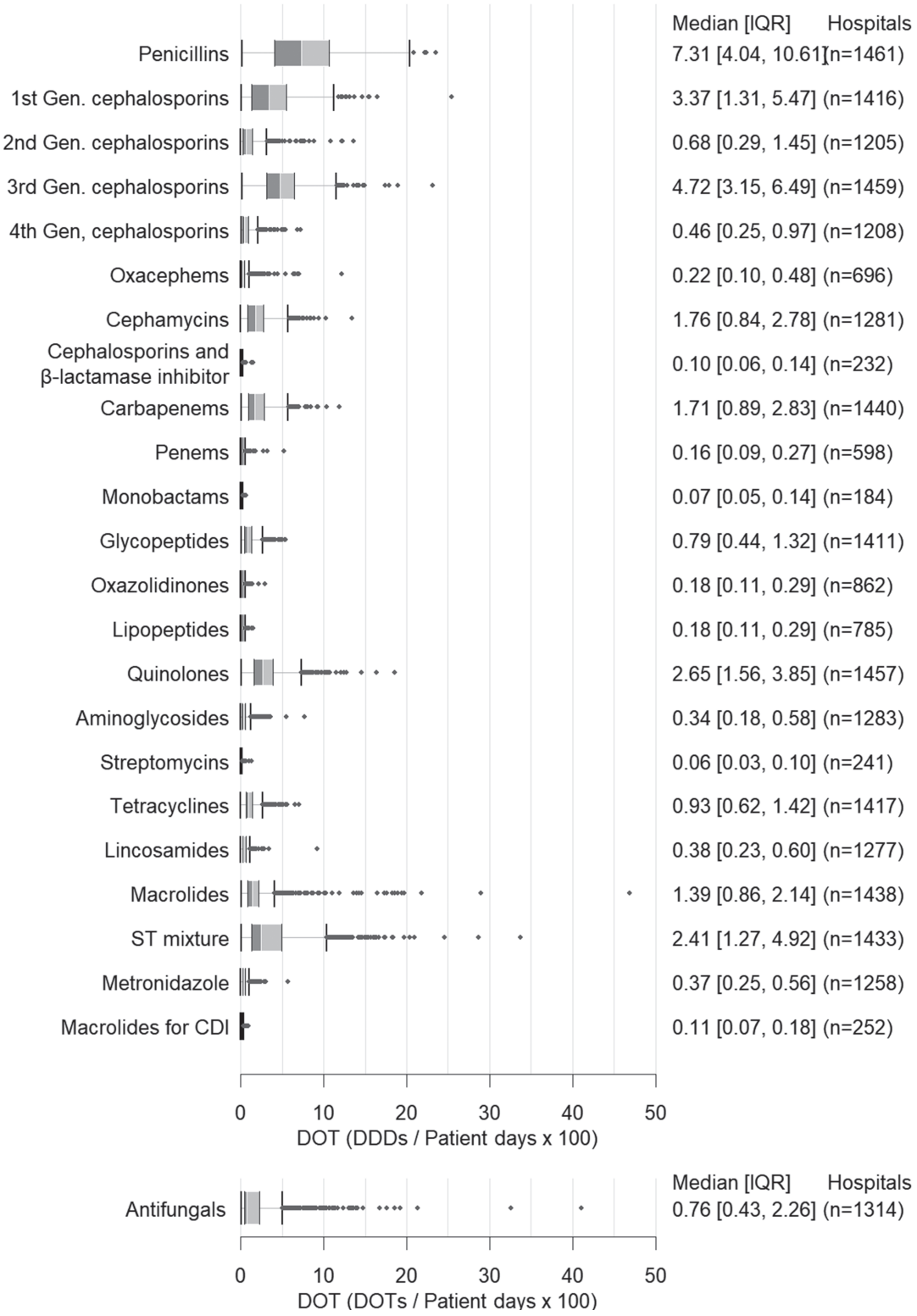
Box plot showing the AUD for each antimicrobial class given both by injection and oral.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for drug class/category.

Figure 21 DOT (injection + oral)

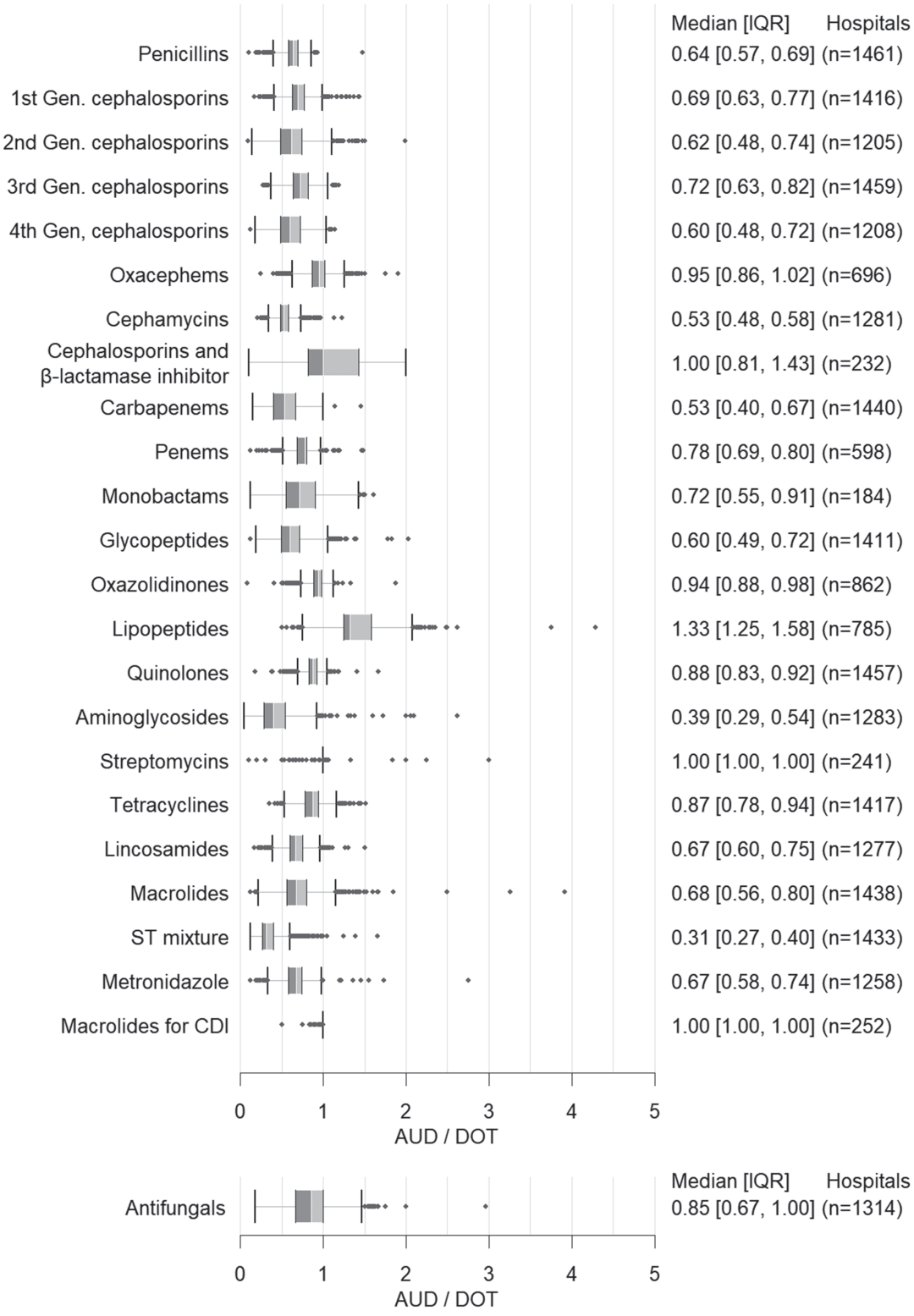
Box plot showing the DOT for each antimicrobial class given both by injection and oral.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for drug class/category.

Figure 22 AUD/ DOT (injection + oral)

Box plot showing the AUD to DOT ratio for each antimicrobial class given both by injection and oral.



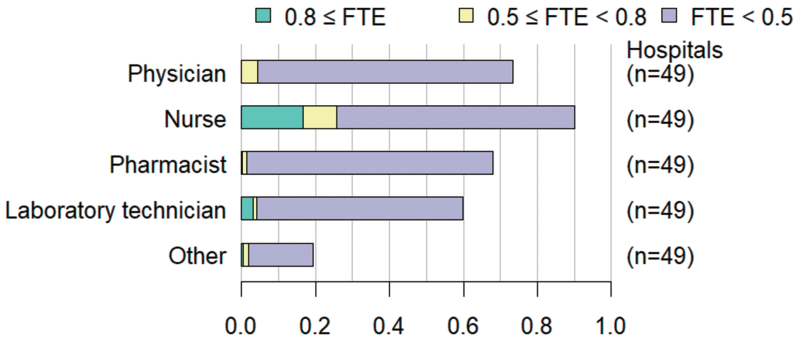
(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Ratio of AUD (injection + oral) and DOT (injection + oral)
* For each antimicrobial drug, sites where the concerned antimicrobial agent was not used throughout the target period were excluded.
* Refer to the list of antimicrobial drugs in the appendix for drug class/category.

Information about the ICT

The data were aggregated and calculated using all the ICT-related information individual sites have registered.

Figure 23 Number of personnel that form part of the ICT by job type per 100 beds

Bar chart showing the number of personnel that form part of the ICT (FTE) by job type per 100 beds.

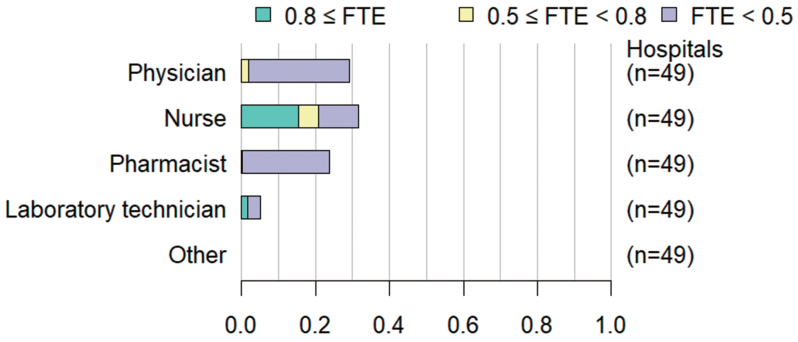


Number of personnel that form part of the ICT by job type per 100 beds
(Number of personnel that form part of the ICT / Number of beds ×100)

(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 5 categories: “physician,” “nurse,” “pharmacist,” “laboratory technician,” and “other job type.”
* Staff dedicate either 0.8 ≤ FTE (80% or more of their working hours), 0.5 <FTE < 0.8 (devote 50% or more) or FTE ≤ 0.5 (devote less than 50%) to ICT work.
* If staff members in each job type do not belong to ICT, the corresponding number at the site was counted as 0.

Figure 24 Number of personnel that form part of the ICT that are specialized in infection control by job type per 100 beds

Bar chart showing the number of specialized personnel that form part of the ICT (FTE) by job type per 100 beds.

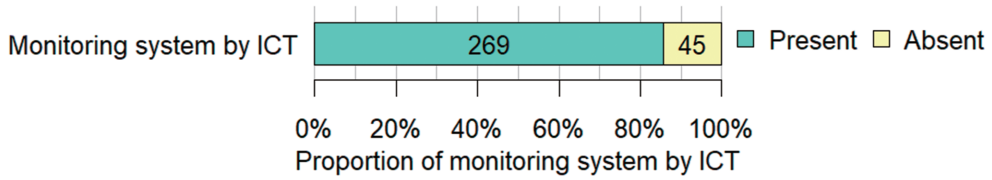


Number of personnel that form part of the ICT that are specialized
in infection control by job type per 100 beds
(Number of personnel that form part of the ICT that are specialized
in infection control / Number of beds ×100)

(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 clinical microbiology laboratory technician, or a certified clinical microbiology laboratory technician.
* A double-licensed person is counted as a single individual.
* Staff dedicate either 0.8 ≤ FTE (80% or more of their working hours), 0.5 <FTE < 0.8 (devote 50% or more) or FTE ≤ 0.5 (devote less than 50%) to ICT work.
* If there are no qualified personnel in the ICT, the number at the site was counted as 0.

Figure 25 ICT monitoring system for cases of resistant bacteria

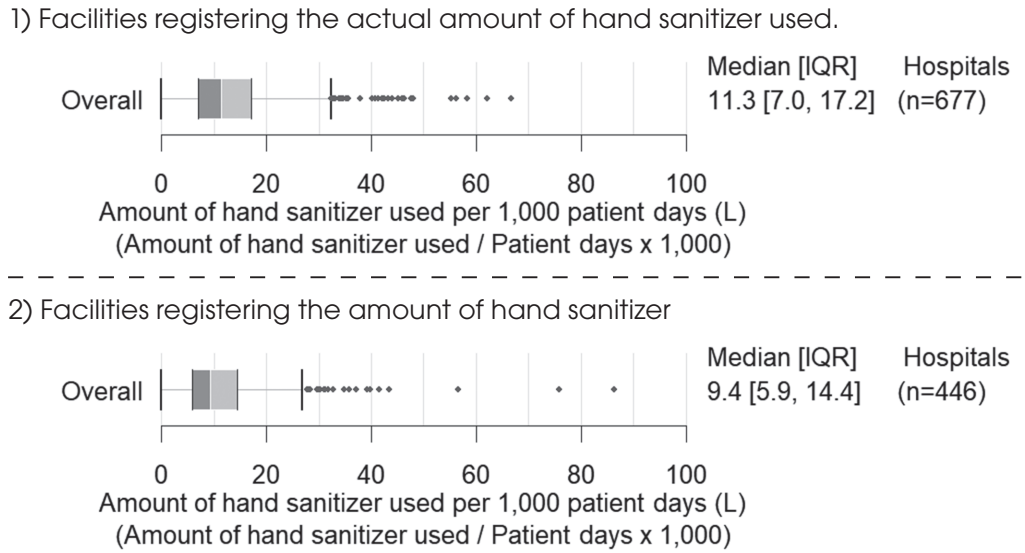
Bar chart showing the proportion of sites that have an ICT monitoring system in place for cases of resistant bacteria shown in numbers and percentages (%)



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.

Figure 26 Amount of hand sanitizer used per 1,000 patient days in liters (L)

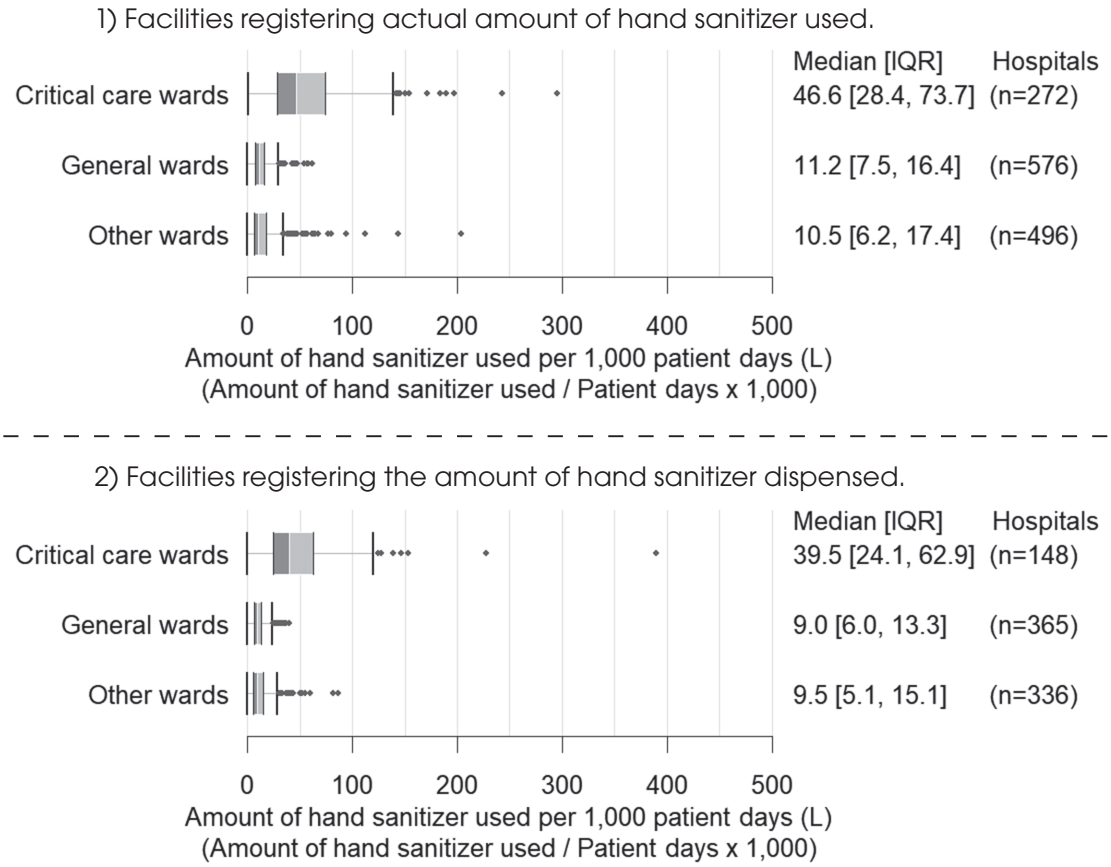
Box plot showing the amount of hand sanitizer used in liters (L) per 1,000 patient days for 1) the actual amount used and 2) the amount of hand sanitizer dispensed.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 for facilities registering the actually usage and those registering the amount of hand sanitizer that was dispensed.
* Facilities that have a period during which they registered actual usage and a period during which they registered the disbursement during the data registration period are counted using both types of data.
* The amount of hand sanitizer used in departments without inpatient facilities such as outpatient clinics, operating rooms, or dialysis rooms is not included.
* Data regardless of dosage form (liquid, gel, or foam).

Figure 27 Amount of hand sanitizer used by ward in liters (L) per 1,000 patient days

Box plot showing the amount of hand sanitizer used in liters (L) by ward type per 1,000 patient days for 1) the actual amount used and 2) the amount of hand sanitizer dispensed.

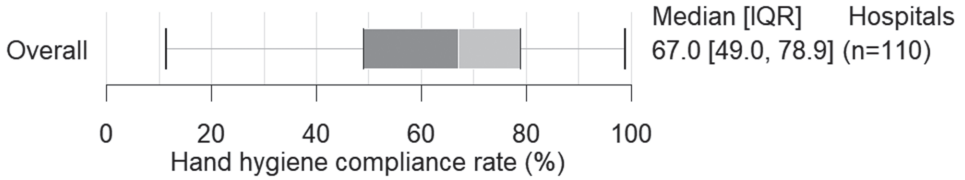


(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 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 for facilities registering the actually usage and those registering the amount of hand sanitizer that was dispensed.
* Facilities that have a period during which they registered by actual consumption and a period during which they registered by disbursement during the data registration period are counted using both types of data.
* The amount of hand sanitizer used in departments without inpatient facilities such as outpatient clinics, operating rooms, or dialysis rooms is not included.
* Data regardless of dosage form (liquid, gel, or foam).
* 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 in the appendix for ward codes by ward function.

Figure 28 Overall hand hygiene compliance rate

Box plot showing the overall hand hygiene compliance rate in percentage (%).

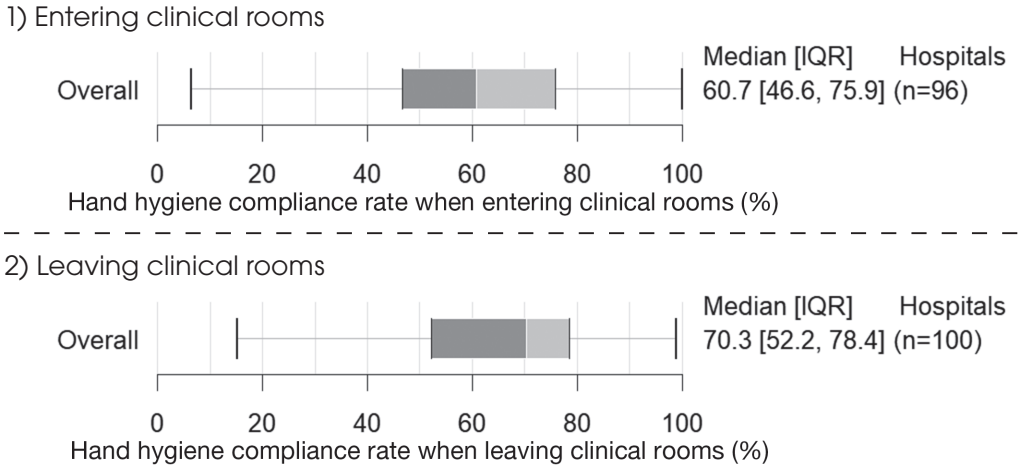


(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 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.

Figure 29 Overall hand hygiene compliance rate when entering and leaving clinical rooms

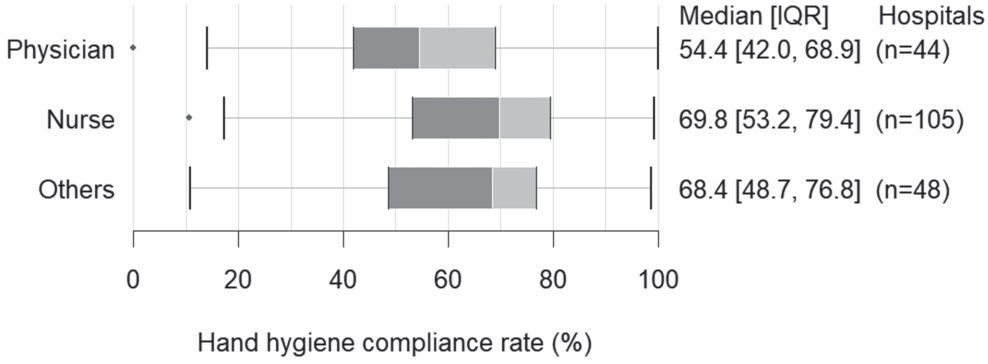
Box plot showing the overall hand hygiene compliance rate when 1) entering and 2) leaving clinical rooms in percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.

Figure 30 Hand hygiene compliance rate by job type

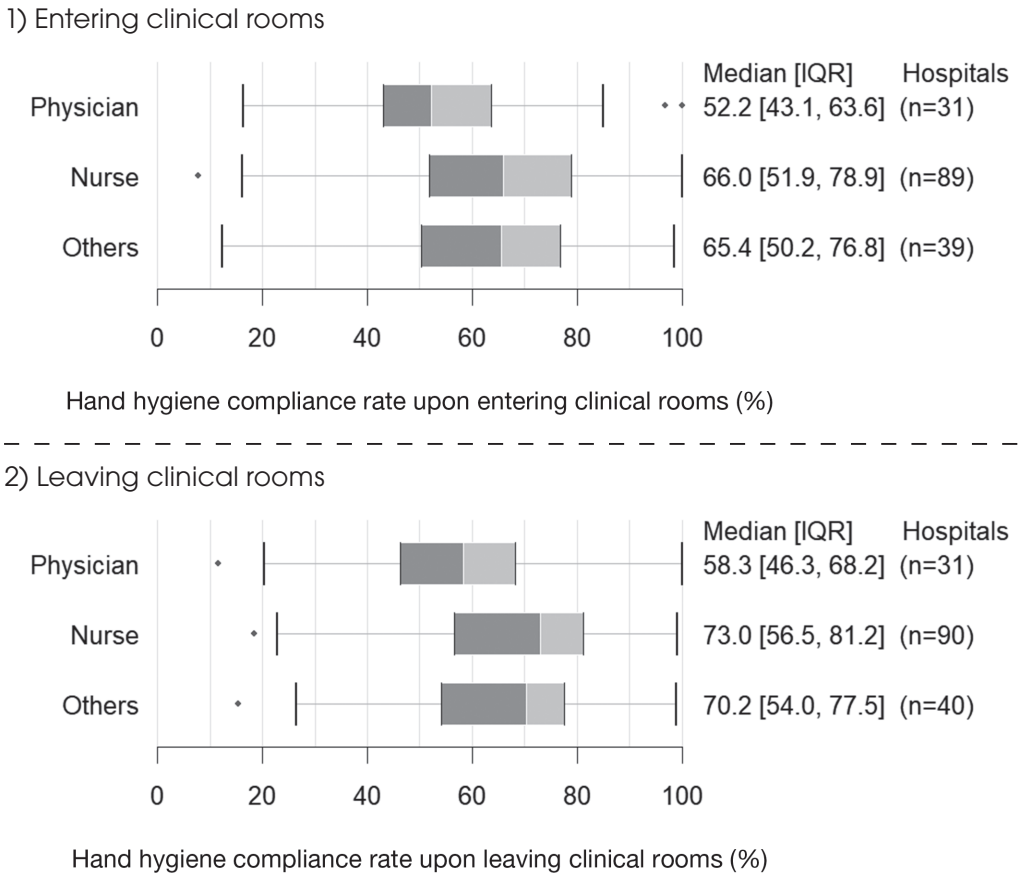
Box plot showing the hand hygiene compliance rate in percentages (%) by job types.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.

Figure 31 Hand hygiene compliance rate upon entering and leaving clinical rooms by job type

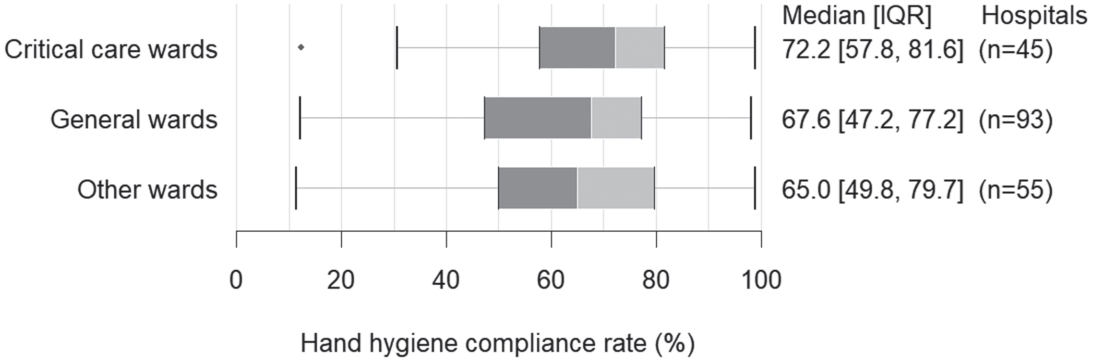
Box plot showing the hand hygiene compliance rate in percentages (%) when 1) entering and 2) leaving clinical rooms by job type.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.

Figure 32 Hand hygiene compliance rate by ward type

Box plot showing the hand hygiene compliance rate in percentages (%) by ward type.

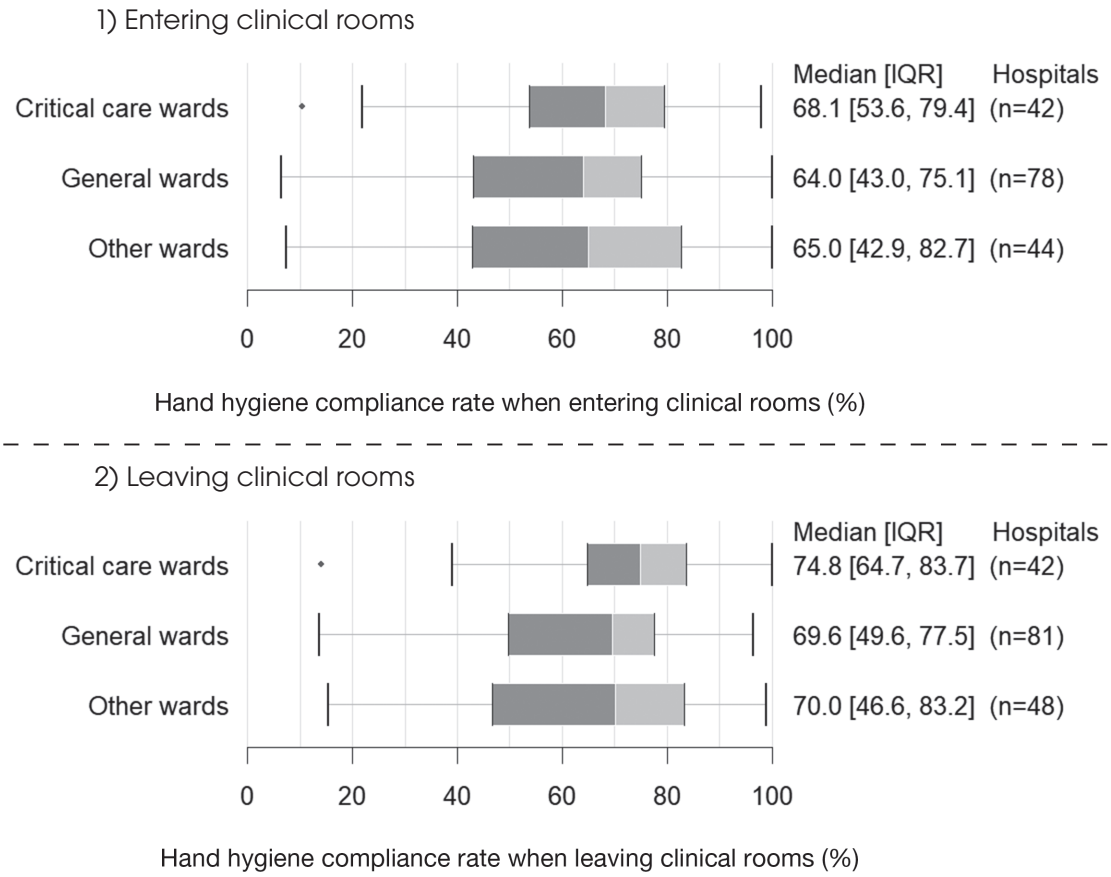


(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.

* 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.
* 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 in the appendix for ward codes by ward function.

Figure 33 Hand hygiene compliance rate when entering and leaving clinical rooms by ward type

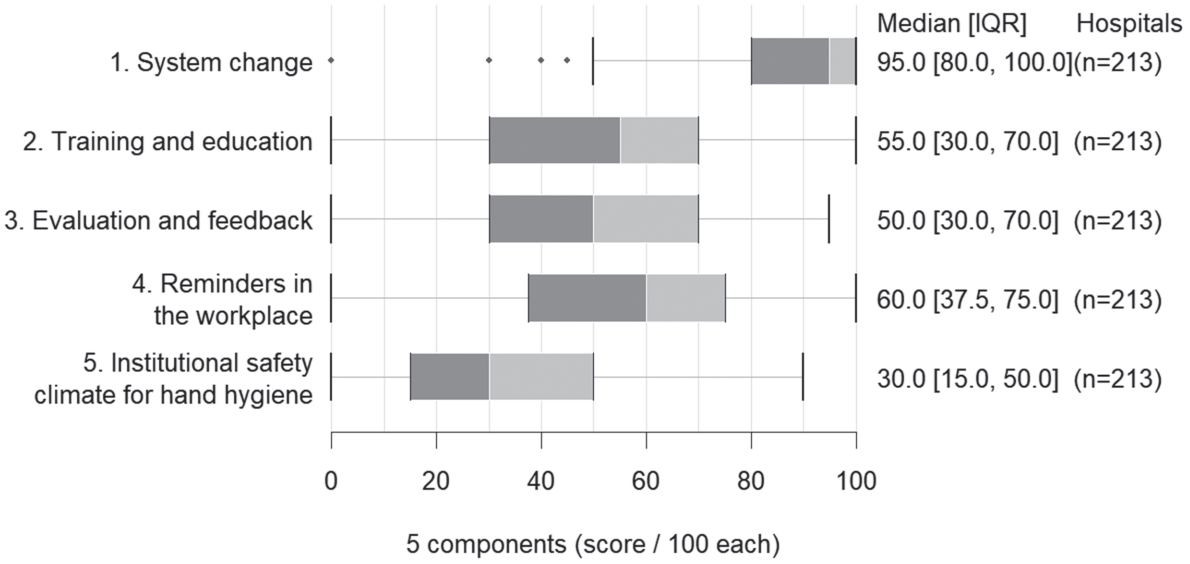
Box plot showing the hand hygiene compliance rate in percentages (%) when 1) entering and 2) leaving clinical rooms by ward type.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for ward codes by ward function.

Figure 34 WHO Hand Hygiene Self-Assessment Framework and its 5 major components

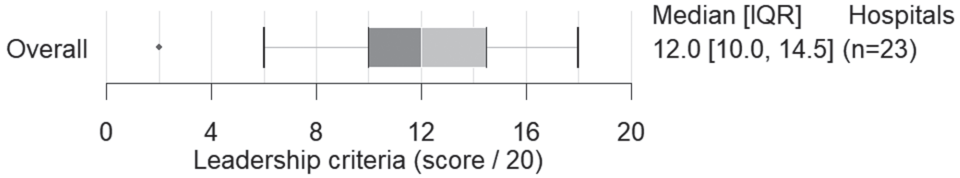
Box plot showing the scores for each of the 5 major components of the WHO Hand Hygiene Self-Assessment Framework.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Calculated based on the latest registered data during the target period for aggregation.
* The WHO Hand Hygiene Self-Assessment Framework 2010 was used.

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

Box plot showing the overall scores for the Leadership criteria of the WHO Hand Hygiene Self-Assessment Framework.



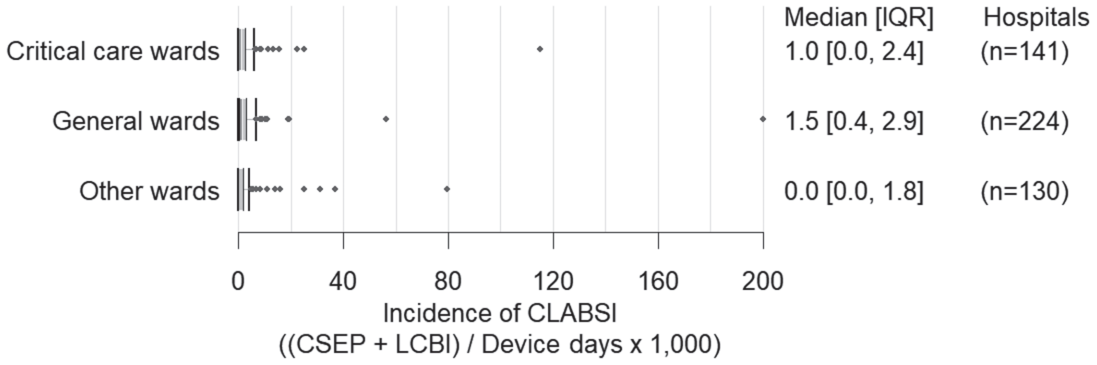
(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Calculated based on the latest registered data during the target period for aggregation.
* Only sites that scored a total of ≥ 376 for the 5 major components of the WHO Self-Assessment of Hand Hygiene Framework were included.

Information on Device-Associated HAIs

The data were aggregated and calculated using all the Device-Associated HAI information registered by sites.

Figure 36 Incidence of CLABSI by ward type

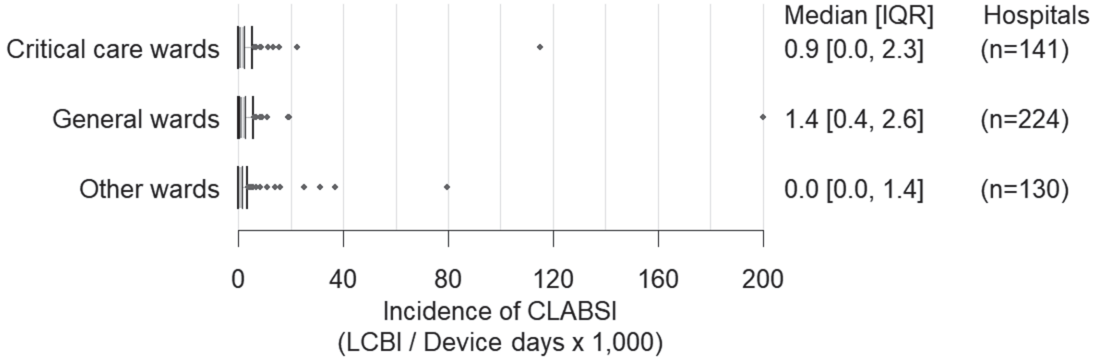
Box plot showing the incidence of CLABSI by ward type.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for ward codes by ward function.

Figure 37 Incidence of CLABSI: LCBI by ward type

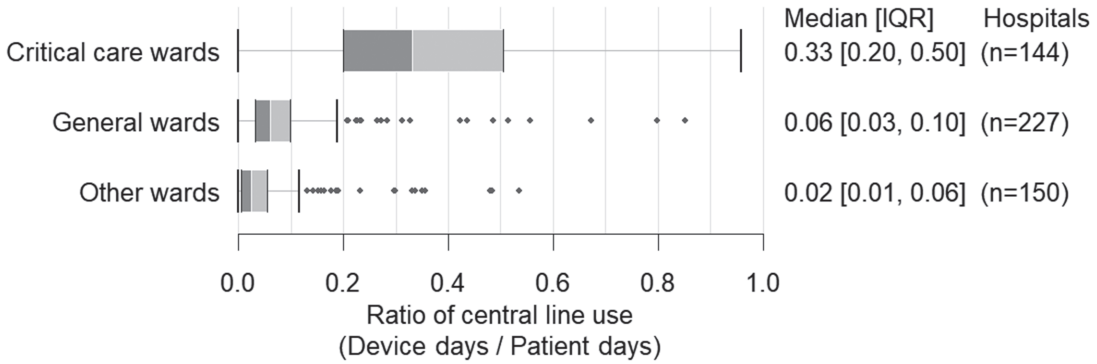
Box plot showing the incidence of CLABSI: LCBI by ward type.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for ward codes by ward function.

Figure 38 Ratio of central line use by ward type

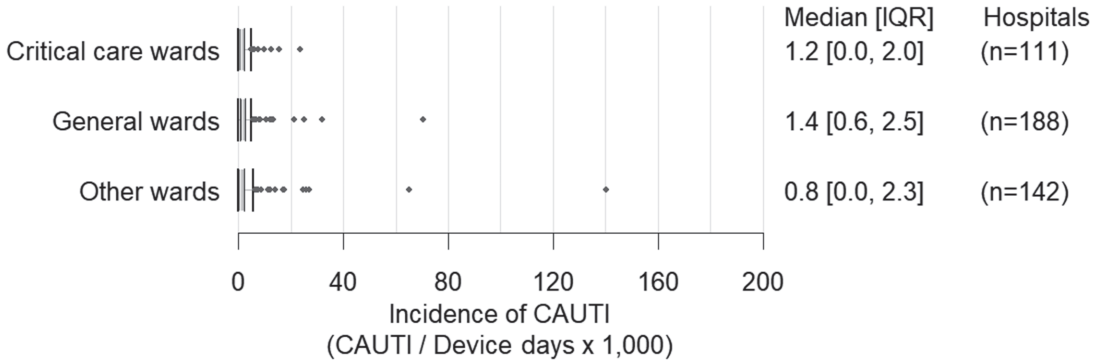
Box plot showing the ratio of central line use by ward type.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for ward codes by ward function.

Figure 39 Incidence of CAUTI by ward type

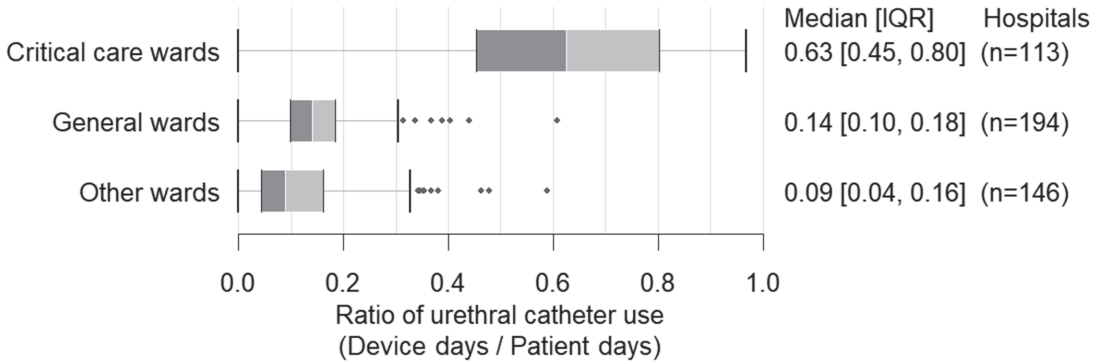
Box plot showing the incidence of CAUTI by ward type.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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 in the appendix for ward codes by ward function.

Figure 40 Ratio of urethral catheter use by ward type

Box plot showing the ratio of urethral catheter use by ward type.



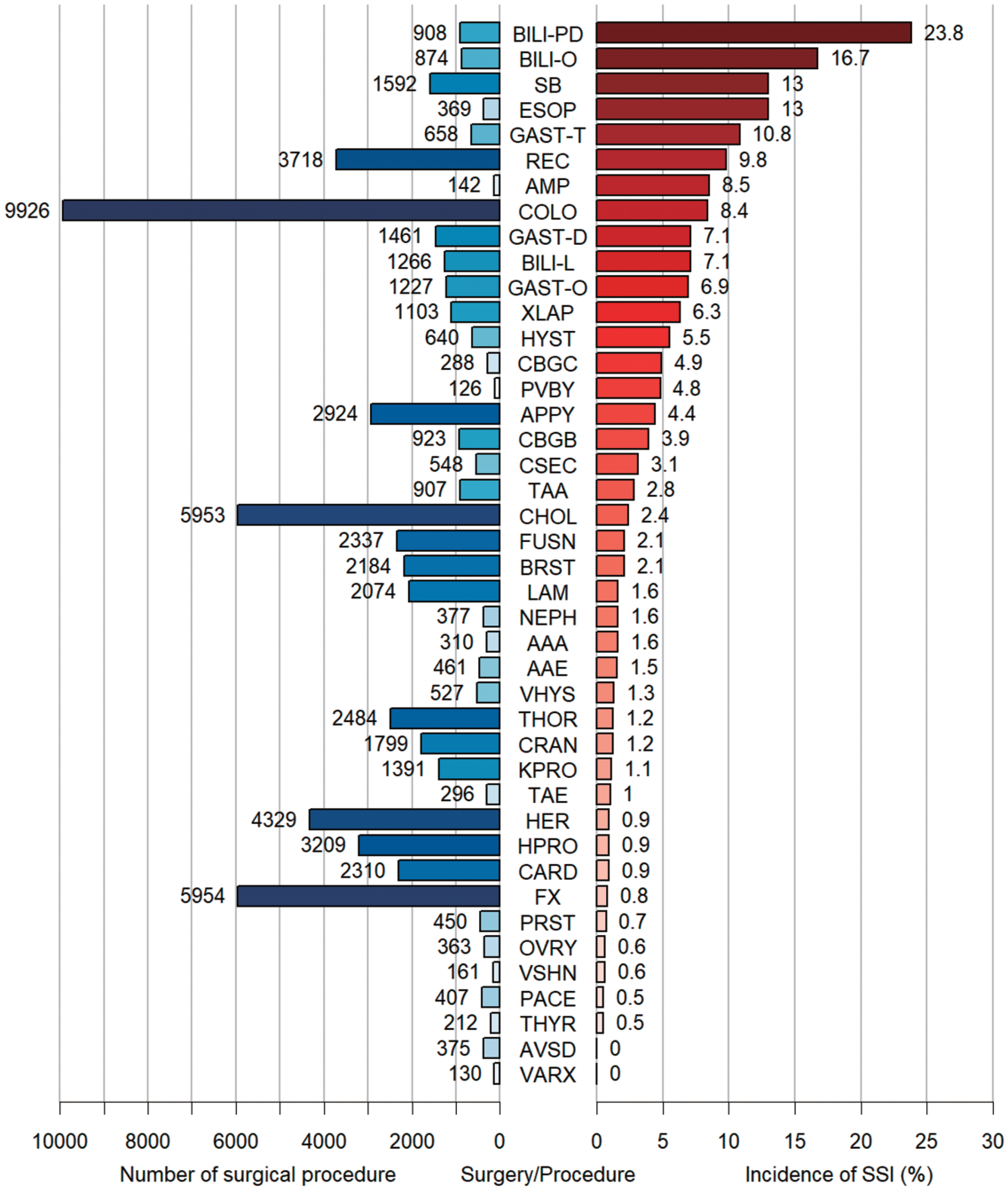
(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Proportion of total patients using urethral catheters in patient days
* Critical care wards: Calculated using ward codes JC01, JC02, JC03, JC04, JC05, 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 in the appendix for ward codes by ward function.

Information on SSI – (HAI)

The data were aggregated and calculated using all the SSI information registered by sites.

Figure 41 Number of surgeries and incidence of SSI by surgical procedure

Bar graph showing the number of surgeries (left) and incidence of SSI by surgical procedure (right) in numbers and percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)

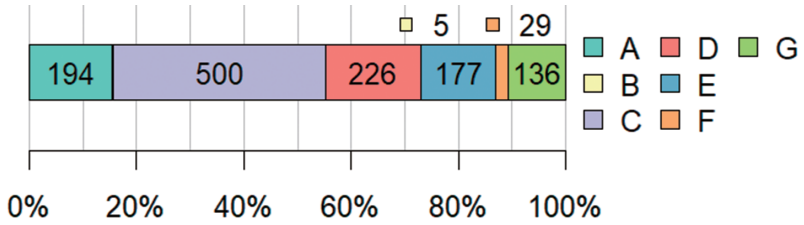
* Eligible facilities were those approved for participation by December 31, 2022.
* The number of surgeries and incidence of SSI among those surgeries, by surgical procedure.
* Data that conformed to the NHSN criteria were used.
* The SSI incidence rate is the percentage of SSIs among the number of surgeries per surgical procedure.
* No adjustment made according to with or without endoscope.
* No adjustment by risk index.
* Surgical procedures with ≥ 100 records were included.
* See the full list of surgical procedure codes in the appendix (in reference to the documents of the JANIS for surgical procedure codes).

Information on microorganisms and resistant bacteria

The data were aggregated and calculated using data on the microorganisms and resistant bacteria registered by sites.

Figure 42 Diagnostic approaches for the detection of CDI

Bar chart showing the proportion of different testing strategies used by sites to diagnose CDI in number and percentages (%).



A. Only the toxin is confirmed by immunochromatography. When the result is positive, CDI is diagnosed. If the result is negative, the test is completed.

B. Only the toxin is confirmed by immunochromatography. When the result is positive, CDI is diagnosed. When the result is negative, the toxin is determined by immunochromatography using cultured colonies. If both results are negative, the test is completed.

C. Both glutamate dehydrogenase (GDH) and the toxin are confirmed by immunochromatography. When both GDH and the toxin are positive, CDI is diagnosed. If GDH is positive and the toxin is negative, CDI is not diagnosed and the test is completed.

D. Both GDH and the toxin are confirmed by immunochromatography. When both GDH and the toxin are positive, CDI is diagnosed. If GDH is positive and the toxin is negative, the toxin is determined by immunochromatography using cultured colonies. If both are negative, the test is completed.

E. Both GDH and the toxin are confirmed by immunochromatography. When both GDH and the toxin are positive, CDI is diagnosed. If GDH is positive and the toxin is negative, the toxin is determined using a fecal toxin gene test. If the result is negative, the test is completed.

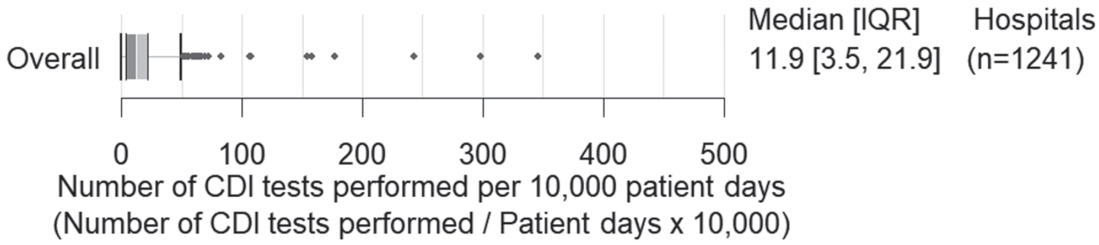
F. Only the toxin is confirmed using a fecal toxin gene test. When the result is positive, CDI is diagnosed. If the result is negative, the test is completed.

G. Others

(Based on data from January to December 2022, as of August 28, 2023)
*** Eligible facilities were those approved for participation by December 31, 2022.**
*** The proportions of the test methods used to diagnose CDI.**
*** The test methods that are normally used are shown.**

Figure 43 Number of CDI tests performed per 10,000 patient days

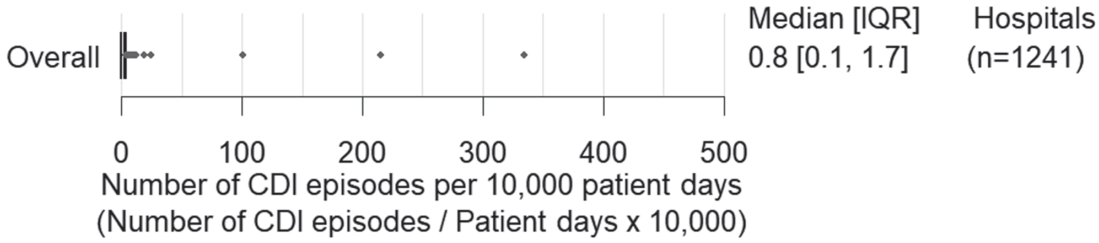
Box plot showing the number of CDI tests performed per 10,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* The value was obtained by dividing the number of patients tested for CDI by patient days and multiplying the result by 10,000.
* Even if multiple tests are performed for one episode per patient, they are counted as one.
* Sites with 0 tests were included regardless of whether there was an eligible patient for inclusion.

Figure 44 Number of CDI episodes per 10,000 patient days

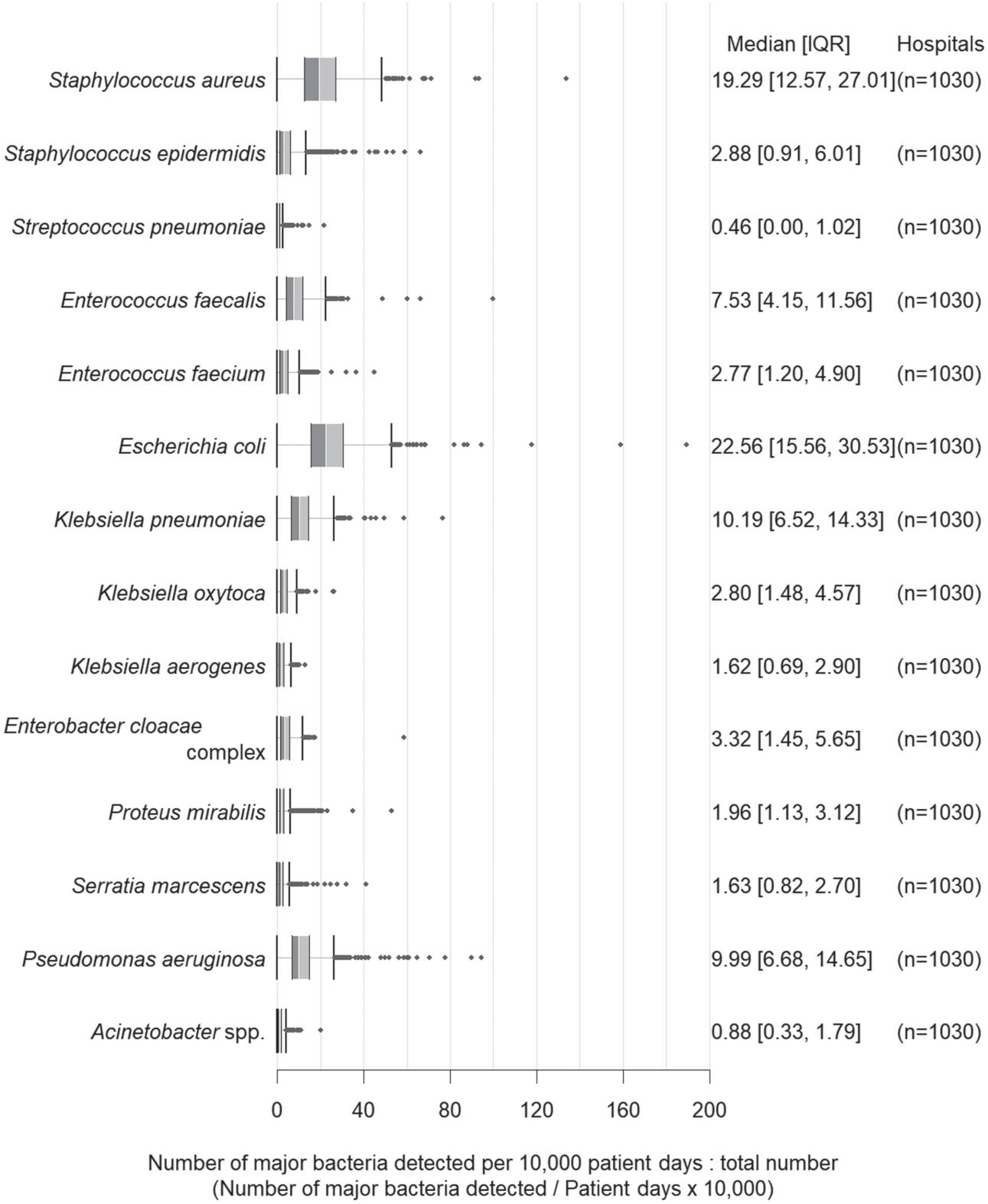
Box plot showing the overall number of CDI episodes per 10,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* The value was obtained by dividing the number of patients diagnosed with CDI episodes 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.

Figure 45 Total number of major bacteria detected per 10,000 patient days

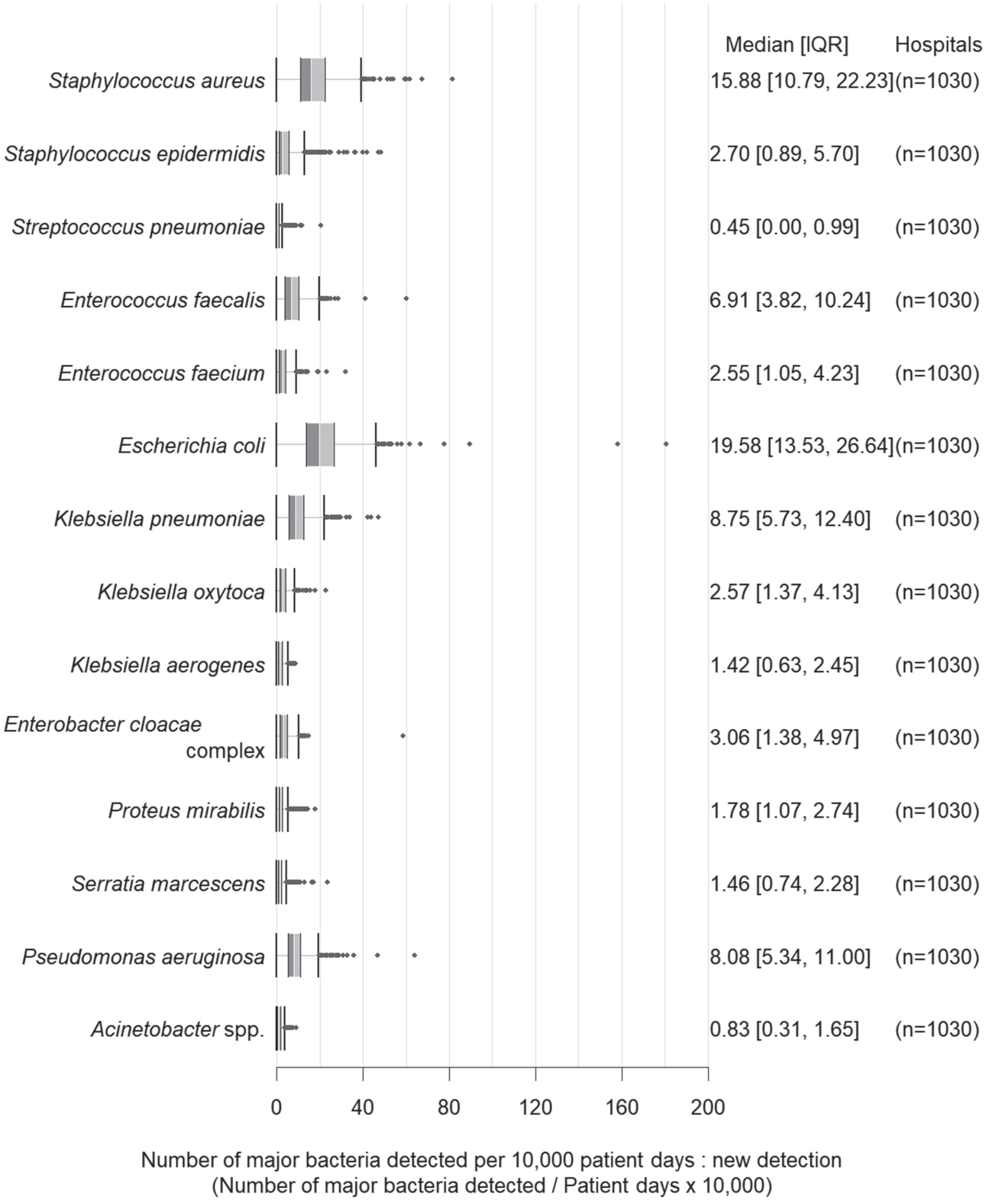
Box plot showing the total number of major bacteria detected per 10,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.

Figure 46 Number of new detections of major bacteria detected per 10,000 patient days

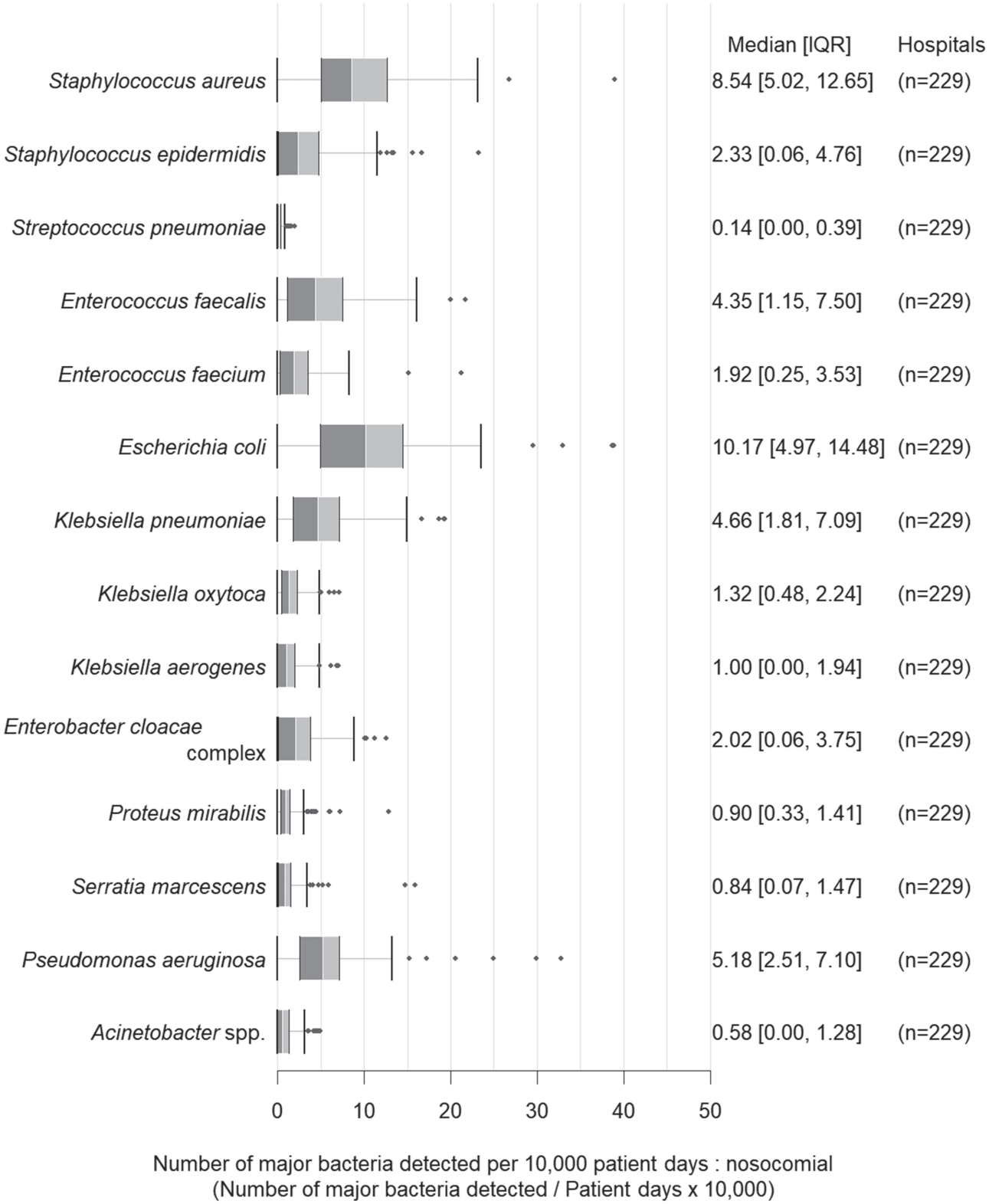
Box plot showing the number of new major bacteria detected per 10,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.

Figure 47 Number of major bacteria detected in nosocomial infections per 10,000 patient days

Box plot showing the number of major bacteria detected in nosocomial infections per 10,000 patient days.

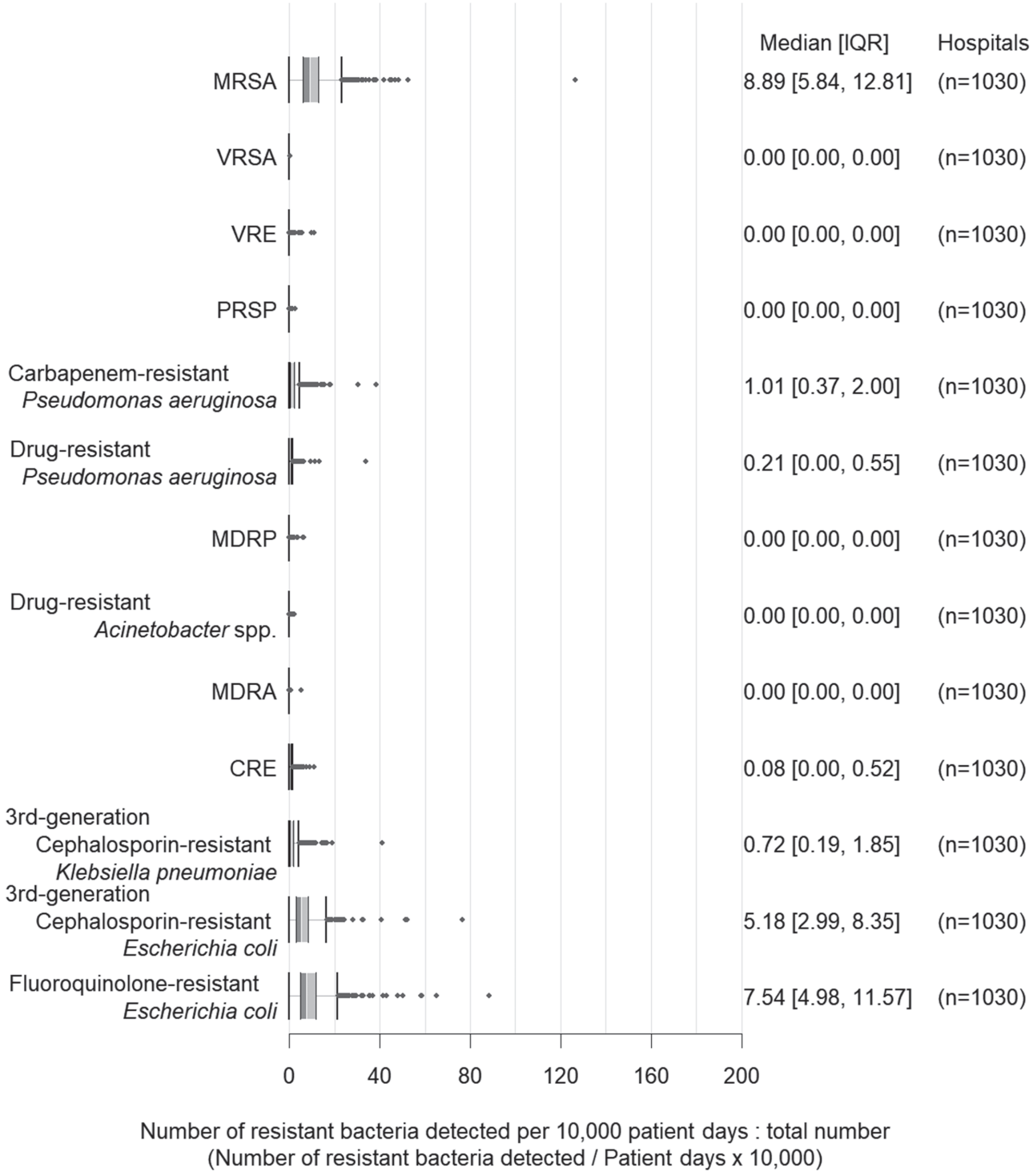


(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 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.

Figure 48 Total number of resistant bacteria detected per 10,000 patient days

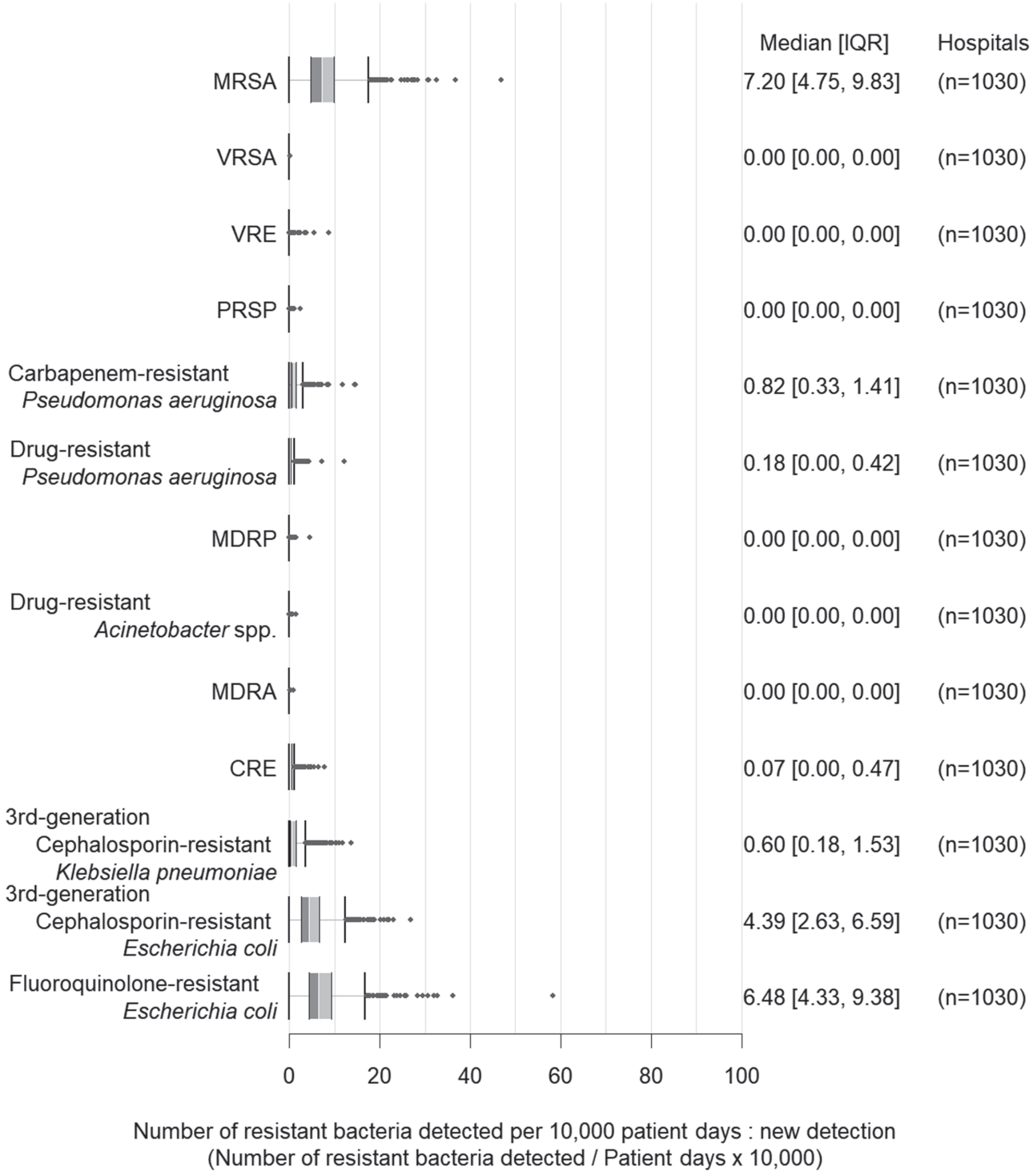
Box plot showing the total number of resistant bacteria detected per 10,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.

Figure 49 Number of new detections of resistant bacteria per 10,000 patient days

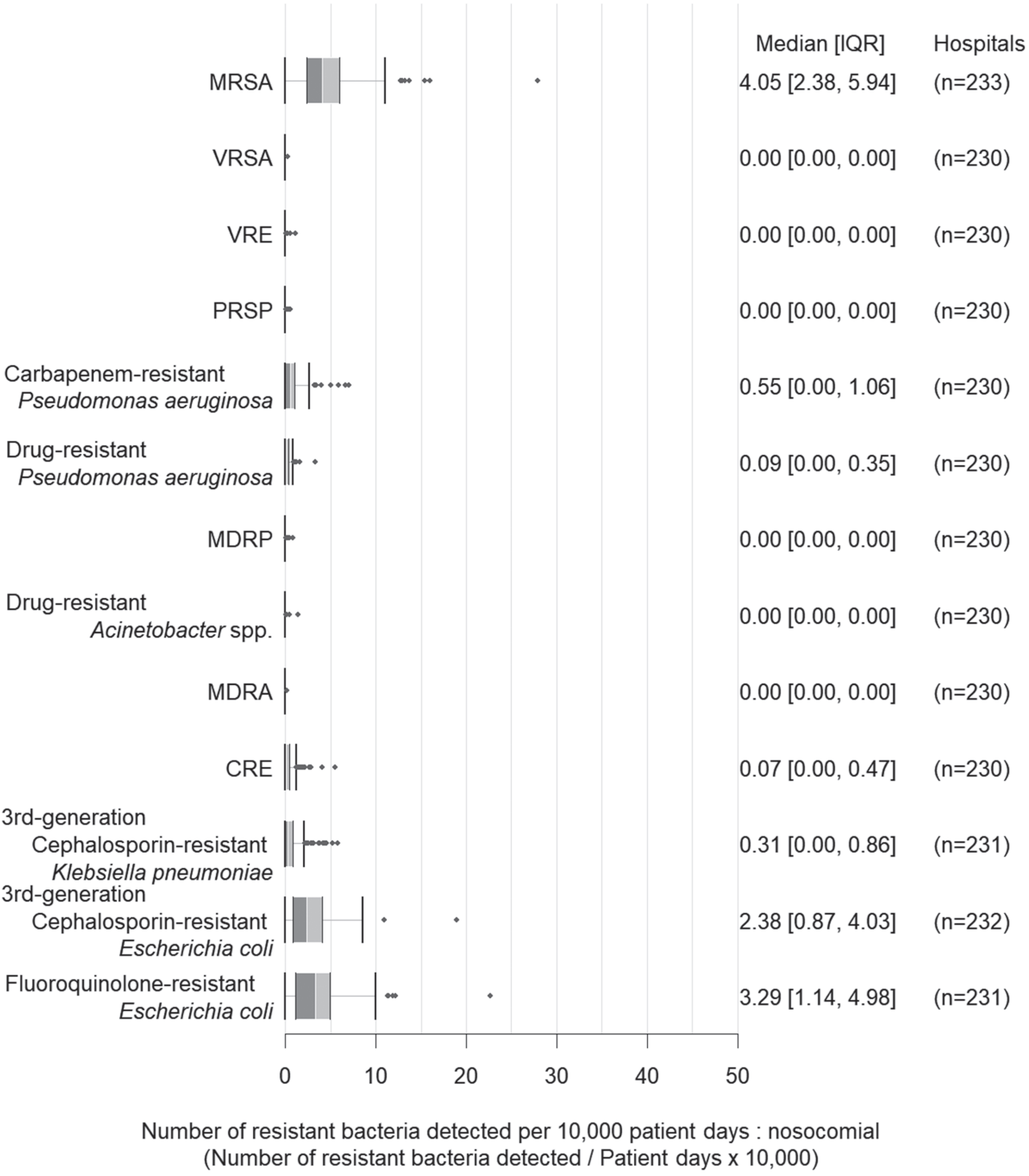
Box plot showing the number of new resistant bacteria detections per 10,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.

Figure 50 Number of resistant bacteria detected in nosocomial infections per 10,000 patient days

Box plot showing the number of resistant bacteria detected in nosocomial infections per 10,000 patient days.

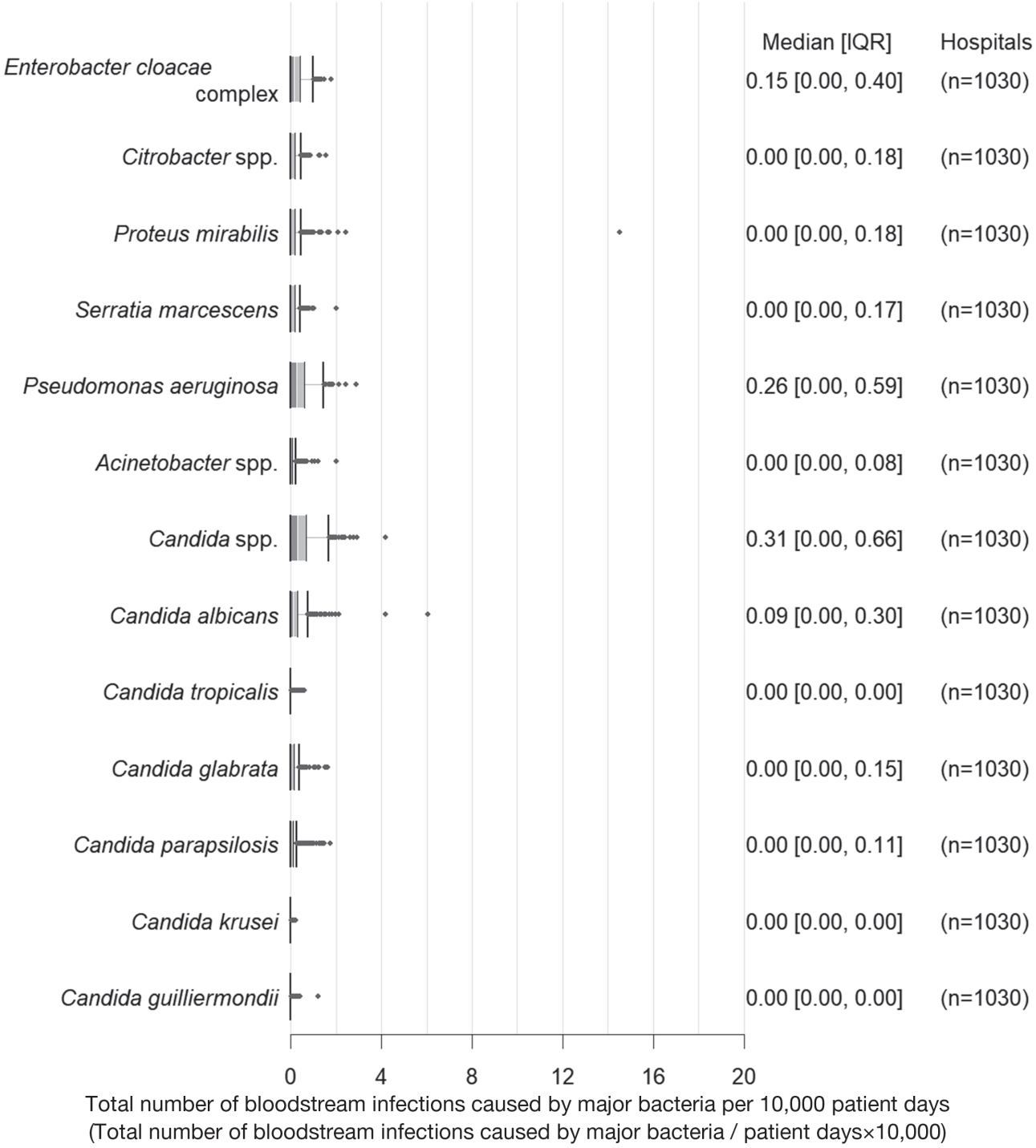


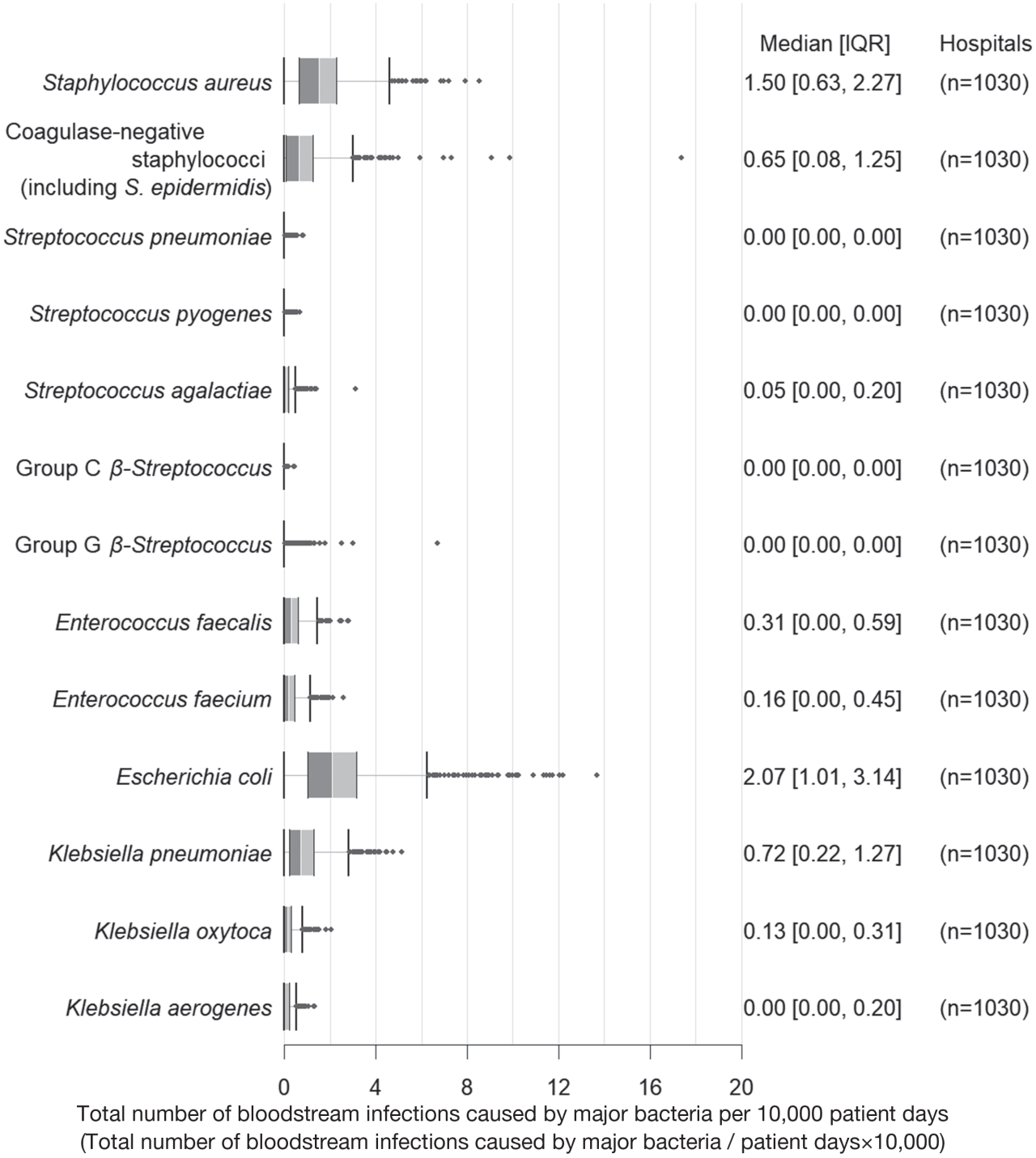
(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 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.

Figure 51 Total number of bloodstream infections caused by major bacteria per 10,000 patient days

Box plot showing the total number of bloodstream infections caused by major bacteria per 10,000 patient days.



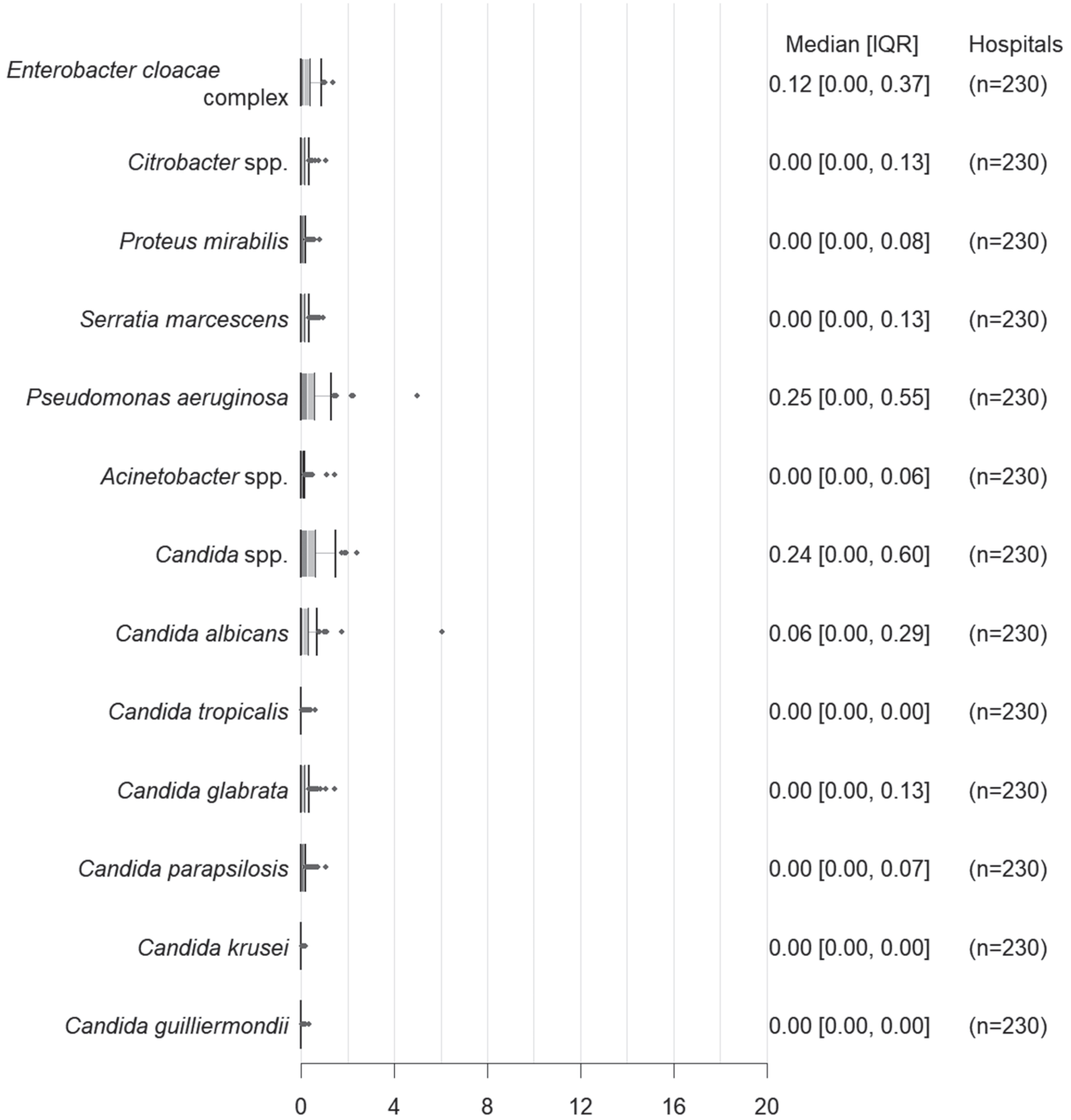


(Based on data from January to December 2022, as of August 28, 2023)

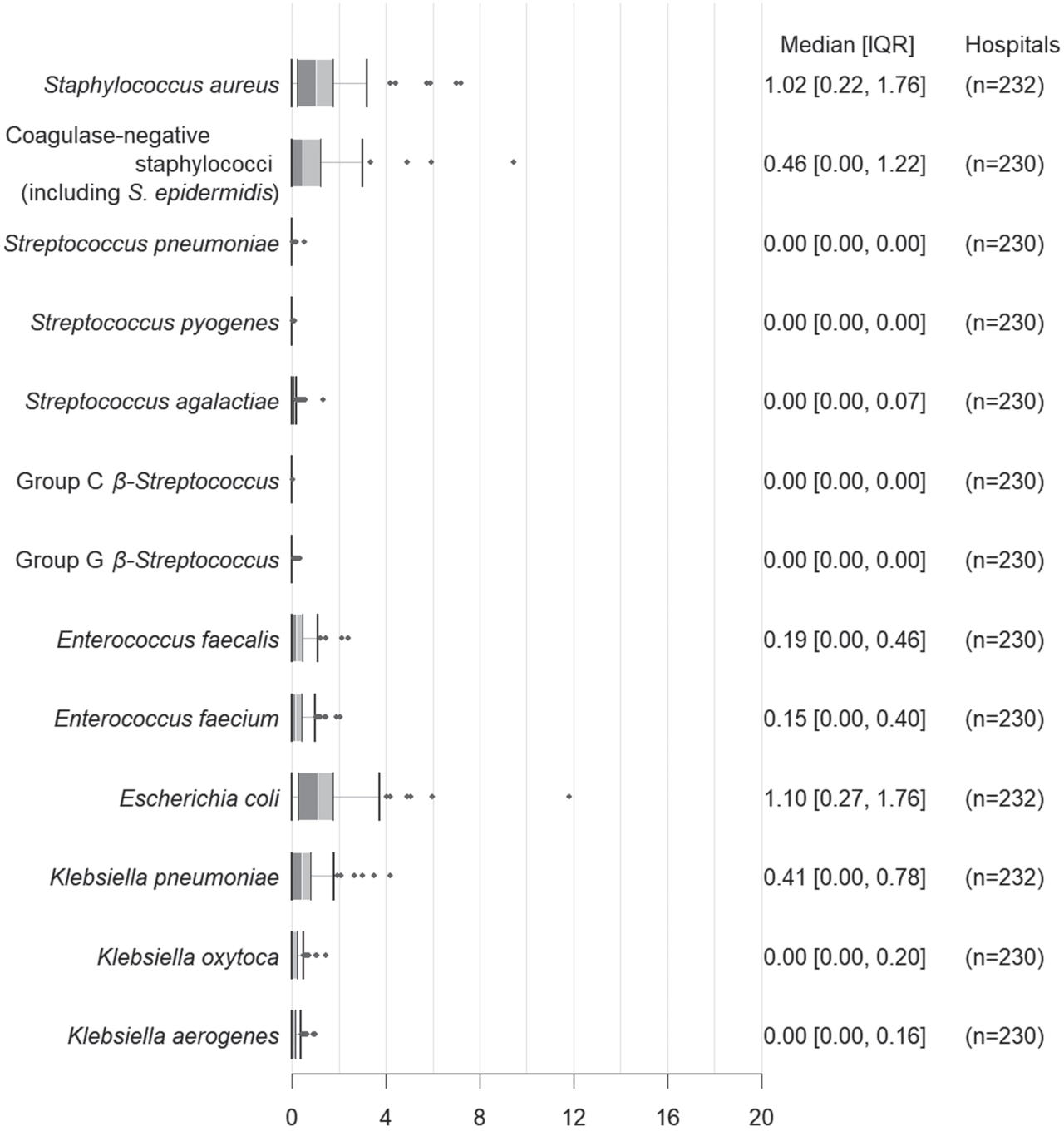
* Eligible facilities were those approved for participation by December 31, 2022.
* The number of major bacterial bloodstream infection outbreaks refers to the number of patients in whom the major bacterial species were detected in blood specimens.
* The value was obtained by dividing the number of patients 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.

Figure 52 Number of nosocomial bloodstream infections caused by major bacteria per 10,000 patient days

Box plot showing the number of nosocomial bloodstream infections caused by major bacteria per 10,000 patient days.



Number of nosocomial bloodstream infections caused by major bacteria per 10,000 patient days
(Number of nosocomial bloodstream infections caused by major bacteria / patient days×10,000)

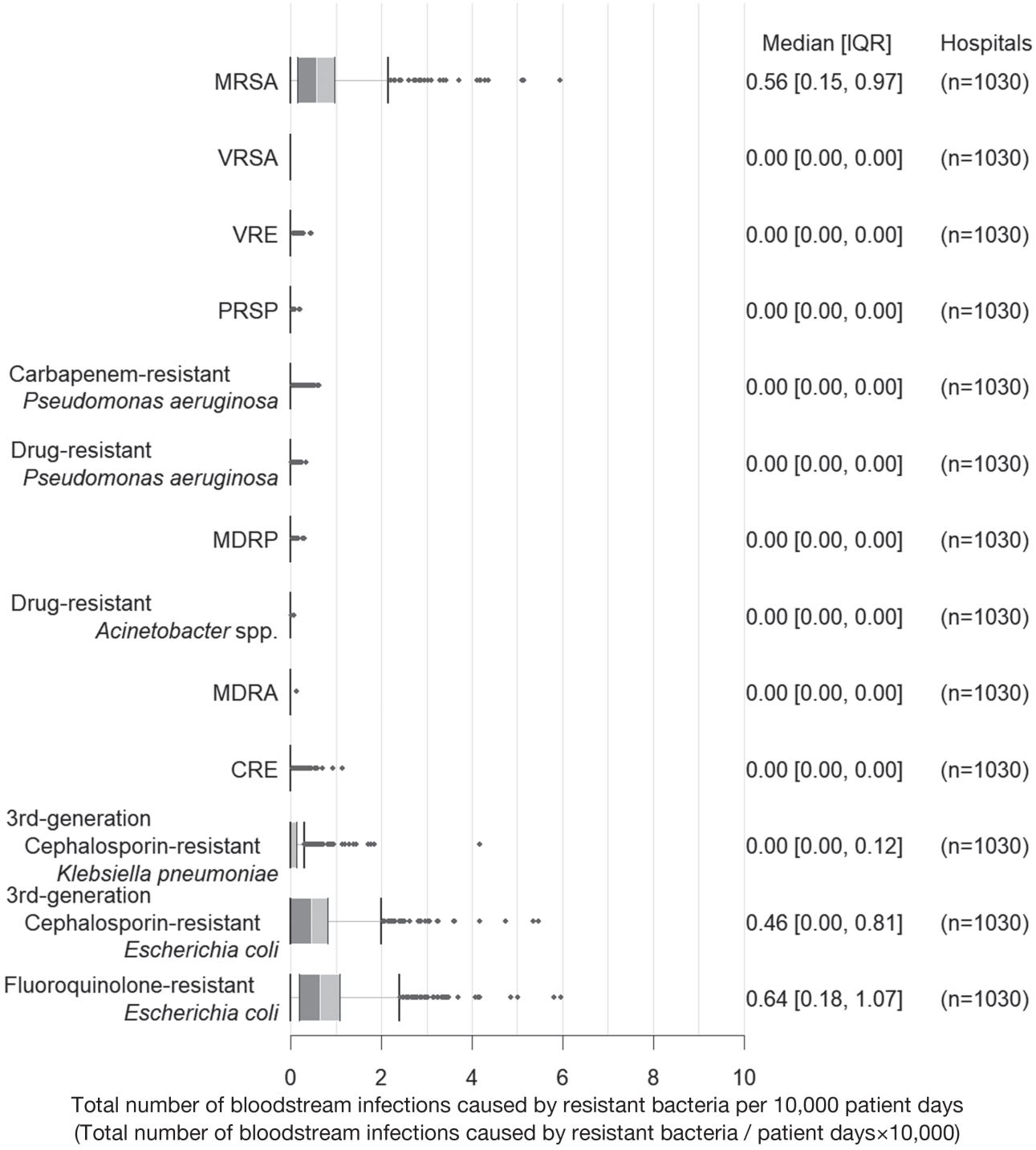


(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 2022.
* The number of major bacterial bloodstream infection outbreaks refers to the number of patients in whom the major bacterial species were detected in blood specimens.
* 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.

Figure 53 Total number of bloodstream infections caused by resistant bacteria per 10,000 patient days

Box plot showing the total number of bloodstream infections caused by resistant bacteria per 10,000 patient days.

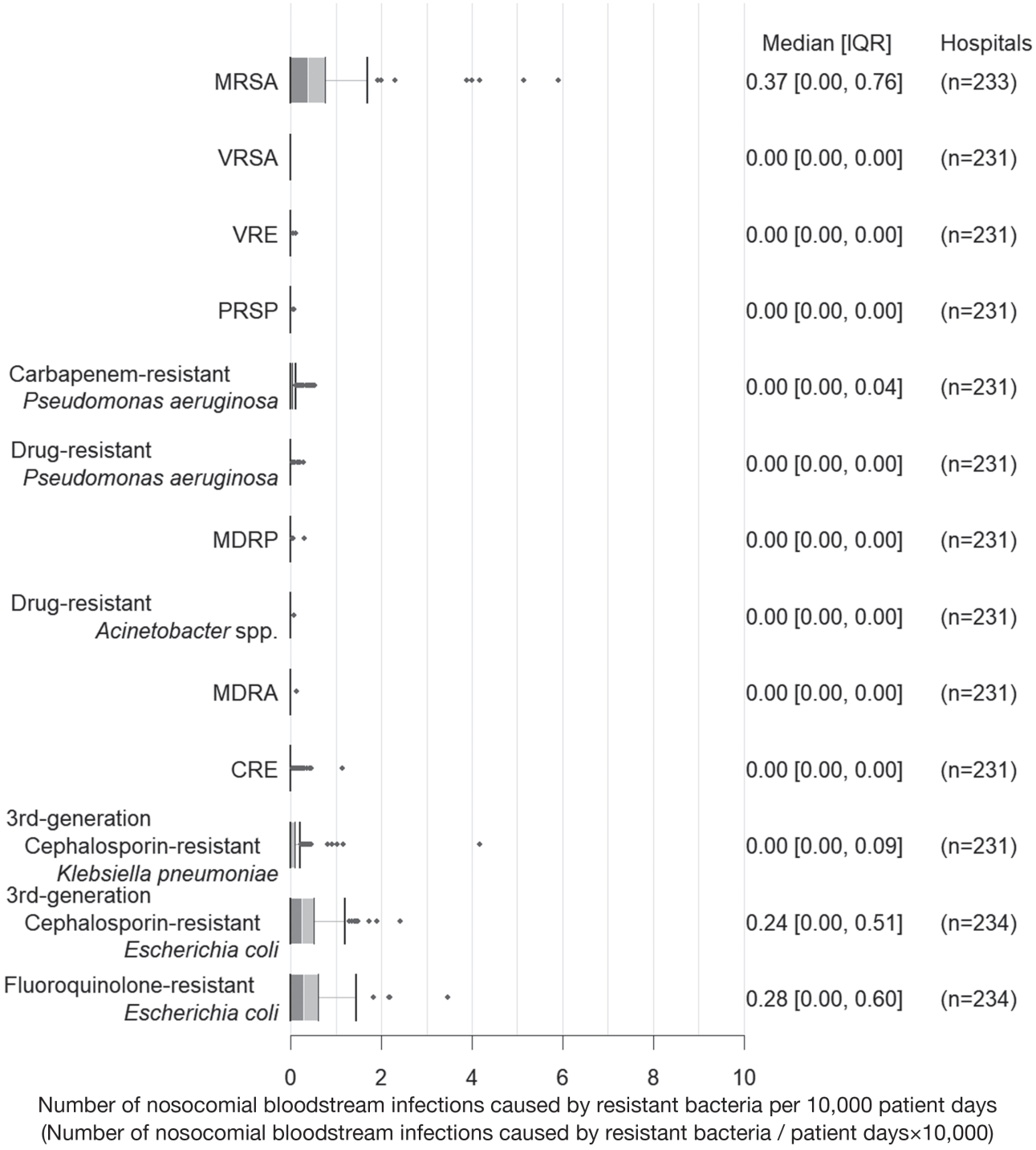


(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 2022.
* The number of resistant bloodstream outbreaks refers to the number of patients in whom resistant organisms are detected in blood specimens.
* 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.

Figure 54 Number of nosocomial bloodstream infections caused by resistant bacteria per 10,000 patient days

Box plot showing the number of nosocomial bloodstream infections caused by resistant bacteria per 10,000 patient days.

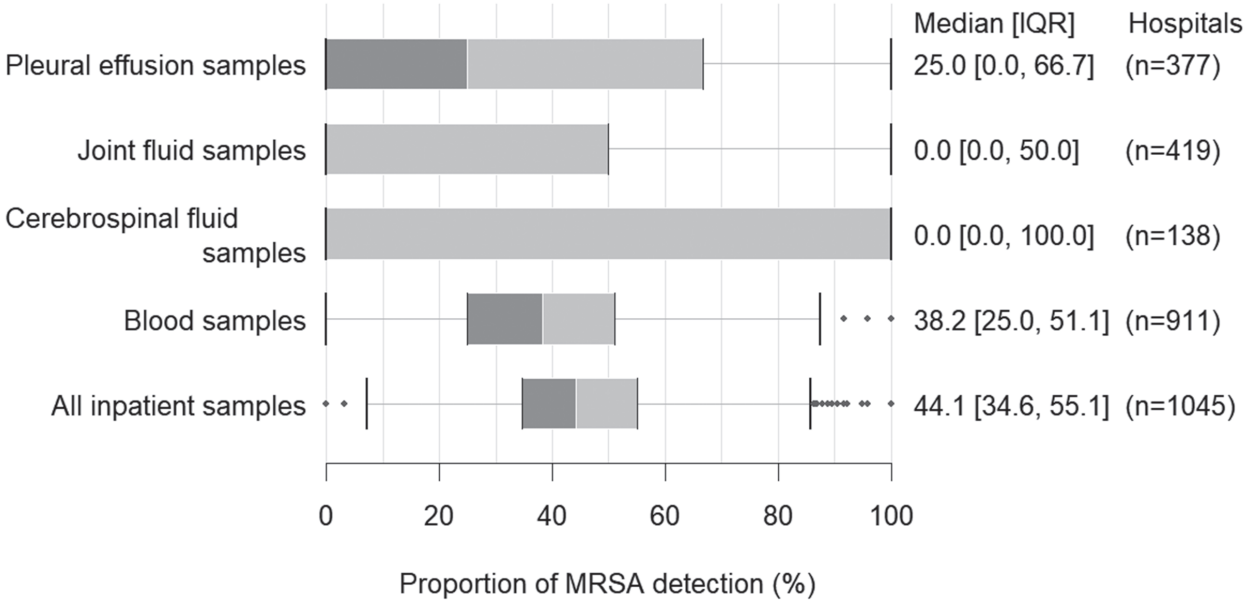


(Based on data from January to December 2022, as of August 28, 2023)

* Eligible facilities were those approved for participation by December 31, 2022.
* The number of resistant bloodstream outbreaks refers to the number of patients in whom resistant organisms are detected in blood specimens.
* 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.

Figure 55 Proportion of MRSA detection

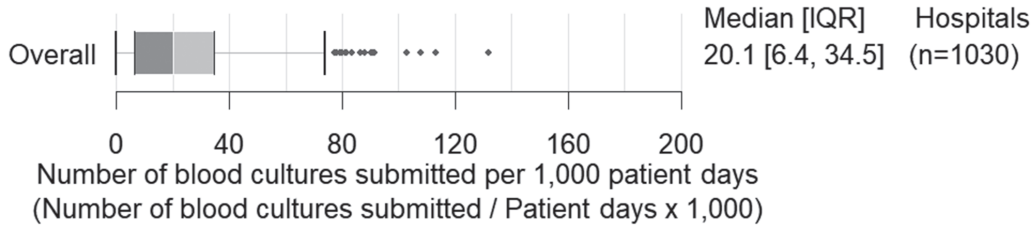
Box plot showing the proportion of patients with newly detected MRSA by sample type shown in percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.

Figure 56 Number of blood cultures submitted per 1,000 patient days

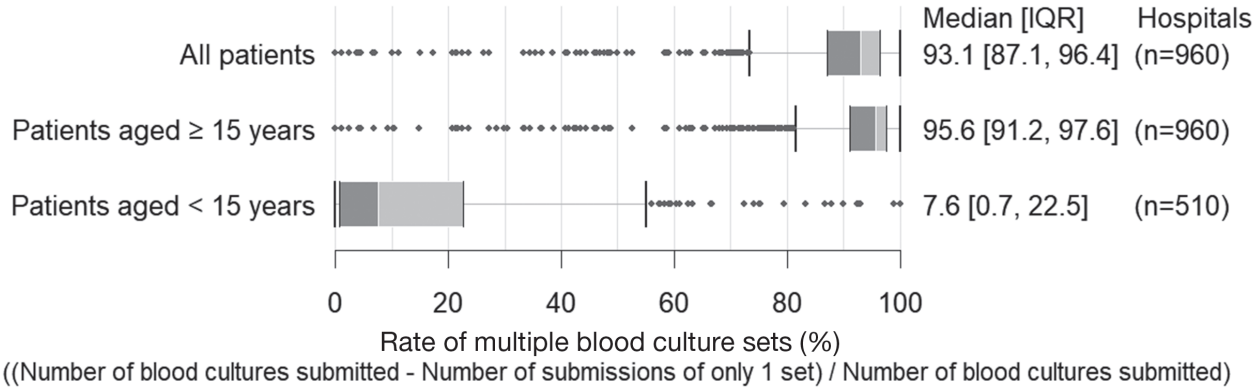
Box plot showing the overall number of blood cultures submitted per 1,000 patient days.



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* The value was obtained by dividing the number of submitted blood cultures by patient days and multiplying the result by 1,000.
* Number of blood cultures submitted refers to the number of blood cultures submitted in one set (aerobic bottle + anaerobic bottle or mixed bottle).

Figure 57 Rate of multiple blood culture sets

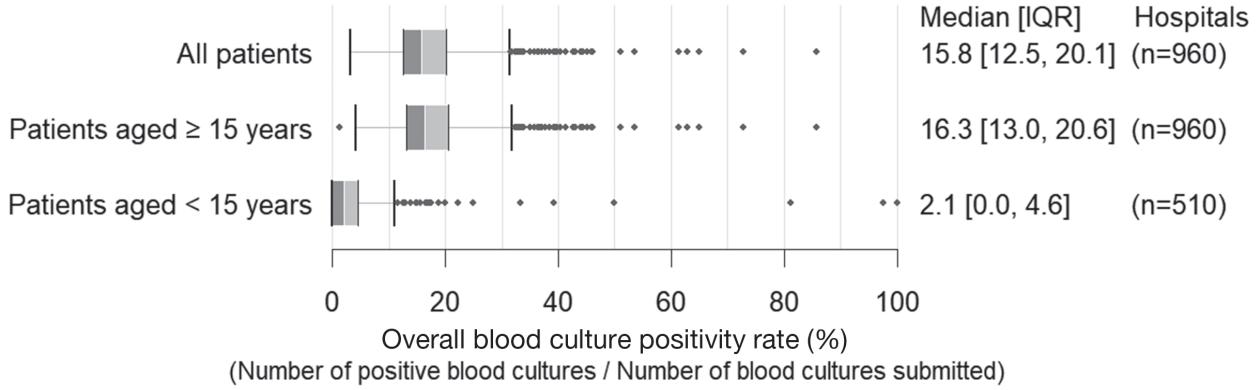
Box plot showing the rate of multiple blood culture sets taken for all patients and for those over and under the age of 15 years in percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 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.
* Number of blood cultures submitted for one set only refers to the number of blood cultures not submitted from the same patient within one day before or after.
* Number of blood cultures submitted refers to the number of blood cultures submitted in one set (aerobic bottle + anaerobic bottle or mixed bottle).
* Sites with registered data for 20 or more submitted blood cultures during the target period were included.

Figure 58 Overall blood culture positivity rate

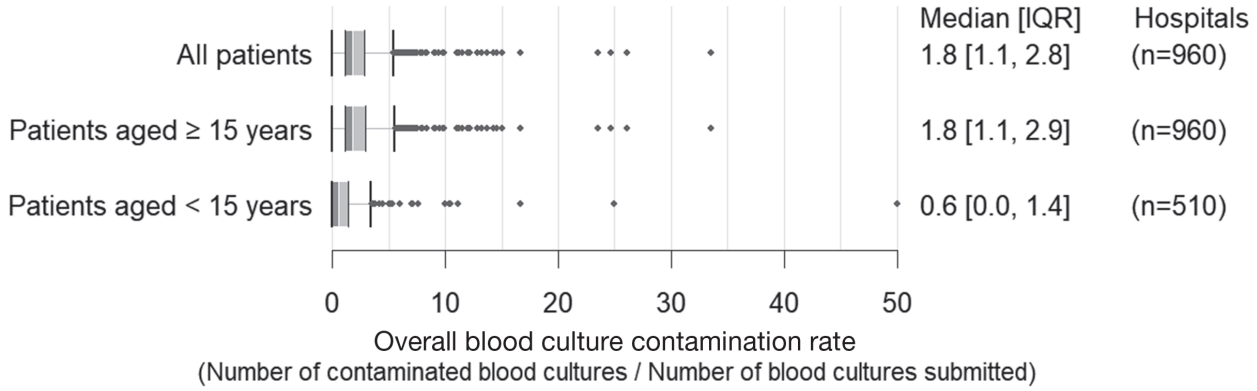
Box plot showing the overall positivity rate of blood cultures collected for all patients and for those over and under the age of 15 years in percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Proportion of the number of blood culture sets with a positive result, among the blood cultures submitted.
* Number of positive blood culture sets refers to the number of sets that were positive for blood culture.
* Number of blood culture submissions refers to the number of blood culture sets (aerobic bottle + anaerobic bottle or mixed bottle) submitted.
* Contaminated samples were counted as positive.
* Sites with registered data for 20 or more submitted blood cultures during the target period were included.

Figure 59 Overall blood culture contamination rate

Box plot showing the overall blood culture contamination rate for all patients and for those over and under the age of 15 years in percentages (%).



(Based on data from January to December 2022, as of August 28, 2023)
* Eligible facilities were those approved for participation by December 31, 2022.
* Proportion of the number of contaminated blood culture sets among the blood cultures submitted.
* Number of blood culture contaminated sets refers to the number of sets in which contaminating bacteria were detected in the blood culture.
* Number of blood culture submissions refers to the number of blood culture sets (aerobic bottles + anaerobic bottles or mixed bottles) 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 were included.
* For contaminating organisms, see the list of target organisms for contaminated specimens in the appendix.

Figure 60 Table of antibiogram

Name of bacterium	No. of strains	PCG	CVA/AMPC	MPIPC	CEZ	IPM/CS	EM	CLDM	LVFX	VCM	TEIC	LZD	ST	MINO
Staphylococcus aureus	244313	34.3	79.5	-	85.4	92.2	55.7	89.2	57.9	100.0	100.0	100.0	97.5	93.6
Methicillin-sensitive *Staphylococcus aureus* (MSSA)	159368	52.3	99.9	-	100.0	100.0	76.5	97.2	82.6	-	-	-	97.4	99.1
Methicillin-resistant *Staphylococcus aureus* (MRSA)	91701	-	-	-	-	-	16.9	73.7	13.2	100.0	100.0	100.0	97.6	83.2
Coagulase negative Staphylococcus (CNS)	115100	26.7	-	42.4	-	-	56.2	83.2	48.7	100.0	97.6	99.9	85.7	96.2

Name of bacterium	No. of strains	ABPC	PCG	CTX	CTRX	MEPM	EM	CLDM	LVFX	VCM
Streptococcus pneumoniae [cerebrospinal fluid]	70	-	98.4	96.2	96.6	92.4	19.6	47.7	96.2	100.0
Streptococcus pneumoniae [other than cerebrospinal fluid]	18098	-	97.8	97.4	97.8	78.8	16.0	48.2	95.4	100.0
Streptococcus pyogenes	3630	99.3	99.9	100.0	99.5	-	72.6	82.7	88.7	-
Streptococcus agalactiae	56776	97.8	97.3	99.4	98.4	-	62.9	77.7	61.7	-

Name of bacterium	No. of strains	PCG	ABPC	EM	LVFX	VCM	TEIC	LZD	MINO
Enterococcus faecalis	101654	98.6	99.9	21.5	92.0	100.0	100.0	99.5	32.7
Enterococcus faecium	32620	14.3	14.5	8.7	11.8	98.3	99.0	99.2	47.9

Name of bacterium	No. of strains	ABPC	PIPC	SBT/ABPC	TAZ/PIPC	CVA/AMPC	CEZ	CEZ*1	CEZ*2	CMZ	CTX	CTRX	CAZ	CFPM	AZT	MEPM	IPM/CS	GM	AMK	LVFX	ST
Escherichia coli	320484	57.6	62.4	71.7	97.8	90.4	43.8	68.4	58.1	99.1	80.0	79.3	87.9	87.4	84.0	100.0	99.9	91.5	99.9	65.3	82.6
Escherichia coli [CTX or CTRX or CAZ R]	68208	0.2	0.8	42.0	95.0	80.7	0.1	0.2	0.1	97.0	0.3	0.5	42.1	37.9	20.8	99.8	99.8	81.3	99.5	17.4	61.0
Klebsiella pneumoniae	122247	6.5	66.7	83.5	96.7	92.7	55.1	84.9	78.4	98.8	91.5	90.4	92.6	93.9	92.3	99.8	99.6	96.9	99.9	95.5	87.7
Klebsiella pneumoniae [CTX or CTRX or CAZ R]	12354	0.1	1.0	6.9	75.4	42.6	0.2	0.6	0.2	91.6	1.2	1.5	23.7	33.4	15.1	97.9	98.2	72.0	99.6	65.7	27.3
Klebsiella oxytoca	40316	5.6	65.5	75.0	91.2	90.9	19.4	35.3	23.1	99.4	95.0	91.6	98.5	98.2	92.2	99.9	98.9	99.0	99.9	95.8	95.4
Enterobacter cloacae	40392	10.3	77.3	31.8	84.8	5.2	1.2	2.0	1.2	7.6	70.9	70.7	75.9	96.5	76.0	99.5	95.9	98.8	99.8	96.2	92.8
Klebsiella aerogenes	22430	10.7	76.5	48.3	84.8	5.9	2.2	5.6	2.2	6.6	73.4	73.8	76.9	98.9	80.6	99.6	87.0	99.6	99.9	98.7	97.5
Proteus mirabilis	28221	78.2	81.8	87.1	99.4	95.8	33.8	59.0	45.2	99.5	90.1	86.6	97.7	92.7	94.7	99.9	47.6	93.6	99.7	85.1	85.7
Proteus vulgaris	6871	5.5	72.7	78.7	99.2	92.3	1.0	2.2	1.1	99.4	76.5	63.4	97.8	98.6	87.1	99.9	41.7	99.3	99.9	99.2	94.5
Citrobacter freundii	14567	30.3	77.6	65.7	92.5	19.8	2.4	4.0	2.5	50.6	77.8	77.7	79.2	98.7	80.5	99.8	96.9	98.2	99.9	95.3	89.6
Citrobacter koseri	14012	1.3	47.0	92.0	96.6	94.6	57.3	88.7	83.5	97.7	94.5	95.1	95.3	97.6	94.7	99.9	99.7	99.2	99.9	96.3	97.0
Serratia marcescens	22061	7.7	83.6	13.4	89.8	4.4	0.1	0.1	0.1	82.7	84.3	79.1	87.8	99.1	87.2	99.9	91.7	99.1	99.4	95.5	97.7

Name of bacterium	No. of strains	PIPC	SBT/ABPC	TAZ/PIPC	CAZ	CFPM	AZT	MEPM	IPM/CS	GM	AMK	LVFX	ST	MINO
Pseudomonas aeruginosa	107652	90.1	-	92.1	93.2	93.7	83.1	93.3	88.4	89.9	98.4	91.1	-	-
Acinetobacter baumannii	7660	81.9	95.4	87.9	90.8	91.3	-	98.9	99.1	91.7	98.7	90.4	90.9	98.0
Acinetobacter spp.	15158	81.5	95.2	89.4	89.1	92.4	-	99.0	99.2	93.2	98.9	92.5	91.7	98.2
Stenotrophomonas maltophilia	17691	-	-	-	39.3	-	-	-	-	-	-	92.2	94.2	99.6

Name of bacterium	No. of strains	ABPC	SBT/ABPC	CVA/AMPC	CTX	CTRX	MEPM	CAM	LVFX	TC
Haemophilus influenzae	18359	48.2	70.3	83.0	98.4	99.4	96.2	78.6	96.3	98.3

* The data for the single year 2022, which had been registered as of August 28, 2023, were used to generate the antibiogram.
* Eligible facilities were those approved for participation by August 28, 2023.
* 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).
* Samples were registered by month, multiple detections for each patient in the previous 90 days were processed, and only those that were newly detected in the concerned month were adopted.
* In cases where detection occurred in same patient more than once in the month of enrollment, only the first susceptibility result of that month was adopted.
* The proportion (%S) was calculated with the total of susceptibility (S) of bacteria as the numerator and the total of all values, including susceptibility (S), as the denominator.
* SI that cannot be classified as either intermediate (I) or susceptible (S) is not included in the numerator, but is aggregated in 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.")

V. Appendix

1. List of ward codes

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

2. List of surgical procedure codes (in reference to the document of JANIS)

Code	Surgical procedures	Description
AAA	Abdominal aortic repair	Resection of abdominal aorta with anastomosis or replacement
AAE	Abdominal aortic endovascular surgery	Endovascular stent placement for abdominal aortic aneurysm
AMP	Limb amputation	Total or partial disarticulation or amputation of an upper or lower limb including the fingers or toes
APPY	Appendix surgery	Appendectomy (excluding those performed in association with other surgical procedures)
AVSD	Shunt for dialysis	Arteriovenous anastomosis for renal dialysis
BILI-L	Hepatectomy without biliary reconstruction	Hepatectomy without biliary reconstruction
BILI-PD	Pancreaticoduodenectomy	Pancreaticoduodenectomy
BILI-O	Other hepatobiliary and pancreatic surgeries	Hepatobiliary and pancreatic surgery (hepatectomy without biliary reconstruction, pancreaticoduodenectomy, and surgeries involving only the gallbladder are not included)
BRST	Breast surgery	Breast lesion or tissue excision. Including radical resection, atypical resection, quadrantectomy, local excision, incisional biopsy, and mammoplasty.

Code	Surgical procedures	Description
CARD	Cardiac surgery	Heart valve or septum thoracotomy. Coronary artery bypass graft, vascular surgery, cardiac transplantation, and pacemaker implantation are not included.
CEA	Carotid endarterectomy	Carotid endarterectomy
CBGB	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.
CBGC	Coronary artery bypass grafts with chest incision only	Thoracotomy for direct revascularization of the heart using the internal mammary artery, etc.
CHOL	Gallbladder surgery	Cholecystectomy and cholecystostomy
COLO	Colon surgery	Incision/resection or anastomosis of the large intestine. Anastomosis of the large/small intestine are included. Rectal surgeries are not included.
CRAN	Craniotomy	Incision of the skull for excision/repair or examination of the brain. Puncture is not included.
CSEC	Cesarean section	Obstetric delivery by cesarean section
ESOP	Esophageal surgery	Surgery involving resection/reconstruction of the esophagus
FUSN	Spinal fusion	Fusion of the spine
FX	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.
GAST-D	Distal gastrectomy	Distal gastrectomy, B-I/B-II reconstruction
GAST-T	Total gastrectomy	Total gastrectomy
GAST-O	Other gastrectomy	Incision or resection of the stomach (distal and total gastrectomy are excluded). Vagotomy and fundoplication are not included.
HER	Herniorrhaphy	Groin/femur/umbilicus or anterior abdominal wall hernia repair. Diaphragmatic hernia, esophageal hiatal hernia, and other hernias are not included.
HPRO	Hip prosthesis	Hip arthroplasty
HTP	Heart transplant	Transplantation of the heart
HYST	Abdominal hysterectomy	Hysterectomy with abdominal incision
KPRO	Knee prosthesis	Knee arthroplasty
KTP	Kidney transplant	Transplantation of the kidney
LAM	Laminectomy	Examination or decompression of the spinal cord by resection/incision of the spinal tissues
LTP	Liver transplant	Transplantation of the liver
NECK	Neck surgery	Major larynx resection or incision, and radical neck dissection. Surgeries of the thyroid and parathyroid gland are not included.
NEPH	Kidney surgery	With or without resection or manipulation of the kidney, or resection of related tissues.
OVRY	Ovarian surgery	Surgery of the ovaries and related tissues
PACE	Pacemaker surgery	Placement/manipulation or replacement of pacemaker
PRST	Prostate surgery	Suprapubic, retropubic, radical or perineal prostatectomy. Transurethral prostatectomy is not included.
PVBY	Peripheral vascular bypass surgery	Bypass surgery of a peripheral vessel
REC	Rectal surgery	Surgery of the rectum
RFUSN	Spinal re-fusion	Re-fusion of the spine
SB	Small bowel surgery	Incision or resection of the small bowel. Small and large bowel anastomoses are not included.
SPLE	Spleen surgery	Resection or manipulation of the spleen
TAA	Thoracic aortic surgery	Surgical procedures to manipulate the thoracic aorta
TAE	Thoracic aortic endovascular surgery	Surgical procedures to manipulate the thoracic vessels
THOR	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.
THYR	Thyroid and/or parathyroid surgery	Resection or manipulation of the thyroid or parathyroid gland
VARX	Varicose vein surgery of the lower limbs	Removal of a varicose vein in the lower limbs
VHYS	Vaginal hysterectomy	Hysterectomy by colpotomy or episiotomy
VSHN	Ventricular shunt	Including cerebroventricular shunting and correction and removal of shunt
XLAP	Abdominal surgery	Abdominal surgeries without manipulation of the gastrointestinal tract or biliary system

3. List of antimicrobial drugs

Drug class name	Category	Name of antimicrobial drug	Abbreviation
Penicillins	Injection	Benzylpenicillin (Inj.)	PCG
	Injection	Benzylpenicillin benzathine (Inj.)	DBECPCG
	Injection	Ampicillin (Inj.)	ABPC
	Injection	Piperacillin (Inj.)	PIPC
	Injection	Ampicillin/cloxacillin (Inj.)	ABPC/MCIPC
	Injection	Ampicillin/sulbactam (Inj.)	ABPC/SBT
	Injection	Piperacillin/tazobactam (Inj.)	PIPC/TAZ
First-generation cephalosporins	Injection	Cefazolin (Inj.)	CEZ
	Injection	Cephalothin (Inj.)	CET
Second-generation cephalosporins	Injection	Cefotiam (Inj.)	CTM
Third-generation cephalosporins	Injection	Cefotaxime (Inj.)	CTX
	Injection	Ceftazidime (Inj.)	CAZ
	Injection	Ceftriaxone (Inj.)	CTRX
	Injection	Cefmenoxime (Inj.)	CMX
	Injection	Cefoperazone/sulbactam (Inj.)	CPZ/SBT
Fourth-generation cephalosporins	Injection	Cefepime (Inj.)	CFPM
	Injection	Cefozopran (Inj.)	CZOP
	Injection	Cefpirome (Inj.)	CPR
Oxacephems	Injection	Flomoxef (Inj.)	FMOX
	Injection	Latamoxef (Inj.)	LMOX
Cephamycins	Injection	Cefminox (Inj.)	CMNX
	Injection	Cefmetazole (Inj.)	CMZ
Cephalosporin and Beta-Lactamase Inhibitor Combinations	Injection	Ceftolozane/tazobactam (Inj.)	CTLZ/TAZ
Carbapenems	Injection	Doripenem (Inj.)	DRPM
	Injection	Biapenem (Inj.)	BIPM
	Injection	Meropenem (Inj.)	MEPM
	Injection	Imipenem/cilastatin (Inj.)	IPM/CS
	Injection	Imipenem/cilastatin/relebactam (Inj.)	REL/IPM/CS
	Injection	Panipenem/betamipron (Inj.)	PAPM/BP
Monobactams	Injection	Aztreonam (Inj.)	AZT
Glycopeptides	Injection	Teicoplanin (Inj.)	TEIC
	Injection	Vancomycin (Inj.)	VCM
Oxazolidinones	Injection	Tedizolid (Inj.)	TZD
	Injection	Linezolid (Inj.)	LZD
lipopeptides	Injection	Daptomycin (Inj.)	DAP
Quinolones	Injection	Ciprofloxacin (Inj.)	CPFX
	Injection	Pazufloxacin (Inj.)	PZFX
	Injection	Lascufloxacin (Inj.)	LSFX
	Injection	Levofloxacin (Inj.)	LVFX
Aminoglycosides	Injection	Amikacin (Inj.)	AMK
	Injection	Arbekacin (Inj.)	ABK
	Injection	Isepamicin (Inj.)	ISP
	Injection	Kanamycin (Inj.)	KM
	Injection	Gentamicin (Inj.)	GM
	Injection	Dibekacin (Inj.)	DKB
	Injection	Spectinomycin	SPCM
	Injection	Tobramycin (Inj.)	TOB

Drug class name	Category	Name of antimicrobial drug	Abbreviation
Streptomycins	Injection	Streptomycin (Inj.)	SM
Tetracyclines	Injection	Tigecycline (Inj.)	TGC
	Injection	Minocycline (Inj.)	MINO
Lincomycins	Injection	Clindamycin (Inj.)	CLDM
	Injection	Lincomycin (Inj.)	LCM
Macrolides	Injection	Azithromycin (Inj.)	AZM
	Injection	Erythromycin (Inj.)	EM
Sulfonamide and Trimethoprim Combinations	Injection	Sulfamethoxazole/trimethoprim (Inj.)	ST
Metronidazole	Injection	Metronidazole (Inj.)	MNZ
Antifungals	Injection	Amphotericin B (Inj.)	AMPH-B
	Injection	Liposomal amphotericin B (Inj.)	L-AMB
	Injection	Miconazole (Inj.)	MCZ
	Injection	Itraconazole (Inj.)	ITCZ
	Injection	Fluconazole (Inj.)	FLCZ
	Injection	Posaconazole (Inj.)	PSCZ
	Injection	Fosfluconazole (Inj.)	F-FLCZ
	Injection	Voriconazole (Inj.)	VRCZ
	Injection	Caspofungin (Inj.)	CPFG
	Injection	Micafungin (Inj.)	MCFG
Penicillins	Oral	Benzylpenicillin benzathine (po)	DBECPCG
	Oral	Amoxicillin (po)	AMPC
	Oral	Ampicillin (po)	ABPC
	Oral	Bacampicillin (po)	BAPC
	Oral	Sultamicillin (po)	SBTPC
	Oral	Amoxicillin/clavulanic acid (2:1) (po)	CVA/AMPC
	Oral	Amoxicillin/clavulanic acid (14:1) (po)	CVA/ AMPC
	Oral	Ampicillin/cloxacillin (po)	ABPC/MCIPC
First-generation cephalosporins	Oral	Cefalexin/combination granules (po)	CEX
	Oral	Cefroxadine (po)	CXD
Second-generation cephalosporins	Oral	Cefaclor/combination granules (po)	CCL
	Oral	Cefotiam (po)	CTM
	Oral	Cefuroxime (po)	CXM-AX
Third-generation cephalosporins	Oral	Cefixime (po)	CFIX
	Oral	Cefcapene (po)	CFPN-PI
	Oral	Cefditoren (po)	CDTR-PI
	Oral	Cefdinir (po)	CFDN
	Oral	Ceftibuten (po)	CETB
	Oral	Cefteram (po)	CFTM-PI
	Oral	Cefpodoxime (po)	CPDX-PR
Carbapenems	Oral	Tebipenem (po)	TBPM-PI
Penems	Oral	Faropenem (po)	FRPM
Oxazolidinones	Oral	Tedizolid (po)	TZD
	Oral	Linezolid (po)	LZD

Drug class name	Category	Name of antimicrobial drug	Abbreviation
Quinolones	Oral	Ofloxacin (po)	OFLX
	Oral	Garenoxacin (po)	GRNX
	Oral	Sitafloxacin (po)	STFX
	Oral	Ciprofloxacin (po)	CPFX
	Oral	Tosufloxacin (po)	TFLX
	Oral	Norfloxacin (po)	NFLX
	Oral	Prulifloxacin (po)	PUFX
	Oral	Moxifloxacin (po)	MFLX
	Oral	Lascufloxacin (po)	LSFX
	Oral	Levofloxacin (po)	LVFX
	Oral	Lomefloxacin (po)	LFLX
Aminoglycosides	Oral	Kanamycin (po)	KM
Tetracyclines	Oral	Tetracycline (po)	TC
	Oral	Demethylchlortetracycline (po)	DMCTC
	Oral	Doxycycline (po)	DOXY
	Oral	Minocycline (po)	MINO
Lincosamides	Oral	Clindamycin (po)	CLDM
	Oral	Lincomycin (po)	LCM
Macrolides	Oral	Azithromycin (po)	AZM
	Oral	Erythromycin (po)	EM
	Oral	Clarithromycin (po)	CAM
	Oral	Josamycin (po)	JM
	Oral	Spiramycin (po)	SPM
	Oral	Acetyl-spiramycin (po)	AC-SPM
	Oral	Roxithromycin (po)	RXM
Sulfonamide and Trimethoprim Combinations	Oral	Sulfamethoxazole/trimethoprim (po)	ST
Metronidazole	Oral	Metronidazole (po)	MNZ
Glycopeptide	Oral	Vancomycin (po)	VCM
Macrolide for CDI	Oral	Fidaxomicin (po)	FDX
Antifungals	Oral	Itraconazole (po)	ITCZ
	Oral	Fluconazole (po)	FLCZ
	Oral	Posaconazole (po)	PSCZ
	Oral	Voriconazole (po)	VRCZ
	Oral	Flucytosine (po)	5-FC

* Benzylpenicillin benzathine(Inj.) will be counted as a penicillin in September 2022.
* Imipenem/cilastatin/relebactam(Inj.) will be counted as carbapenems from September 2022.
* The following drugs and drug classes will be counted from January 2022.
  - Arbekacin(Inj.) and Spectinomycin (Inj.) are counted as aminoglycosides.
  - Streptomycin (Inj.) was changed from aminoglycosides to streptomycins.
  - Spiramycin(po) was added to macrolides and counted.
  - Classes: Ceftorozan/tazobactam was renamed to Cephalosporin and Beta-Lactamase Inhibitor Combinations.
  - Classes: Daptomycin was renamed to Lipopeptides.
  - Classes: Lincomycins changed its name to Lincosamides.
  - Classes: Sulfamethoxazole/Trimethoprim changed to Sulfonamide and Trimethoprim Combinations.
  - Classes: Vancomycin was changed to Glycopeptide.
  - Classes: Fidaxomicin was changed to Macrolide for CDI.

4. List of microorganisms and resistant bacteria

Current list of all major bacteria and resistant bacteria detected in clinical samples.

Major bacterium
Acinetobacter spp.
Enterobacter cloacae complex
Enterobacter spp.
Enterococcus faecalis
Enterococcus faecium
Escherichia coli
Klebsiella aerogenes
Klebsiella oxytoca
Klebsiella pneumoniae
Proteus mirabilis
Pseudomonas aeruginosa
Serratia marcescens
Staphylococcus aureus
Staphylococcus epidermidis
Streptococcus pneumoniae

Resistant bacterium
Drug-resistant *Acinetobacter* spp.*
Drug-resistant *Pseudomonas aeruginosa***
CRE: Carbapenem-Resistant *Enterobacteriaceae*
MDRA: Multidrug-resistant *Acinetobacter* spp.
MDRP: Multidrug-resistant *P. aeruginosa*
MRSA: Methicillin-resistant *S. aureus*
PRSP: Penicillin-resistant *S. pneumoniae*
VRE: Vancomycin-resistant *Enterococcus* spp.
VRSA: Vancomycin-resistant *S.aureus*
Carbapenem-resistant *Pseudomonas aeruginosa*
Fluoroquinolone-resistant *Escherichia coli*
3rd Generation Cephalosporin-resistant *Escherichia coli*
3rd Generation Cephalosporin-resistant *Klebsiella pneumoniae*

* Drug-Resistant *Acinetobacter* spp.: *Acinetobacter* spp. resistant to two classes of antibiotics among carbapenem, fluoroquinolone, aminoglycoside (intermediate or resistant to amikacin) by drug susceptibility testing (broth microdilution methods) per CLSI criteria (M100-2012)
**Drug-resistant *Pseudomonas aeruginosa*: *P. aeruginosa* resistant to two classes of antibiotics among carbapenem, fluoroquinolone, aminoglycoside (intermediate or resistant to amikacin) by drug susceptibility testing (broth microdilution methods) per CLSI criteria (M100-2012)

5. Current list of all known bacteria causing bloodstream infections

Major bacterium causing bloodstream infection
Acinetobacter spp.
Candida spp.
Candida albicans
Candida tropicalis
Candida glabrata
Candida parapsilosis
Candida krusei
Candida guilliermondii
Citrobacter spp.
CNS (including *S. epidermidis*)
Group C β-*Streptococcus*
Enterobacter spp.
Enterobacter cloacae complex
Enterococcus faecalis
Enterococcus faecium
Escherichia coli
Group G β-*Streptococcus*
Klebsiella aerogenes
Klebsiella oxytoca
Klebsiella pneumoniae
Proteus mirabilis
Pseudomonas aeruginosa
Staphylococcus aureus
Serratia marcescens
Streptococcus agalactiae
Streptococcus pneumoniae
Streptococcus pyogenes

Resistant bacterium causing bloodstream infection
Drug-resistant *Acinetobacter* spp.*
Drug-resistant *Pseudomonas aeruginosa***
CRE: Carbapenem-Resistant *Enterobacteriaceae*
MDRA: Multidrug-resistant *Acinetobacter* spp.
MDRP: Multidrug-resistant *P. aeruginosa*
MRSA: Methicillin-resistant *S. aureus*
PRSP: Penicillin-resistant *S. pneumoniae*
VRE: Vancomycin-resistant *Enterococcus* spp.
VRSA: Vancomycin-resistant *S. aureus*
Carbapenem-resistant *Pseudomonas aeruginosa*
Fluoroquinolone-resistant *Escherichia coli*
3rd Generation Cephalosporin-resistant *Escherichia coli*
3rd Generation Cephalosporin-resistant *Klebsiella pneumoniae*

* Drug-Resistant *Acinetobacter* spp.: *Acinetobacter* spp. resistant to two classes of antibiotics among carbapenem, fluoroquinolone, aminoglycoside (intermediate or resistant to amikacin) by drug susceptibility testing (broth microdilution methods) per CLSI criteria (M100-2012)
**Drug-resistant *Pseudomonas aeruginosa*: *P. aeruginosa* resistant to two classes of antibiotics among carbapenem, fluoroquinolone, aminoglycoside (intermediate or resistant to amikacin) by drug susceptibility testing (broth microdilution methods) per CLSI criteria (M100-2012)

6. List of bacteria in contaminated samples

Name of bacteria
Staphylococcus spp.
Staphylococcus, coagulase negative (CNS)
Staphylococcus epidermidis
Staphylococcus saprophyticus subsp. *saprophyticus*
Staphylococcus hominis subsp. *hominis*
Staphylococcus warneri
Staphylococcus lentus
Staphylococcus auricularis
Staphylococcus simulans
Staphylococcus cohnii subsp. *cohnii*
Staphylococcus xylosus
Staphylococcus sciuri subsp. *sciuri*
Staphylococcus intermedius
Staphylococcus hyicus
Staphylococcus haemolyticus
Staphylococcus capitis subsp. *capitis*
Propionibacterium spp.
Propionibacterium acnes
Corynebacterium spp.
Corynebacterium diphtheriae
Corynebacterium jeikeium
Bacillus spp.
Bacillus cereus
Bacillus subtilis subsp. *subtilis*
Bacillus anthracis

7. How to read a box plot

Box plots were generated based on data from medical institutions.

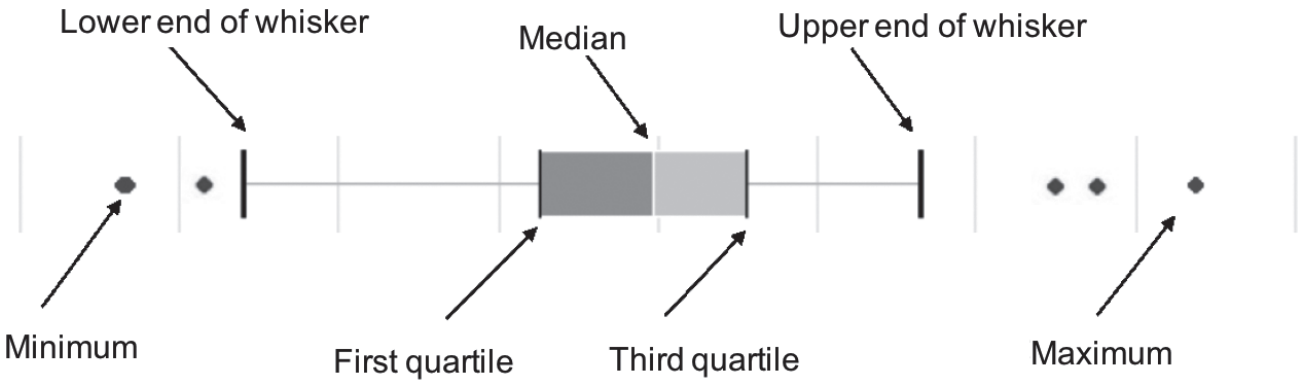
Outliers were plotted as individual points, and the upper and lower ends of whiskers represent the maximum and minimum values of the outlier criteria.

Values falling within the box plot are not shown in the plot.

Outlier criterion (lower limit) = Q1 - 1.5 × (Q3 - Q1)

Outlier criterion (upper limit) = Q3 + 1.5 × (Q3 - Q1)

***Q1: 1st quartile, Q3: 3rd quartile**



J-SIPHE expert committee

Yusuke Ito	Hyogo Prefectural Amagasaki General Medical Center
Chikara Ogimi	National Center for Child Health and Development
Kei Kasahara	Nara Medical University
Ichiro Kawamura	Osaka International Cancer Institute
Yoshiaki Gu	Tokyo Medical and Dental University
Fumie Sakamoto	Itabashi Chuo Medical Center
Keigo Shibayama	Nagoya University
Yasushi Harihara	Towa Hospital
Hiroshige Mikamo	Aichi Medical University
Nobuo Murakami	Gifu University / Gifu General Healthcheckup Centre
Yuichi Muraki	Kyoto Pharmaceutical University
Tetsuya Yagi	Nagoya University
Katsunori Yanagihara	Nagasaki University
Kazunori Yamada	Nakamura Memorial Hospital
Makiko Yoshida	Tohoku Medical and Pharmaceutical University
Norio Ohmagari	National Center for Global Health and Medicine
Kayoko Hayakawa	National Center for Global Health and Medicine
Nobuaki Matsunaga	National Center for Global Health and Medicine

The Ministry of Health, Labour and Welfare

Jun Sugihara	Division of Infectious Disease Prevention and Control, Department of Infectious Disease Prevention and Control, Public Health Bureau
Yushi Matsuura	Division of Infectious Disease Prevention and Control, Department of Infectious Disease Prevention and Control, Public Health BureauKohei Uechi Division of Infectious Disease Prevention and Control, Department of Infectious Disease Prevention and Control, Public Health BureauTaiki Taniguchi Division of Infectious Disease Prevention and Control, Department of Infectious Disease Prevention and Control, Public Health Bureau
Yuta Miyahara	Division of Infectious Disease Prevention and Control, Department of Infectious Disease Prevention and Control, Public Health Bureau
Shin Asato	Division of Infectious Disease Prevention and Control, Department of Infectious Disease Prevention and Control, Public Health Bureau

Editing/preparation

Yusuke Asai	AMR Clinical Reference Center
Toshiaki Azuma	AMR Clinical Reference Center
Jiefu Yu	AMR Clinical Reference Center
Mio Endo	AMR Clinical Reference Center
Sanae Suzuki	AMR Clinical Reference Center
Taichi Tajima	AMR Clinical Reference Center
Shinya Tsuzuki	AMR Clinical Reference Center
Hiroko Hashimoto	AMR Clinical Reference Center
Kayoko Hayakawa	AMR Clinical Reference Center
Naoki Fujii	AMR Clinical Reference Center
Nobuaki Matsunaga	AMR Clinical Reference Center
Go Yamada	AMR Clinical Reference Center

(Contact Information)
J-SIPHE Office (Division of Clinical Epidemiology)
National Center for Global Health and Medicine
Project commissioned by the Ministry of Health, Labour and Welfare
AMR Clinical Reference Center
E-mail: j-siphe@hosp.ncgm.go.jp

J-SIPHE Office (Division of Clinical Epidemiology)
National Center for Global Health and Medicine
AMR Clinical Reference Center