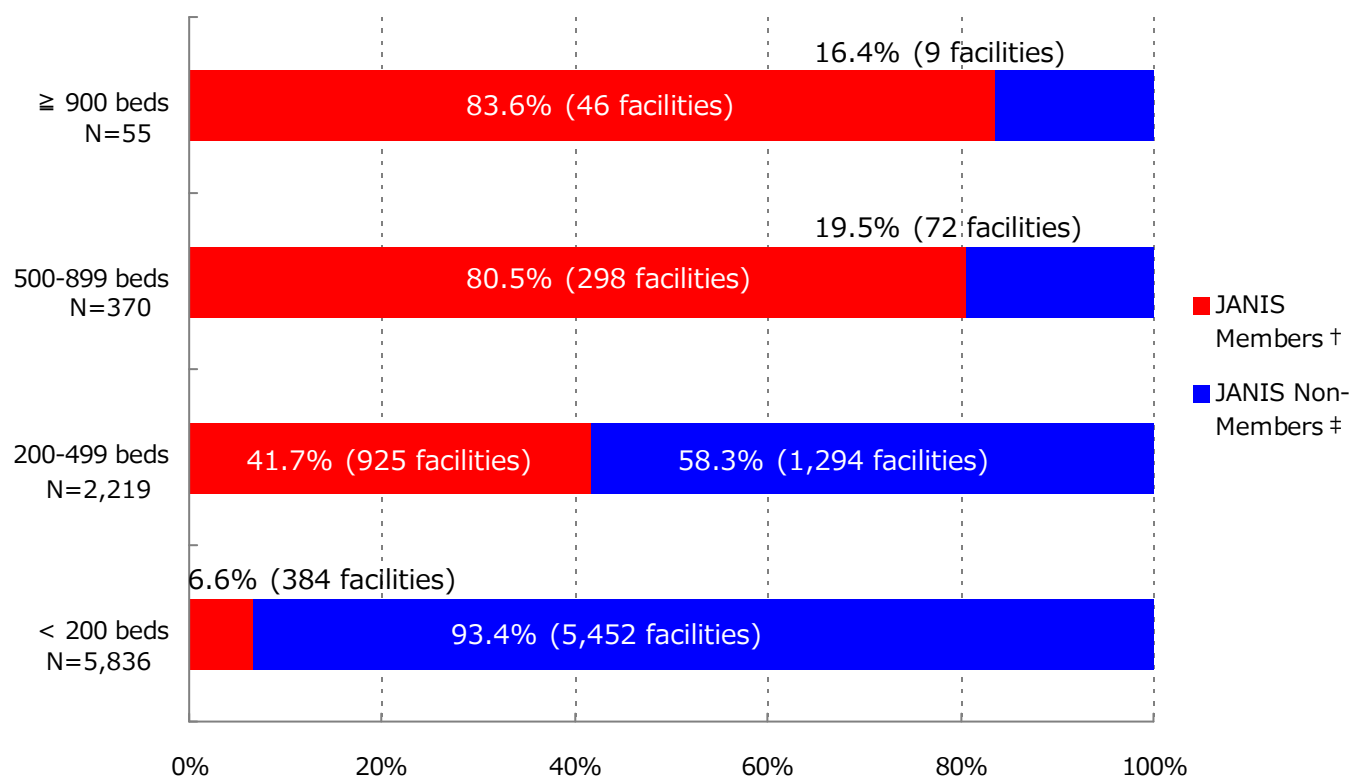


Annual Open Report 2016 (All Facilities)

Japan Nosocomial Infections Surveillance (JANIS) [CLSI2012 Version]
Clinical Laboratory Division

1. Number of Data-submitting Facilities* (1,653 facilities)



*Data-submitting Facilities indicate facilities included in Annual Open Report 2016.

† Number of JANIS Members = Number of facilities included in Annual Open Report 2016.

‡ Number of JANIS Non-members = (Number of facilities nationwide in 2015¶) – (Number of facilities included in Annual Open Report 2016)

Number of beds	Number of facilities nationwide in 2015¶	Number of Facilities Included in Annual Open Report 2016 (percentage of facilities nationwide)
≥ 900 beds	55	46 (83.6%)
500-899 beds	370	298 (80.5%)
200-499 beds	2,219	925 (41.7%)
< 200 beds	5,836	384 (6.6%)
Unknown	-	0 (-)
Total	8,480	1,653 (19.5%)

¶Data of medical facilities is referred to Vital Statistics 2015.

2. Number of Data-submitting Facilities,

Specimens and Isolates Counted by Specimen Source

Specimen Sources	Number of facilities included in Annual Open Report 2016	Number of Specimens	Number of culture-positive specimens (Number of isolates)
Respiratory	1,651	2,220,093	1,395,809 (2,889,185)
Urine	1,649	1,003,895	541,951 (821,107)
Feces	1,638	581,065	268,897 (513,982)
Blood	1,647	2,560,343	327,343 (365,231)
Cerebrospinal fluid	1,349	91,144	4,297 (4,727)
Others	1,653	1,401,062	644,476 (1,123,379)
Total	1,653	7,857,602	3,182,773 (5,717,611)

Inpatient specimens are counted.

All isolated bacteria except Isolated Bacterial Code 9999 (comments only) are counted.

Each specimen includes corresponding specimen source codes as below.

Respiratory : 101 (Sputum), 102 (Endotracheal aspirate), 103 (Bronchoalveolar lavage), 104 (Throat), 105 (Nasal), 106 (Oral), 107 (Lung biopsy), 109 (Other respiratory) and 404 (Pleural effusion)

Urinary : 201 (Urine), 202 (Urine collected by catheter), 203 (Urine obtained from indwelling catheter) and 206 (Catheterized urine)

Feces : 301 (Feces)

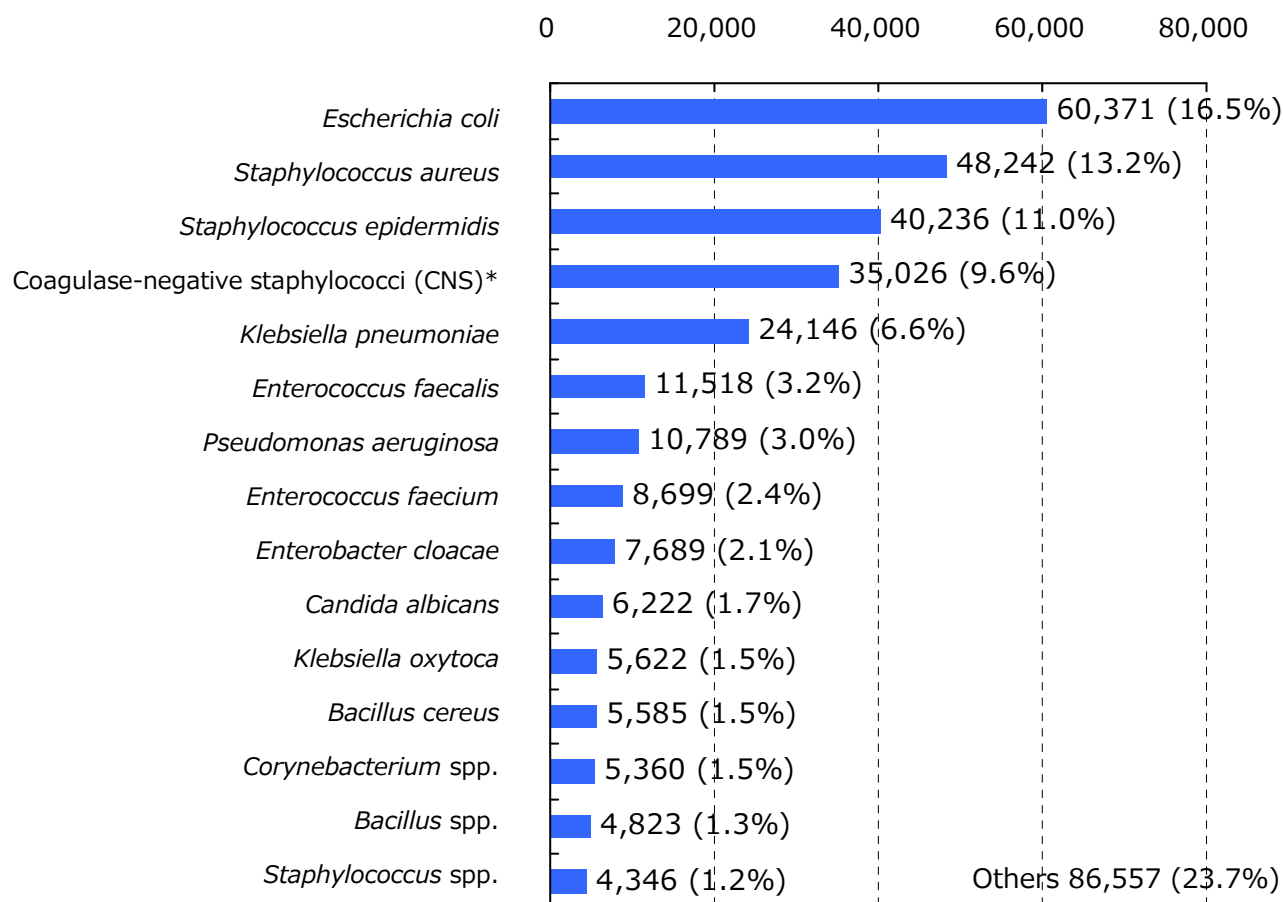
Blood : 401 (Venous blood) and 402 (Arterial blood)

Cerebrospinal fluid : 403 (Cerebrospinal fluid)

Others : Specimen codes not indicated above

Specimen Source Code : <https://janis.mhlw.go.jp/section/kensa.html>

3. Isolated Bacteria from Blood Specimens Blood Isolates (N=365,231)



*Coagulase-negative staphylococci correspond to Isolated Bacterial Codes 1311, 1313-1325 (except Code 1312, *Staphylococcus epidermidis*)

Inpatient specimens are counted.

Others include Isolated Bacterial Code 9998 (other species) and bacteria ranked 16th and lower.

All isolated bacteria except Bacterial Code 9999 (comments only) are counted.

Specimen reported as Specimen Source Code 401 (venous blood) and Code 402 (arterial blood) are counted.

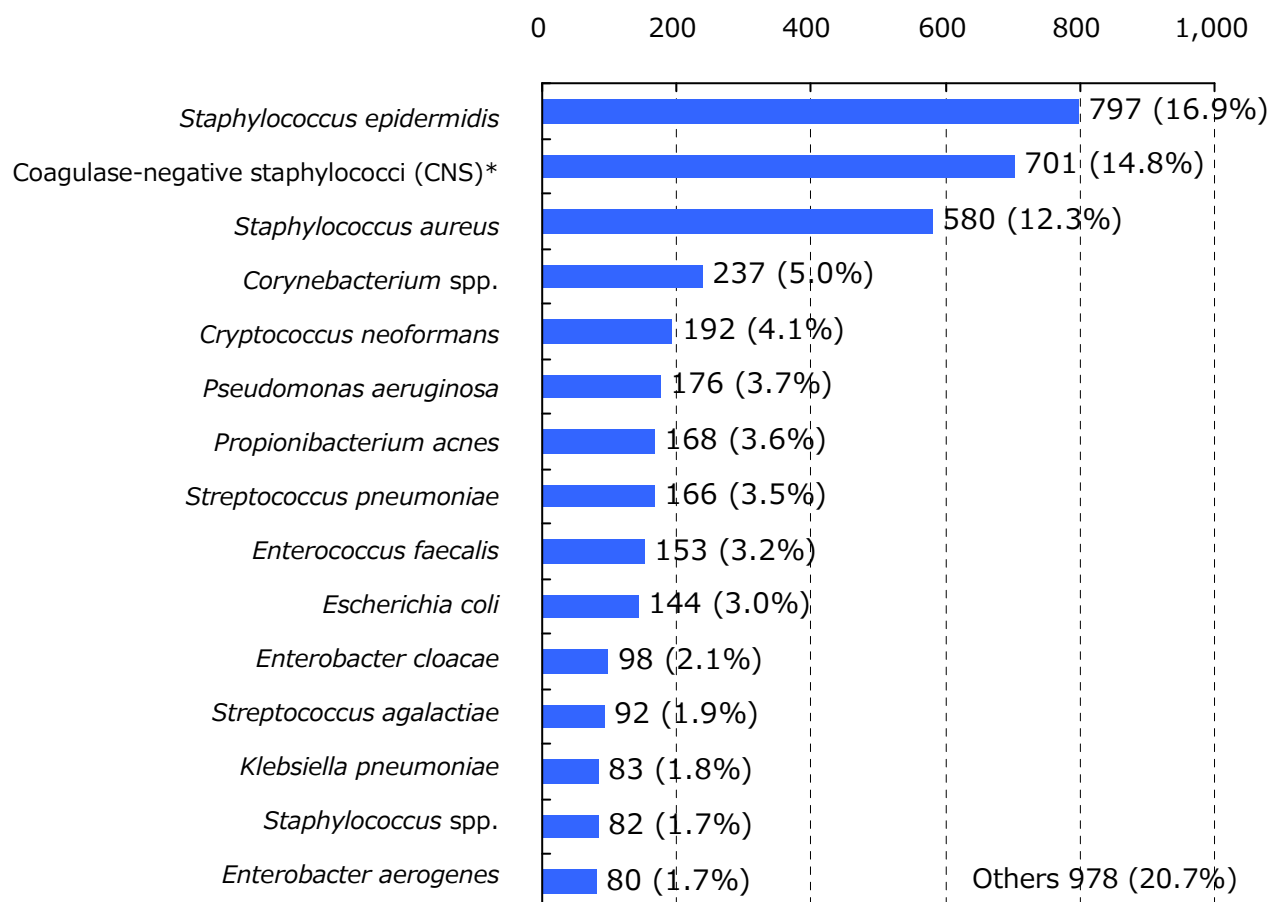
Percentage of Corresponding Blood Isolates =

$$\frac{\text{(Number of Corresponding Blood Isolates)}}{\text{(Total Number of Blood Isolates)}} \times 100$$

Isolated Bacterial Code : <https://janis.mhlw.go.jp/section/kensa.html>

Specimen Source Code : <https://janis.mhlw.go.jp/section/kensa.html>

3. Isolated Bacteria from Cerebrospinal Fluid Specimens Cerebrospinal Fluid Isolates (N=4,727)



*Coagulase-negative staphylococci correspond to Isolated Bacterial Codes 1311, 1313-1325 (except Code 1312, *Staphylococcus epidermidis*)

Inpatient specimens are counted.

Others include Isolated Bacterial Code 9998 (other species) and bacteria ranked 16th and lower.

All isolated bacteria except Bacterial Code 9999 (comments only) are counted.

Specimen reported as Specimen Source Code 403 (Cerebrospinal Fluid Samples) are counted.

Percentage of Corresponding Cerebrospinal Fluid Isolates =

$(\text{Number of Corresponding Cerebrospinal Fluid Isolates}) / (\text{Total Number of Cerebrospinal Fluid Isolates}) \times 100$

Isolated Bacterial Code : <https://janis.mhlw.go.jp/section/kensa.html>

Specimen Source Code : <https://janis.mhlw.go.jp/section/kensa.html>

Annual Open Report 2016 (All Facilities)

Japan Nosocomial Infections Surveillance (JANIS) [CLSI2012 Version]

Clinical Laboratory Division

4. Number of Patients* and Isolation Rate of Major Bacteria

	Number of Patients (Total Isolation Rate ‡)					Distribution of Isolation Rates (%)¶ among Data-submitting Facilities †
	2012	2013	2014	2015	2016	
Number of Specimen-submitting Patients	1,453,969 cases	1,584,041 cases	1,747,538 cases	2,551,541 cases	2,745,096 cases	
<i>S. aureus</i>	221,239 cases (15.22%)	231,909 cases (14.64%)	246,030 cases (14.08%)	349,743 cases (13.71%)	372,787 cases (13.58%)	1.70 13.96 50.67 H Q M
<i>S. epidermidis</i>	65,531 cases (4.51%)	69,423 cases (4.38%)	74,651 cases (4.27%)	99,594 cases (3.90%)	102,216 cases (3.72%)	0.00 2.39 32.99 H Q M
<i>S. pneumoniae</i>	30,484 cases (2.10%)	32,083 cases (2.03%)	32,256 cases (1.85%)	43,390 cases (1.70%)	42,708 cases (1.56%)	0.00 1.06 14.57 H Q M
<i>E. faecalis</i>	82,510 cases (5.67%)	87,239 cases (5.51%)	93,822 cases (5.37%)	130,647 cases (5.12%)	139,873 cases (5.10%)	0.00 4.60 25.99 H Q M
<i>E. faecium</i>	26,941 cases (1.85%)	29,540 cases (1.86%)	32,300 cases (1.85%)	46,969 cases (1.84%)	51,558 cases (1.88%)	0.00 1.50 21.75 H Q M
<i>E. coli</i>	171,361 cases (11.79%)	189,127 cases (11.94%)	214,281 cases (12.26%)	322,142 cases (12.63%)	358,746 cases (13.07%)	0.00 13.80 46.51 H Q M
<i>K. pneumoniae</i>	85,532 cases (5.88%)	93,395 cases (5.90%)	103,737 cases (5.94%)	150,147 cases (5.88%)	169,073 cases (6.16%)	0.00 6.39 34.25 H Q M
<i>Enterobacter spp.</i>	57,843 cases (3.98%)	62,966 cases (3.98%)	67,752 cases (3.88%)	96,837 cases (3.80%)	105,645 cases (3.85%)	0.00 3.41 10.56 H Q M
<i>S. marcescens</i>	19,452 cases (1.34%)	20,358 cases (1.29%)	22,681 cases (1.30%)	31,891 cases (1.25%)	35,256 cases (1.28%)	0.00 1.11 40.55 H Q M
<i>P. aeruginosa</i>	101,821 cases (7.00%)	105,968 cases (6.69%)	113,011 cases (6.47%)	163,631 cases (6.41%)	180,065 cases (6.56%)	0.00 6.33 63.70 H Q M
<i>Acinetobacter spp.</i>	20,997 cases (1.44%)	23,447 cases (1.48%)	23,161 cases (1.33%)	30,277 cases (1.19%)	32,270 cases (1.18%)	0.00 0.90 27.26 H Q M

Inpatient specimens are counted.

*The number of duplicates within 30 days is not recounted for Patients with Major Bacteria and Specimen-submitting Patients (See Appendix).

‡ Total Isolation Rate = (Total Number of Patients with Major Bacteria for Data-submitting Facilities) / (Total Number of Specimen-submitting Patients for Data-submitting Facilities) x 100

¶ Isolation Rate = (Number of Patients with Major Bacteria for Each Facility) / (Number of Specimen-submitting Patients for Each Facility) x 100

† Data-submitting Facilities indicate facilities included in Annual Open Report 2016

Annual Open Report 2016 (All Facilities)

Japan Nosocomial Infections Surveillance (JANIS) [CLSI2012 Version]

Clinical Laboratory Division

5. Number of Patients* and Isolation Rate of Specific AMR Bacteria

	Number of Patients (Total Isolation Rate ‡)					Distribution of Isolation Rates (%)¶ among Data-submitting Facilities †
	2012	2013	2014	2015	2016	
Number of Specimen-submitting Patients	1,453,969 cases	1,584,041 cases	1,747,538 cases	2,551,541 cases	2,745,096 cases	
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	117,209 cases (8.06%)	118,539 cases (7.48%)	120,702 cases (6.91%)	169,528 cases (6.64%)	177,768 cases (6.48%)	0.00 6.60 H □ I 38.41
Vancomycin-resistant <i>Staphylococcus aureus</i> (VISA)	0 cases (0.00%)	0 cases (0.00%)	0 cases (0.00%)	0 cases (0.00%)	0 cases (0.00%)	0.00
Vancomycin-resistant Enterococci(VRE)	236 cases (0.02%)	289 cases (0.02%)	334 cases (0.02%)	465 cases (0.02%)	642 cases (0.02%)	0.00 0.00 2.75
Penicillin-resistant <i>Streptococcus pneumoniae</i> (PRSP)	12,874 cases (0.89%)	12,593 cases (0.79%)	11,984 cases (0.69%)	16,236 cases (0.64%)	15,608 cases (0.57%)	0.00 0.35 H □ I 9.42
Multidrug-resistant <i>Pseudomonas aeruginosa</i> (MDRP)	2,059 cases (0.14%)	1,822 cases (0.12%)	1,489 cases (0.09%)	1,804 cases (0.07%)	1,655 cases (0.06%)	0.00 0.00 H 5.56
Multidrug-resistant <i>Acinetobacter</i> spp.(MDRA)	163 cases (0.01%)	102 cases (0.01%)	116 cases (0.01%)	143 cases (0.01%)	130 cases (0.00%)	0.00 0.00 2.47
Carbapenem-resistant <i>Enterobacteriaceae</i> (CRE)	- -	- -	8,582 cases (0.49%)	9,254 cases (0.36%)	7,827 cases (0.29%)	0.00 0.11 H □ I 5.11
Carbapenem-resistant <i>Pseudomonas aeruginosa</i>	15,815 cases (1.09%)	15,593 cases (0.98%)	15,369 cases (0.88%)	21,487 cases (0.84%)	22,506 cases (0.82%)	0.00 0.62 H □ I 18.75
3rd Generation Cephalosporin-resistant <i>Klebsiella pneumoniae</i>	3,419 cases (0.24%)	3,646 cases (0.23%)	5,787 cases (0.33%)	8,075 cases (0.32%)	9,931 cases (0.36%)	0.00 0.17 H 13.96
3rd Generation Cephalosporin-resistant <i>Escherichia coli</i>	18,843 cases (1.30%)	22,212 cases (1.40%)	31,796 cases (1.82%)	50,748 cases (1.99%)	60,034 cases (2.19%)	0.00 2.01 H □ I 22.98
Fluoroquinolone-resistant <i>Escherichia coli</i>	41,684 cases (2.87%)	49,466 cases (3.12%)	58,478 cases (3.35%)	94,393 cases (3.70%)	109,766 cases (4.00%)	0.00 4.21 H □ I 41.86

Inpatient specimens with MIC Value reported by either the broth microdilution method or Etest are counted.

*The number of duplicates within 30 days is not recounted for the Patients with Specific AMR Bacteria and Specimen-submitting Patients (See Appendix).

‡ Total Isolation Rate = (Total Number of Patients with Specific AMR Bacteria for Data-submitting Facilities) / (Total Number of Specimen-submitting Patients for Data-submitting Facilities) x 100

¶ Isolation Rate = (Number of Patients with Specific AMR Bacteria for Each Facility) / (Number of Specimen-submitting Patients for Each Facility) x 100

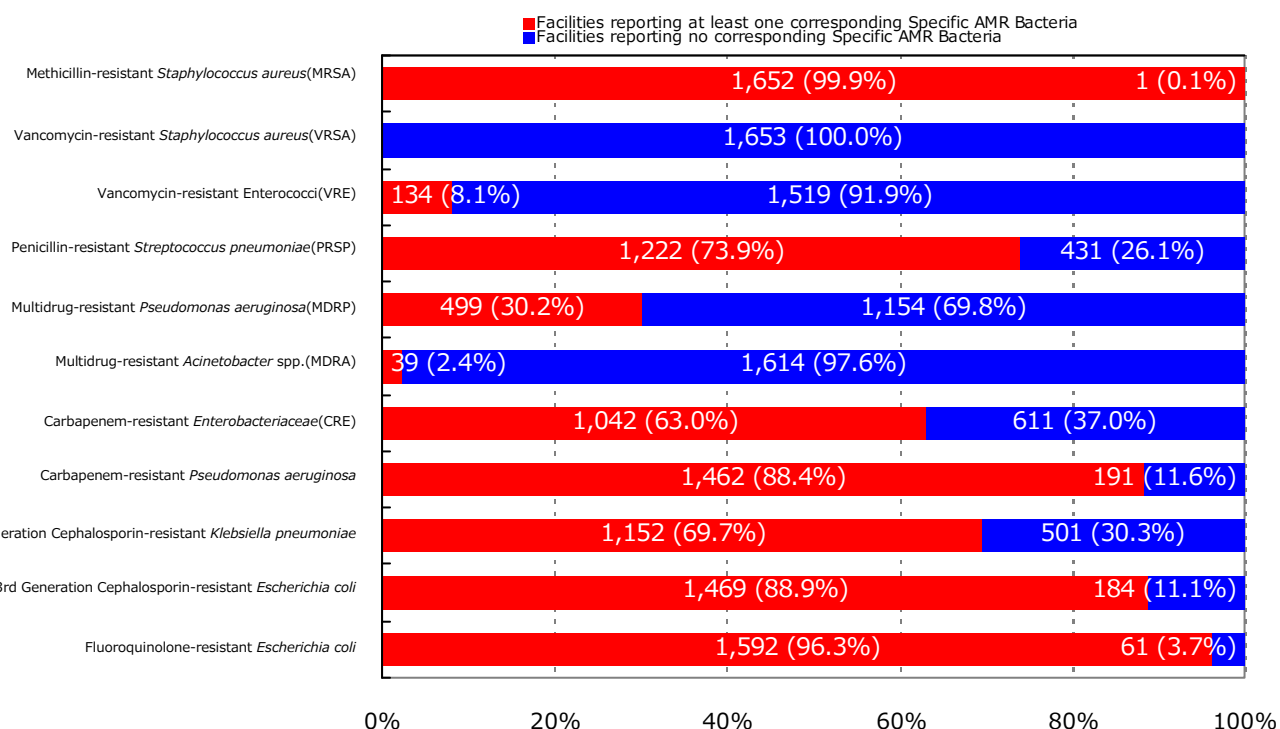
† Data-submitting Facilities indicate facilities included in Annual Open Report 2016

Annual Open Report 2016 (All Facilities)

Japan Nosocomial Infections Surveillance (JANIS) [CLSI2012 Version]
Clinical Laboratory Division

6. Percentage of Facilities Reporting Specific AMR Bacteria

Percentage of Facilities Reporting Specific AMR Bacteria in 2016 (N=1,653)



Percentage of Facilities Reporting Specific AMR Bacteria for the Past Five Years

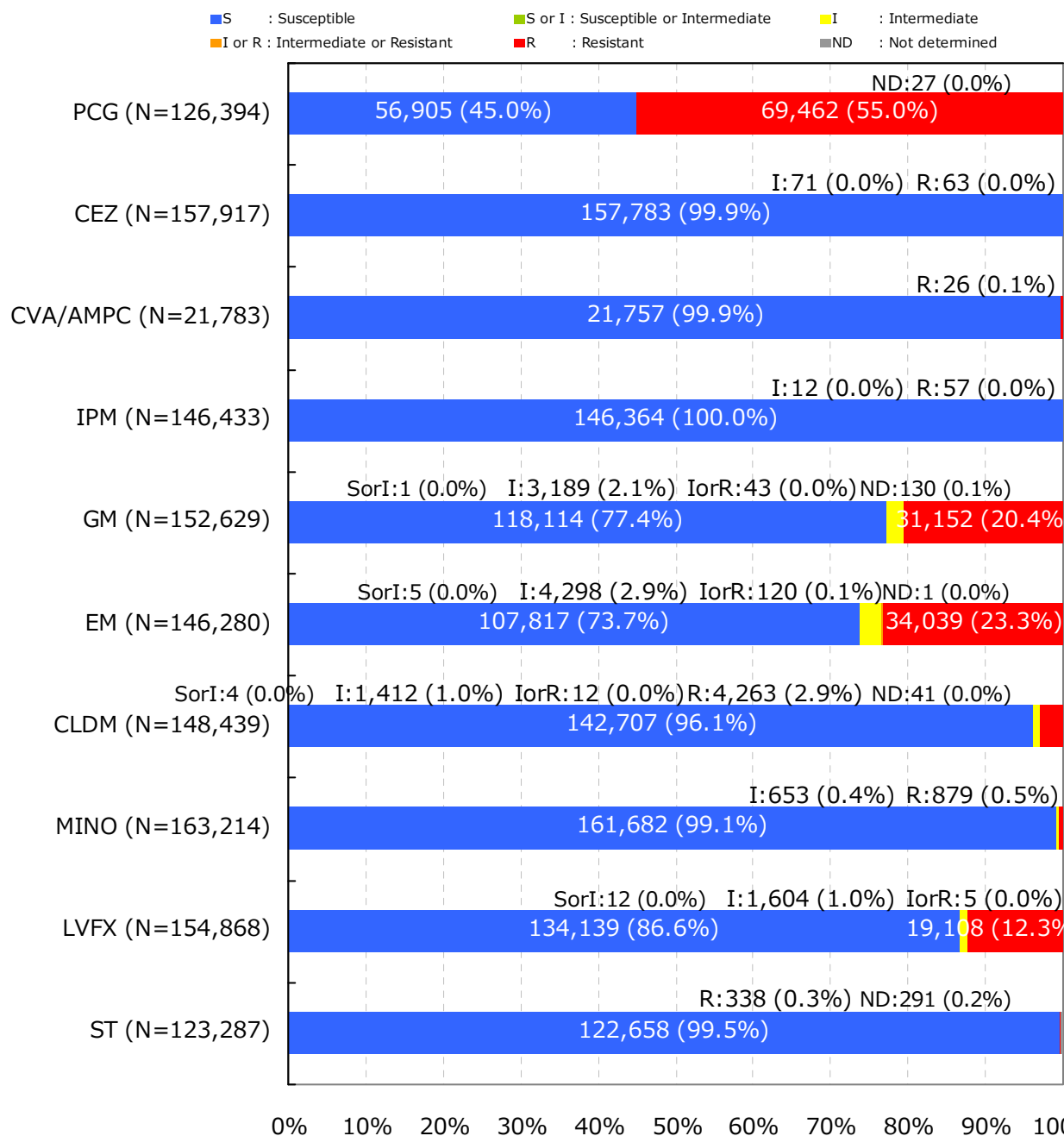
	2012	2013	2014	2015	2016
Number of facilities included in Annual Open Report	660	745	883	1,435	1,653
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	100.0%	100.0%	100.0%	100.0%	99.9%
Vancomycin-resistant <i>Staphylococcus aureus</i> (VRSA)	0.0%	0.0%	0.0%	0.0%	0.0%
Vancomycin-resistant Enterococci(VRE)	10.8%	8.6%	8.8%	7.2%	8.1%
Penicillin-resistant <i>Streptococcus pneumoniae</i> (PRSP)	83.8%	81.2%	80.7%	76.6%	73.9%
Multidrug-resistant <i>Pseudomonas aeruginosa</i> (MDRP)	53.2%	50.2%	44.3%	37.7%	30.2%
Multidrug-resistant <i>Acinetobacter</i> spp.(MDRA)	4.4%	3.8%	3.4%	2.6%	2.4%
Carbapenem-resistant <i>Enterobacteriaceae</i> (CRE)	-	-	81.0%	70.5%	63.0%
Carbapenem-resistant <i>Pseudomonas aeruginosa</i>	94.8%	93.4%	92.6%	89.3%	88.4%
3rd Generation Cephalosporin-resistant <i>Klebsiella pneumoniae</i>	69.2%	69.3%	71.7%	71.0%	69.7%
3rd Generation Cephalosporin-resistant <i>Escherichia coli</i>	90.0%	89.9%	92.1%	90.2%	88.9%
Fluoroquinolone-resistant <i>Escherichia coli</i>	93.9%	94.9%	95.4%	95.7%	96.3%

Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted.

Percentage of Facilities Reporting Specific AMR Bacteria = (Number of Facilities Reporting at Least one Corresponding Specific AMR Bacteria) / (Number of Data-submitting Facilities)

7. Antimicrobial Susceptibility of Major Bacteria*

Staphylococcus aureus (MSSA) †



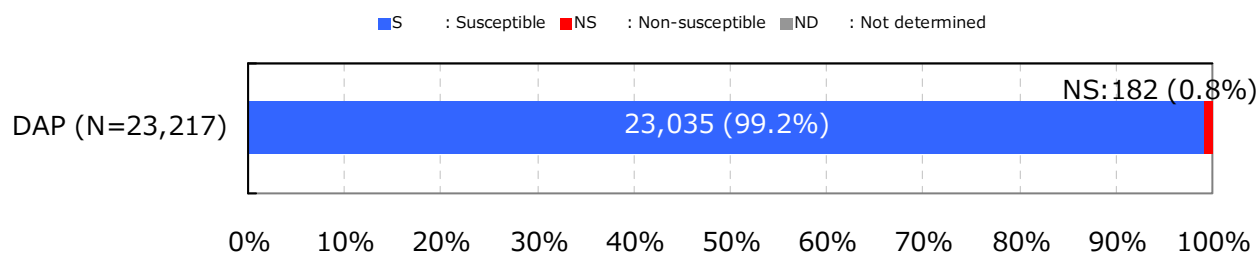
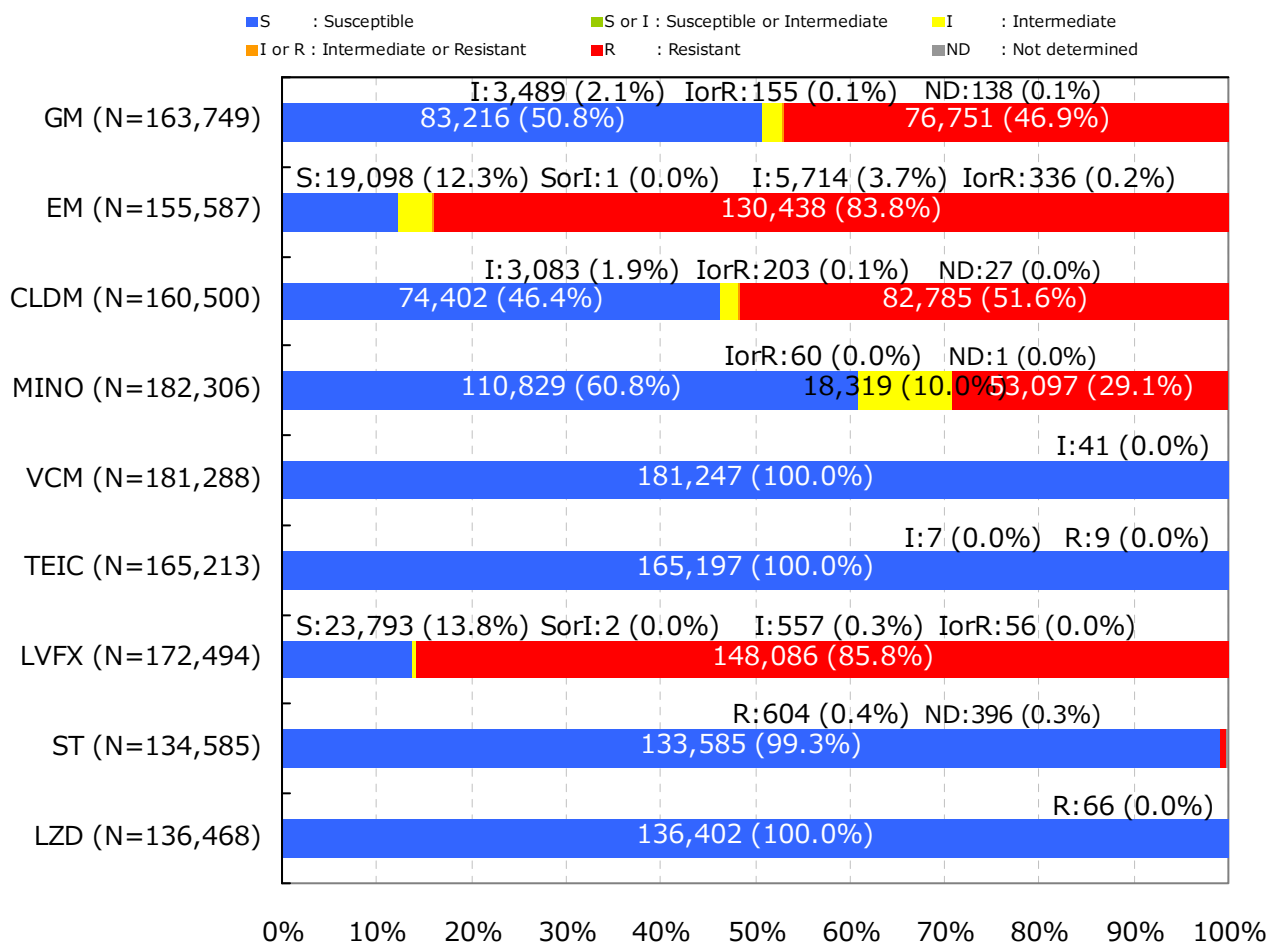
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *S. aureus* (MSSA) corresponds to Isolated Bacterial Codes 1304, 1305 and 1306; and also to Isolated Bacterial Code 1301 susceptible to Antimicrobial Code 1208 (Oxacillin).

7. Antimicrobial Susceptibility of Major Bacteria*

Staphylococcus aureus (MRSA) †



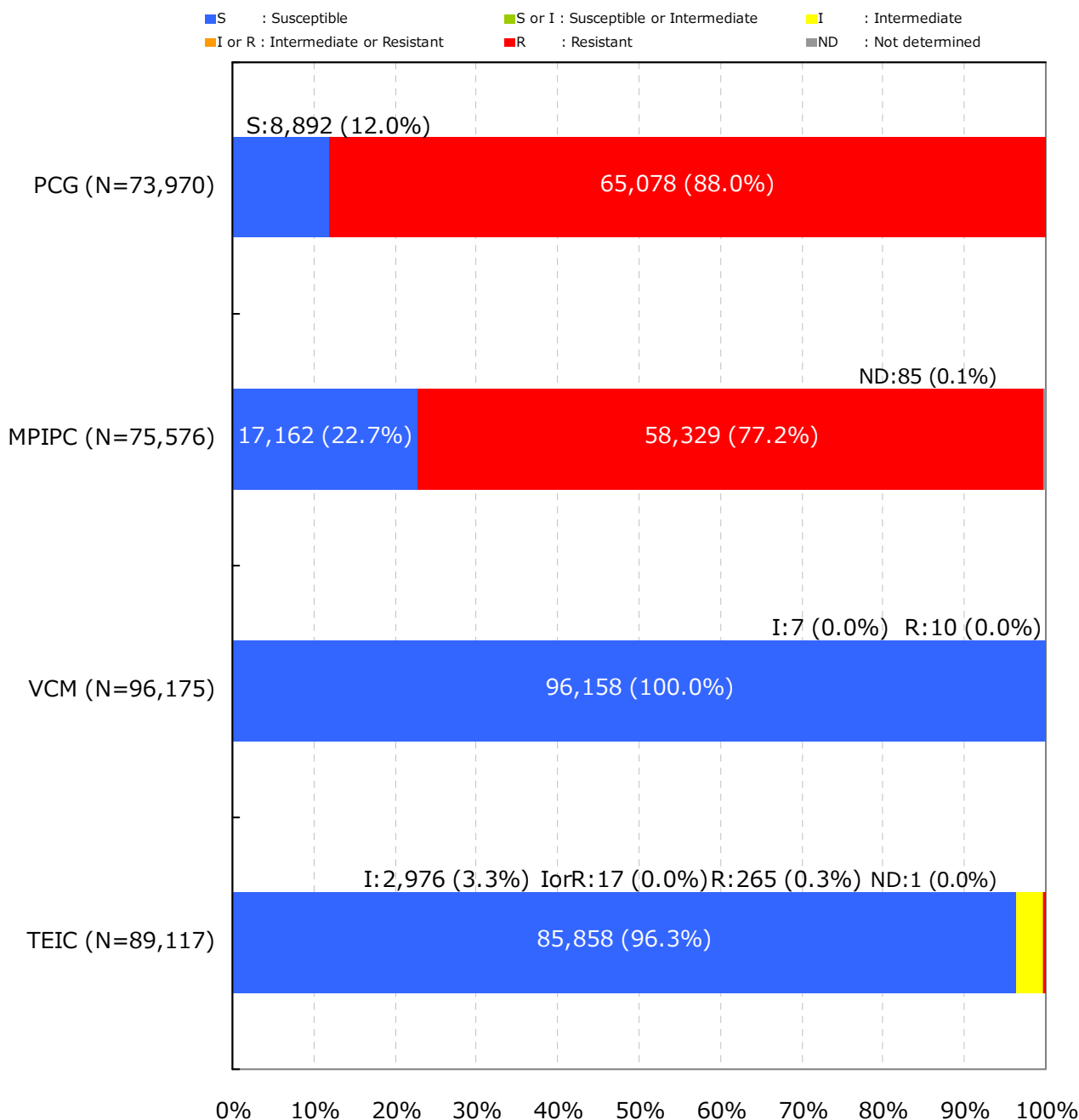
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *S. aureus* (MRSA) corresponds to Isolated Bacterial Codes 1303, and also to Isolated Bacterial Code 1301 Resistant to Antimicrobial Code 1208 (Oxacillin).

7. Antimicrobial Susceptibility of Major Bacteria*

Staphylococcus epidermidis †



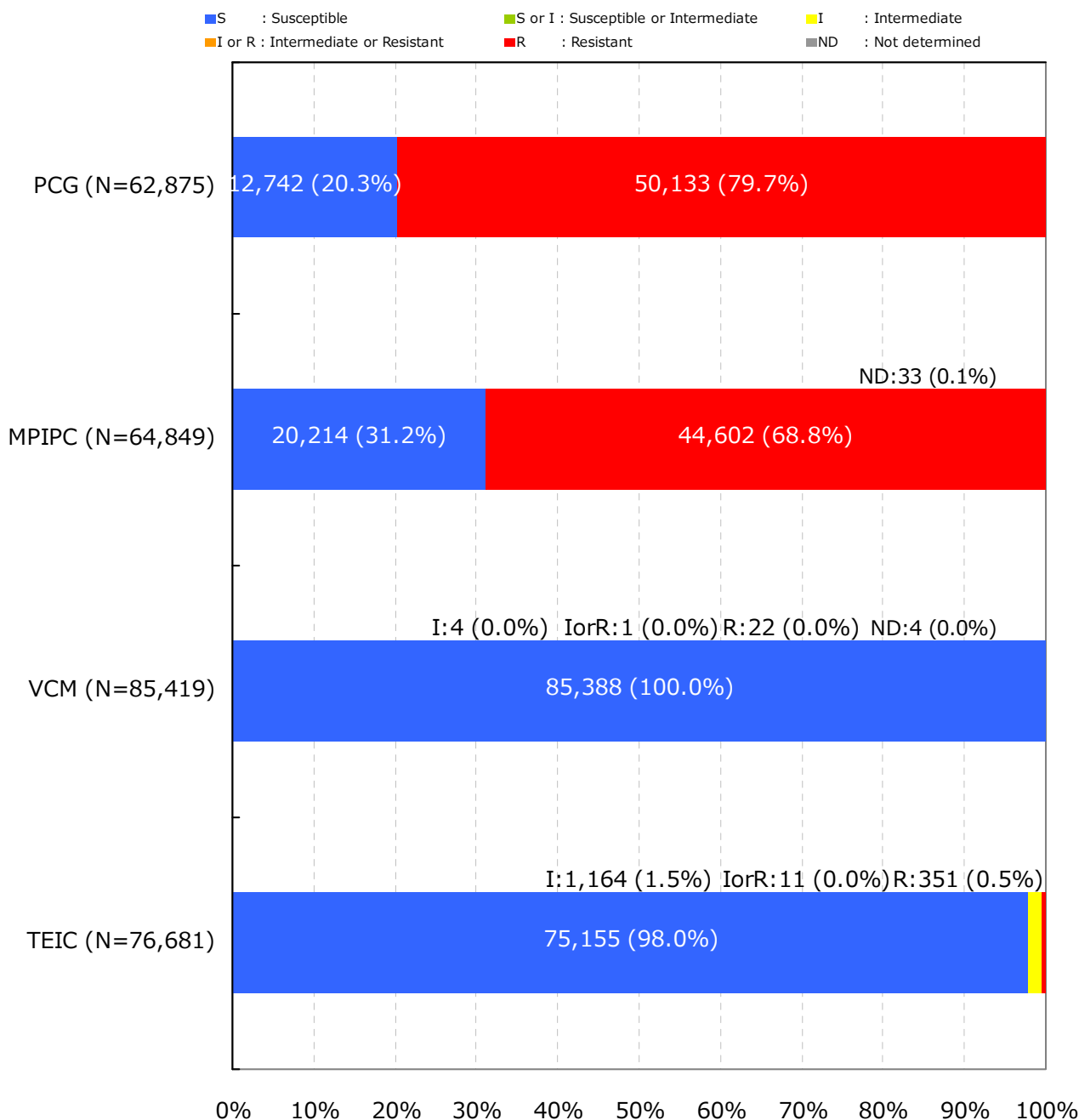
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *S. epidermidis* corresponds to Isolated Bacterial Code 1312.

7. Antimicrobial Susceptibility of Major Bacteria*

Coagulase-negative staphylococci (CNS) †



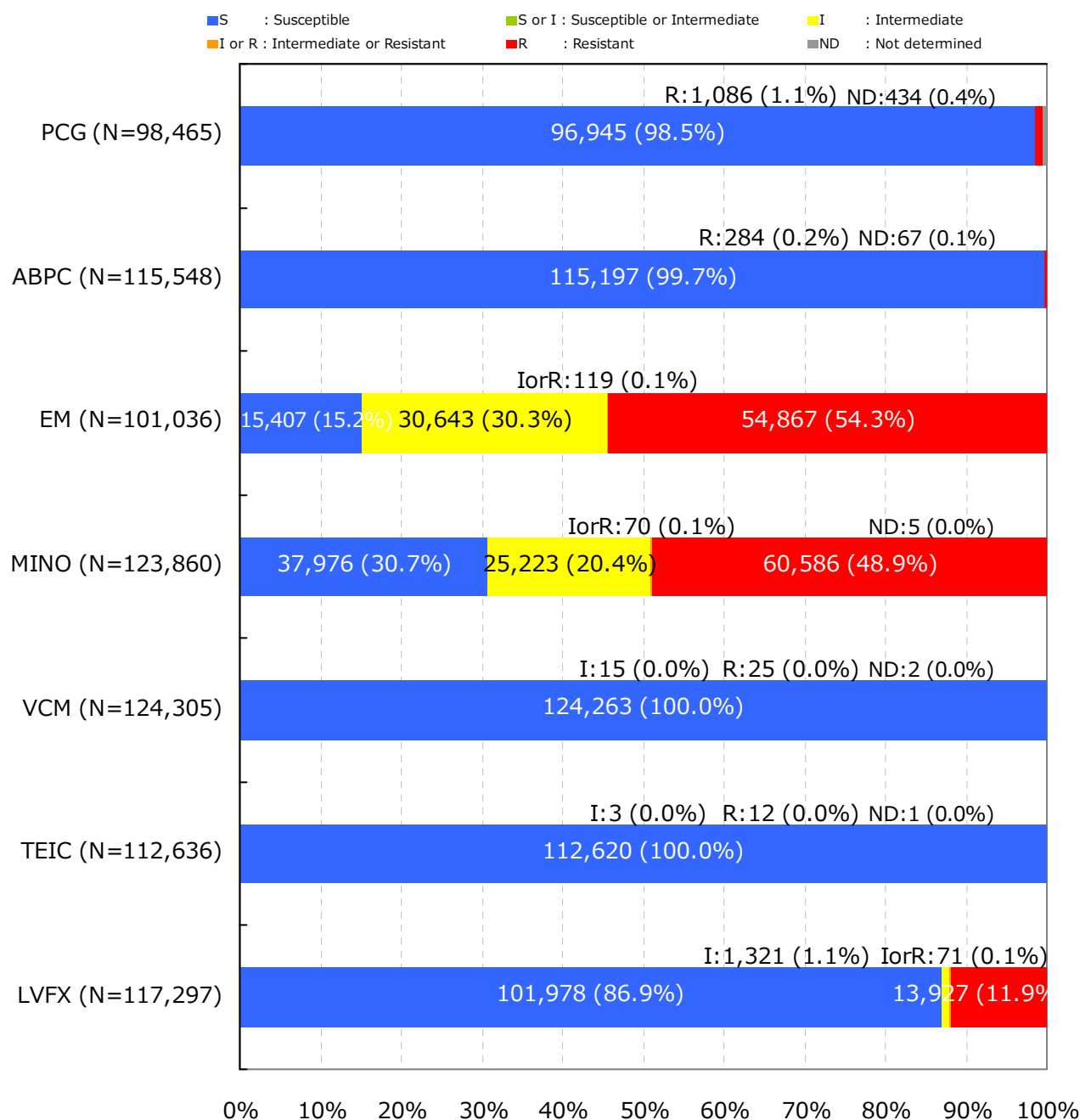
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† Coagulase-negative staphylococci (CNS) corresponds to Isolated Bacterial Codes 1311 and 1313-1325 (except Code 1312, *Staphylococcus epidermidis*)

7. Antimicrobial Susceptibility of Major Bacteria*

Enterococcus faecalis †



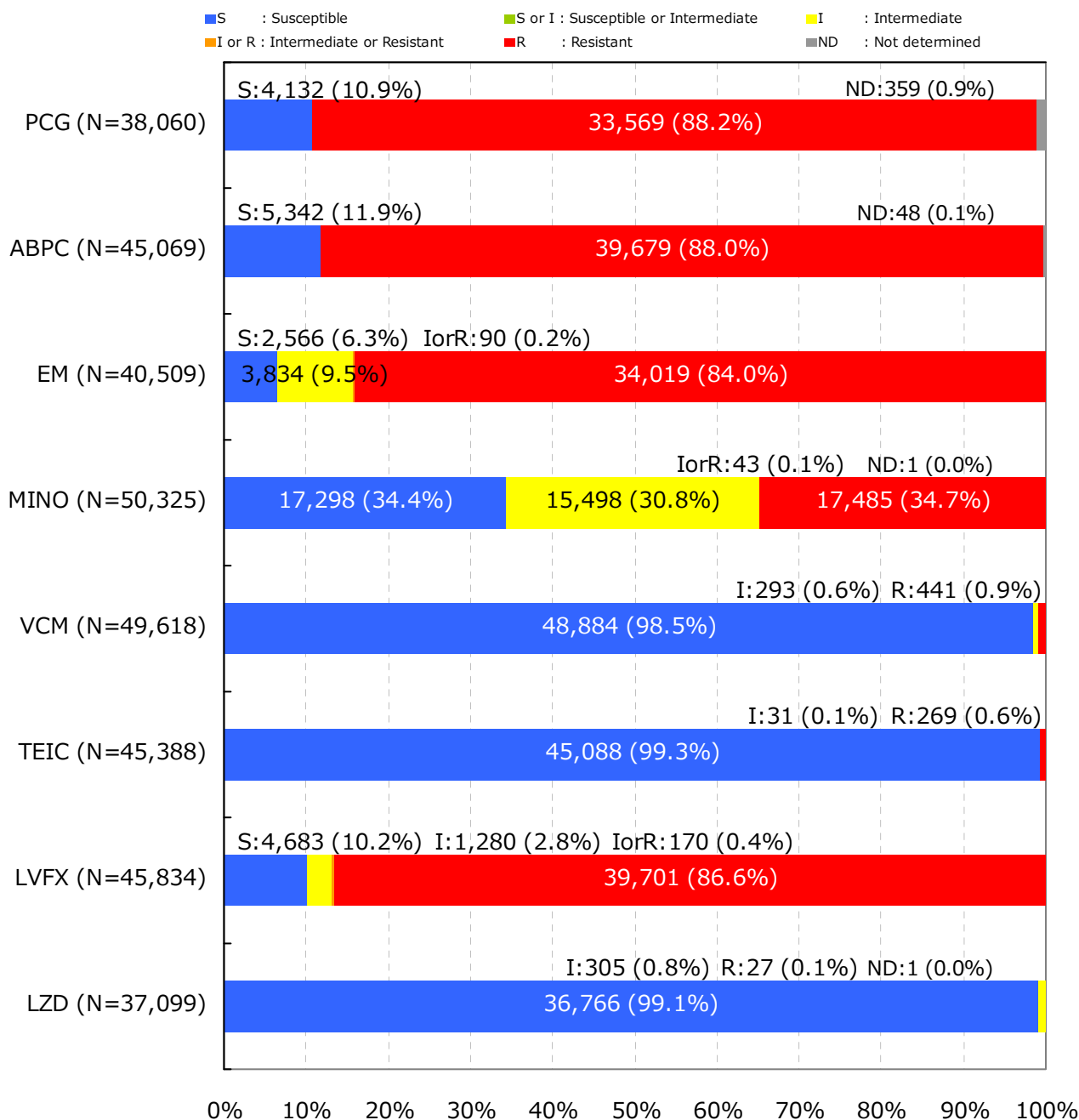
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *E. faecalis* corresponds to Isolated Bacterial Codes 1201 and 1202.

7. Antimicrobial Susceptibility of Major Bacteria*

Enterococcus faecium †



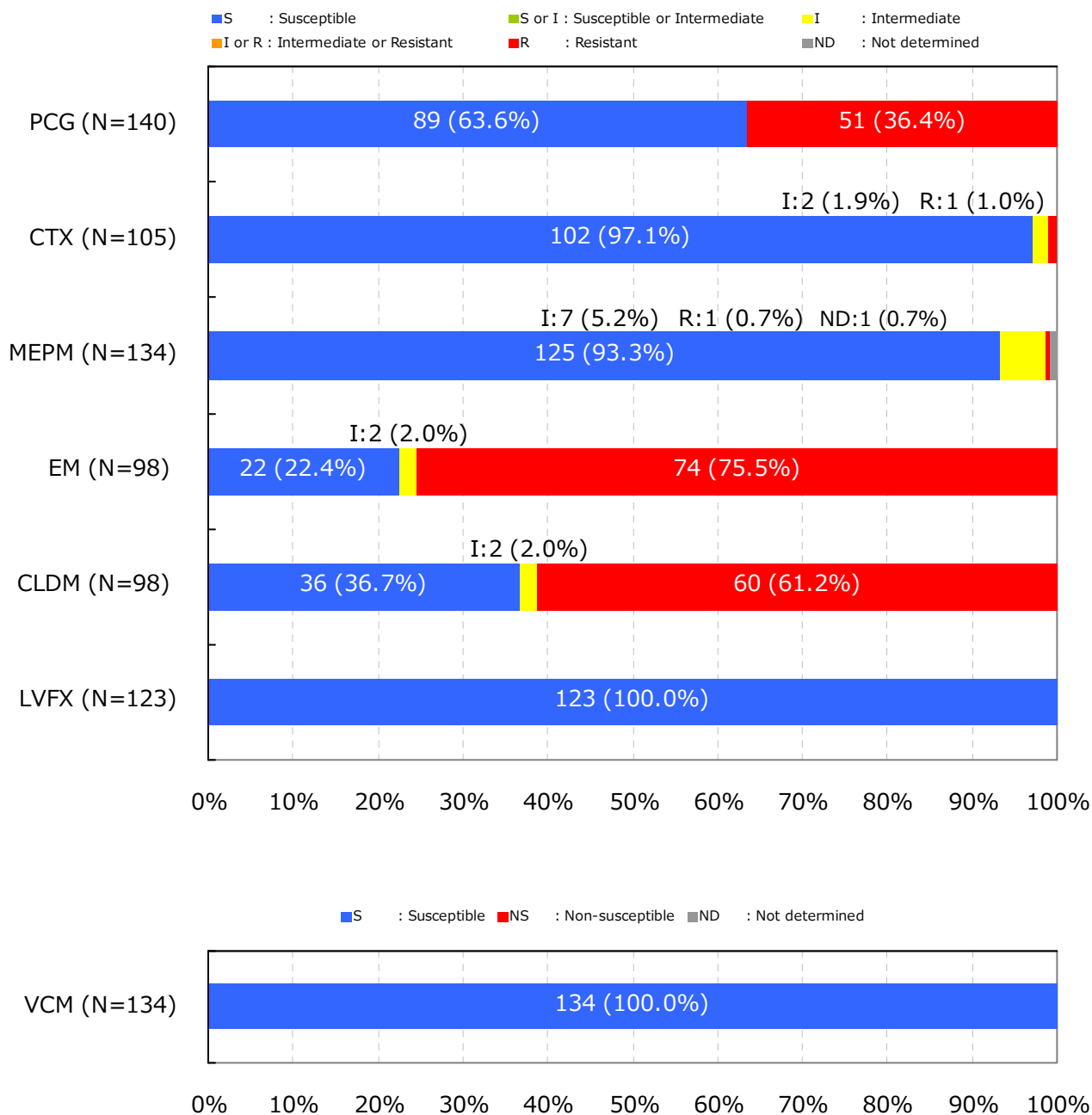
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *E. faecium* corresponds to Isolated Bacterial Codes 1205 and 1206.

7. Antimicrobial Susceptibility of Major Bacteria*

Streptococcus pneumoniae(Cerebrospinal Fluid) †



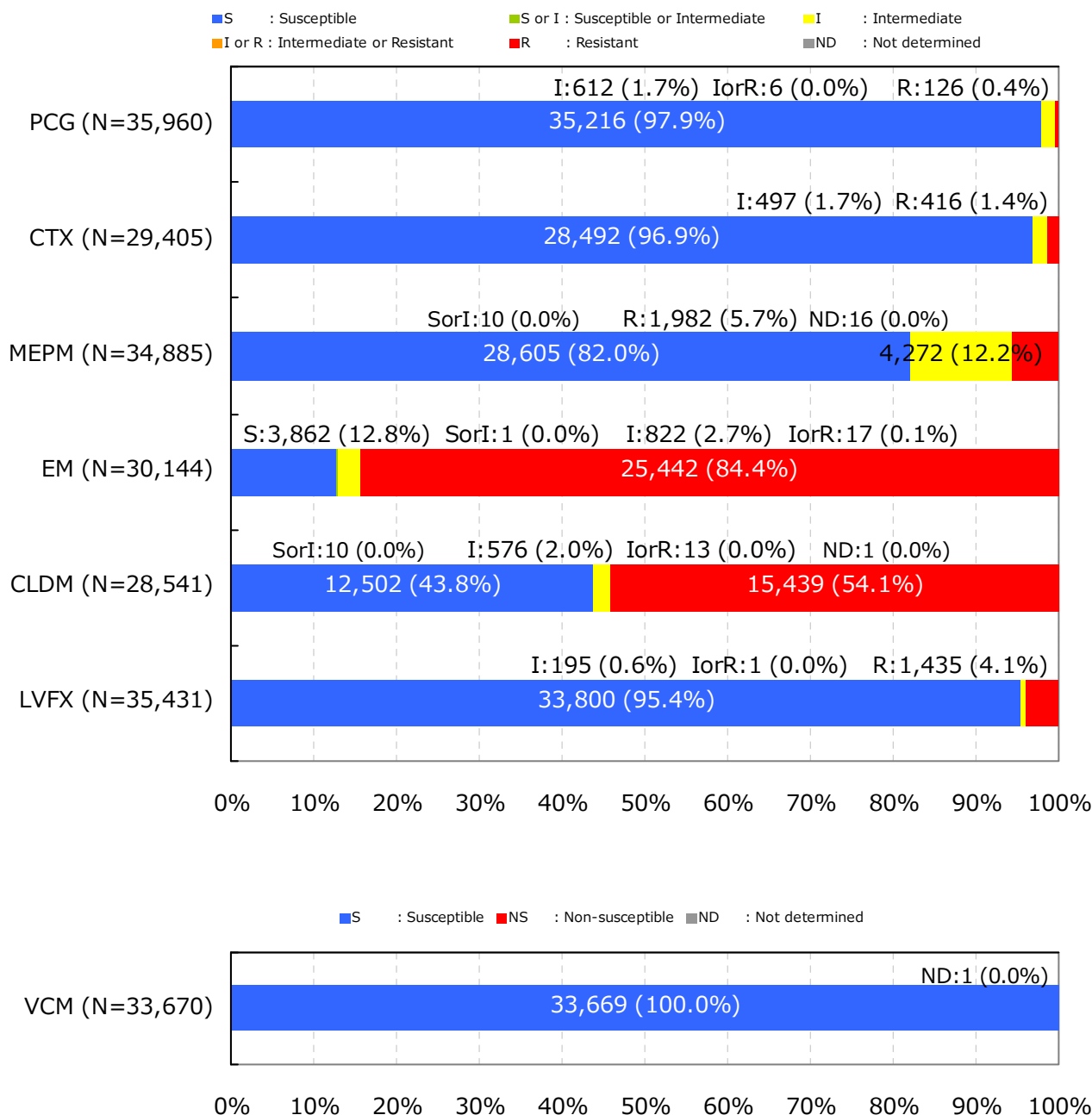
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *S. pneumoniae* corresponds to Isolated Bacterial Code 1131.

7. Antimicrobial Susceptibility of Major Bacteria*

Streptococcus pneumoniae(Other than Cerebrospinal Fluid) †



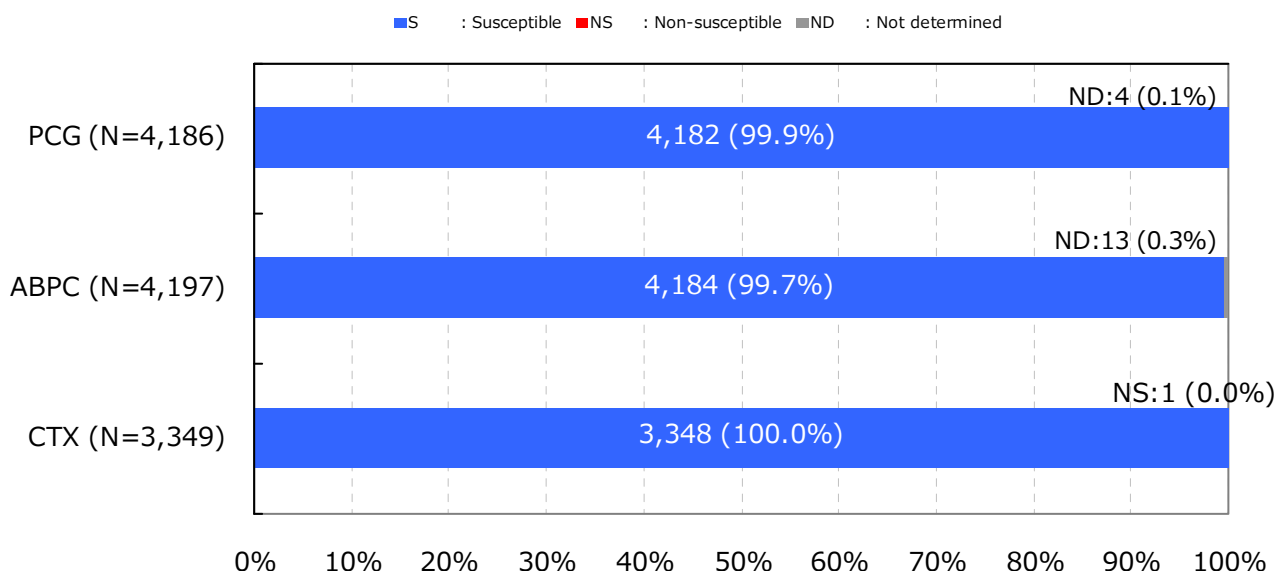
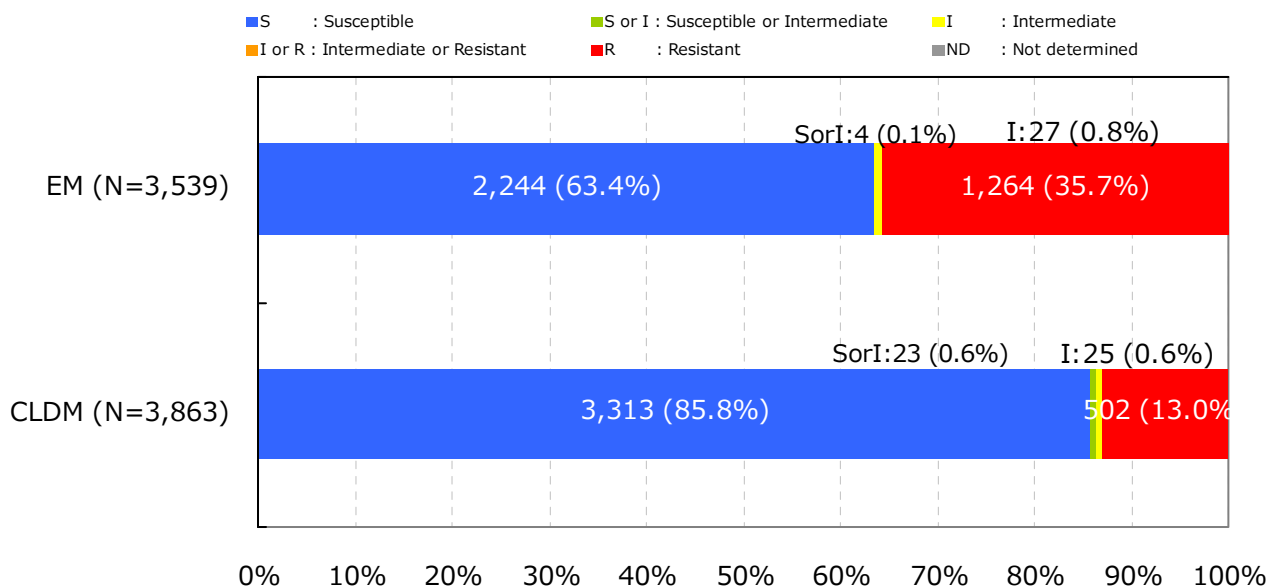
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *S. pneumoniae* corresponds to Isolated Bacterial Code 1131.

7. Antimicrobial Susceptibility of Major Bacteria*

Streptococcus pyogenes †



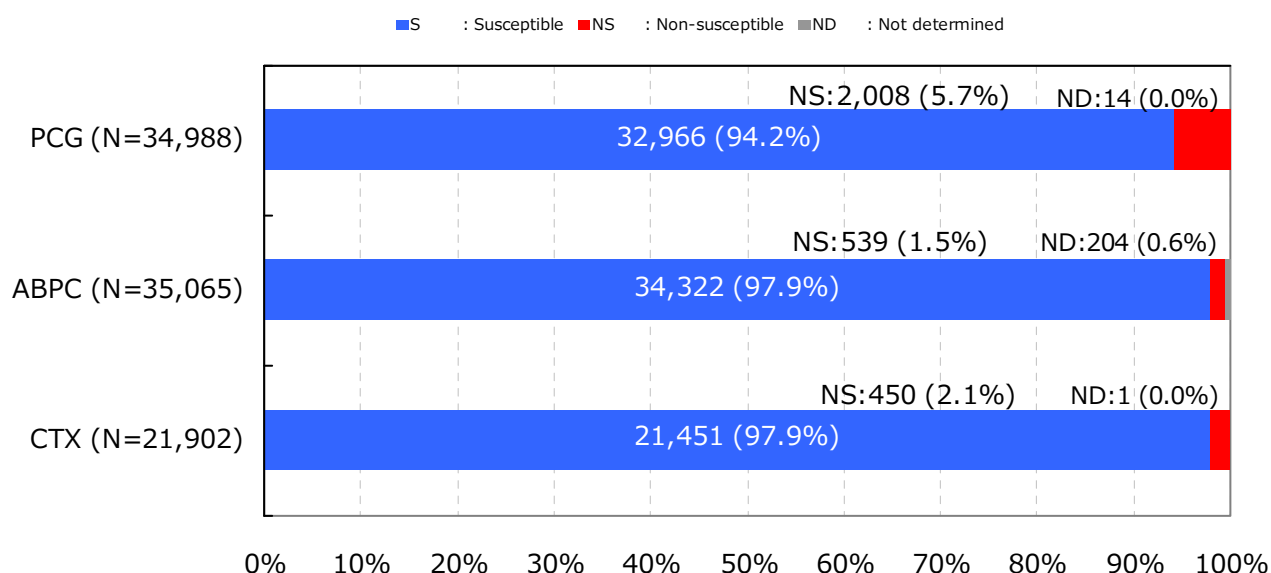
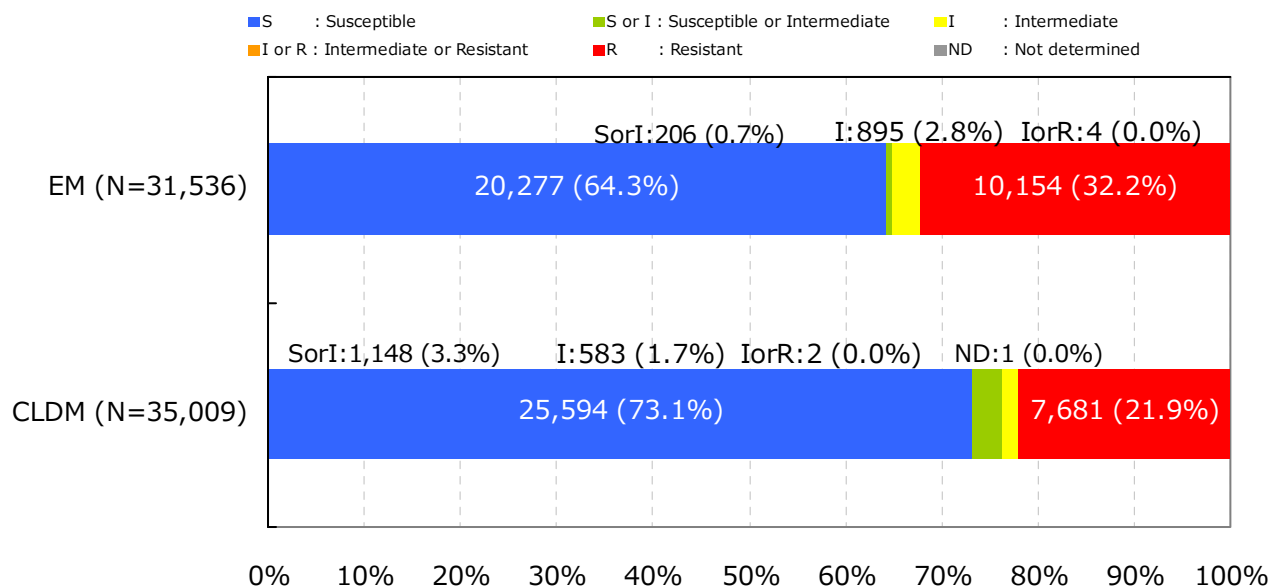
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *S. pyogenes* corresponds to Isolated Bacterial Code 1111.

7. Antimicrobial Susceptibility of Major Bacteria*

Streptococcus agalactiae †



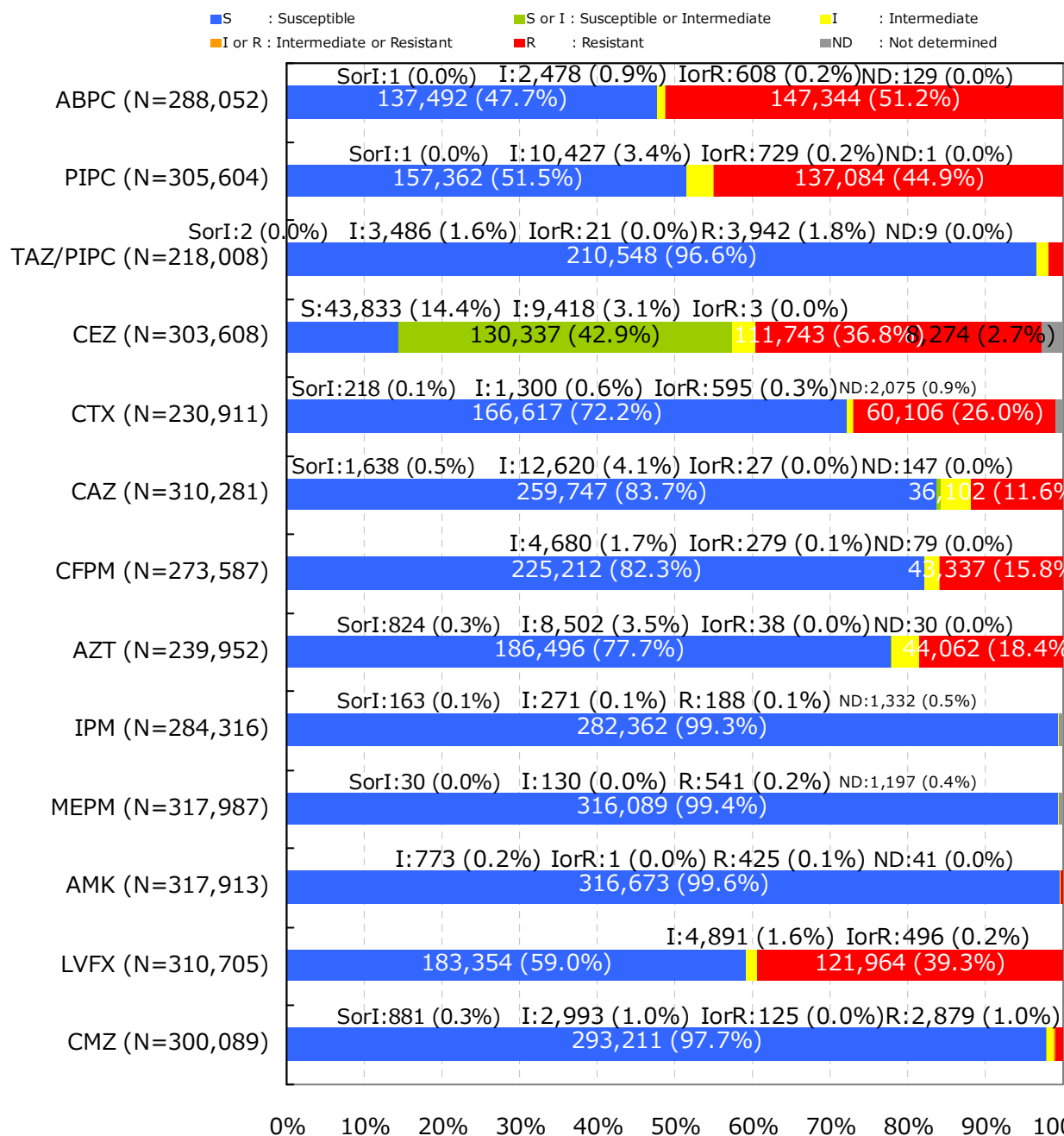
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *S. agalactiae* corresponds to Isolated Bacterial Code 1114.

7. Antimicrobial Susceptibility of Major Bacteria*

Escherichia coli †



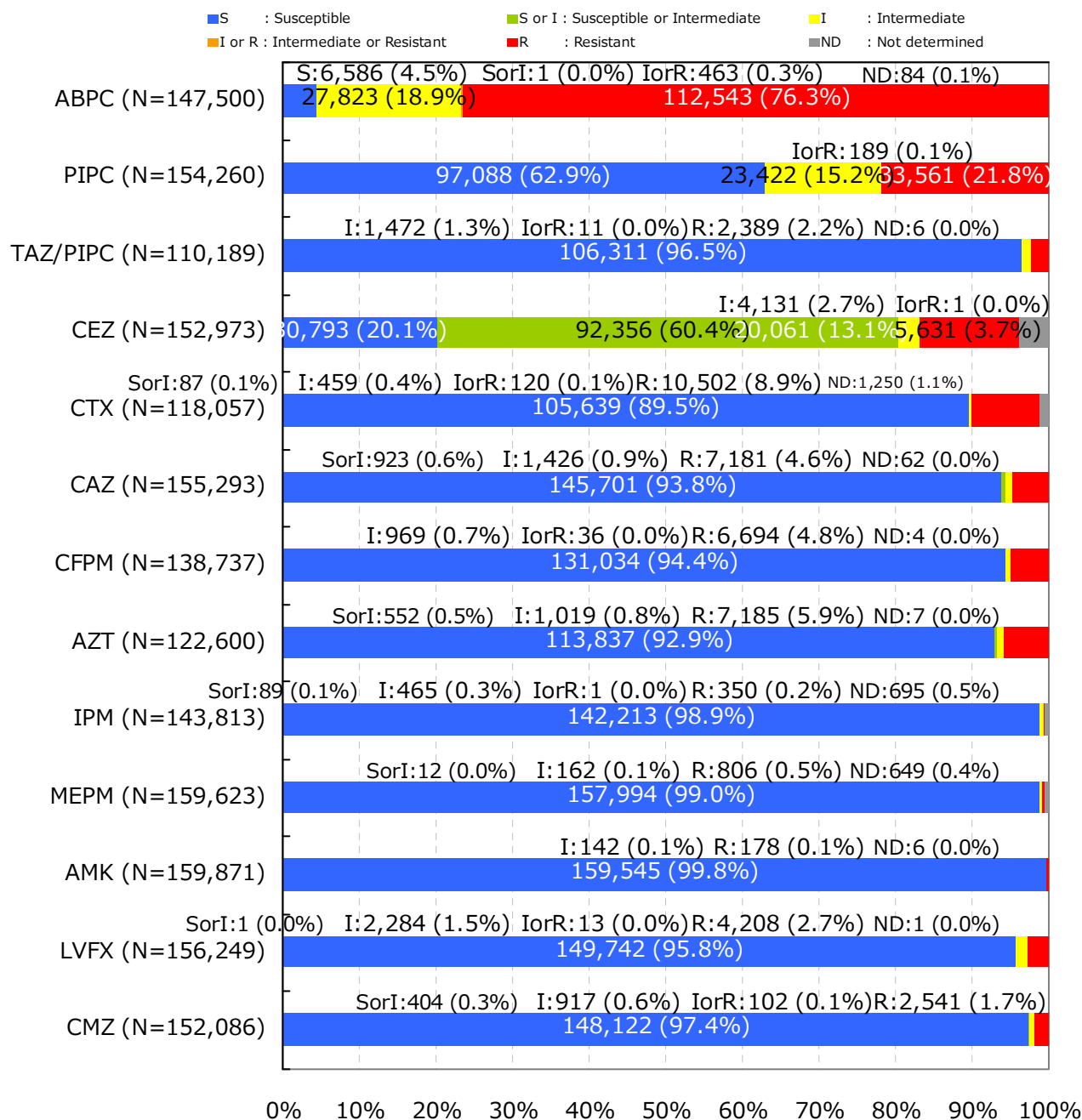
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *E. coli* corresponds to Isolated Bacterial Codes 2001-2007.

7. Antimicrobial Susceptibility of Major Bacteria*

Klebsiella pneumoniae †



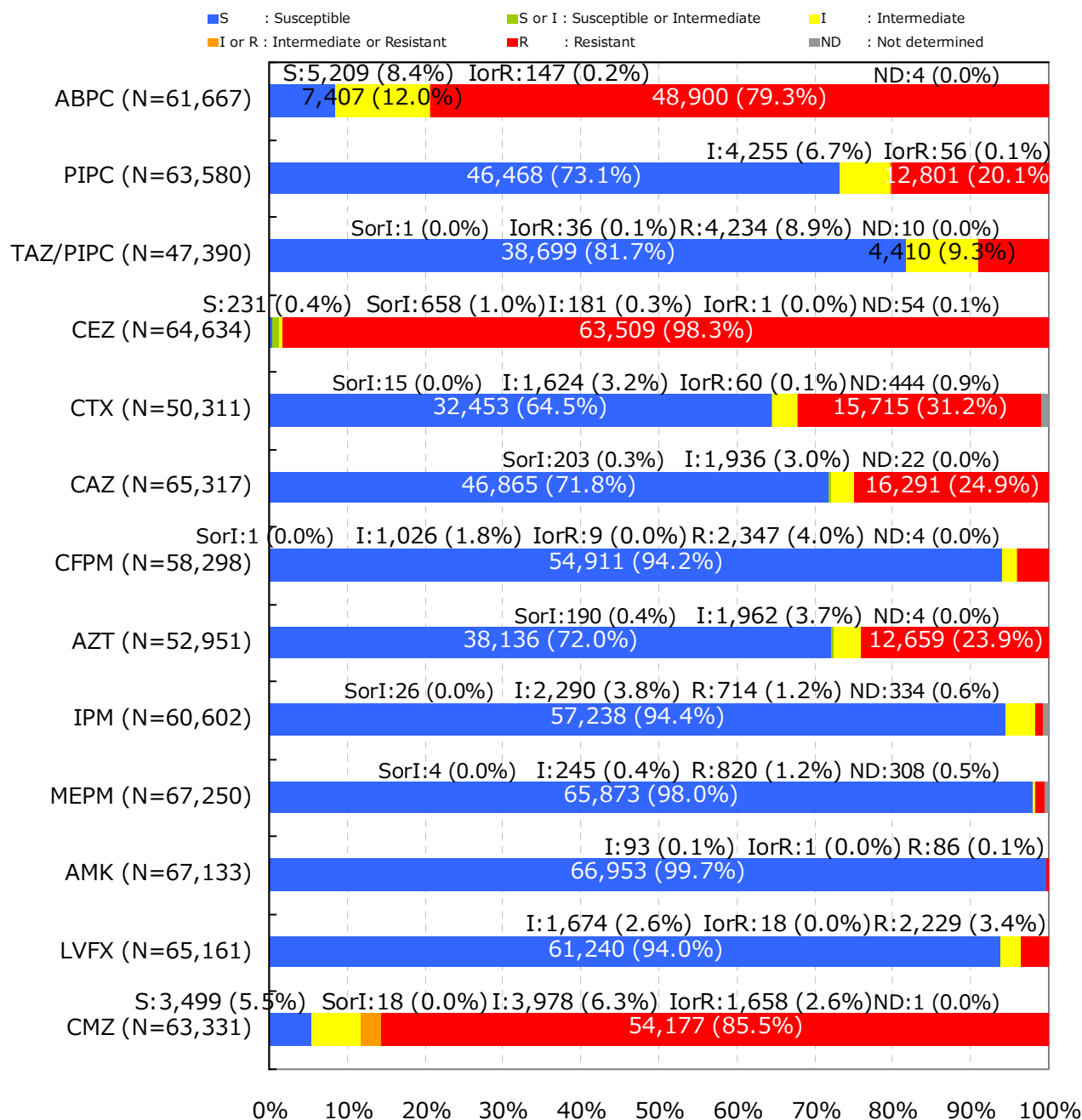
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *K. pneumoniae* corresponds to Isolated Bacterial Code 2351.

7. Antimicrobial Susceptibility of Major Bacteria*

Enterobacter cloacae †



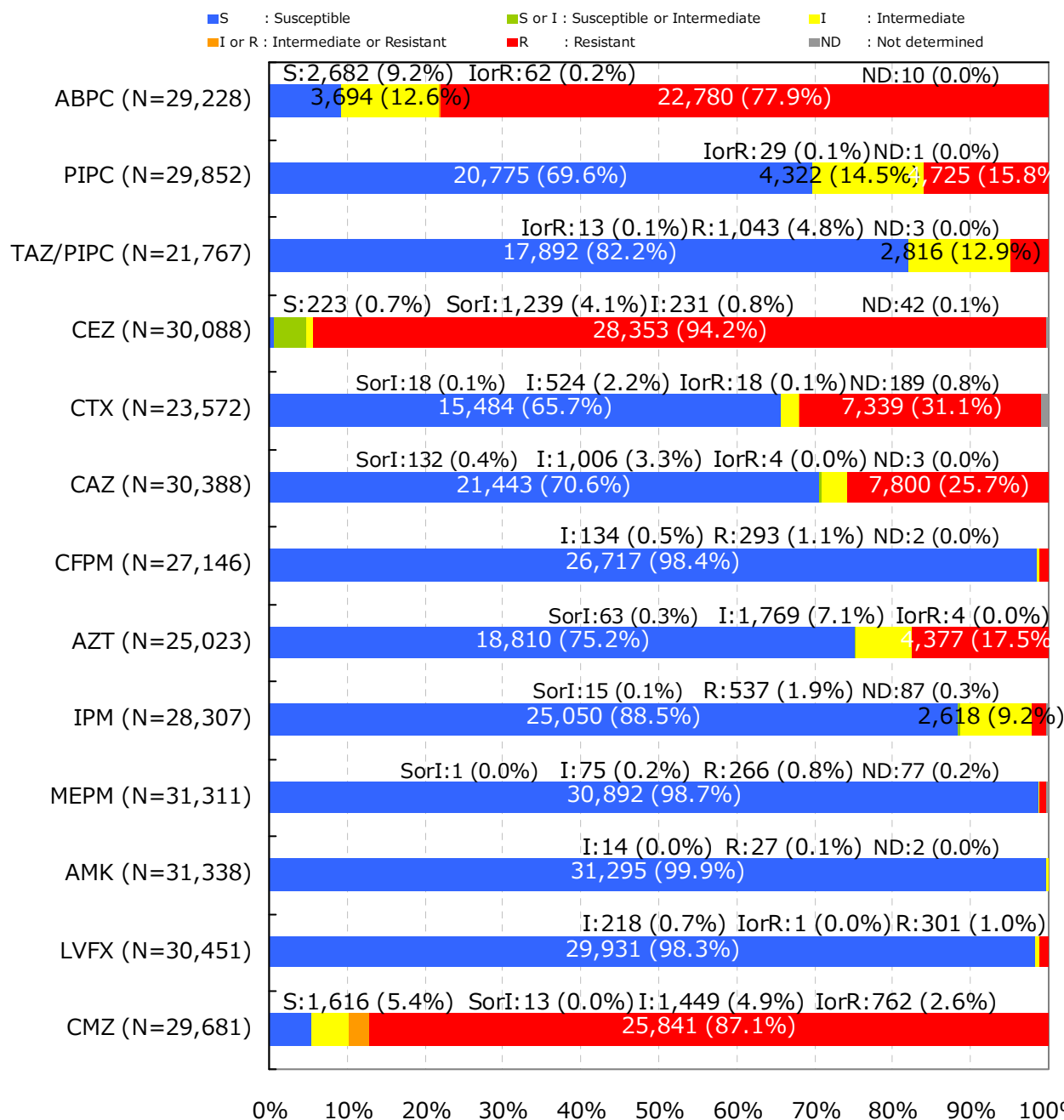
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *E. cloacae* corresponds to Isolated Bacterial Code 2151.

7. Antimicrobial Susceptibility of Major Bacteria*

Enterobacter aerogenes †



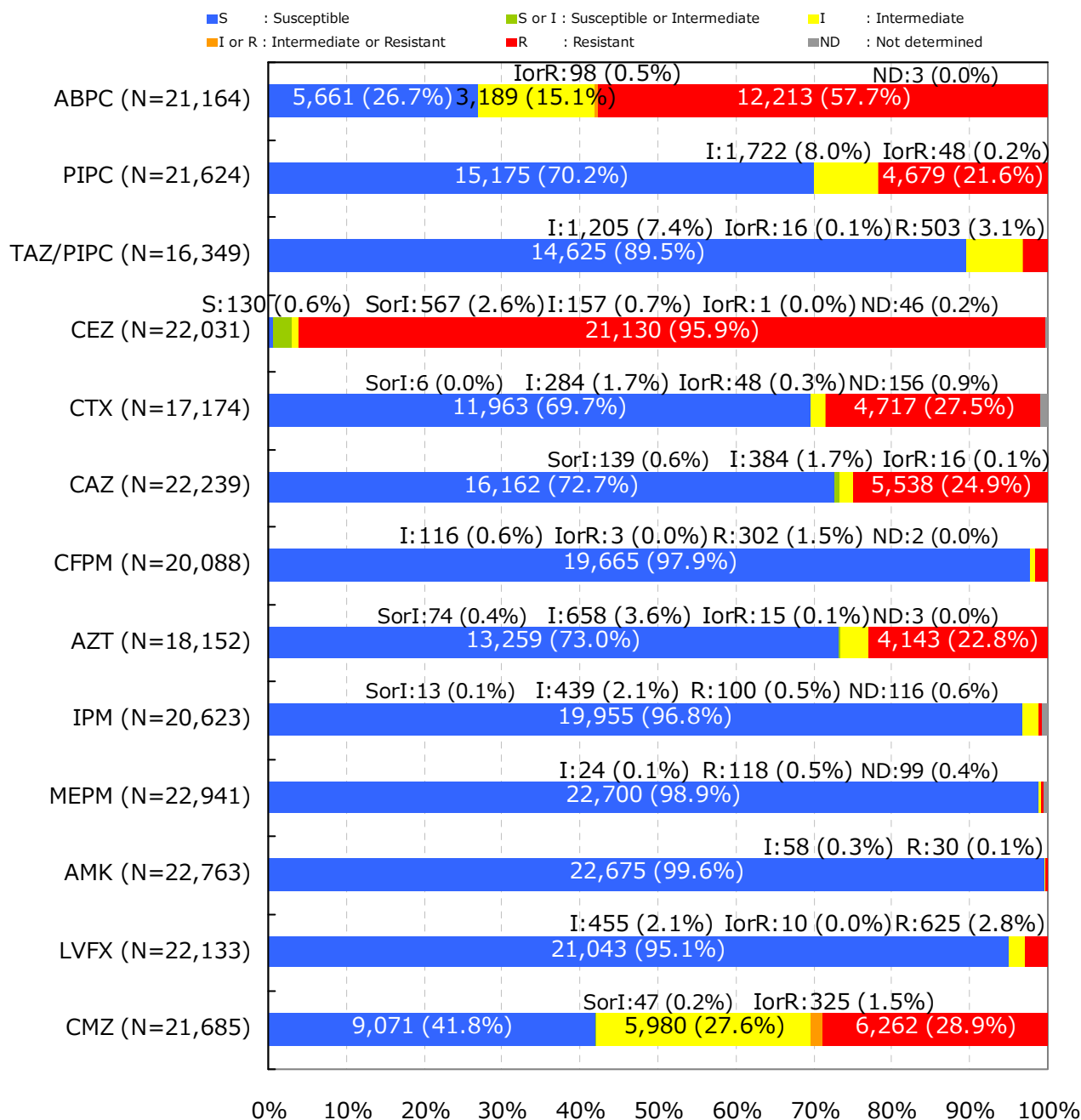
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *E. aerogenes* corresponds to Isolated Bacterial Code 2152.

7. Antimicrobial Susceptibility of Major Bacteria*

Citrobacter freundii †



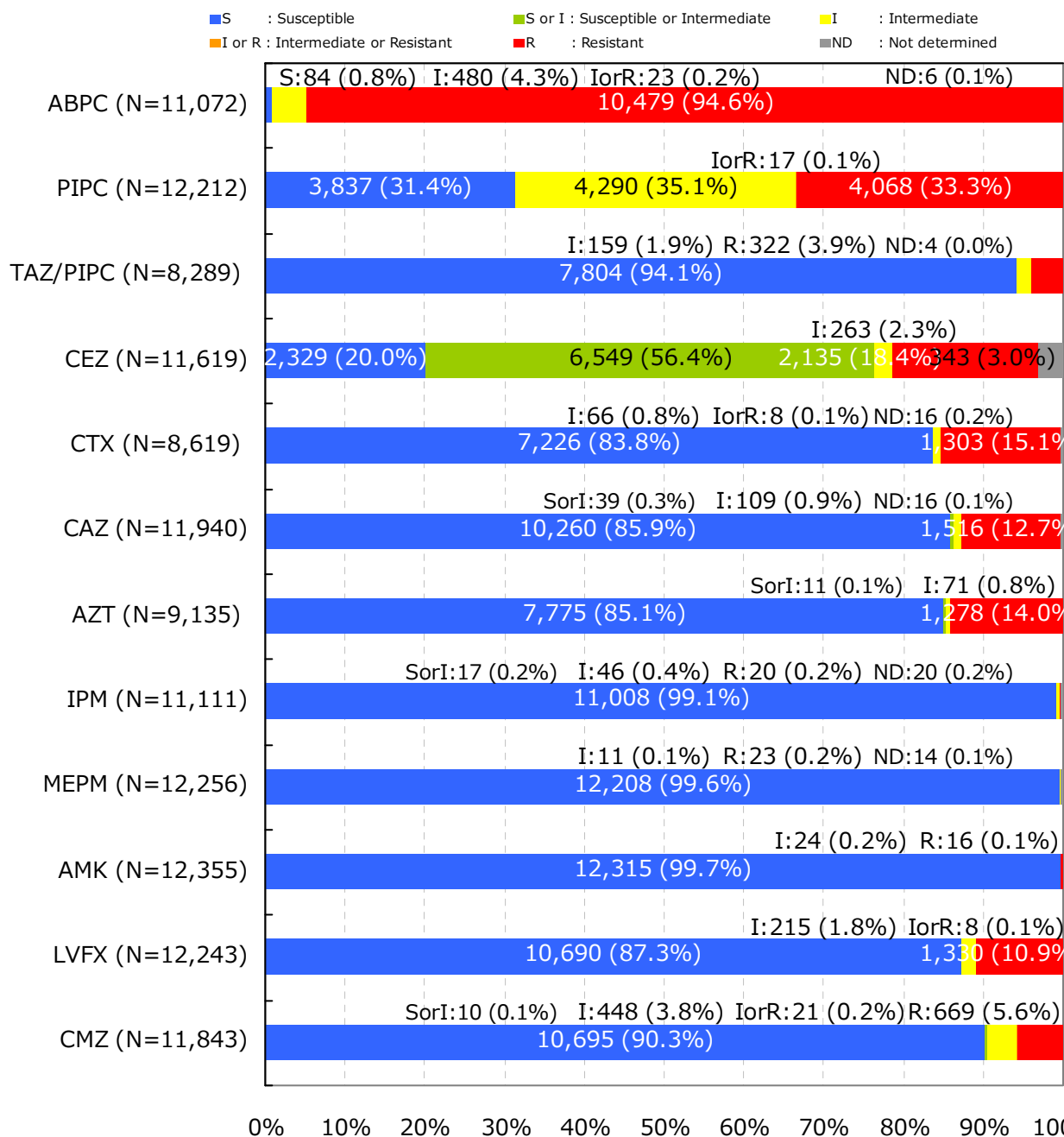
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *C. freundii* corresponds to Isolated Bacterial Code 2051.

7. Antimicrobial Susceptibility of Major Bacteria*

Citrobacter koseri †



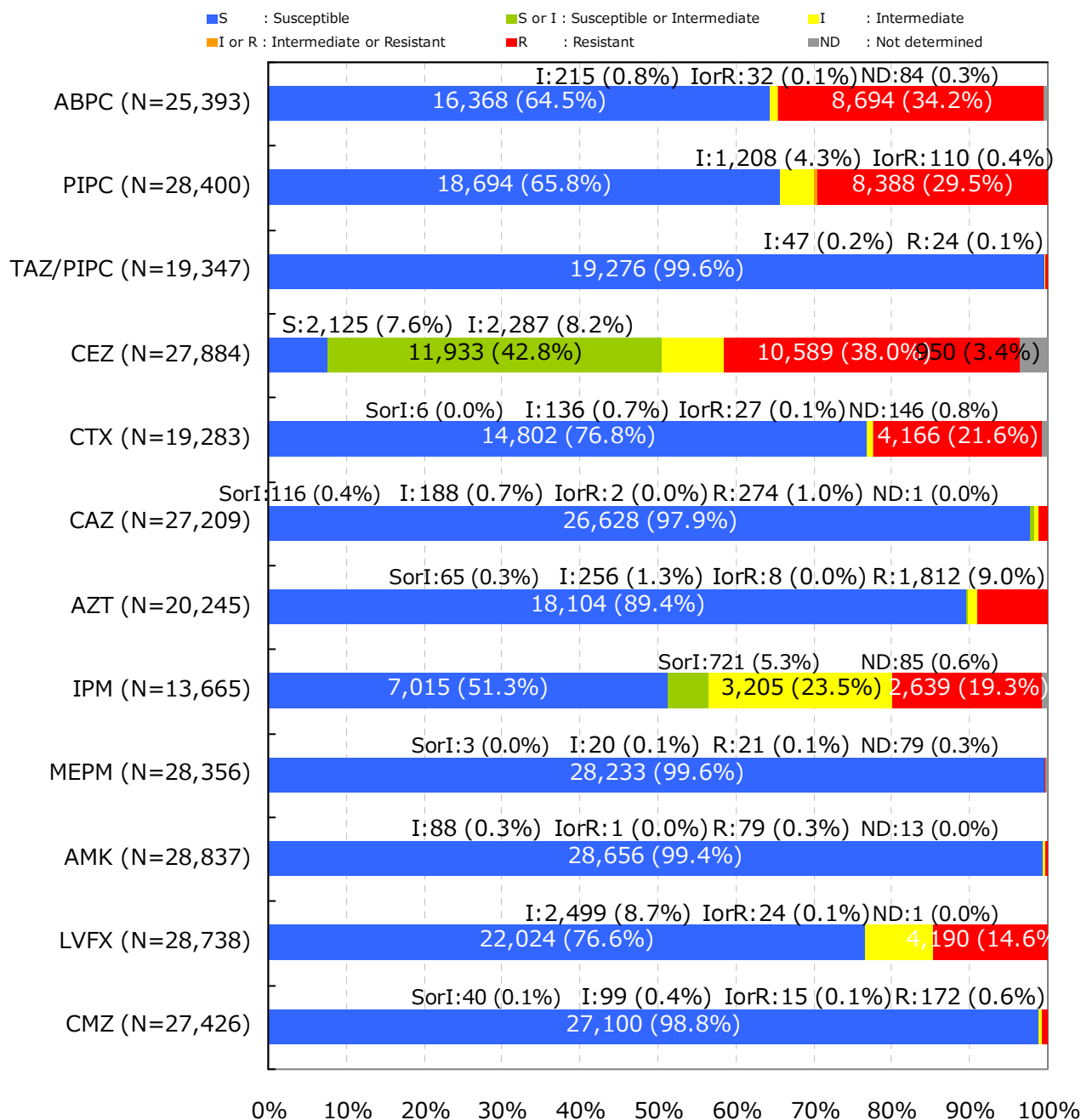
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *C. koseri* corresponds to Isolated Bacterial Code 2052.

7. Antimicrobial Susceptibility of Major Bacteria*

Proteus mirabilis †



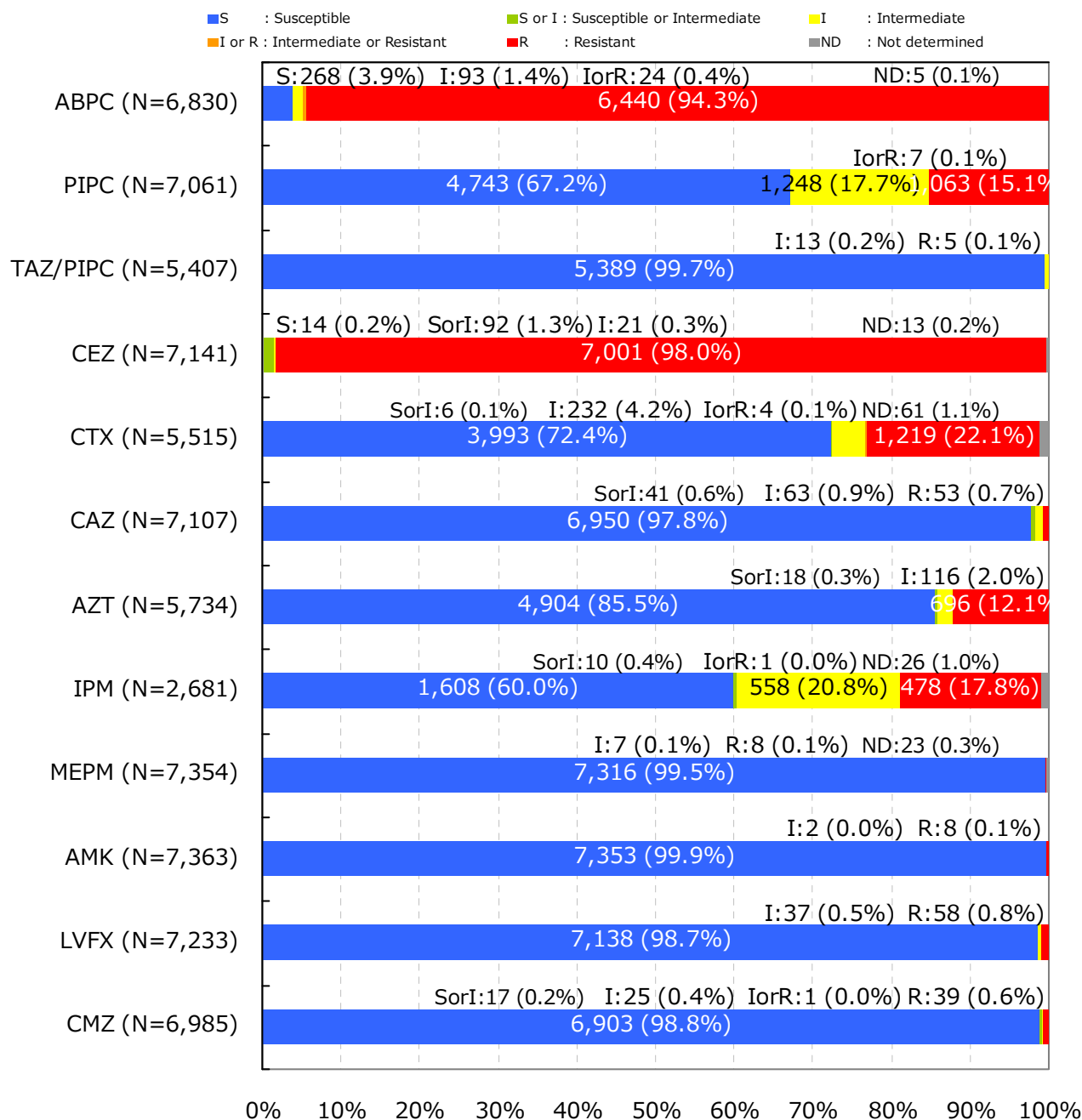
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *P. mirabilis* corresponds to Isolated Bacterial Code 2201.

7. Antimicrobial Susceptibility of Major Bacteria*

Proteus vulgaris †



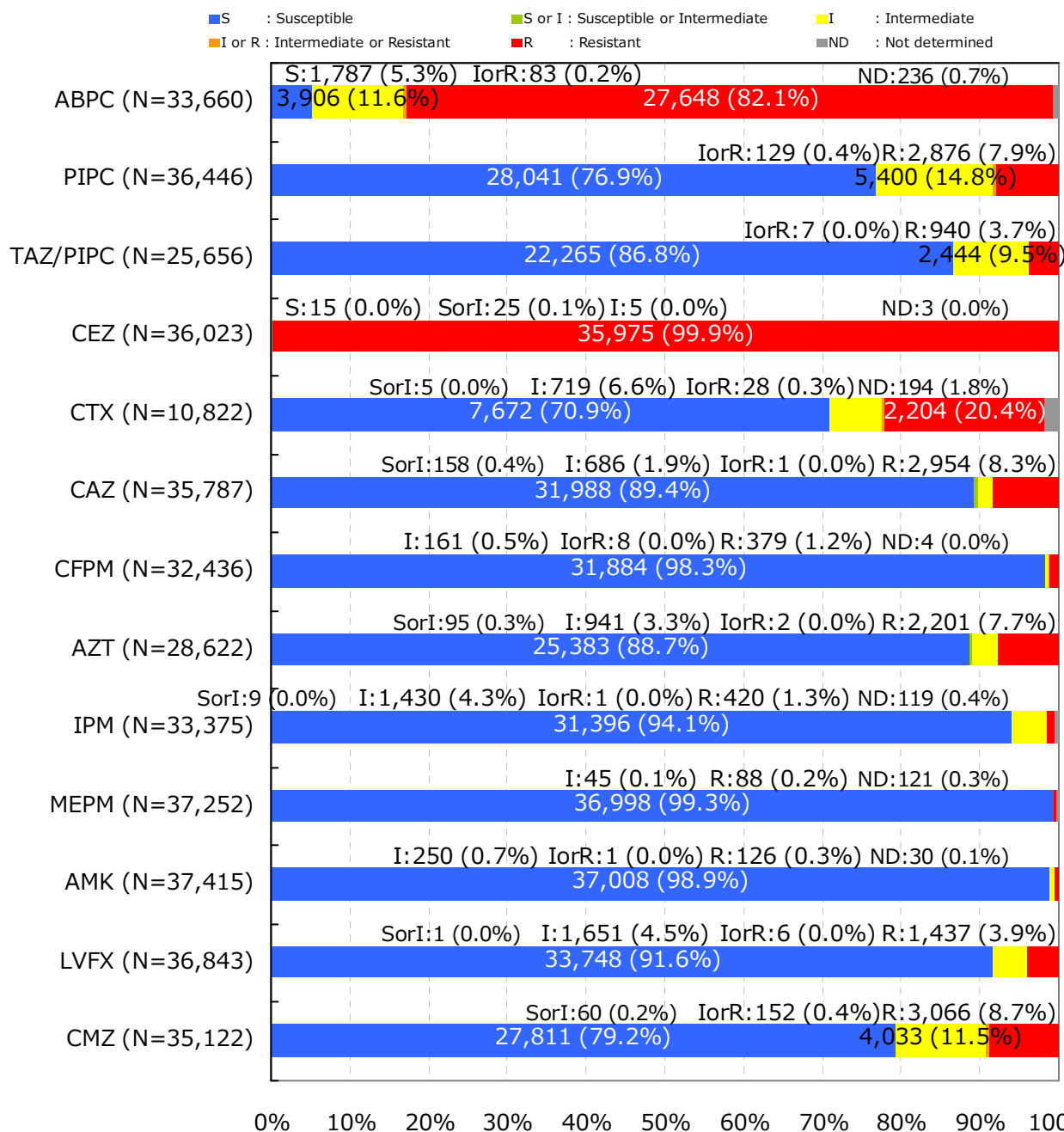
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *P. vulgaris* corresponds to Isolated Bacterial Code 2202.

7. Antimicrobial Susceptibility of Major Bacteria*

Serratia marcescens †



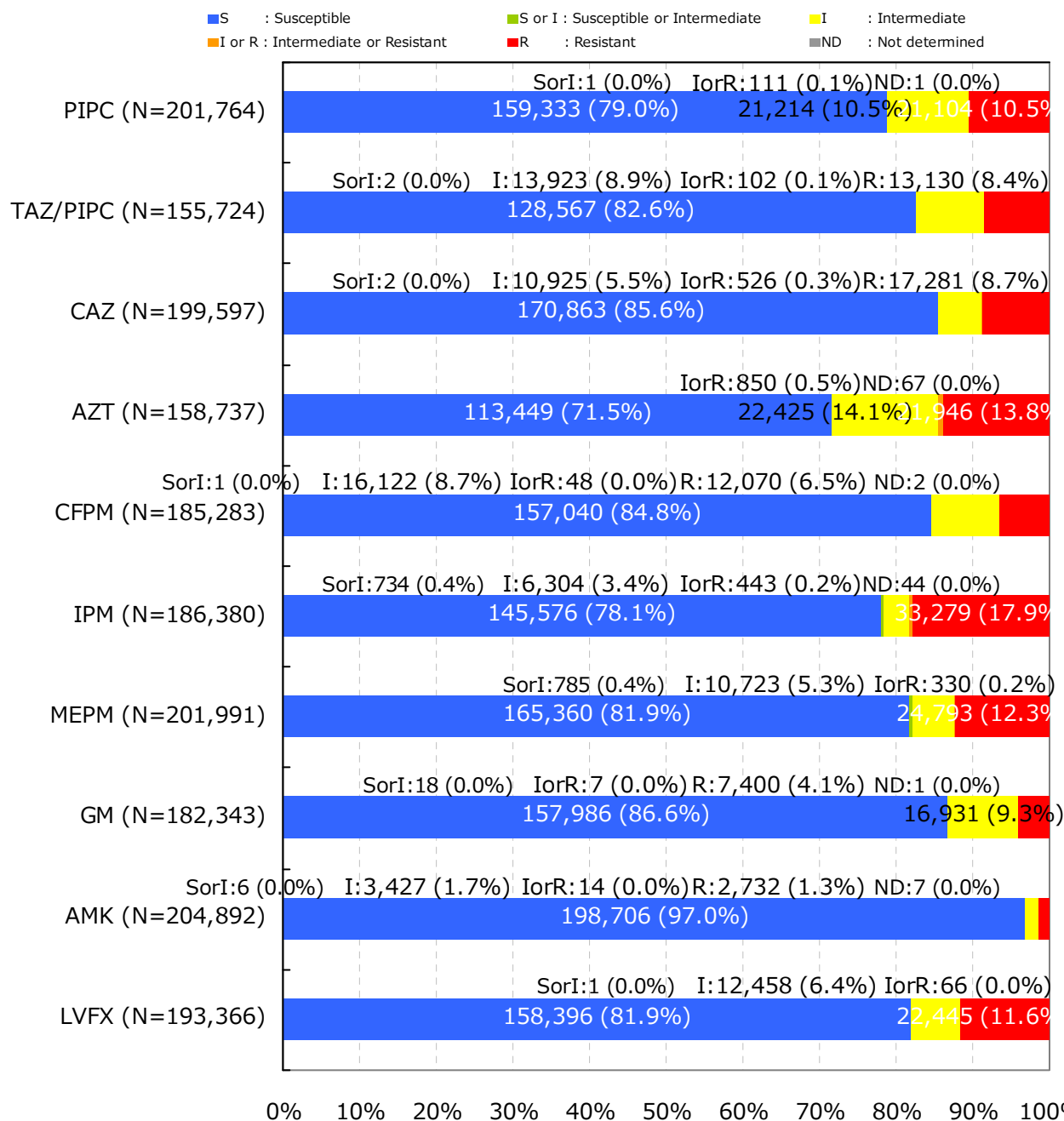
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *S. marcescens* corresponds to Isolated Bacterial Code 2101.

7. Antimicrobial Susceptibility of Major Bacteria*

Pseudomonas aeruginosa †



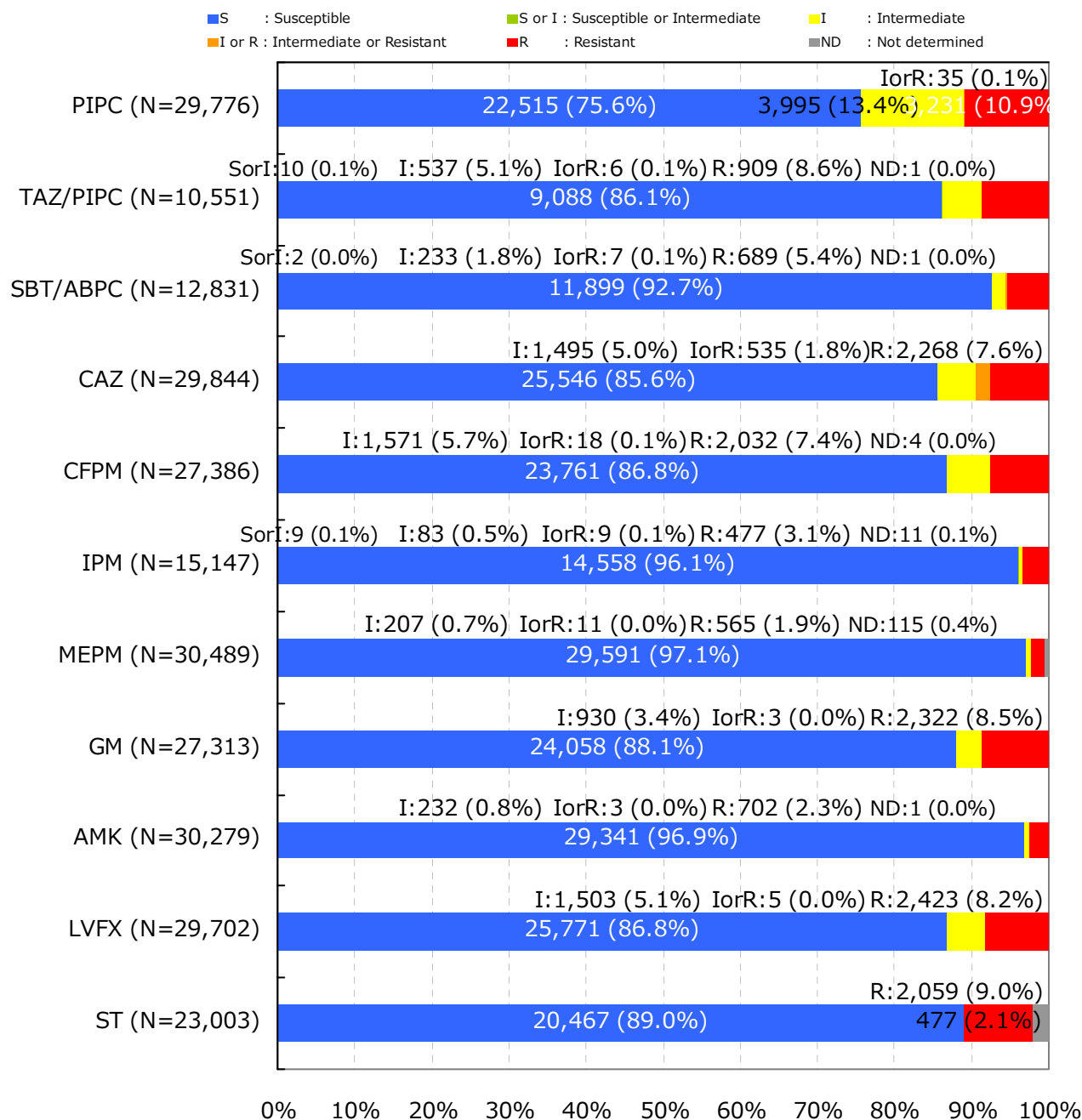
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *P. aeruginosa* corresponds to Isolated Bacterial Code 4001.

7. Antimicrobial Susceptibility of Major Bacteria*

Acinetobacter spp. †



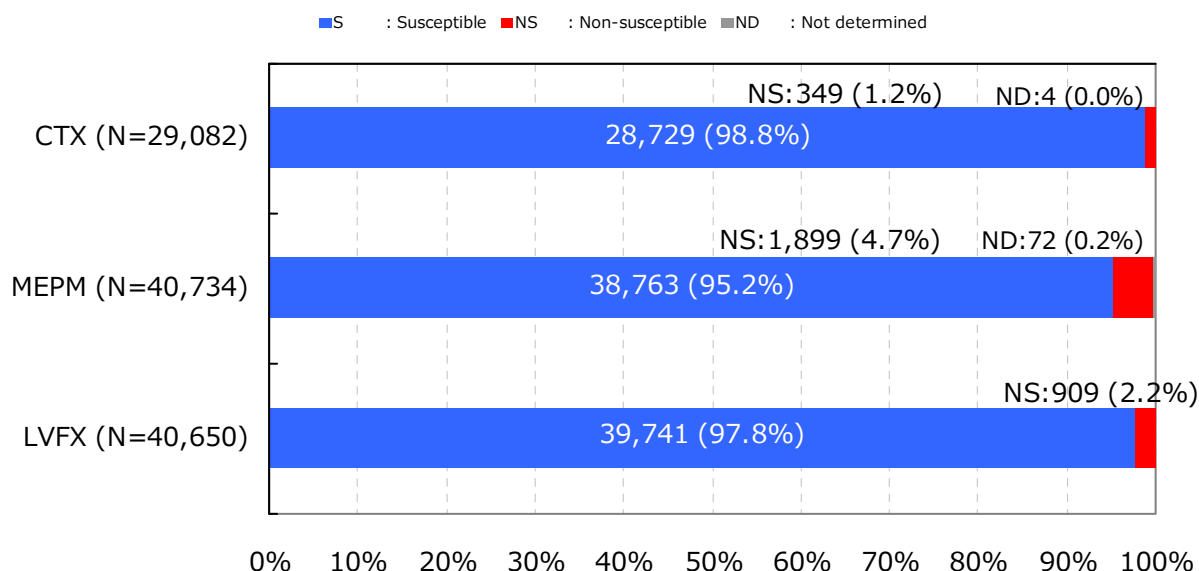
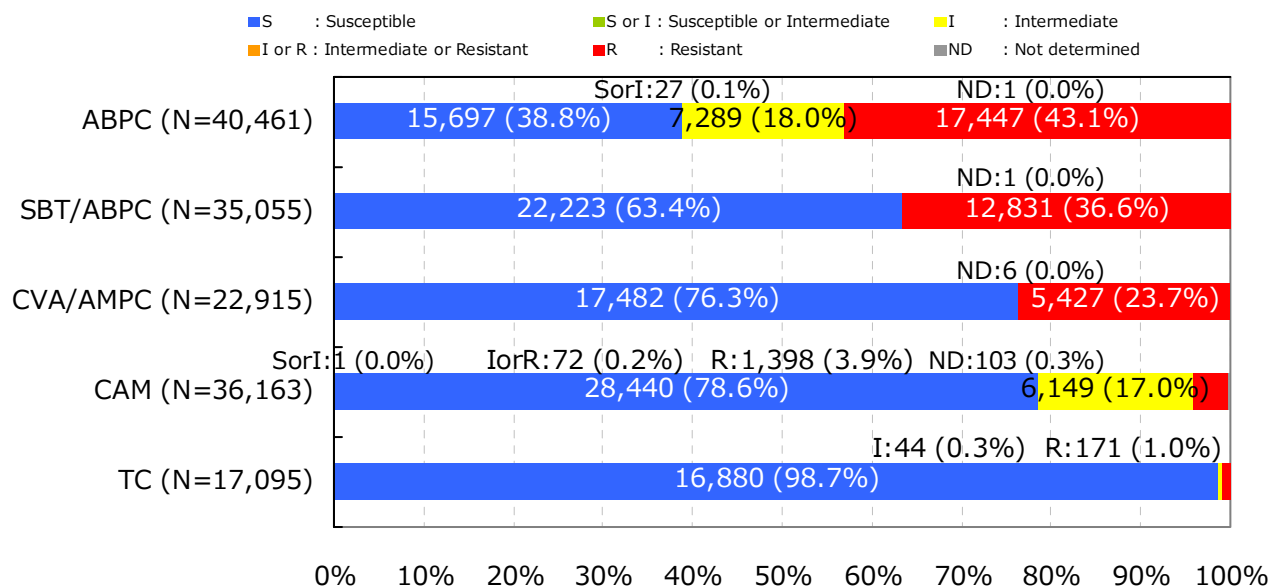
Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *Acinetobacter* spp. correspond to Isolated Bacterial Codes 4400-4403.

7. Antimicrobial Susceptibility of Major Bacteria*

Haemophilus influenzae †



Inpatient specimens with MIC values reported by either the broth microdilution method or Etest are counted. Duplicates based on the result of Antimicrobial Susceptibility Testing are not recounted within 30 days (See Appendix).

* Results are interpreted according to the CLSI2012 (M100-S22) criteria.

† *H. influenzae* corresponds to Isolated Bacterial Codes 3201, 3202, 3203, 3205, 3208, 3211, 3214, 3217, 3220 and 3223.

【Appendix 1 Interpretive Criteria for Specific AMR Bacteria based on the Broth Microdilution Method】

Isolated Bacterium	Comments*	MIC Values by Broth Microdilution Method	Isolated Bacterial Code Ver.4.0
Methicillin-Resistant <i>Staphylococcus aureus</i> (MRSA)	<i>S. aureus</i> resistant to oxacillin by the broth microdilution method or methicillin-resistant <i>S. aureus</i> detected on selective media	oxacillin $\geq 4 \mu\text{g/mL}$	1301, 1303
Vancomycin-Resistant <i>Staphylococcus aureus</i> (VRSA)	<i>S. aureus</i> resistant to vancomycin	vancomycin $\geq 16 \mu\text{g/mL}$	1301,1303–1306
Vancomycin-Resistant Enterococci (VRE)	<i>Enterococcus</i> spp. resistant† to vancomycin by the broth microdilution method or vancomycin-resistant enterococci detected on selective media Note: Excluding species that were not identified within <i>Enterococcus</i> sp.	vancomycin $\geq 16 \mu\text{g/mL}^\dagger$	1201,1202,1205, 1206,1209,1210, 1213–1217
Penicillin-Resistant <i>Streptococcus pneumoniae</i> (PRSP)	<i>S. pneumoniae</i> resistant† to penicillin G	penicillin G $\geq 0.125 \mu\text{g/mL}^\dagger$	1131
Multidrug-Resistant <i>Pseudomonas aeruginosa</i> (MDRP)	<i>P. aeruginosa</i> satisfying all of the following criteria: 1. Resistant† to carbapenems (imipenem and/or meropenem) 2. Resistant† to aminoglycosides (amikacin) 3. Resistant to fluoroquinolones (any of norfloxacin, ofloxacin, levofloxacin, lomefloxacin, ciprofloxacin and gatifloxacin).	1. imipenem $\geq 16 \mu\text{g/mL}^\dagger$, meropenem $\geq 16 \mu\text{g/mL}^\dagger$ 2. amikacin $\geq 32 \mu\text{g/mL}^\dagger$ 3. norfloxacin $\geq 16 \mu\text{g/mL}$, ofloxacin $\geq 8 \mu\text{g/mL}$, levofloxacin $\geq 8 \mu\text{g/mL}$, lomefloxacin $\geq 8 \mu\text{g/mL}$, gatifloxacin $\geq 8 \mu\text{g/mL}$, ciprofloxacin $\geq 4 \mu\text{g/mL}$	4001
Multidrug-Resistant <i>Acinetobacter</i> spp. (MDRA)	<i>Acinetobacter</i> spp. satisfying all of the following criteria: 1. Resistant to carbapenems (imipenem and/or meropenem) 2. Resistant† to aminoglycosides (amikacin) 3. Resistant to fluoroquinolones (any of levofloxacin, ciprofloxacin and gatifloxacin)	1. imipenem $\geq 16 \mu\text{g/mL}^\dagger$, meropenem $\geq 16 \mu\text{g/mL}^\dagger$ 2. amikacin $\geq 32 \mu\text{g/mL}^\dagger$ 3. levofloxacin $\geq 8 \mu\text{g/mL}$, ciprofloxacin $\geq 4 \mu\text{g/mL}$, gatifloxacin $\geq 8 \mu\text{g/mL}$	4400–4403
Carbapenem-Resistant <i>Enterobacteriaceae</i> (CRE)	<i>Enterobacteriaceae</i> satisfying one of the following criteria. 1. Resistant† to meropenem 2. Resistant† to imipenem and also resistant to cefmetazole	meropenem $\geq 2 \mu\text{g/mL}^\dagger$, imipenem $\geq 2 \mu\text{g/mL}^\dagger$ and also cefmetazole $\geq 64 \mu\text{g/mL}$	2000-2691, 3150-3151

Isolated Bacterium	Comments*	MIC Values by Broth Microdilution Method	Isolated Bacterial Code Ver.4.0
Carbapenem-Resistant <i>Pseudomonas aeruginosa</i>	<i>P. aeruginosa</i> resistant to imipenem and/or meropenem	imipenem $\geq 16 \mu\text{g/mL}^\dagger$, meropenem $\geq 16 \mu\text{g/mL}^\dagger$	4001
3rd Generation Cephalosporin-Resistant <i>Klebsiella pneumoniae</i>	<i>K. pneumoniae</i> resistant to cefotaxime and/or ceftazidime	cefotaxime $\geq 4 \mu\text{g/mL}$, ceftazidime $\geq 16 \mu\text{g/mL}$	2351
3rd Generation Cephalosporin-Resistant <i>Escherichia coli</i>	<i>E. coli</i> resistant to cefotaxime and/or ceftazidime	cefotaxime $\geq 4 \mu\text{g/mL}$, ceftazidime $\geq 16 \mu\text{g/mL}$	2001–2007
Fluoroquinolone-Resistant <i>Escherichia coli</i>	<i>E. coli</i> resistant to fluoroquinolones (any of norfloxacin, ofloxacin, levofloxacin, lomefloxacin, ciprofloxacin and gatifloxacin)	norfloxacin $\geq 16 \mu\text{g/mL}$, ofloxacin $\geq 8 \mu\text{g/mL}$, levofloxacin $\geq 8 \mu\text{g/mL}$, lomefloxacin $\geq 8 \mu\text{g/mL}$, gatifloxacin $\geq 8 \mu\text{g/mL}$, ciprofloxacin $\geq 4 \mu\text{g/mL}$	2001–2007

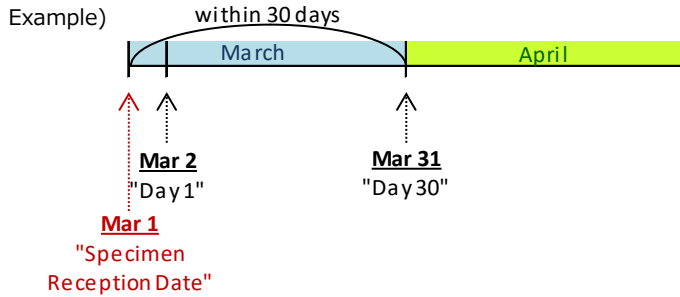
* In principle, RIS interpretation is based on the CLSI2012 (M100-S22) guidelines

† Criteria are based on the Infectious Diseases Control Law

【Appendix 2 Method to Eliminate Duplicates of Annual Report】

1. Rule of Counting Days

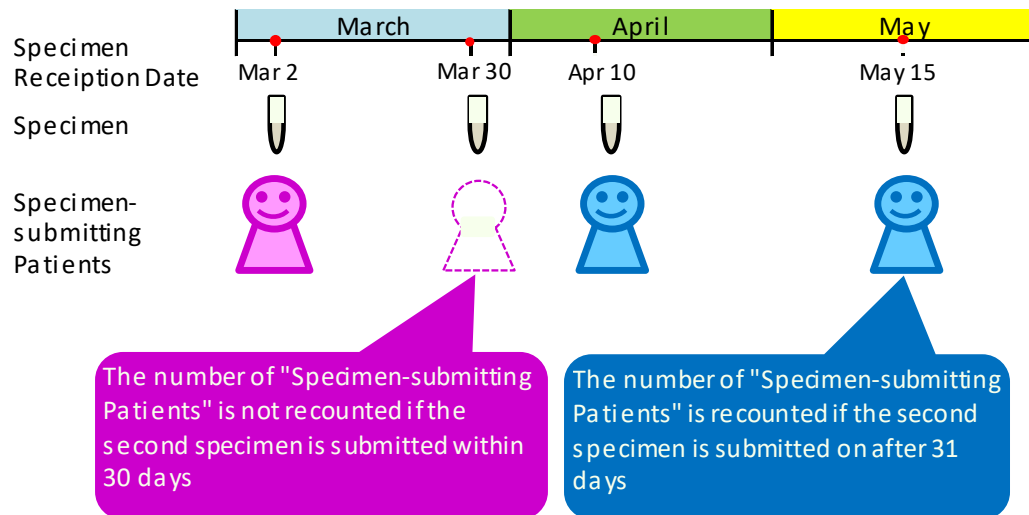
"Day 1" is defined as the day after the "Specimen Reception Date". For example, if a specimen is received on March 1, "Day 1" will be March 2 and "Day 30" will be March 31.



2. Number of "Specimen-submitting Patients"

The number of "Specimen-submitting Patients" is equal to the number of inpatients whose specimens were submitted, regardless of the specimen sources. If more than one specimen is submitted by one patient within 30 days, the number of "Specimen-submitting Patients" is defined as one. This is how we eliminate duplicates.

Example)

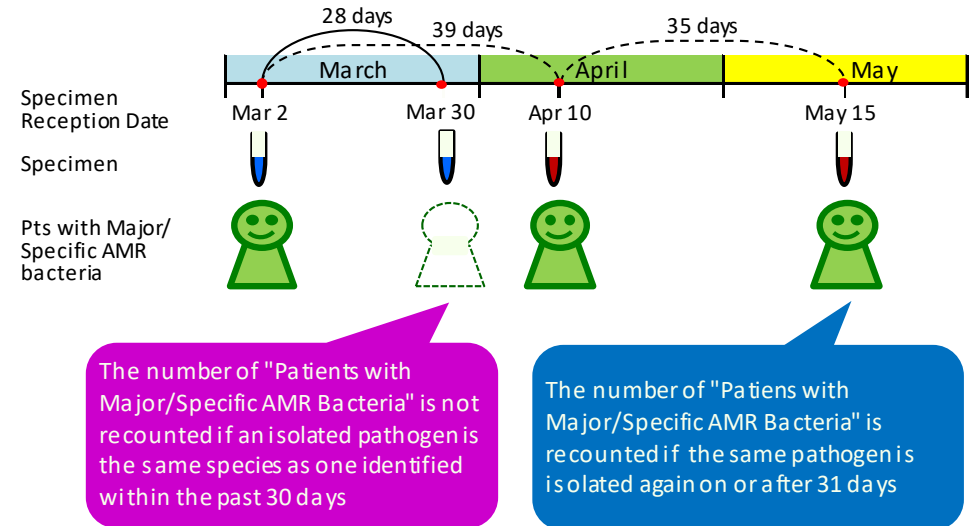


3. Number of Patients with Major/Specific AMR Bacteria

The same method used to eliminate duplicate "Specimen-submitting Patients" records is applied to "Patients with Major/Specific AMR Bacteria". If more than one identical bacterium is isolated from the same patient within 30 days, the number of "Patients with Major/Specific AMR Bacteria" is not recounted.

To obtain the number of "Patients with Specific AMR Bacteria", first the data regarding pathogens which meet "Specific AMR Bacteria" criteria are extracted. Then the method mentioned above is applied to eliminate duplicates.

Example



4. Definition of Isolates Based on the Results of Antimicrobial Susceptibility Testing (AST)

If the AST results differ* between the same bacteria isolated within 30 days, each of them is counted separately.

*Difference of AST is determined by satisfying any of the following four criteria:

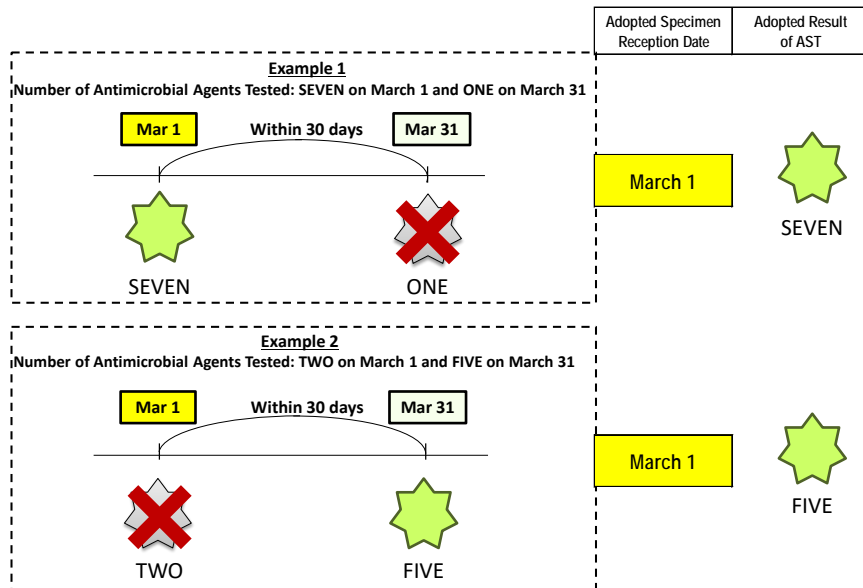
- ① More than four-fold difference in the MIC value; however, MIC > 2 is equivalent to MIC ≥ 4 and is interpreted as MIC = 4, and MIC < 16 is equivalent to MIC ≤ 16 and is interpreted as MIC = 16
- ② Findings of "R and S" on RIS interpretation
- ③ Findings of "- and ++", "+ and +++", or "- and +++" on +/- interpretation
- ④ Fewer than five duplicate antimicrobial agents among testings

【Appendix 2 Method to Eliminate Duplicates of Annual Report】

5. Method for Eliminating Duplicates Based on the Results of AST

The following method will be applied to eliminate duplicates if “Identical Bacteria” are detected more than once from the same patient within 30 days, according to the criteria in Section 4.

- With regard to the “Specimen Reception Date”, whichever is the earliest will be adopted
- Data in which the greatest number of antimicrobial agents tested will be adopted as the “Results of AST”

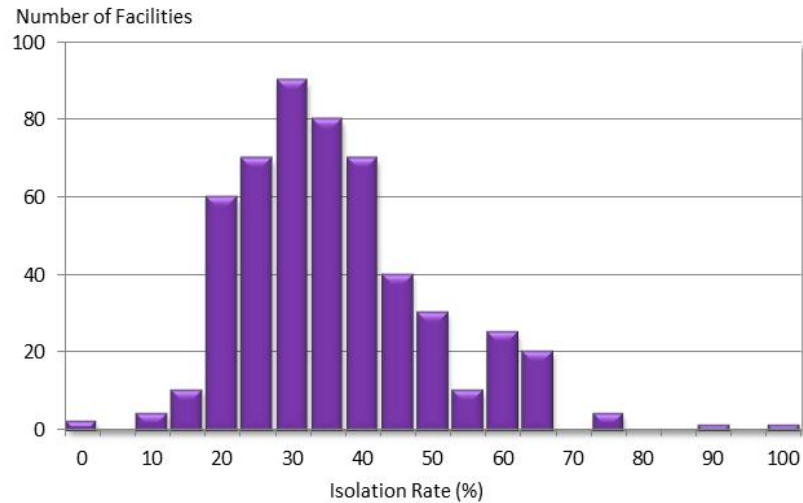
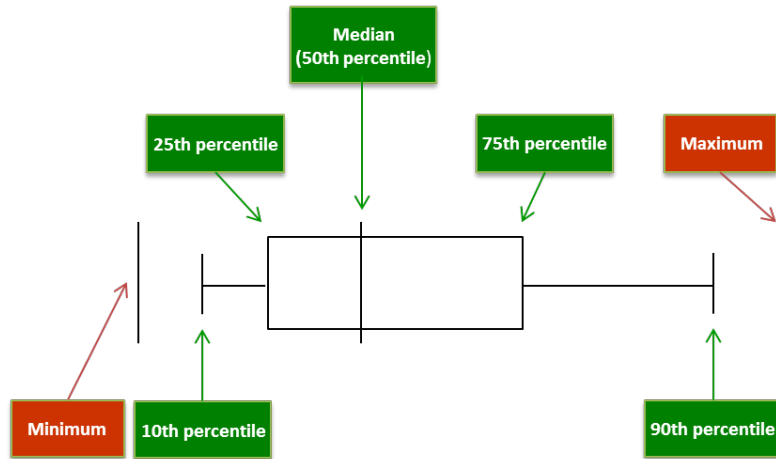


【Appendix 3 Box Plot Chart】

1. Box Plot Chart

The chart represents the data distribution of the facilities.

Example



※ Percentile represents the position of a single data value within a group of samples in ascending order. For example, if a group contains 100 samples, then the 10th percentile refers to the position of the 10th smallest value in the group.
n n

2. Box Plot Chart of Feedback Reports

Example

