

Antibiotic Resistance & Patient Safety Portal

Antibiotic Resistance HAI Data

The following are definitions for the phenotypes listed in the Antibiotic Resistance & Patient Safety Portal. For all pathogens included in the AR HAI dataset, there is a select group of antimicrobials for which susceptibility test results must be reported to the National Healthcare Safety Network (NHSN); these pathogen-antimicrobial combinations are then used to define the selected phenotypes. Susceptibility results for each pathogen were reported to NHSN using the final category interpretations (see key below). For more information about the AR Patient Safety Portal Antibiotic Resistance HAI dataset, visit: <http://www.cdc.gov/hai/surveillance>.

Phenotype Analytical Definitions

Key

(S) Susceptible
(I) Intermediate
(R) Resistant
(NS) Non-Susceptible

Escherichia coli

Carbapenem-resistant (CRE)	Any isolate that tested (R) to at least 1 of these: imipenem, meropenem, doripenem, ertapenem
Cephalosporin-resistant	Any isolate that tested (I) or (R) to at least 1 of these: ceftriaxone, ceftazidime, cefepime, cefotaxime
Fluoroquinolone-resistant	Any isolate that tested (I) or (R) to at least 1 of these: ciprofloxacin, levofloxacin, moxifloxacin
Multidrug-resistant (MDR)	Any isolate that tested either (I)* or (R) to at least 1 drug in at least 3 of these categories: <ol style="list-style-type: none">1. Extended-spectrum cephalosporins (ceftriaxone, ceftazidime, cefepime, cefotaxime)2. Fluoroquinolones (ciprofloxacin, levofloxacin, moxifloxacin)3. Aminoglycosides (amikacin, gentamicin, tobramycin)4. *Carbapenems (isolate must have tested (R) to imipenem, meropenem, doripenem, or ertapenem)5. Piperacillin/tazobactam



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Enterobacter (*E. aerogenes* removed for 2020 data and forward)

Carbapenem-resistant (CRE)	Any isolate that tested (R) to at least 1 of these: imipenem, meropenem, doripenem, ertapenem
Cefepime-resistant	Any isolate that tested (I) or (R) to cefepime
Multidrug-resistant (MDR)	Any isolate that tested either (I)* or (R) to at least 1 drug in at least 3 of these categories: <ol style="list-style-type: none">1. Cefepime2. Fluoroquinolones (ciprofloxacin, levofloxacin, moxifloxacin)3. Aminoglycosides (amikacin, gentamicin, tobramycin)4. *Carbapenems (isolate must have tested (R) to imipenem, meropenem, doripenem, or ertapenem)5. Piperacillin/tazobactam

Klebsiella (limited to *K. oxytoca* and *K. pneumoniae*)

Carbapenem-resistant (CRE) (<i>K. aerogenes</i> added for 2020 data and forward)	Any isolate that tested (R) to at least 1 of these: imipenem, meropenem, doripenem, ertapenem
Cephalosporin-resistant	Any isolate that tested (I) or (R) to at least 1 of these: ceftriaxone, ceftazidime, cefepime, cefotaxime
Multidrug-resistant (MDR)	Any isolate that tested either (I)* or (R) to at least 1 drug in at least 3 of these categories: <ol style="list-style-type: none">1. Extended-spectrum cephalosporins (ceftriaxone, ceftazidime, cefepime, cefotaxime)2. Fluoroquinolones (ciprofloxacin, levofloxacin, moxifloxacin)3. Aminoglycosides (amikacin, gentamicin, tobramycin)4. *Carbapenems (isolate must have tested (R) to imipenem, meropenem, doripenem, or ertapenem)5. Piperacillin/tazobactam



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Pseudomonas aeruginosa

Carbapenem-resistant	Any isolate that tested (I) or (R) to at least 1 of these: imipenem, meropenem, doripenem
Cephalosporin-resistant	Any isolate that tested (I) or (R) to at least 1 of these: ceftazidime, cefepime
Fluoroquinolone-resistant	Any isolate that tested (I) or (R) to at least 1 of these: ciprofloxacin, levofloxacin
Aminoglycoside-resistant	Any isolate that tested (I) or (R) to at least 1 of these: amikacin, gentamicin, tobramycin
Piperacillin/Tazobactam-resistant	Any isolate that tested (I) or (R) to at least 1 of these: piperacillin, piperacillin/tazobactam
Multidrug-resistant (MDR)	Any isolate that tested either (I) or (R) to at least 1 drug in at least 3 of these categories: <ol style="list-style-type: none">1. Extended-spectrum cephalosporins (ceftazidime, cefepime)2. Fluoroquinolones (ciprofloxacin, levofloxacin)3. Aminoglycosides (amikacin, gentamicin, tobramycin)4. Carbapenems (imipenem, meropenem, doripenem)5. Piperacillin Group (piperacillin, piperacillin/tazobactam)

Enterococcus faecium

Vancomycin-resistant (VRE)	Any isolate that tested (R) to vancomycin
Daptomycin-resistant	Any isolate that tested (NS) to daptomycin

Enterococcus faecalis

Vancomycin-resistant (VRE)	Any isolate that tested (R) to vancomycin
Daptomycin-resistant	Any isolate that tested (NS) to daptomycin

Coagulase-negative *Staphylococci*

Vancomycin-resistant	Any isolate that tested (I) or (R) to vancomycin
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Enterobacterales (limited to *E. coli*, *Enterobacter*, *K. oxytoca*, *K. pneumoniae*, and *K. aerogenes*)

Referred to as *Enterobacteriaceae* prior to 2020

Carbapenem-resistant (CRE)	Any isolate that tested (R) to at least 1 of these: imipenem, meropenem, doripenem, ertapenem
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Staphylococcus aureus

Methicillin-resistant (MRSA)	Any <i>Staphylococcus aureus</i> isolate that tested (R) to at least 1 of these: methicillin, oxacillin, ceftoxitin
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Linezolid-resistant MRSA	MRSA that tested (R) to linezolid
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Fluoroquinolone-resistant MRSA	MRSA that tested (I) or (R) to ciprofloxacin and/or levofloxacin
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Vancomycin-resistant MRSA	MRSA that tested (I) or (R) to vancomycin
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Daptomycin-resistant MRSA	MRSA that tested (NS) to daptomycin
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Acinetobacter

Carbapenem-resistant	Any isolate that tested either (I) or (R) to at least 1 of these: imipenem, meropenem, doripenem
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Multidrug-resistant (MDR)	Any isolate that tested either (I) or (R) to at least 1 drug in at least 3 of these categories:
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1. Extended-spectrum cephalosporins (ceftazidime, cefepime)
2. Fluoroquinolones (ciprofloxacin, levofloxacin)
3. Aminoglycosides (amikacin, gentamicin, tobramycin)
4. Carbapenems (imipenem, meropenem, doripenem)
5. Piperacillin Group (piperacillin, piperacillin/tazobactam)
6. Ampicillin/sulbactam



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