

## 2022 Alaska State Antibiogram

The following tables show the proportion of isolates of various bacterial species that tested susceptible to various antibiotics during 2022. These data were aggregated from the antibiograms produced by Alaska hospitals in order to create aggregate regional resistance pattern summaries. These antibiograms can be helpful for health care providers in selecting appropriate empiric antimicrobial therapy for their patients until specific individual laboratory test results are available. They can also be helpful for determining antibiotic stewardship priorities within hospitals and emerging resistance patterns in a broader service area.

- **Methodology:** Individual hospitals prepared their own facility antibiograms, which were shared with the Alaska Section of Epidemiology. Aggregated susceptibility percentages were calculated as the proportion of all tested isolates for the region that were susceptible. Values are only reported when more than one facility provided data for the given species-antibiotic combination. Intrinsic resistance is indicated with an “R”, following the guidance of CLSI document M100-S24. Tribal health facilities and many smaller hospitals customarily include both inpatient and outpatient isolates, while some hospitals may only include inpatients.
- **Multi-Drug Resistant Organisms of Note:**
  - Vancomycin-resistant *Staphylococcus aureus* (VRSA): no cases of VRSA have ever been reported in Alaska. VRSA will stop being reportable to Section of Epidemiology in 2023.
  - Carbapenem-resistant Enterobacterales (CRE): there were 35 cases of CRE reported in 2022; the increase is likely at least partly due to improvements in reporting. Two were carbapenemase-producing, including one in an out-of-state facility and one in Southwest.
  - Carbapenem-resistant *Pseudomonas aeruginosa*: there were 21 cases of carbapenem-resistant *Pseudomonas aeruginosa* reported in 2022, the increase is likely at least partly due to improvements in reporting. One was carbapenemase-producing.
- **Legend:**
  - The top value in each square is the percent of isolates of that species that tested susceptible to that antibiotic.
  - The lower value in each square indicates the number of tested isolates for that species-antibiotic combination.
  - “R” indicates intrinsic resistance to that antibiotic, while “S” indicates definitional susceptibility.
- **Limitations:** Individual facilities often use different methods to test for antimicrobial susceptibility, different methods to build their antibiograms, and different antibiotics in their pharmacies. These factors limit interpretation of these data. Additionally, antimicrobial susceptibility testing done in the laboratory does not always predict how effective that drug will be when used to treat a patient. Data are not stratified by infection site, which influences antibiotic choice and effectiveness.
- **Contributing Facilities:** Thanks to all the hospitals in Alaska for participating in this project to the extent of their ability. These statewide data include all the hospitals used in the Regional Antibiograms, plus SEARHC and Yukon-Kuskokwim Delta Regional Hospital.

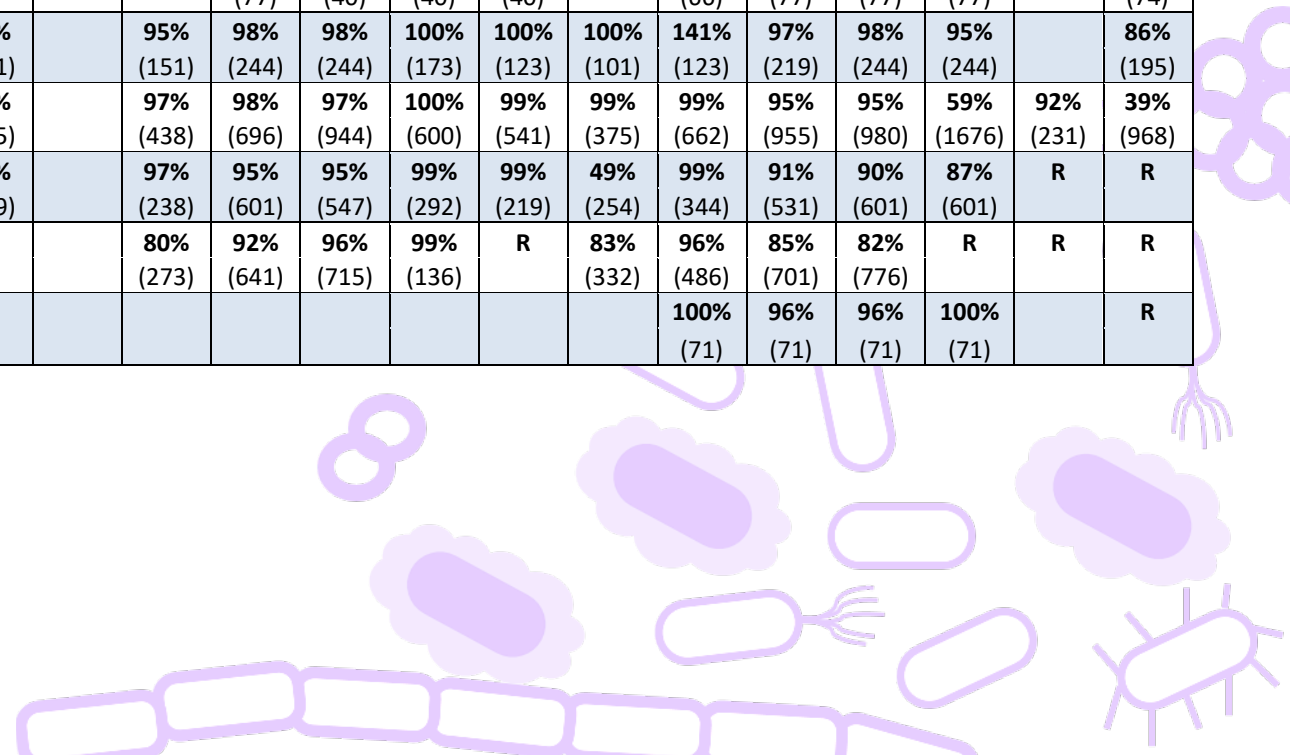
**Important note: Due to disruptions from the COVID pandemic, the 2022 antibiogram was substantially delayed and is missing data from many hospitals. If additional data are collected, we will update this document.**

For more information and the methods used for the analyses, please see the “Regional Antibiogram Project — Alaska, 2014–2015” *Epidemiology Bulletin*.

2022 State Antibiograms- SURVEILLANCE DATA ONLY

| Species  | Penicillin           | Ampicillin           | Oxacillin            | Cefazolin            | Ceftriaxone          | Cefotaxime          | Ciprofloxacin        | Levofloxacin         | Daptomycin            | Clindamycin          | Erythromycin         | Vancomycin            | Gentamicin           | Gent Syn            | Trimethoprim-sulfamethoxazole | Linezolid             | Tetracycline         | Nitrofurantoin       | Rifampin             | Tigecycline          |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|----------------------|----------------------|-----------------------|----------------------|----------------------|-----------------------|----------------------|---------------------|-------------------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|
| Total <i>Staphylococcus aureus</i>                                   |                      |                      | <b>71%</b><br>(4398) | <b>60%</b><br>(1304) | <b>63%</b><br>(622)  |                     | <b>69%</b><br>(2791) | <b>69%</b><br>(3763) | <b>99%</b><br>(1619)  | <b>81%</b><br>(5048) | <b>55%</b><br>(1773) | <b>99%</b><br>(3617)  | <b>99%</b><br>(2485) |                     | <b>96%</b><br>(3765)          | <b>99%</b><br>(2800)  | <b>95%</b><br>(3380) | <b>99%</b><br>(1584) | <b>99%</b><br>(716)  |                      |
| MSSA   | <b>10%</b><br>(1482) |                      | <b>S</b>             |                      | <b>100%</b><br>(395) |                     | <b>92%</b><br>(1542) | <b>93%</b><br>(2949) | <b>100%</b><br>(1013) | <b>89%</b><br>(2933) | <b>76%</b><br>(1729) | <b>100%</b><br>(2872) | <b>99%</b><br>(2212) |                     | <b>98%</b><br>(2949)          | <b>99%</b><br>(2403)  | <b>96%</b><br>(2769) | <b>98%</b><br>(1215) | <b>99%</b><br>(1380) | <b>100%</b><br>(879) |
| MRSA   | <b>0%</b><br>(986)   |                      | <b>R</b>             |                      |                      |                     | <b>26%</b><br>(822)  | <b>25%</b><br>(1710) | <b>99%</b><br>(124)   | <b>70%</b><br>(1707) | <b>14%</b><br>(921)  | <b>99%</b><br>(1641)  | <b>99%</b><br>(1169) |                     | <b>96%</b><br>(1711)          | <b>100%</b><br>(1293) | <b>95%</b><br>(1507) | <b>100%</b><br>(815) | <b>99%</b><br>(752)  | <b>100%</b><br>(580) |
| <i>Staphylococcus lugdunensis</i>                                    |                      |                      | <b>83%</b><br>(147)  |                      |                      |                     | <b>99%</b><br>(147)  | <b>99%</b><br>(147)  |                       | <b>80%</b><br>(147)  | <b>80%</b><br>(147)  | <b>100%</b><br>(147)  | <b>99%</b><br>(147)  |                     | <b>99%</b><br>(147)           | <b>100%</b><br>(147)  | <b>98%</b><br>(147)  | <b>100%</b><br>(147) |                      |                      |
| Coag-negative <i>Staphylococcus</i><br>(inc. <i>S. epidermidis</i> ) | <b>13%</b><br>(467)  |                      | <b>48%</b><br>(1069) |                      | <b>47%</b><br>(305)  |                     | <b>83%</b><br>(670)  | <b>85%</b><br>(1093) | <b>100%</b><br>(284)  | <b>68%</b><br>(983)  | <b>42%</b><br>(663)  | <b>100%</b><br>(1069) | <b>95%</b><br>(602)  |                     | <b>73%</b><br>(944)           | <b>99%</b><br>(715)   | <b>85%</b><br>(987)  | <b>99%</b><br>(742)  | <b>99%</b><br>(508)  | <b>100%</b><br>(130) |
| <i>Enterococcus faecalis</i>   | <b>99%</b><br>(975)  | <b>99%</b><br>(1140) |                      | <b>R</b>             | <b>R</b>             | <b>R</b>            | <b>93%</b><br>(731)  | <b>96%</b><br>(1061) | <b>84%</b><br>(434)   | <b>R</b>             | <b>12%</b><br>(480)  | <b>99%</b><br>(959)   | <b>R</b>             | <b>84%</b><br>(264) | <b>R</b>                      | <b>100%</b><br>(1027) | <b>27%</b><br>(1061) | <b>96%</b><br>(850)  |                      |                      |
| <i>Enterococcus</i> spp.   | <b>86%</b><br>(110)  | <b>62%</b><br>(37)   |                      |                      |                      |                     | <b>88%</b><br>(83)   | <b>78%</b><br>(110)  |                       |                      |                      | <b>78%</b><br>(37)    |                      | <b>95%</b><br>(37)  |                               | <b>100%</b><br>(37)   | <b>48%</b><br>(110)  | <b>94%</b><br>(80)   |                      |                      |
| Group B <i>Streptococcus</i>   | <b>100%</b><br>(155) | <b>S</b>             |                      |                      | <b>100%</b><br>(70)  |                     |                      | <b>99%</b><br>(101)  |                       | <b>57%</b><br>(155)  |                      | <b>100%</b><br>(158)  |                      |                     |                               | <b>100%</b><br>(54)   |                      |                      |                      |                      |
| <i>Streptococcus pneumoniae</i> (all)                                | <b>94%</b><br>(157)  |                      |                      |                      | <b>98%</b><br>(109)  | <b>99%</b><br>(235) |                      | <b>99%</b><br>(250)  |                       | <b>94%</b><br>(158)  | <b>89%</b><br>(157)  | <b>98%</b><br>(250)   |                      |                     | <b>60%</b><br>(202)           | <b>100%</b><br>(54)   |                      |                      |                      |                      |
| <i>S. pneumoniae</i> -oral   | <b>87%</b><br>(93)   |                      |                      |                      |                      |                     |                      |                      |                       |                      |                      |                       |                      |                     |                               |                       |                      |                      |                      |                      |
| <i>S. pneumoniae</i> - non-CSF                                       | <b>100%</b><br>(222) |                      |                      |                      | <b>100%</b><br>(222) |                     |                      |                      |                       |                      |                      |                       |                      |                     |                               |                       |                      |                      |                      |                      |
| <i>S pneumoniae</i> - meningitis                                     | <b>88%</b><br>(232)  |                      |                      |                      | <b>95%</b><br>(232)  | <b>97%</b><br>(276) |                      |                      |                       |                      |                      |                       |                      |                     |                               |                       |                      |                      |                      |                      |

| Species                        | Amoxicillin+ clavulanate | Ampicillin           | Ampicillin+Sulbactam | Piperacillin+Tazobactam | Cefazolin            | Cefuroxime           | Ceftriaxone          | Ceftazidime          | Cefepime             | Ceftazidime-avibactam | Cefoxitin            | Cephalothin          | Aztreonam            | Gentamicin           | Tobramycin           | Amikacin             | Ertapenem            | Imipenem              | Meropenem             | Ciprofloxacin        | Levofloxacin         | Trimeth+Sulfa        | Tetracycline         | Nitrofurantoin       |
|--------------------------------|--------------------------|----------------------|----------------------|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <i>Acinetobacter baumannii</i> |                          |                      | <b>100%</b><br>(31)  | <b>84%</b><br>(31)      |                      |                      |                      | <b>81%</b><br>(31)   |                      |                       |                      |                      |                      | <b>97%</b><br>(31)   | <b>97%</b><br>(31)   |                      |                      |                       | <b>100%</b><br>(31)   | <b>97%</b><br>(31)   | <b>97%</b><br>(31)   | <b>94%</b><br>(31)   |                      |                      |
| <i>Citrobacter freundii</i>    | <b>R</b>                 | <b>R</b>             | <b>R</b>             | <b>93%</b><br>(145)     | <b>R</b>             | <b>R</b>             | <b>79%</b><br>(155)  | <b>80%</b><br>(127)  | <b>99%</b><br>(155)  |                       | <b>R</b>             |                      | <b>83%</b><br>(71)   | <b>96%</b><br>(155)  | <b>88%</b><br>(103)  | <b>100%</b><br>(91)  | <b>100%</b><br>(49)  | <b>100%</b><br>(75)   | <b>100%</b><br>(81)   | <b>88%</b><br>(137)  | <b>92%</b><br>(155)  | <b>82%</b><br>(135)  |                      | <b>88%</b><br>(133)  |
| <i>Klebsiella aerogenes</i>    | <b>R</b>                 | <b>R</b>             | <b>R</b>             | <b>86%</b><br>(86)      | <b>R</b>             | <b>R</b>             | <b>85%</b><br>(86)   | <b>82%</b><br>(65)   | <b>100%</b><br>(75)  |                       | <b>R</b>             |                      | <b>78%</b><br>(65)   | <b>100%</b><br>(86)  | <b>100%</b><br>(65)  | <b>100%</b><br>(65)  | <b>100%</b><br>(40)  |                       | <b>100%</b><br>(86)   | <b>99%</b><br>(86)   | <b>87%</b><br>(86)   | <b>99%</b><br>(86)   | <b>95%</b><br>(41)   | <b>31%</b><br>(51)   |
| <i>Enterobacter cloacae</i>    | <b>R</b>                 | <b>R</b>             | <b>R</b>             | <b>79%</b><br>(415)     | <b>R</b>             | <b>R</b>             | <b>74%</b><br>(378)  | <b>78%</b><br>(356)  | <b>97%</b><br>(394)  |                       | <b>R</b>             |                      | <b>76%</b><br>(212)  | <b>98%</b><br>(416)  | <b>98%</b><br>(250)  | <b>100%</b><br>(243) | <b>93%</b><br>(99)   | <b>96%</b><br>(181)   | <b>99%</b><br>(265)   | <b>97%</b><br>(379)  | <b>96%</b><br>(416)  | <b>94%</b><br>(416)  | <b>93%</b><br>(90)   | <b>45%</b><br>(334)  |
| <i>Escherichia coli</i>        | <b>88%</b><br>(2247)     | <b>62%</b><br>(8296) | <b>68%</b><br>(6841) | <b>98%</b><br>(8405)    | <b>93%</b><br>(6445) | <b>78%</b><br>(4147) | <b>95%</b><br>(8731) | <b>98%</b><br>(7815) | <b>98%</b><br>(7377) | <b>99%</b><br>(2011)  | <b>95%</b><br>(2837) | <b>59%</b><br>(1651) | <b>94%</b><br>(3611) | <b>94%</b><br>(6754) | <b>94%</b><br>(7360) | <b>87%</b><br>(4702) | <b>97%</b><br>(4864) | <b>100%</b><br>(3893) | <b>100%</b><br>(5610) | <b>86%</b><br>(8192) | <b>88%</b><br>(8728) | <b>80%</b><br>(8728) | <b>86%</b><br>(4752) | <b>97%</b><br>(8484) |
| <i>ESBL E. coli</i>            |                          |                      |                      | <b>88%</b><br>(77)      |                      |                      |                      |                      |                      |                       |                      |                      |                      | <b>70%</b><br>(77)   | <b>73%</b><br>(40)   | <b>98%</b><br>(40)   | <b>100%</b><br>(40)  |                       | <b>100%</b><br>(66)   | <b>36%</b><br>(77)   | <b>36%</b><br>(77)   | <b>47%</b><br>(77)   |                      | <b>85%</b><br>(74)   |
| <i>Klebsiella oxytoca</i>      | <b>91%</b><br>(80)       |                      | <b>77%</b><br>(219)  | <b>91%</b><br>(244)     | <b>80%</b><br>(93)   | <b>97%</b><br>(176)  | <b>93%</b><br>(244)  | <b>100%</b><br>(219) | <b>99%</b><br>(244)  |                       | <b>98%</b><br>(101)  |                      | <b>95%</b><br>(151)  | <b>98%</b><br>(244)  | <b>98%</b><br>(244)  | <b>100%</b><br>(173) | <b>100%</b><br>(123) | <b>100%</b><br>(101)  | <b>141%</b><br>(123)  | <b>97%</b><br>(219)  | <b>98%</b><br>(244)  | <b>95%</b><br>(244)  |                      | <b>86%</b><br>(195)  |
| <i>Klebsiella pneumoniae</i>   | <b>97%</b><br>(390)      | <b>R</b>             | <b>91%</b><br>(853)  | <b>98%</b><br>(1005)    | <b>96%</b><br>(819)  | <b>82%</b><br>(532)  | <b>97%</b><br>(1005) | <b>98%</b><br>(850)  | <b>99%</b><br>(947)  |                       | <b>96%</b><br>(245)  |                      | <b>97%</b><br>(438)  | <b>98%</b><br>(696)  | <b>97%</b><br>(944)  | <b>100%</b><br>(600) | <b>99%</b><br>(541)  | <b>99%</b><br>(375)   | <b>99%</b><br>(662)   | <b>95%</b><br>(955)  | <b>95%</b><br>(980)  | <b>59%</b><br>(1676) | <b>92%</b><br>(231)  | <b>39%</b><br>(968)  |
| <i>Proteus mirabilis</i>       | <b>96%</b><br>(225)      | <b>82%</b><br>(601)  | <b>91%</b><br>(477)  | <b>99%</b><br>(601)     | <b>95%</b><br>(562)  | <b>95%</b><br>(155)  | <b>99%</b><br>(601)  | <b>99%</b><br>(477)  | <b>99%</b><br>(547)  |                       | <b>92%</b><br>(149)  |                      | <b>97%</b><br>(238)  | <b>95%</b><br>(601)  | <b>95%</b><br>(547)  | <b>99%</b><br>(292)  | <b>99%</b><br>(219)  | <b>49%</b><br>(254)   | <b>99%</b><br>(344)   | <b>91%</b><br>(531)  | <b>90%</b><br>(601)  | <b>87%</b><br>(601)  | <b>R</b>             | <b>R</b>             |
| <i>Pseudomonas aeruginosa</i>  | <b>R</b>                 | <b>R</b>             | <b>R</b>             | <b>94%</b><br>(776)     | <b>R</b>             | <b>R</b>             | <b>R</b>             | <b>92%</b><br>(701)  | <b>91%</b><br>(766)  | <b>R</b>              | <b>R</b>             |                      | <b>80%</b><br>(273)  | <b>92%</b><br>(641)  | <b>96%</b><br>(715)  | <b>99%</b><br>(136)  | <b>R</b>             | <b>83%</b><br>(332)   | <b>96%</b><br>(486)   | <b>85%</b><br>(701)  | <b>82%</b><br>(776)  | <b>R</b>             | <b>R</b>             | <b>R</b>             |
| <i>Serratia marcescens</i>     | <b>R</b>                 | <b>R</b>             | <b>R</b>             |                         | <b>R</b>             | <b>R</b>             | <b>96%</b><br>(71)   | <b>97%</b><br>(71)   | <b>97%</b><br>(71)   |                       | <b>R</b>             |                      |                      |                      |                      |                      |                      |                       | <b>100%</b><br>(71)   | <b>96%</b><br>(71)   | <b>96%</b><br>(71)   | <b>100%</b><br>(71)  |                      | <b>R</b>             |

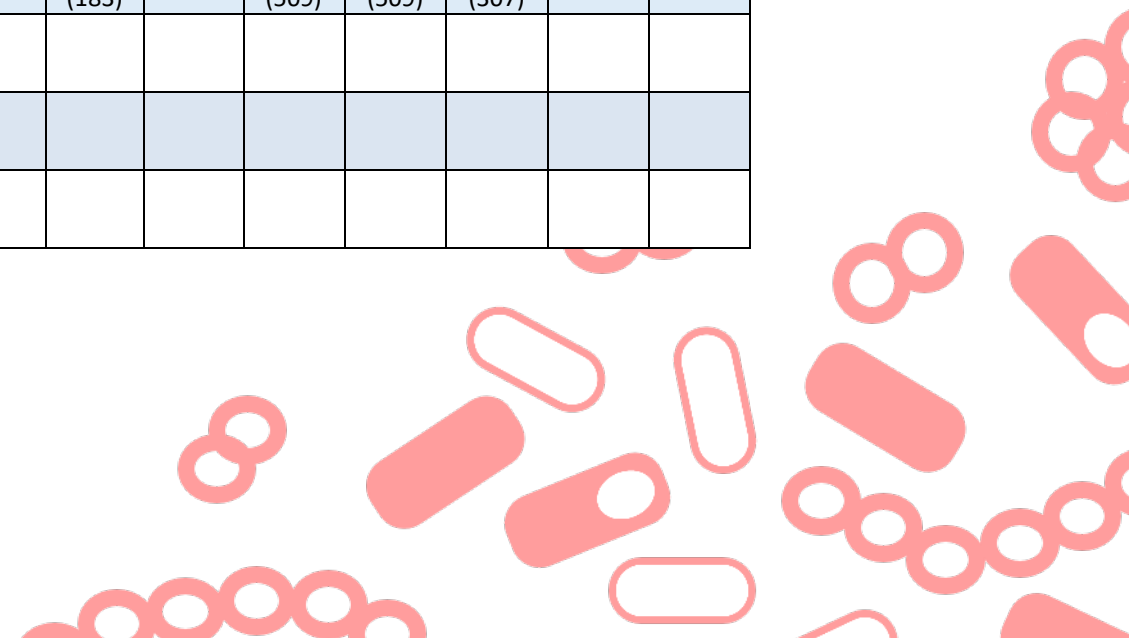


## 2022 Alaska State Antibigram: Anchorage-Mat-Su Region

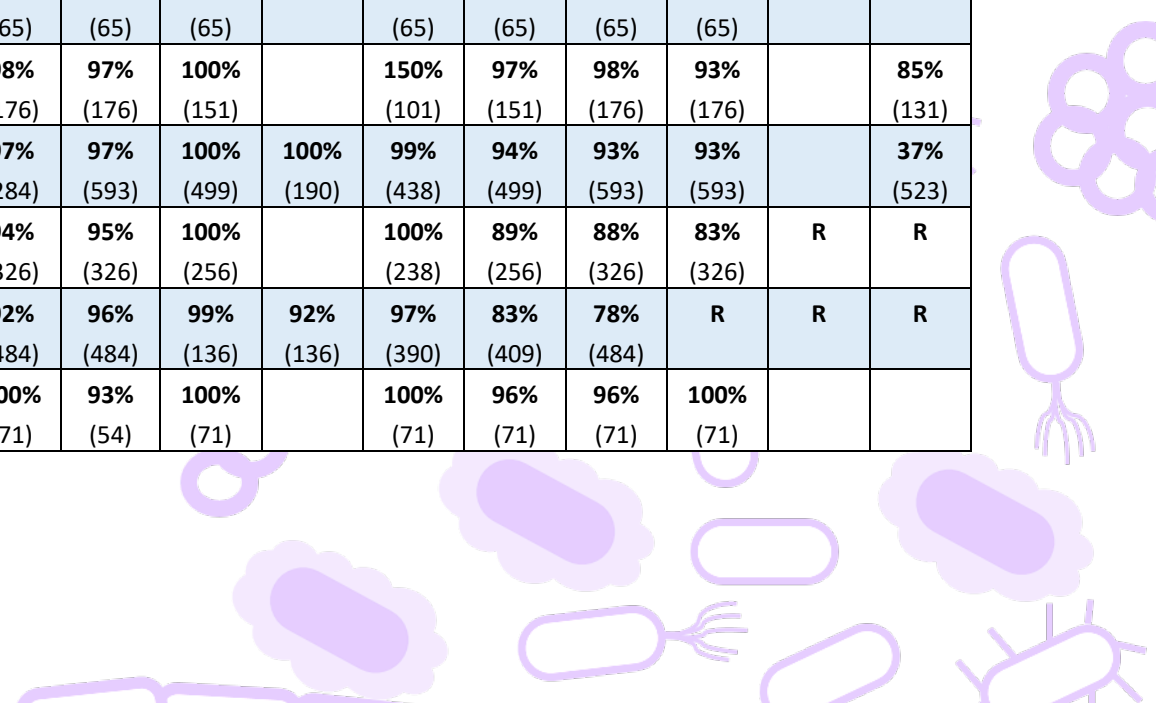
The following tables show the proportion of isolates of various bacterial species that tested susceptible to various antibiotics during 2022. These data were aggregated from the antibiograms produced by Alaska hospitals in order to create aggregate regional resistance pattern summaries. These antibiograms can be helpful for health care providers in selecting appropriate empiric antimicrobial therapy for their patients until specific individual laboratory test results are available. They can also be helpful for determining antibiotic stewardship priorities within hospitals and emerging resistance patterns in a broader service area.

- **Methodology:** Individual hospitals prepared their own facility antibiograms, which were shared with the Alaska Section of Epidemiology. Aggregated susceptibility percentages were calculated as the proportion of all tested isolates for the region that were susceptible. Values are only reported when more than one facility provided data for the given species-antibiotic combination. Intrinsic resistance is indicated with an “R”, following the guidance of CLSI document M100-S24.
- **Multi-Drug Resistant Organisms of Note:**
  - Vancomycin-resistant *Staphylococcus aureus* (VRSA): no cases of VRSA have ever been reported in Alaska. VRSA will stop being reportable to Section of Epidemiology in 2023.
  - Carbapenem-resistant Enterobacterales (CRE): there were 22 cases of CRE reported in Anchorage/Mat-Su residents in 2022. One was carbapenemase-producing, diagnosed out of state.
  - Carbapenem-resistant *Pseudomonas aeruginosa*: there were 17 cases of carbapenem-resistant *Pseudomonas aeruginosa* reported in Anchorage/Mat-Su residents in 2022. One was carbapenemase-producing with a VIM gene acquired out of state.
- **Legend:**
  - The top value in each square is the percent of isolates of that species that tested susceptible to that antibiotic.
  - The lower value in each square indicates the number of tested isolates for that species-antibiotic combination.
  - “R” indicates intrinsic resistance to that antibiotic, while “S” indicates definitional susceptibility.
  - “NED” indicates that there was Not Enough Data to report the value: either only one facility reported data for that species-antibiotic combination or <30 isolates were tested.
- **Limitations:** Individual facilities often use different methods to test for antimicrobial susceptibility, different methods to build their antibiograms, and different antibiotics in their pharmacies. These factors limit interpretation of these data. Additionally, antimicrobial susceptibility testing done in the laboratory does not always predict how effective that drug will be when used to treat a patient. Data are not stratified by infection site, which influences antibiotic choice and effectiveness.
- **Contributing Facilities:** Thanks to the following facilities for providing data in support of this project:
  - Alaska Native Medical Center
  - Alaska Regional Hospital
  - Providence Alaska Medical Center
  - Joint Base Elmendorf-Richardson

| Species                               | Penicillin           | Ampicillin          | Oxacillin            | Ceftriaxone          | Cefotaxime           | Ciprofloxacin        | Levofloxacin         | Clindamycin          | Erythromycin         | Vancomycin            | Gentamicin           | Gent Syn            | Trimethoprim-sulfamethoxazole | Linezolid             | Tetracycline         | Nitrofurantoin       | Rifampin             | Moxifloxacin        |
|---------------------------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|---------------------|-------------------------------|-----------------------|----------------------|----------------------|----------------------|---------------------|
| Total <i>Staphylococcus aureus</i>    |                      |                     | <b>60%</b><br>(1922) |                      |                      | <b>66%</b><br>(1382) | <b>65%</b><br>(1922) | <b>78%</b><br>(3226) | <b>48%</b><br>(1455) | <b>100%</b><br>(3299) | <b>99%</b><br>(2914) |                     | <b>97%</b><br>(3299)          | <b>100%</b><br>(2914) | <b>95%</b><br>(2914) | <b>99%</b><br>(1878) | <b>95%</b><br>(1455) |                     |
| MSSA                                  |                      |                     | <b>S</b>             |                      |                      | <b>91%</b><br>(879)  | <b>92%</b><br>(1998) | <b>86%</b><br>(1998) | <b>71%</b><br>(879)  | <b>100%</b><br>(1998) | <b>99%</b><br>(1817) |                     | <b>98%</b><br>(1998)          | <b>100%</b><br>(1817) | <b>95%</b><br>(1817) | <b>98%</b><br>(1098) | <b>100%</b><br>(879) | <b>92%</b><br>(879) |
| MRSA                                  |                      |                     | <b>R</b>             |                      |                      | <b>26%</b><br>(580)  | <b>24%</b><br>(1324) | <b>67%</b><br>(1324) | <b>12%</b><br>(580)  | <b>100%</b><br>(1324) | <b>99%</b><br>(1120) |                     | <b>96%</b><br>(1324)          | <b>100%</b><br>(1120) | <b>95%</b><br>(1120) | <b>100%</b><br>(799) | <b>99%</b><br>(580)  |                     |
| Coag-negative <i>Staphylococcus</i>   |                      |                     | <b>44%</b><br>(443)  |                      |                      | <b>86%</b><br>(222)  | <b>84%</b><br>(443)  | <b>64%</b><br>(443)  | <b>37%</b><br>(222)  | <b>100%</b><br>(443)  |                      |                     | <b>65%</b><br>(300)           | <b>100%</b><br>(288)  | <b>83%</b><br>(380)  | <b>100%</b><br>(301) |                      |                     |
| <i>Staphylococcus epidermidis</i>     |                      |                     | <b>36%</b><br>(206)  |                      |                      |                      | <b>80%</b><br>(206)  | <b>62%</b><br>(206)  |                      | <b>100%</b><br>(206)  |                      |                     | <b>58%</b><br>(155)           | <b>100%</b><br>(143)  |                      | <b>100%</b><br>(126) |                      |                     |
| <i>Streptococcus agalacticae</i>      | <b>100%</b><br>(70)  |                     |                      | <b>100%</b><br>(70)  |                      |                      | <b>99%</b><br>(70)   | <b>46%</b><br>(70)   |                      | <b>100%</b><br>(70)   |                      |                     |                               |                       |                      |                      |                      |                     |
| <i>Enterococcus faecalis</i>          | <b>99%</b><br>(509)  | <b>99%</b><br>(588) |                      | <b>R</b>             | <b>R</b>             | <b>98%</b><br>(218)  | <b>96%</b><br>(509)  | <b>R</b>             |                      | <b>99%</b><br>(588)   | <b>R</b>             | <b>83%</b><br>(183) | <b>R</b>                      | <b>100%</b><br>(509)  | <b>24%</b><br>(509)  | <b>99%</b><br>(307)  |                      |                     |
| <i>Streptococcus pneumoniae</i> (all) | NED                  |                     |                      |                      | <b>100%</b><br>(151) |                      | <b>99%</b><br>(151)  | <b>91%</b><br>(103)  | <b>90%</b><br>(58)   | <b>100%</b><br>(151)  |                      |                     |                               |                       |                      |                      |                      |                     |
| <i>S. pneumoniae</i> - non-CSF        | <b>100%</b><br>(222) |                     |                      | <b>100%</b><br>(222) |                      |                      |                      |                      |                      |                       |                      |                     |                               |                       |                      |                      |                      |                     |
| <i>S pneumoniae</i> - meningitis      | <b>89%</b><br>(222)  |                     |                      | <b>95%</b><br>(222)  | <b>97%</b><br>(222)  |                      |                      |                      |                      |                       |                      |                     |                               |                       |                      |                      |                      |                     |



| Species                        | Amoxicillin+ clavulanate | Ampicillin           | Ampicillin+Sulbactam | Piperacillin+Tazobactam | Cefazolin            | Cefuroxime           | Ceftriaxone          | Ceftazidime          | Cefepime             | Aztreonam            | Gentamicin           | Tobramycin           | Amikacin              | Imipenem              | Meropenem             | Ciprofloxacin        | Levofloxacin         | Trimeth+Sulfa        | Tetracycline         | Nitrofurantoin       |
|--------------------------------|--------------------------|----------------------|----------------------|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| <i>Acinetobacter baumannii</i> |                          |                      | <b>100%</b><br>(31)  | <b>84%</b><br>(31)      |                      |                      |                      | <b>81%</b><br>(31)   |                      |                      | <b>97%</b><br>(31)   | <b>97%</b><br>(31)   |                       |                       | <b>100%</b><br>(31)   | <b>97%</b><br>(31)   | <b>97%</b><br>(31)   | <b>94%</b><br>(31)   |                      |                      |
| <i>Citrobacter freundii</i>    | <b>R</b>                 | <b>R</b>             | <b>R</b>             | <b>89%</b><br>(109)     | <b>R</b>             | <b>R</b>             | <b>83%</b><br>(109)  | <b>85%</b><br>(91)   | <b>100%</b><br>(109) | <b>83%</b><br>(71)   | <b>95%</b><br>(109)  | <b>98%</b><br>(57)   | <b>100%</b><br>(91)   | <b>100%</b><br>(39)   | <b>100%</b><br>(71)   | <b>93%</b><br>(91)   | <b>90%</b><br>(109)  | <b>83%</b><br>(89)   | NED                  | <b>90%</b><br>(89)   |
| <i>Enterobacter cloacae</i>    | <b>R</b>                 | <b>R</b>             | <b>R</b>             | <b>77%</b><br>(249)     | <b>R</b>             | <b>R</b>             | <b>71%</b><br>(212)  | <b>77%</b><br>(212)  | <b>98%</b><br>(249)  | <b>76%</b><br>(212)  | <b>96%</b><br>(249)  | <b>97%</b><br>(105)  | <b>100%</b><br>(212)  |                       | <b>100%</b><br>(212)  | <b>96%</b><br>(212)  | <b>95%</b><br>(249)  | <b>92%</b><br>(249)  | NED                  | <b>47%</b><br>(179)  |
| <i>Escherichia coli</i>        | <b>83%</b><br>(536)      | <b>63%</b><br>(4195) | <b>67%</b><br>(4091) | <b>97%</b><br>(4627)    | <b>92%</b><br>(2667) | <b>78%</b><br>(4147) | <b>94%</b><br>(4627) | <b>98%</b><br>(4091) | <b>99%</b><br>(4627) | <b>94%</b><br>(3611) | <b>93%</b><br>(2976) | <b>94%</b><br>(4627) | <b>100%</b><br>(4091) | <b>100%</b><br>(2131) | <b>100%</b><br>(3611) | <b>82%</b><br>(4091) | <b>86%</b><br>(4627) | <b>88%</b><br>(4627) | <b>88%</b><br>(3401) | <b>97%</b><br>(4417) |
| <i>Klebsiella aerogenes</i>    |                          |                      |                      | <b>82%</b><br>(65)      |                      |                      | <b>82%</b><br>(65)   | <b>82%</b><br>(65)   | <b>100%</b><br>(65)  | <b>78%</b><br>(65)   | <b>100%</b><br>(65)  | <b>100%</b><br>(65)  | <b>100%</b><br>(65)   |                       | <b>100%</b><br>(65)   | <b>98%</b><br>(65)   | <b>98%</b><br>(65)   | <b>100%</b><br>(65)  |                      |                      |
| <i>Klebsiella oxytoca</i>      | <b>91%</b><br>(80)       |                      | <b>77%</b><br>(151)  | <b>89%</b><br>(176)     |                      | <b>97%</b><br>(176)  | <b>93%</b><br>(176)  | <b>100%</b><br>(151) | <b>99%</b><br>(176)  | <b>95%</b><br>(151)  | <b>98%</b><br>(176)  | <b>97%</b><br>(176)  | <b>100%</b><br>(151)  |                       | <b>150%</b><br>(101)  | <b>97%</b><br>(151)  | <b>98%</b><br>(176)  | <b>93%</b><br>(176)  |                      | <b>85%</b><br>(131)  |
| <i>Klebsiella pneumoniae</i>   | <b>82%</b><br>(223)      | <b>R</b>             | <b>89%</b><br>(499)  | <b>97%</b><br>(593)     | <b>96%</b><br>(523)  | <b>82%</b><br>(532)  | <b>97%</b><br>(593)  | <b>98%</b><br>(499)  | <b>98%</b><br>(593)  | <b>97%</b><br>(438)  | <b>97%</b><br>(284)  | <b>97%</b><br>(593)  | <b>100%</b><br>(499)  | <b>100%</b><br>(190)  | <b>99%</b><br>(438)   | <b>94%</b><br>(499)  | <b>93%</b><br>(593)  | <b>93%</b><br>(593)  |                      | <b>37%</b><br>(523)  |
| <i>Proteus mirabilis</i>       | <b>95%</b><br>(155)      | <b>75%</b><br>(326)  | <b>90%</b><br>(256)  | <b>100%</b><br>(326)    | <b>95%</b><br>(287)  | <b>95%</b><br>(155)  | <b>99%</b><br>(326)  | <b>98%</b><br>(256)  | <b>99%</b><br>(326)  | <b>97%</b><br>(238)  | <b>94%</b><br>(326)  | <b>95%</b><br>(326)  | <b>100%</b><br>(256)  |                       | <b>100%</b><br>(238)  | <b>89%</b><br>(256)  | <b>88%</b><br>(326)  | <b>83%</b><br>(326)  | <b>R</b>             | <b>R</b>             |
| <i>Pseudomonas aeruginosa</i>  | <b>R</b>                 | <b>R</b>             | <b>R</b>             | <b>95%</b><br>(484)     |                      |                      | <b>R</b>             | <b>90%</b><br>(409)  | <b>89%</b><br>(484)  |                      | <b>92%</b><br>(484)  | <b>96%</b><br>(484)  | <b>99%</b><br>(136)   | <b>92%</b><br>(136)   | <b>97%</b><br>(390)   | <b>83%</b><br>(409)  | <b>78%</b><br>(484)  | <b>R</b>             | <b>R</b>             | <b>R</b>             |
| <i>Serratia marcescens</i>     |                          |                      |                      |                         |                      |                      | <b>96%</b><br>(71)   | <b>97%</b><br>(71)   | <b>97%</b><br>(71)   | <b>97%</b><br>(71)   | <b>100%</b><br>(71)  | <b>93%</b><br>(54)   | <b>100%</b><br>(71)   |                       | <b>100%</b><br>(71)   | <b>96%</b><br>(71)   | <b>96%</b><br>(71)   | <b>100%</b><br>(71)  |                      |                      |



## 2022 Alaska State Antibigram: Gulf Coast Region

The following tables show the proportion of isolates of various bacterial species that tested susceptible to various antibiotics during 2021. These data were aggregated from the antibiograms produced by Alaska hospitals in order to create aggregate regional resistance pattern summaries. These antibiograms can be helpful for health care providers in selecting appropriate empiric antimicrobial therapy for their patients until specific individual laboratory test results are available. They can also be helpful for determining antibiotic stewardship priorities within hospitals and emerging resistance patterns in a broader service area.

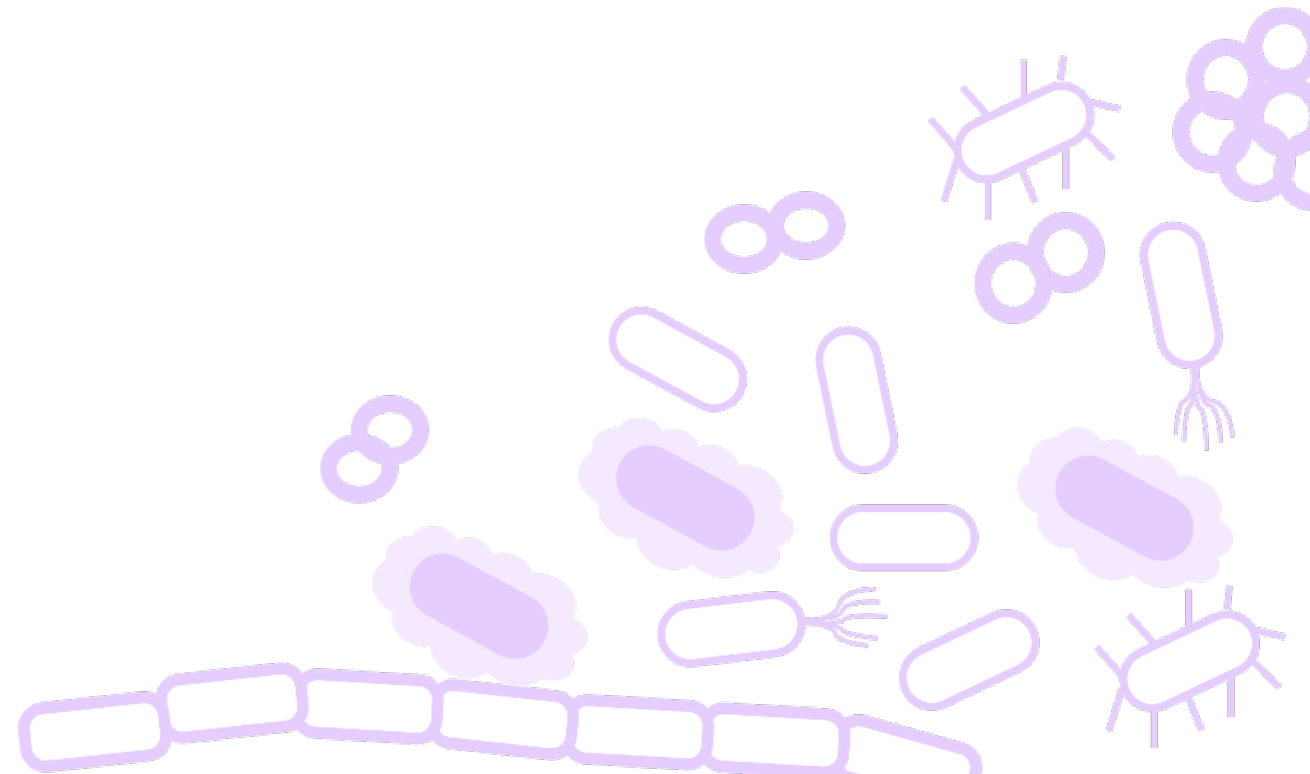
- **Methodology:** Individual hospitals prepared their own facility antibiograms, which were shared with the Alaska Section of Epidemiology. Aggregated susceptibility percentages were calculated as the proportion of all tested isolates for the region that were susceptible. Values are only reported when more than one facility provided data for the given species-antibiotic combination. Intrinsic resistance is indicated with an “R”, following the guidance of CLSI document M100-S24.
- **Multi-Drug Resistant Organisms of Note:**
  - Vancomycin-resistant *Staphylococcus aureus* (VRSA): no cases of VRSA have ever been reported in Alaska. VRSA will stop being reportable to Section of Epidemiology in 2023.
  - Carbapenem-resistant Enterobacterales (CRE): there were 8 cases of CRE reported in Gulf Coast residents in 2022.
  - Carbapenem-resistant *Pseudomonas aeruginosa*: there were 3 case of carbapenem-resistant *Pseudomonas aeruginosa* reported in Gulf Coast residents in 2022.
- **Legend:**
  - The top value in each square is the percent of isolates of that species that tested susceptible to that antibiotic.
  - The lower value in each square indicates the number of tested isolates for that species-antibiotic combination.
  - “R” indicates intrinsic resistance to that antibiotic, while “S” indicates definitional susceptibility.
  - “NED” indicates that there was Not Enough Data to report the value: either only one facility reported data for that species-antibiotic combination or <30 isolates were tested.
- **Limitations:** Individual facilities often use different methods to test for antimicrobial susceptibility, different methods to build their antibiograms, and different antibiotics in their pharmacies. These factors limit interpretation of these data. Additionally, antimicrobial susceptibility testing done in the laboratory does not always predict how effective that drug will be when used to treat a patient. Data are not stratified by infection site, which influences antibiotic choice and effectiveness.
- **Contributing Facilities:** Thanks to the following facilities for providing data in support of this project:
  - Central Peninsula Hospital
  - South Peninsula Hospital

| Species                            | Penicillin           | Ampicillin          | Oxacillin           | Ciprofloxacin       | Levofloxacin        | Daptomycin           | Clindamycin         | Vancomycin           | Trimethoprim-sulfamethoxazole | Linezolid            | Tetracycline        | Nitrofurantoin       | Rifampin            |
|------------------------------------|----------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|----------------------|-------------------------------|----------------------|---------------------|----------------------|---------------------|
| Total <i>Staphylococcus aureus</i> | <b>18%</b><br>(289)  |                     | <b>66%</b><br>(292) | <b>66%</b><br>(371) | <b>67%</b><br>(372) | <b>100%</b><br>(371) | <b>74%</b><br>(373) | <b>100%</b><br>(374) | <b>82%</b><br>(373)           | <b>99%</b><br>(374)  | <b>90%</b><br>(374) | <b>100%</b><br>(222) |                     |
| MSSA                               | <b>17%</b><br>(191)  |                     | <b>S</b>            | <b>92%</b><br>(191) | <b>92%</b><br>(191) | <b>100%</b><br>(191) | <b>90%</b><br>(192) | <b>100%</b><br>(192) | <b>99%</b><br>(192)           | <b>99%</b><br>(192)  | <b>95%</b><br>(192) | <b>100%</b><br>(100) |                     |
| MRSA                               |                      |                     | <b>R</b>            | <b>23%</b><br>(124) | <b>23%</b><br>(124) |                      | <b>71%</b><br>(125) | <b>100%</b><br>(125) | <b>98%</b><br>(125)           | <b>100%</b><br>(125) | <b>93%</b><br>(125) |                      | <b>98%</b><br>(124) |
| <i>Staphylococcus epidermidis</i>  | <b>16%</b><br>(205)  |                     | <b>52%</b><br>(206) | <b>75%</b><br>(205) | <b>76%</b><br>(206) |                      | <b>66%</b><br>(205) | <b>100%</b><br>(206) | <b>67%</b><br>(205)           | <b>99%</b><br>(206)  | <b>83%</b><br>(206) | <b>100%</b><br>(138) | <b>99%</b><br>(205) |
| <i>Enterococcus faecalis</i>       | <b>100%</b><br>(251) | <b>99%</b><br>(256) |                     | <b>90%</b><br>(251) | <b>97%</b><br>(256) |                      | <b>R</b>            | <b>100%</b><br>(256) | <b>R</b>                      | <b>99%</b><br>(256)  | <b>26%</b><br>(256) | <b>88%</b><br>(256)  |                     |
| Group B <i>Streptococcus</i>       | <b>100%</b><br>(36)  | <b>S</b>            |                     |                     | <b>100%</b><br>(31) |                      | <b>72%</b><br>(36)  | <b>100%</b><br>(39)  |                               | <b>100%</b><br>(31)  | NED                 |                      |                     |





| Species                       | Ampicillin          | Ampicillin+Sulbactam | Piperacillin+Tazobactam | Cefazolin            | Ceftriaxone          | Ceftazidime          | Cefepime             | Gentamicin           | Tobramycin           | Ciprofloxacin       | Levofloxacin        | Trimeth+Sulfa       | Nitrofurantoin      |
|-------------------------------|---------------------|----------------------|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|---------------------|---------------------|---------------------|
| <i>Escherichia coli</i>       | <b>66%</b><br>(988) | <b>69%</b><br>(988)  | <b>99%</b><br>(988)     | <b>94%</b><br>(988)  | <b>99%</b><br>(988)  | <b>99%</b><br>(971)  | <b>100%</b><br>(988) | <b>96%</b><br>(988)  | <b>96%</b><br>(971)  | <b>91%</b><br>(988) | <b>92%</b><br>(988) | <b>85%</b><br>(988) | <b>97%</b><br>(954) |
| <i>Klebsiella pneumoniae</i>  | <b>R</b>            | <b>93%</b><br>(169)  | <b>99%</b><br>(169)     | <b>100%</b><br>(169) | <b>100%</b><br>(169) | <b>100%</b><br>(166) | <b>100%</b><br>(169) | <b>100%</b><br>(169) | <b>100%</b><br>(166) | <b>96%</b><br>(169) | <b>99%</b><br>(169) | <b>98%</b><br>(169) | <b>46%</b><br>(158) |
| <i>Proteus mirabilis</i>      | <b>84%</b><br>(116) | <b>90%</b><br>(116)  | <b>95%</b><br>(116)     | <b>92%</b><br>(116)  | <b>99%</b><br>(116)  | <b>99%</b><br>(116)  | <b>99%</b><br>(116)  | <b>95%</b><br>(116)  | <b>95%</b><br>(116)  | <b>93%</b><br>(116) | <b>95%</b><br>(116) | <b>91%</b><br>(116) | <b>R</b>            |
| <i>Pseudomonas aeruginosa</i> | <b>R</b>            | <b>R</b>             | <b>96%</b><br>(182)     | <b>R</b>             | <b>R</b>             | <b>96%</b><br>(182)  | <b>95%</b><br>(182)  | <b>93%</b><br>(147)  | <b>100%</b><br>(131) | <b>90%</b><br>(182) | <b>84%</b><br>(182) | <b>R</b>            | <b>R</b>            |



## 2022 Alaska State Antibigram: Interior Region

The following tables show the proportion of isolates of various bacterial species that tested susceptible to various antibiotics during 2021. These data were aggregated from the antibiograms produced by Alaska hospitals in order to create aggregate regional resistance pattern summaries. These antibiograms can be helpful for health care providers in selecting appropriate empiric antimicrobial therapy for their patients until specific individual laboratory test results are available. They can also be helpful for determining antibiotic stewardship priorities within hospitals and emerging resistance patterns in a broader service area.

- **Methodology:** Individual hospitals prepared their own facility antibiograms, which were shared with the Alaska Section of Epidemiology. Aggregated susceptibility percentages were calculated as the proportion of all tested isolates for the region that were susceptible. Values are only reported when more than one facility provided data for the given species-antibiotic combination. Intrinsic resistance is indicated with an “R”, following the guidance of CLSI document M100-S24.
- **Multi-Drug Resistant Organisms of Note:**
  - Vancomycin-resistant *Staphylococcus aureus* (VRSA): no cases of VRSA have ever been reported in Alaska. VRSA will stop being reportable to Section of Epidemiology in 2023.
  - Carbapenem-resistant Enterobacterales (CRE): there was one case of CRE reported in a Interior resident in 2022.
  - Carbapenem-resistant *Pseudomonas aeruginosa*: there were no cases of carbapenem-resistant *Pseudomonas aeruginosa* reported in Southwest residents in 2022.
- **Legend:**
  - The top value in each square is the percent of isolates of that species that tested susceptible to that antibiotic.
  - The lower value in each square indicates the number of tested isolates for that species-antibiotic combination.
  - “R” indicates intrinsic resistance to that antibiotic, while “S” indicates definitional susceptibility.
  - “NED” indicates that there was Not Enough Data to report the value: either only one facility reported data for that species-antibiotic combination or <30 isolates were tested.
- **Limitations:** Individual facilities often use different methods to test for antimicrobial susceptibility, different methods to build their antibiograms, and different antibiotics in their pharmacies. These factors limit interpretation of these data. Additionally, antimicrobial susceptibility testing done in the laboratory does not always predict how effective that drug will be when used to treat a patient. Data are not stratified by infection site, which influences antibiotic choice and effectiveness.
- **Contributing Facilities:** Thanks to the following facilities for providing data in support of this project:
  - Fairbanks Memorial Hospital
  - Chief Andrew Isaac Health Center

| Species   | Penicillin           | Oxacillin           | Ciprofloxacin       | Levofloxacin        | Clindamycin         | Erythromycin        | Vancomycin           | Gentamicin          | Trimethoprim-sulfamethoxazole | Linezolid            | Tetracycline        | Nitrofurantoin      |
|---|----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|-------------------------------|----------------------|---------------------|---------------------|
| Total <i>S. aureus</i>  |                      | <b>66%</b><br>(498) | <b>70%</b><br>(646) | <b>71%</b><br>(646) | <b>83%</b><br>(646) | <b>49%</b><br>(646) |                      |                     | <b>97%</b><br>(646)           |                      | <b>95%</b><br>(646) |                     |
| Coagulase-negative <i>Staph</i><br>(including <i>S. epidermidis</i> ) |                      | <b>57%</b><br>(138) | <b>83%</b><br>(162) | <b>83%</b><br>(162) | <b>68%</b><br>(138) | <b>49%</b><br>(138) | <b>100%</b><br>(138) | <b>96%</b><br>(138) | <b>78%</b><br>(162)           | <b>100%</b><br>(138) |                     | <b>99%</b><br>(138) |
| <i>Enterococcus spp.</i>  | <b>100%</b><br>(254) |                     | <b>95%</b><br>(254) | <b>97%</b><br>(254) |                     |                     |                      |                     |                               |                      | <b>37%</b><br>(254) | <b>99%</b><br>(254) |



| Species                      | Ampicillin           | Ceftriaxone          | Ciprofloxacin        | Levofloxacin         | Trimethoprim-sulfamethoxazole | Nitrofurantoin       |
|------------------------------|----------------------|----------------------|----------------------|----------------------|-------------------------------|----------------------|
| <i>Escherichia coli</i>      | <b>65%</b><br>(1509) | <b>96%</b><br>(1509) | <b>89%</b><br>(1509) | <b>89%</b><br>(1509) | <b>84%</b><br>(1509)          | <b>98%</b><br>(1509) |
| <i>Klebsiella pneumoniae</i> |                      |                      | <b>98%</b><br>(160)  | <b>98%</b><br>(160)  | <b>96%</b><br>(160)           | <b>39%</b><br>(160)  |

