Healthcare is the first large international group to adopt and implement the U.S. CDC ASP elements across its network of foreign hospitals. By utilizing a phased approach, we have ensured consistent and effective implementation across diverse healthcare settings. To date, all 80 hospitals have successfully completed Phase 2 of the program and are on track to achieve Phase 3 milestones by 2025 (see Table 4). Early outcomes from this initiative underscore the significant value of standardized ASPs in enhancing patient safety, reducing AMR and fostering sustainable quality improvement.

*Antimicrobial Stewardship & Healthcare Epidemiology* 2025;5(Suppl. S2):s54–s58
doi:10.1017/ash.2025.260

**Presentation Type:**
Poster Presentation
**Subject Category:** Antibiotic Stewardship

## Mapping Microbial Resistance: Unveiling Regional Patterns through Atlanta's Antibiogram Development

Melat Endashaw[1], Trinh Vu[2], Sujit Suchindran[3] and Edo McGee[4]
[1]Emory University Hospital Midtown; [2]Emory University Hospital Midtown; [3]Emory University School of Medicine and [4]Philadelphia College of Osteopathic Medicine, School of Pharmacy

**Background:** Multidrug resistance remains one of the top global health threats and has been rising over recent decades, jeopardizing patient outcomes and increasing healthcare costs. This underscores an urgent need to design tools to optimize antibiotic prescribing to target these pathogens. Antibiograms are an essential antimicrobial stewardship tool used to provide guidance for empiric antimicrobial selection and information on local resistance. However, facility-level antibiograms are limited to individual institutions and do not reflect regional variations in resistance. Previous studies have demonstrated the feasibility and importance of generating regional antibiograms to better inform regional infection prevention and spearhead antimicrobial stewardship initiatives. Regional antibiograms also offer a valuable resource for community hospitals and health centers with lower pathogen prevalence and limited access to infectious diseases-trained personnel. This study aims to curate a regional antibiogram to analyze and understand antimicrobial susceptibility and resistance patterns of targeted pathogens across Metro Atlanta. **Methods:** This descriptive study aimed to evaluate antibiograms from multiple hospitals across the Atlanta metropolitan area. In September 2019, flagship hospitals of five different health-systems within metro Atlanta were surveyed using a

**Table 1:** Characteristics of Contributing Flagship Hospital of each Healthcare System (Hospital A, Health system E, Health system F)

| Characteristics (n=3) | n (%) |
|---|---|
| **Hospital bed size** | |
| > 500 | 3 (100.0) |
| **Patient population** | |
| Adults | 3 (100.0) |
| Pediatrics | 0 |
| Obstetrics | 2 (66.7) |
| **Special patient populations** | |
| Bone marrow transplant | 1 (33.3) |
| Burn | 1 (33.3) |
| Cystic fibrosis | 2 (66.7) |
| Neonatal ICU | 2 (66.7) |
| Oncology/hematology | 3 (100.0) |
| Solid organ transplant | 2 (66.7) |
| Trauma | 1 (33.3) |
| **Specialized ID services available** | 3 (100.0) |
| **Primary professional(s) responsible for generating antibiograms** | |
| Microbiologist | 3 (100.0) |
| Epidemiologist | 1 (33.3) |
| ID physiciann | 1 (33.3) |
| Non-ID physician | 1 (33.3) |
| ID pharmacist | 1 (33.3) |
| **Frequency of generating new antibiograms** | |
| Every year | 3 (100.0) |
| **Months of culture data used to generate antibiograms** | |
| 12 months* | 3 (100.0) |
| **Specimen sources used to compile data for antibiogram** | |
| Blood | 3 (100.0) |
| Cerebrospinal fluid | 3 (100.0) |
| Pleural fluid/bronchoalveolar lavage | 3 (100.0) |
| Sputum | 3 (100.0) |
| Urine | 3 (100.0) |
| Wound | 2 (66.7) |
| **Stratify antibiograms by sample site (i.e., separate urine antibiogram)** | 1 (33.3) |
| **Stratify antibiograms by hospital location (ICU, general wards, ED, etc.)** | 2 (66.7) |
| **Inclusion of ED isolates** | 1 (33.3) |
| **Inclusion of first only isolates** | 3 (100.0) |
| **Susceptibility platform used** | |
| MicroScan | 1 (33.3) |
| Vitek | 2 (66.7) |
| **Fungal antibiogram available** | 1 (33.3) |
| **Using breakpoints established by Clinical and Laboratory Standards Institute** | 3 (100.0) |
| **Which edition of the CLSI M100 are you using for breakpoints?** | 30th Edition 2020 (66.7)<br>25th Edition 2015 (33.3) |
| **Do you routinely adopt new/revised CLSI breakpoints?** | Yes, on a case-by-case basis (33.3)<br>Yes, update once per year (33.3)<br>Yes, update with every revision (33.3) |

*1 hospital pools 24 months of data to obtain > 30 isolates

**Table 2:** Non-Susceptible Rates for Targeted Resistant Pathogens

| Pathogen Combination | Antibiotic | Susceptibility Rate | Non-Susceptibility Rates |
|---|---|---|---|
| Staphylococcus aureus | Oxacillin | 54.9% | **MRSA: 45.1%** |
| Enterococcus faecalis | Vancomycin | 95.8% | **VRE: 15.8%** (557/3525) |
| Enterococcus faecium | | 31.0% | |
| Acinetobacter baumannii/complex | Ceftriaxone | 53.3% | **Ceftriaxone-Resistant: 11.3%** (2957/26163) |
| Citrobacter freundii | | 71.7% | |
| Citrobacter koseri | | 99.6% | |
| Enterobacter cloacae | | 74.8% | |
| Escherichia coli | | 90.0% | |
| Klebsiella aerogenes | | 78.0% | |
| Klebsiella oxytoca | | 88.8% | |
| Klebsiella pneumoniae | | 89.1% | |
| Morganella morganii | | 84.0% | |
| Proteus mirabilis | | 97.3% | |
| Proteus vulgaris | | 50.0% | |
| Providencia group | | 90.8% | |
| Serratia marcescens | | 85.8% | |
| Acinetobacter baumannii/complex | Meropenem | 86.8% | **CR-AB: 13.2%** (52/395) |
| Citrobacter freundii | Meropenem | 94.5% | **CR-E: 1.1%** (275/26004) |
| Citrobacter koseri | | 100.0% | |
| Enterobacter cloacae | | 97.3% | |
| Escherichia coli | | 99.5% | |
| Klebsiella aerogenes | | 92.7% | |
| Klebsiella oxytoca | | 99.8% | |
| Klebsiella pneumoniae | | 98.9% | |
| Morganella morganii | | 96.7% | |
| Proteus mirabilis | | 100.0% | |
| Proteus vulgaris | | 50.0% | |
| Providencia group | | 97.1% | |
| Serratia marcescens | | 97.2% | |
| Pseudomonas aeruginosa | Meropenem | 86.7% | **CR-PA: 13.3%** |

**Table 3:** Carbapenem-Resistance Rates in Hospitals with Restrictive vs Non-Restrictive Antimicrobial Restrictions

| Carbapenem-Resistant Species | Restrictive Hospitals (n=8) | Non-Restrictive Hospitals (n=2) | p-value |
|---|---|---|---|
| CR-AB | 13.3%<br>52/391 | 0%<br>0/4 | - |
| CR-E | 1.1%<br>246/22912 | 1.0%<br>30/3092 | 0.602 |
| CR-PA | 11.6%<br>259/2242 | 19.6%<br>118/602 | **<0.001** |

| Gram Positive Organism | Antimicrobial | | | | | | |
|---|---|---|---|---|---|---|---|
| | Ampicillin | Oxacillin | Vancomycin | Linezolid | Daptomycin | Clindamycin | SMZ-TMP |
| **Staphylococcus aureus** | - | **54.9%**<br>3638/6625 | **99.9%**<br>6620/6625 | **99.9%**<br>6094/6098 | **99.6%**<br>6072/6098 | **70.6%**<br>4305/6098 | **94.2%**<br>6242/6625 |
| **Enterococcus faecalis** | **99.2%**<br>2872/2896 | - | **95.8%**<br>2773/2896 | **98.5%**<br>2852/2896 | **99.6%**<br>2883/2896 | - | - |
| **Enterococcus faecium** | **14.6%**<br>92/629 | - | **31.0%**<br>195/629 | **97.3%**<br>612/629 | **96.7%**<br>466/482 | - | - |

**Figure 1**: Gram-Positive Isolate Analysis

| Gram Negative Organism | Antimicrobial | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ampicillin | Amp/Sulb | Pip/tazo | Cefazolin | Ceftriaxone | Ceftazidime | Cefepime | Ertapenem | Meropenem | Gentamicin | Tobramycin | Amikacin | Ciprofloxacin | Levofloxacin | SMZ/TMP | Tetracycline |
| **Acinetobacter baumannii/complex** | - | **81.8%**<br>191/234 | **71.3%**<br>181/254 | - | **53.3%**<br>90/169 | **71.0%**<br>137/193 | **74.6%**<br>129/173 | - | **86.8%**<br>343/395 | **81.3%**<br>247/304 | **87.1%**<br>344/395 | **100.0%**<br>50/50 | **75.8%**<br>257/339 | **74.6%**<br>144/193 | **75.2%**<br>297/395 | **82.2%**<br>139/169 |
| **Citrobacter freundii** | - | - | **82.7%**<br>330/399 | **0%**<br>0/76 | **71.7%**<br>286/399 | **72.4%**<br>289/399 | **94.5%**<br>377/399 | **95.5%**<br>230/240 | **94.5%**<br>377/399 | **90.2%**<br>360/399 | **93.0%**<br>371/399 | **100.0%**<br>399/399 | **90.0%**<br>216/240 | **91.3%**<br>295/323 | **82.7%**<br>330/399 | **97.6%**<br>156/164 |
| **Citrobacter koseri** | - | - | **99.6%**<br>243/244 | **95.0%**<br>123/130 | **99.6%**<br>243/244 | **100.0%**<br>244/244 | **100.0%**<br>244/244 | **100.0%**<br>244/244 | **100.0%**<br>244/244 | **100.0%**<br>243/243 | **99.5%**<br>243/244 | **100.0%**<br>244/244 | **100.0%**<br>244/244 | **100.0%**<br>114/114 | **99.6%**<br>243/244 | **98.2%**<br>112/114 |
| **Enterobacter cloacae/complex** | - | - | **78.1%**<br>825/1056 | **0%**<br>0/328 | **74.8%**<br>790/1056 | **75.4%**<br>796/1056 | **92.0%**<br>971/1056 | **96.0%**<br>726/756 | **97.3%**<br>1027/1056 | **95.5%**<br>1009/1056 | **94.7%**<br>1000/1056 | **100.0%**<br>1056/1056 | **92.1%**<br>631/685 | **91.8%**<br>715/779 | **99.3%**<br>954/1056 | **85.8%**<br>411/479 |
| **Escherichia coli** | **47.9%**<br>5749/12000 | **55.3%**<br>7844/14191 | **97.1%**<br>14646/15078 | **82.7%**<br>12470/15078 | **90.0%**<br>13564/15078 | **91.0%**<br>13720/15078 | **92.2%**<br>13898/15078 | **99.4%**<br>12843/12920 | **93.5%**<br>14099/15078 | **90.6%**<br>13662/15078 | **91.0%**<br>13720/15078 | **99.4%**<br>14996/15083 | **77.4%**<br>9283/12000 | **74.5%**<br>7993/10725 | **72.5%**<br>10927/15078 | **73.8%**<br>6320/8567 |
| **Klebsiella aerogenes** | - | - | **80.2%**<br>594/703 | - | **78.0%**<br>548/703 | **78.9%**<br>555/703 | **94.2%**<br>662/703 | **91.5%**<br>270/295 | **95.4%**<br>671/703 | **94.4%**<br>627/664 | **93.7%**<br>659/703 | **98.3%**<br>690/703 | **93.3%**<br>443/475 | **97.8%**<br>441/451 | **95.0%**<br>668/703 | **92.5%**<br>246/266 |
| **Klebsiella oxytoca** | - | **56.7%**<br>361/531 | **89.8%**<br>513/571 | **38.8%**<br>198/510 | **88.8%**<br>501/571 | **92.1%**<br>525/570 | **96.1%**<br>549/571 | **100.0%**<br>344/344 | **99.8%**<br>570/571 | **92.6%**<br>529/571 | **91.2%**<br>521/571 | **100.0%**<br>571/571 | **93.0%**<br>281/302 | **95.7%**<br>464/485 | **90.4%**<br>516/571 | **91.1%**<br>235/258 |
| **Klebsiella pneumoniae** | - | **77.1%**<br>3460/4488 | **92.9%**<br>4483/4825 | **84.6%**<br>4083/4825 | **89.1%**<br>4300/4825 | **90.0%**<br>4322/4825 | **91.7%**<br>4423/4825 | **99.1%**<br>378/381 | **98.9%**<br>4774/4825 | **93.0%**<br>4489/4825 | **93.0%**<br>4485/4825 | **99.5%**<br>4801/4825 | **92.0%**<br>3217/3498 | **92.2%**<br>3305/3582 | **85.2%**<br>4113/4825 | **80.1%**<br>2061/2572 |
| **Morganella morganii** | - | - | **93.1%**<br>256/275 | - | **84.0%**<br>231/275 | **80.0%**<br>220/275 | **92.7%**<br>255/275 | **96.4%**<br>240/249 | **96.7%**<br>266/275 | **82.5%**<br>227/275 | **90.5%**<br>249/275 | **98.9%**<br>272/275 | **74.3%**<br>185/249 | **80.7%**<br>121/150 | **66.9%**<br>184/275 | - |
| **Proteus mirabilis** | **83.9%**<br>1309/1561 | **92.6%**<br>1689/1823 | **98.7%**<br>1929/1955 | **91.2%**<br>1780/1958 | **97.3%**<br>1892/1945 | **97.2%**<br>1901/1955 | **97.9%**<br>1913/1955 | **100.0%**<br>1584/1584 | **100.0%**<br>1952/1955 | **95.0%**<br>1857/1955 | **95.3%**<br>1863/1955 | **99.6%**<br>1947/1955 | **80.5%**<br>1150/1429 | **81.4%**<br>1004/1234 | **82.0%**<br>1579/1925 | - |
| **Proteus vulgaris** | - | **78.0%**<br>39/50 | **100.0%**<br>50/50 | - | **50.0%**<br>25/50 | **50.0%**<br>25/50 | **100.0%**<br>50/50 | **50.0%**<br>25/50 | **50.0%**<br>25/50 | **50.0%**<br>25/50 | **50.0%**<br>25/50 | **50.0%**<br>25/50 | **98.0%**<br>49/50 | **50.0%**<br>25/50 | **98.0%**<br>49/50 | - |
| **Providencia group** | - | **33.3%**<br>23/69 | **93.1%**<br>162/174 | - | **90.8%**<br>158/174 | **81.0%**<br>141/174 | **96.6%**<br>168/174 | **97.1%**<br>169/174 | **97.1%**<br>169/174 | **53.4%**<br>93/174 | **52.9%**<br>92/174 | **100.0%**<br>174/174 | **62.1%**<br>108/174 | **78.3%**<br>54/69 | **74.7%**<br>130/174 | - |
| **Pseudomonas aeruginosa** | - | - | **81.4%**<br>2316/2844 | - | - | **81.7%**<br>2323/2844 | **80.4%**<br>2279/2834 | - | **86.7%**<br>2467/2844 | **67.7%**<br>2486/2834 | **90.7%**<br>2712/2990 | **95.3%**<br>2701/2834 | **80.4%**<br>1388/1726 | **74.5%**<br>1650/2087 | - | - |
| **Serratia marcescens** | - | - | **91.3%**<br>146/238 | **0%**<br>0/211 | **85.8%**<br>578/674 | **86.6%**<br>584/674 | **96.7%**<br>652/674 | **96.3%**<br>445/462 | **97.2%**<br>655/674 | **97.2%**<br>655/674 | **86.9%**<br>580/674 | **99.6%**<br>673/674 | **92.3%**<br>385/417 | **95.9%**<br>444/463 | **98.1%**<br>661/674 | **22.2%**<br>10/45 |
| **Stenotrophomonas maltophilia** | - | - | - | - | - | **58.5%**<br>152/260 | - | - | - | - | - | - | - | **86.9%**<br>225/260 | **92.8%**<br>282/304 | - |

**Figure 2**: Gram-Negative Isolate Analysis



https://doi.org/10.1017/ash.2025.261 Published online by Cambridge University Press

questionnaire to collect information on basic facility and microbiology laboratory characteristics. Three health-systems responded, providing inpatient antibiogram data from the 2019 calendar year. These data were combined to create a single, cumulative antibiogram with 18 clinically relevant combinations of microorganisms and antibiotics. In total, data from 10 different hospitals were aggregated to create one regional antibiogram. **Results:** Data from 10 hospitals were combined to create one regional antibiogram with 18 organisms and 21 antibiotics. The overall prevalence of methicillin-resistant Staphylococcus aureus (MRSA) was 45.1% and vancomycin-resistant Enterococcus (VRE) was 15.8%, carbapenem-resistant Acinetobacter baumannii (CRAB) was 13.2%, carbapenem-resistant enterobacterales (CRE) was 1.1%, and carbapenem-resistant Pseudomonas aeruginosa (CR-PA) was 13.3%. Carbapenem resistance rates were compared between carbapenem-restrictive (n=4) and carbapenem-non-restrictive (n=2) hospitals. The prevalence of CR-PA was significantly higher in carbapenem-non-restrictive hospitals compared to carbapenem-restrictive hospitals, 19.6% vs 11.6% ($p < 0$ .001). **Conclusion:** The development of a regional cumulative antibiogram to capture resistance patterns of targeted pathogens across multiple health-systems in a large metropolitan area is feasible. Data from a regional antibiogram is useful in assessing susceptibilities and can serve as a valuable antimicrobial stewardship tool for institutions without access to their own specific antibiogram. Additionally, implementation of targeted stewardship policies, such as carbapenem restriction, demonstrates promise to potentially slow the development of resistant pathogens, thereby improving patient outcomes.

*Antimicrobial Stewardship & Healthcare Epidemiology* 2025;5(Suppl. S2):s58–s59
doi:10.1017/ash.2025.261

**Presentation Type:**
Poster Presentation
**Subject Category:** Antibiotic Stewardship

**Provider Experience with Outpatient Parenteral Antimicrobial Therapy in Veterans Affairs Healthcare Systems: a qualitative study**

Elizabeth Scruggs-Wodkowski[1,2], Lauren Gauntlett[3], Amanda Blok[3], Danielle Helminski[3], Nicholas Henry[3], Sara Keller[4], Ronald Kendall[1], Manon Nitta[3], Allison Ranusch[3], Molly Harrod[3] and Sarah Krein[2,3]
[1]VA Ann Arbor Healthcare System; [2]University of Michigan Healthcare System; [3]Center for Clinical Management Research, VA Ann Arbor Healthcare System and [4]Johns Hopkins University School of Medicine

**Background:** Variability in outpatient parenteral antimicrobial therapy (OPAT) management and challenges to providing recommended OPAT care can compromise patient safety and care quality. Little is known about how OPAT is currently delivered by healthcare systems across the United States (US), including within the Veteran's Health Administration (VHA). We sought to understand and compare OPAT delivery at selected Veterans Affairs medical centers. **Method:** Using a qualitative methodology, we conducted semi-structured interviews with key informants involved in OPAT delivery at 6 VHA medical centers with different complexity levels in the Midwestern US. Facility complexity is determined by patient volume and complexity level along with the amount of teaching and research conducted at the facility. Interviews occurred between February and December 2024 with healthcare personnel (n=30), including primary care and infectious diseases physicians, pharmacists, nursing staff, care coordinators, and vascular access providers. Data collection focused on better

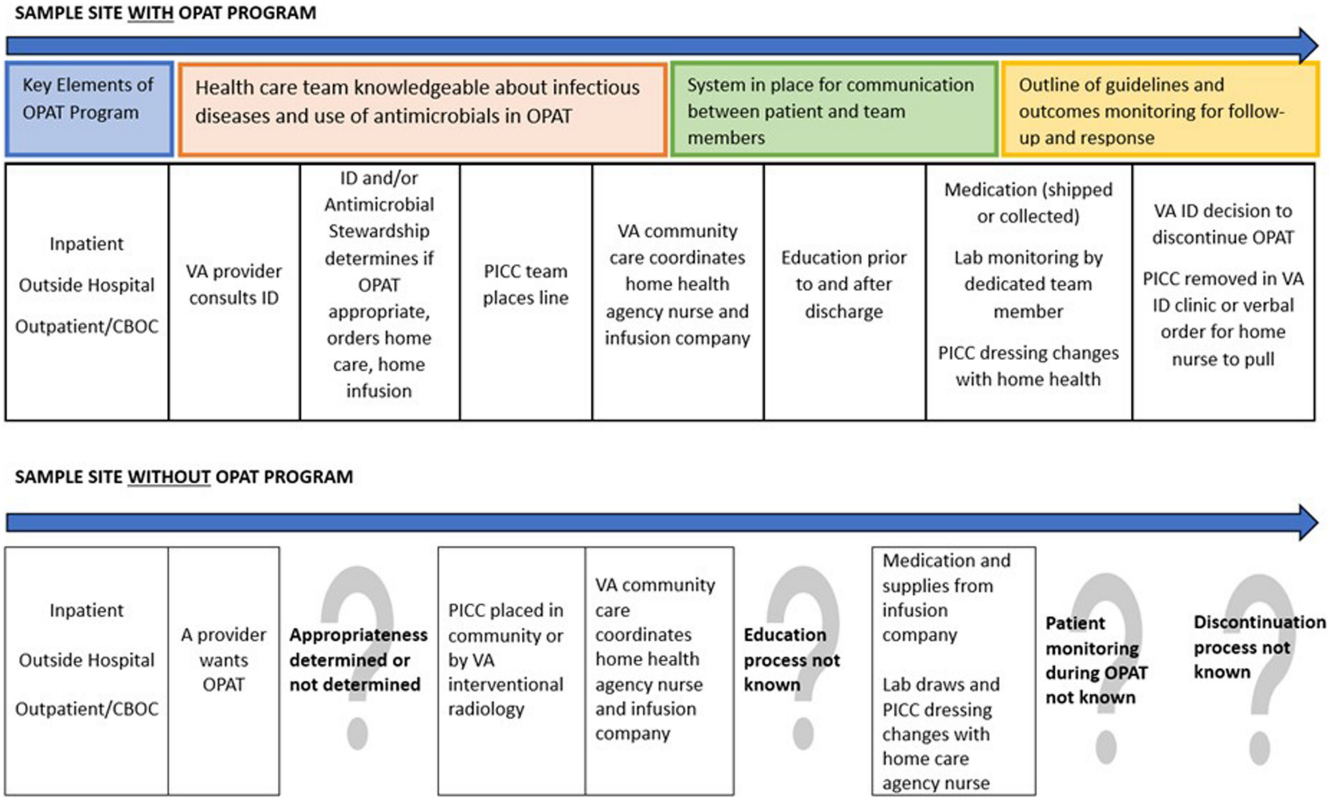



**Figure 1.** Comparison of process maps with and without established OPAT programs.

Abbreviations: CBOC: community-based outpatient clinics; ID: infectious diseases; OPAT: outpatient parenteral antimicrobial therapy; PICC: peripherally inserted central catheter; VA: Veterans Affairs



https://doi.org/10.1017/ash.2025.261 Published online by Cambridge University Press