Article DOI: http://dx.doi.org/10.3201/eid2210.160695

# Polymyxin B Resistance in Carbapenem-Resistant *Klebsiella pneumoniae*, São Paulo, Brazil

## Technical Appendix

**Technical Appendix Table 1.** Primers used for amplification and sequencing of the $bla_{KPC}$ gene

| Primer designation | Use | Primer sequence |
|---|---|---|
| 5-prom-blaKPC-JS | PCR and sequencing | 5′-CTAGCTCCACCTTCAAACAAGGA |
| 3-out-blaKPC-JS | PCR and sequencing | 5′-TGGGTGGGCCAATAGATGAT |
| blaKPC-397–416-seqF | Sequencing | 5′-GCCGCCAATTTGTTGCTGAA |
| blaKPC-590–71-seqR | Sequencing | 5′-GCAGAGCCCAGTGTCAGTTT |

**Technical Appendix Table 2.** Demographic characteristics of *Klebsiella pneumoniae* isolates included in this study

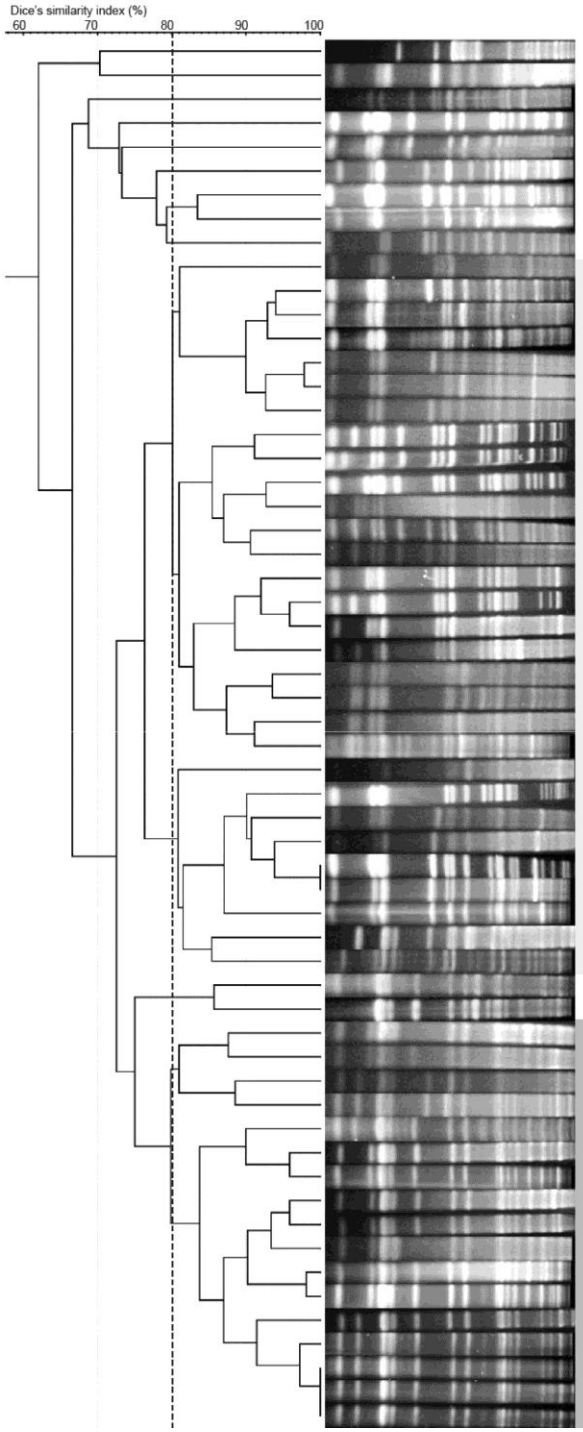
| Characteristic | No. (%) *K. pneumoniae* isolates (n = 3,085) |
|---|---|
| Year | |
| 2011 | 468 (15.2) |
| 2012 | 518 (16.8) |
| 2013 | 629 (20.4) |
| 2014 | 662 (21.5) |
| 2015 | 808 (26.2) |
| Isolation source | |
| Blood | 1,138 (36.9) |
| Respiratory tract | 892 (28.9) |
| Other non-urinary non-surveillance | 1,055 (34.2) |

*During July 1, 2015–December 31, 2015, only carbapenem-resistant *K. pneumoniae* were tested for polymyxin B susceptibility.

**Technical Appendix Table 3.** Susceptibility of carbapenem-resistant *Klebsiella pneumoniae* and carbapenem and polymyxin B–resistant K. pneumoniae to alternative antimicrobial drugs*

| | Susceptibility | |
|---|---|---|
| Antimicrobial drug | In CRKp, no. (%)† | In CPRKp, no. (%)† |
| Amikacin | 841 (79.9) | 183 (73.8) |
| Chloramphenicol | 530 (23.8) | 137 (41.6) |
| Fosfomycin | 258 (27.9) | 60 (81.6) |
| Gentamicin | 839 (50.9) | 182 (58.2) |
| Tigecycline | 468 (72.2) | 111 (69.4) |

*CRKp, carbapenem-resistant *K. pneumoniae*. CPRKp, carbapenem- and polymyxin B–resistant *K. pneumoniae*.
†Values indicate susceptibility rate and the number of isolates (n) tested for each antimicrobial drug.




| Isolate | Date | Hospital | PMB MIC | MLST | $bla_{KPC}$ |
|---|---|---|---|---|---|
| 3540 | Oct, 14 | D | ≥64 | - | - |
| 8762 | Jul, 14 | L | ≥64 | - | - |
| 1157 | Oct, 14 | A | 16 | - | - |
| 4451 | Mar, 14 | J | ≥64 | - | - |
| 1108 | Aug, 14 | A | 32 | - | - |
| 3587 | Jan, 15 | D | ≥64 | - | - |
| 4462 | Mar, 14 | J | 32 | - | - |
| 3522 | Feb, 15 | D | 32 | - | - |
| 4067 | Aug, 14 | F | ≥64 | - | - |
| 3578 | Nov, 14 | D | 16 | - | - |
| 1178 | Jan, 15 | A | 16 | - | - |
| 1140 | May, 14 | A | ≥64 | - | - |
| 1128 | Mar, 14 | A | 32 | - | - |
| 4499 | Apr, 14 | J | 32 | ST11 | $bla_{KPC-2}$ |
| 4041 | Apr, 14 | F | ≥64 | - | - |
| 4028 | Apr, 14 | F | ≥64 | - | - |
| 3533 | Mar, 15 | D | 16 | ST11 | $bla_{KPC-2}$ |
| 3574 | Jan, 15 | D | ≥64 | - | - |
| 3568 | Mar, 14 | D | 32 | - | - |
| 3598 | Jul, 14 | D | ≥64 | - | - |
| 4008 | Mar, 14 | F | 32 | - | - |
| 4050 | May, 14 | F | 8 | - | - |
| 3552 | Mar, 14 | D | 16 | - | - |
| 3572 | Mar, 14 | D | ≥64 | - | - |
| 3509 | May, 14 | D | 16 | ST11 | $bla_{KPC-2}$ |
| 3518 | Jun, 14 | D | ≥64 | - | - |
| 4159 | Jun, 14 | G | 32 | - | - |
| 4156 | Dec, 14 | G | ≥64 | - | - |
| 4123 | Aug, 14 | G | ≥64 | ST11 | $bla_{KPC-2}$ |
| 4483 | Feb, 15 | J | 32 | ST11 | $bla_{KPC-2}$ |
| 1487 | Oct, 14 | C | ≥64 | - | - |
| 3528 | Feb, 15 | D | 16 | ST11 | $bla_{KPC-2}$ |
| 1264 | Jul, 14 | B | ≥64 | - | - |
| 4254 | Sep, 14 | H | 32 | - | - |
| 4021 | Feb, 15 | F | 32 | ST11 | $bla_{KPC-2}$ |
| 4492 | Feb, 15 | J | 16 | - | - |
| 4444 | Feb, 15 | J | 16 | - | - |
| 4012 | Oct, 14 | F | ≥64 | - | - |
| 4406 | Mar, 14 | J | ≥64 | - | - |
| 1497 | Mar, 15 | C | ≥64 | - | - |
| 1187 | Apr, 14 | A | 32 | - | - |
| 4334 | Apr, 14 | I | ≥64 | ST437 | $bla_{KPC-2}$ |
| 4455 | Apr, 14 | J | 32 | - | - |
| 3588 | Dec, 14 | D | 16 | ST437 | - |
| 3551 | Aug, 14 | D | 32 | - | - |
| 1414 | Mar, 15 | C | 32 | - | - |
| 8346 | Jun, 14 | K | 32 | - | - |
| 4425 | Jan, 15 | J | 16 | - | - |
| 5018 | Oct, 14 | E | ≥64 | ST437 | $bla_{KPC-2}$ |
| 4430 | Jul, 14 | J | ≥64 | - | - |
| 4340 | Jul, 14 | I | ≥64 | - | - |
| 3893 | Feb, 15 | E | 32 | - | - |
| 4473 | Feb, 15 | J | ≥64 | - | - |
| 4371 | Apr, 14 | I | 16 | - | - |
| 4358 | Mar, 14 | I | ≥64 | - | - |
| 4354 | Mar, 14 | I | 16 | ST437 | $bla_{KPC-2}$ |
| 4313 | Jan, 15 | I | 16 | - | - |
| 4293 | Mar, 14 | H | ≥64 | - | - |

**Technical Appendix Figure.** Clonal diversity among polymyxin B (PMB)– and carbapenem-resistant *Klebsiella pneumoniae* from São Paulo, Brazil. Isolates highlighted in shades of gray represent the 2 largest clonal groups that were detected. Public hospitals are represented by letters A and B. Private hospitals are represented by letters C–L. Date represents the month and year (i.e. 2014, or 2015). MLST, multilocus sequence typing; PMB MIC, PMB MIC in mg/L; ST, sequence type.