**Supplemental Table 1:** Explanation of the calculations used to parameterize the model

| | Event | Estimates (%) | Explanation of Calculation |
|---|---|---|---|
| **A** | Patients given an empiric dose for suspected infection | 33.0 | =70/(2549/12)<br><br>Number of first doses was divided by annualized patient-months from reference 7 |
| **B** | Appropriate empiric dose | 57.1 | NA |
| | Inappropriate empiric dose not given due to antimicrobial stewardship program | 8.6 | =0.429*0.2<br><br>Probability of 'inappropriate first dose' from reference 7 was multiplied by antimicrobial stewardship program effectiveness |
| | **Appropriate empiric treatment** | | |
| **C** | Microbiology tests confirm suspected infection | 100.0 | NA |
| **E** | Continuous treatment de-escalated without antimicrobial stewardship program | 73.2 | =1-0.268<br><br>Complement of the probability of 'more narrow spectrum antimicrobial not chosen' from reference 7 |
| | Continuous treatment de-escalated with antimicrobial stewardship program | 78.6 | =1-(0.268*0.8)<br><br>Probability of 'more narrow spectrum antimicrobial not chosen' from reference 7 was reduced by antimicrobial stewardship program effectiveness and then subtracted from 100% |
| | **Inappropriate empiric treatment** | | |
| **D** | Microbiology tests confirm suspected infection | 10.0 | NA |
| **F** | Continuous treatment appropriately stopped without antimicrobial stewardship program | 50.0 | NA |
| | Continuous treatment appropriately stopped with antimicrobial stewardship program | 60.0 | =1-((1-0.5)*0.8)<br><br>Complement of the probability of 'continuous treatment appropriately stopped without antimicrobial stewardship program' was reduced by antimicrobial stewardship program effectiveness and then subtracted from 100% |

| | **Colonization, Infection and Mortality** | | |
|---|---|---|---|
| **G/H** | *de novo* multidrug-resistant organisms colonization (without antimicrobial exposure) | 37.3 | =1-EXP(-(-LN(1-0.208)/6*12))<br><br>Probability of 'acquiring MDRGN without antibiotic exposure ≥7 d' from reference 3 was converted to an annual rate and then converted back to a probability |
| | *de novo* multidrug-resistant organisms colonization (with antimicrobial exposure) | 72.9 | =1-EXP(-(-LN(1-0.373))*2.8)<br><br>Probability of '*de novo* multidrug-resistant organism colonization (without antimicrobial exposure)' was converted to a rate, multiplied by RR (based on OR of acquiring colonization due to antibiotics exposure vs. no exposure from reference 3), and converted back to a probability |
| **I/J/K** | VRE infection after prior colonization | 16.0 | =1-EXP(-(-LN(1-0.00964))*18.035)<br><br>Probability of VRE infection if uncolonized from reference 2 was converted to a rate, multiplied by RR (based on OR of acquiring VRE due to colonization vs. no colonization from reference 2), and converted back to a probability |
| | MRSA infection after prior colonization | 19.0 | NA |
| | MDRGN infection after prior colonization | 16.0 | Minimum value of either VRE or MRSA infection probabilities |
| **L/M/N** | VRE-associated mortality | 35.0 | =1-EXP(-(-LN(1-0.2))*1.9325)<br><br>Probability of mortality with vancomycin-susceptible enterococci from reference 5 was converted to a rate, multiplied by RR (based on OR of mortality due to VRE versus vancomycin-susceptible enterococci from reference 5), and converted back to a probability |
| | MRSA-associated mortality | 30.0 | NA |
| | MDRGN-associated mortality | 30.0 | Minimum value of either VRE or MRSA mortality probabilities |

| | | | |
|---|---|---|---|
| **O/P** | *C.difficile* infection (without antimicrobial exposure) | 0 | NA |
| | *C.difficile* infection (with antimicrobial exposure) | 8.0 | =1-EXP(-(8.3/100)*1)<br><br>Annual rate of *Clostridium difficile* infection cases in hemodialysis outpatients from reference 6 was converted to a probability |
| **Q** | *C.difficile* infection - associated mortality | 18.9 | =1-EXP(-(21/100)*1)<br><br>Annual rate of deaths for infected patients from reference 6 was converted to a probability |
| **R** | Dialysis-associated mortality not related to infections | 10.4 | =1-EXP(-(11/100)*1)<br><br>Annual rate of deaths for uninfected patients from reference 6 was converted to a probability |
| | **Mean hospitalization costs of non-fatal and fatal infections** | | |
| | *C.difficile* infection | $31,838.37 | Inflation-adjusted costs from references 17 and 18 were averaged |
| | VRE | $46,573.74 | Inflation-adjusted costs from references 12 and 19 were averaged |
| | MRSA | $48,458.63 | Inflation-adjusted costs from references 20 and 21 were averaged |
| | MDRGN | $45,956.33 | NA |

Abbreviations: MDRGN, multidrug-resistant gram-negative bacteria; MRSA, methicillin-resistant *Staphylococcus aureus*; NA, not applicable; OR, odds ratio; RR, relative risk; VRE, vancomycin-resistant enterococci.

**Supplemental Table 2:** Distributions used for parameters varied in the probabilistic sensitivity analysis

| Parameter/Variable* | Default value | Variance | Distribution |
|---|---|---|---|
| **Probabilities** | | | |
| Effectiveness | 0.2 | 0.02 | Beta |
| Patients given an empiric dose for suspected infection | 0.33 | 0.033 | Beta |
| Appropriate empiric dose | 0.571 | 0.057 | Beta |
| Continuous treatment de-escalated after appropriate empiric treatment (without antimicrobial stewardship program) | 0.732 | 0.073 | Beta |
| Microbiology tests confirm suspected infection after inappropriate empiric treatment | 0.1 | 0.01 | Beta |
| Continuous treatment de-escalated after inappropriate empiric treatment (without antimicrobial stewardship program) | 0.5 | 0.05 | Beta |
| *de novo* multidrug-resistant organisms colonization (without antimicrobial exposure) | 0.373 | 0.037 | Beta |
| VRE infection after prior colonization | 0.16 | 0.016 | Beta |
| MRSA infection after prior colonization | 0.19 | 0.019 | Beta |
| VRE-associated mortality | 0.35 | 0.035 | Beta |
| MRSA-associated mortality | 0.3 | 0.03 | Beta |
| *C.difficile* infection (with antimicrobial exposure) | 0.0796 | 0.008 | Beta |
| *C.difficile* infection -associated mortality | 0.189 | 0.019 | Beta |
| Dialysis-associated mortality not related to infections | 0.104 | 0.010 | Beta |
| **Costs** | | | |
| *C.difficile* infection | $31,838.37 | $11,201.09 | Gamma |
| VRE | $46,573.74 | $5,091.90 | Gamma |
| MRSA | $48,458.63 | $12,868.28 | Gamma |
| MDRGN | $45,956.33 | $4,595.63 | Gamma |
| Unit (mg) cost of cefazolin | $0.0027 | $0.0004 | Gamma |
| Unit (mg) cost of cefepime | $0.016 | $0.0013 | Gamma |
| Unit (mg) cost of daptomycin | $1.0487 | $0.0204 | Gamma |
| Unit (mg) cost of meropenem | $0.03778 | $0.0042 | Gamma |
| Unit (mg) cost of gentamycin | $0.02594 | $0.0051 | Gamma |
| Unit (mg) cost of vancomycin | $0.1012 | $0.01686 | Gamma |

*Parameters that cannot be independently varied or were not associated with uncertainty (eg, drug dose) were not included in the probabilistic sensitivity analysis.
Abbreviations: MDRGN, multidrug-resistant gram-negative bacteria; MRSA, methicillin-resistant *Staphylococcus aureus*; NA, not applicable; VRE, vancomycin-resistant enterococci.