

CURRICULUM VITAE
Johns Hopkins University School of Medicine

Pranita Tamma

Pranita D. Tamma, MD, MHS

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DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments

University

2018-present Associate Professor, Department of Pediatrics, Division of Pediatric Infectious Diseases, Johns Hopkins University School of Medicine

Hospital

2012-present Director, Pediatric Antimicrobial Stewardship, Johns Hopkins Hospital

Other

2018-present Associate Professor, Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health

Personal Data

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Education and Training

Undergraduate/graduate

2004 BS/MD, 7-year medical program, State University of New York Downstate Medical School, New York

2011 MHS, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Postdoctoral

2004-2005 Intern, Pediatrics, Johns Hopkins Hospital, Baltimore, MD

2005-2007 Resident, Pediatrics, Johns Hopkins Hospital, Baltimore, MD

2008-2011 Fellow, Pediatric Infectious Diseases, Johns Hopkins Hospital, Baltimore, MD

Professional Experience

2007-2009 Pediatric Hospitalist, Carroll Hospital Medical Center, Westminster, MD

2010-2011 Pediatric Hospitalist, St. Agnes Hospital, Baltimore, MD

2011-2012 Instructor, Pediatrics, Johns Hopkins University School of Medicine, Baltimore, MD

2012-present Director, Pediatric Antimicrobial Stewardship, Johns Hopkins Hospital, Baltimore, MD

2013-2018 Assistant Professor, Pediatrics, Johns Hopkins University School of Medicine, Baltimore, MD

2013-2018 Assistant Professor, Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

PUBLICATIONS

Original Research [OR] (*Corresponding author, [Mentee](#))

1. Strouse JJ, **Tamma PD**, Kickler TS, Takemoto CM. D-dimer for the Diagnosis of Venous Thromboembolism in Children. *American Journal of Hematology* 2009;84:62.
2. ***Tamma PD**, Aucott SW, Milstone AM. Chlorhexidine use in the Neonatal Intensive Care Unit: Results from a National Survey. *Infection Control and Hospital Epidemiology* 2010; 31:846.
3. ***Tamma PD**, [Turnbull AT](#), Milstone AM, Cosgrove SE, Valsamakis A, Budd A, Perl TM. Clinical outcomes of seasonal influenza and pandemic influenza A (H1N1) in pediatric inpatients. *BMC Pediatrics* 2010;10: 72.
4. Tamhane M, Gautney B, Shiu C, Segaren N, **Tamma P**, Thompson CB, Khamadi S, Siberry GK, Persaud D. Analysis of the optimal cut-point for HIV-p24 antigen testing to diagnose HIV infection in HIV-exposed children from resource-constrained settings. *Journal of Clinical Virology* 2011; 50:338.
5. ***Tamma PD**, [Turnbull AE](#), Milstone AM, Lehmann CU, Sydnor ER, Cosgrove SE. Ventilator-associated tracheitis in children: Does antibiotic duration matter? *Clinical Infectious Diseases* 2011; 52:1324.
6. ***Tamma PD**, Putcha N, Suh YS, Van Arendonk KJ, Rinke ML. Do Prolonged Beta-lactam Infusions Improve Clinical Outcomes Compared to Intermittent infusions? A Meta-analysis and Systematic Review of Randomized, Controlled Trials. *BMC Infectious Diseases*, 2011; 11:181.
7. ***Tamma PD**, Savard P, Pal T, Sonnevend A, Perl TM, Milstone AM. An Outbreak of Extended Spectrum β -lactamase Producing *Klebsiella pneumoniae* in a Neonatal Intensive Care Unit. *Infect Control Hosp Epidemiol.* 2012; 33:631.
8. ***Tamma PD**, [Turnbull AT](#), Milstone AM, Hsu AJ, Carroll KC, Cosgrove SE. Outcomes of Bacteremia due to *Pseudomonas aeruginosa*. How Important is the Resistance Breakpoint? *Clinical Infectious Diseases* 2012; 55:799.
9. ***Tamma PD**, Newland JG, Pannanraj PS, Metjian TA, Banerjee R, Gerber JS, Weissman SJ, Beekmann SE, Polgreen PM, Hersh AJ. The use of intravenous colistin among children in the United States: Results from a multicenter, case-series. *Pediatric Infectious Disease Journal.* 2013;32:17.
10. ***Tamma PD**, [Turnbull AE](#), Harris AD, Milstone AM, Hsu AJ, & Cosgrove SE. Less is More: Combination Antibiotic Therapy for the Treatment of Gram-Negative Bacteremia in Children. *JAMA Pediatrics.* 2013;167:903.
11. [Sick AC](#), Lehmann CU, **Tamma PD**, Lee CK, Agwu AL. Sustained Savings from a Longitudinal Cost-Analysis of an Internet-Based Pre-Approval Antimicrobial Stewardship. *Infect Control Hosp Epidemiol.* 2013; 34:573-580.
12. Popoola V, **Tamma PD**, Reich NG, Perl TM, Milstone AM. Risk Factors for Persistent MRSA Colonization in Children with Multiple Intensive Care Unit Admissions. *Infect Control Hosp Epidemiol* 2013; 34(7):748-50.
13. ***Tamma PD**, [Wu H](#), Gerber JS, Hsu AJ, Tekle T, Carroll KC, Cosgrove SE. Outcomes of Children with *Enterobacteriaceae* Bacteremia with Reduced Susceptibility to Ceftriaxone: Do the Revised Breakpoints Translate to Improved Patient Outcomes? *Pediatric Infectious Disease Journal* 2013; 32:965.
14. ***Tamma PD**, Tan K, Nussenblatt VR, [Turnbull AE](#), Carroll KC, Cosgrove SE. Can Matrix-Assisted Laser Desorption Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF) Enhance Antimicrobial Stewardship Efforts in the Acute Care Setting? *Infect Control Hosp Epidemiol.* 2013; 34:990.
15. ***Tamma PD**, [Girdwood SC](#), [Gopaul R](#), Tekle T, Roberts AA, Harris AD, Cosgrove SE, Carroll KC. The Use of Cefepime for Treating AmpC-beta-lactamase producing *Enterobacteriaceae*. *Clinical Infectious Disease* 2013; 57:781.
16. Sammons JS, Gerber JS, **Tamma PD**, Sandora TJ, Banerjee R, Beekman SE, Polgreen PM, Hersh AL. Diagnosis and management of *Clostridium difficile* infection by pediatric infectious diseases clinicians. *Journal of Pediatric Infectious Disease Society* 2014;3:43-48.
17. Tschudin-Sutter S, **Tamma PD**, Naegeli AN, Speck KA, Milstone AM, Perl TM. Distinguishing Community-Associated from Hospital-Associated *Clostridium difficile* Infections in Children: Implications for Public health surveillance. *Clinical Infectious Diseases* 2013;57:1665.
18. ***Tamma PD**, [Robinson GL](#), Gerber JS, Newland JG, DeLisle CM, Zaoutis TE, Milstone AM. Pediatric antimicrobial susceptibility trends across the United States. *Infect Contr Hosp Epidemiol* 2013; 34:1244.
19. [Park SH](#), Milstone AM, Diener-West M, Nussenblatt V, Cosgrove SE, **Tamma PD**. Short Versus Prolonged Courses of Antibiotic Therapy for Children with Uncomplicated Gram-Negative Bacteremia. *Journal of Antimicrobial Chemotherapy* 2014;69:779-85.
20. Tschudin-Sutter S, **Tamma PD**, Milstone AM, Perl TM. Predictors of first recurrence of *Clostridium difficile* infections in children. *Pediatric Infectious Disease Journal* 2014 Apr;33(4):414-6.
21. Drekonja DM, Beekmann SE, Elliott S, Mukundan D, Polenakovic H, Rosenthal M, **Tamma PD**, Polgreen PM, Weissman SJ. Challenges in the Management of Infections due to Carbapenem-Resistant *Enterobacteriaceae*. *Infect Control Hosp Epi* 2014 35:437-939.

22. Sick AC, Tschudin-Sutter S, Turnbull AE, Weissman SJ, ***Tamma PD**. Empiric Combination Therapy for Gram-Negative Bacteremia. *Pediatrics* 2014;133:e1148-55.40.
23. Tschudin-Sutter S, **Tamma PD**, Milstone AM, Perl TM. The Prediction of Complicated *Clostridium difficile* Infections in Children. *Infect Control Hosp Epi* 2014;35:901-903.
24. Huang Y, Carroll KC, Cosgrove SE, ***Tamma PD**. Determining the Optimal Ceftriaxone MIC to Trigger ESBL Confirmatory Testing. *Journal of Clinical Microbiology* 2014; 52: 2228-30.
25. ***Tamma PD**, Sklansky DJ, Palazzi DL, Swami S, Milstone AM. Antibiotic Susceptibility of Common Pediatric Uropathogens in the United States. *Clinical Infectious Disease* 2014;59(5):750-2.
26. ***Tamma PD**, Hsu AJ. Optimizing Therapy for Vancomycin-Resistant Enterococcal Bacteremia in Children. *Current Opinion in Infectious Disease* 2014;27:517-27.
27. ***Tamma PD**, Han JH, Rock C, Harris AD, Lautenbach E, Hsu AJ, Avdic E, Cosgrove SE. Carbapenem Therapy is Associated with Improved Survival Compared to Piperacillin-Tazobactam in Patients with ESBL Bacteremia. *Clinical Infectious Diseases* 2015;60:1319-25.
28. Ibrahim SL, Zhang L, Brady TM, Hsu AJ, Cosgrove SE, ***Tamma PD**. Low-dose Gentamicin for Uncomplicated *Enterococcus faecalis* Bacteremia May be Nephrotoxic in Children. *Clinical Infectious Diseases* 2015;61:1119-24; *corresponding author.
29. Smith JM, Avdic E, **Tamma PD**, Zhang L, Carroll KC, Cosgrove SE. Risk Factors for Resistance to Beta-Lactam/Beta-Lactamase Inhibitors and Ertapenem in *Bacteroides* Species Bacteremia. *Antimicrobial Agents and Chemotherapy* 2015;59:5049-51.
30. Hsu AJ, Carroll KC, Milstone AM, Avdic E, Cosgrove SE, Vilasoja M, ***Tamma PD**. The use of a combination antibiograms to assist with the selection of appropriate antimicrobial therapy for carbapenem-resistant *Enterobacteriaceae* infections. *Infect Contr Hosp Epidemiol* 2015;36:1458-60.
31. Tschudin-Sutter S, Carroll KC, **Tamma PD**, Sudekum ML, Frei R, Widmer AF, Ellis BC, Bartlett J, Perl TM. Impact of toxigenic *Clostridium difficile* colonization on the risk of subsequent *Clostridium difficile* infection in ICU patients. *Infect Contr Hosp Epidemiol* 2015;36:1324-9.
32. Kovacich A, **Tamma PD**, Advani S, Popoola VO, Clantuoni E, Gosey L, Milstone AM. Peripherally Inserted Central Venous Catheter Complications in Children Receiving Outpatient Parenterally Antibiotic Therapy (OPAT). *Infect Contr Hosp Epidemiol* 2016;37:420-4.
33. Suwanarat N, Logan LK, Carroll KC, Bonomo RA, Simner PJ, Rudin S, Milstone AM, Tekle T, Ross MT, ***Tamma PD**. The Prevalence and Molecular Epidemiology of Multidrug-Resistant *Enterobacteriaceae* Colonization in a Pediatric Intensive Care Unit. *Infect Contr Hosp Epidemiol* 2016;37:535-43.
34. Simner PJ, Martin I, Opene B, **Tamma PD**, Carroll KC, & Milstone AM. Evaluation of Multiple Methods for the Detection of Gastrointestinal Colonization of Carbapenem-Resistant Organisms from Rectal Swabs. *Journal of Clinical Microbiology* 2016;54:1664-7.
35. Johnson J, Bracken R, **Tamma PD**, Aucott SW, Bearer C, Milstone AM. Trends in Chlorhexidine Use in United States Neonatal Intensive Care Units: Results from a Follow-Up National Survey. *Infect Contr Hosp Epidemiol* 2016;37:1116-8.
36. Wang R, Cosgrove SE, Tschudin-Sutter S, Han JH, Turnbull AE, Hsu AJ, Avdic E, Carroll KC, & ***Tamma PD**. Cefepime Therapy for Cefepime-Susceptible Extended-Spectrum Beta-Lactamase-Producing *Enterobacteriaceae* Bacteremia. *Open Forum Infectious Diseases* 2016; 3:ofw132.
37. Li DX, Ferrada M, Avdic E, **Tamma PD**, & Cosgrove SE. Sustained Impact of an Antibiotic Stewardship Intervention for Community-Acquired Pneumonia. *Infect Contr Hosp Epidemiol* 2016;37:1243-6.
38. Goodman K, Lessler J, Cosgrove SE, Harris AD, Lautenbach E, Han JH, Milstone AM, Masey C, & ***Tamma PD**. A Clinical Decision Tree to Predict Whether a Bacteremic Patient is Infected With an ESBL-Producing Organism. *Clinical Infectious Diseases* 2016; 63:896-903.
39. Cosgrove SE, Li DX, **Tamma PD**, Avdic E, Hadhazy E, Wakefield T, Gherna M, & Carroll KC. Use of PNA Fish for Blood Cultures Growing Gram-Positive Cocci in Chains without Concomitant Antibiotic Stewardship Intervention Does Not Improve Time to Appropriate Antibiotic Therapy. *Diagnostic Microbiology and Infectious Disease* 2016 ;86:86-92
40. ***Tamma PD**, Suwanarat N, Rudin SD, Logan LK, Simner PJ, Coy LR, Mojica MF, Carroll KC, & Bonomo, RA. First Report of a VIM metallo-beta-lactamase-producing *Klebsiella pneumoniae* Infection in a Child in the United States. *J Pediatr Infect Dis Society* 2016;5:e24-7.
41. ***Tamma PD**, Huang Y, Opene BN, & Simner PJ. Determining the optimal carbapenem MIC that distinguishes carbapenemase-producing and non-carbapenemase-producing carbapenem-resistant *Enterobacteriaceae*. *Antimicrobial Agents and Chemotherapy* 2016; 60:6425-9; *corresponding author.

42. ***Tamma PD**, **Goodman KE**, Harris AD, Tekle T, Robert A, Taiwo A, & Simner PJ. Comparing the Outcomes of Patients with Carbapenemase-Producing and Non-Carbapenemase-Producing Carbapenem-Resistant *Enterobacteriaceae* Bacteremia. *Clinical Infectious Diseases* 2017;64(3):257-264.
43. ***Tamma PD**, Avdic E, Keenan JF, Zhao Y, Anand G, Copper J, Dezube R, Hsu S, & Cosgrove SE. What is the More Effective Antibiotic Stewardship Intervention: Pre-Prescription Authorization or Post-Prescription Review with Feedback? *Clinical Infectious Diseases* 2017; 64(5):537-543.
44. ***Tamma PD** & Rodriguez-Bano J. The Use of Non-Carbapenem Beta-Lactams for the Treatment of ESBL Infections. *Clinical Infectious Diseases* 2017;64(7):972-980.
45. Buckel WR, Ghobrial S, **Tamma PD**, Milstone AM, & Hsu AJ. Risk factors for non-therapeutic initial steady-state vancomycin trough concentrations in children and adolescents receiving high empiric doses of intravenous vancomycin. *Pediatric Drugs* 2017; 19(1):43-5.
46. **Tamma PD**, Opene BNA, Gluck A, Chambers K, Carroll KC, & Simner PJ. A Comparison of Eleven Phenotypic Assays for the Accurate Detection of Carbapenemase-Producing *Enterobacteriaceae*. *Journal of Clinical Microbiology*; 2017; 64(3):257-264.
47. **Fox MT**, Melia MT, Same RG, Conley AT, & ***Tamma PD**. A Seven-Day Course of Trimethoprim-Sulfamethoxazole May Be as Effective as a Seven-Day Course of Ciprofloxacin for the Treatment of Pyelonephritis. *American Journal of Medicine* 2017;130(7):842-845.
48. **Hamdy R**, Hsu AJ, Stockmann C, Olson JA, Bryan M, Hersh AL, **Tamma PD**, & Gerber JS. Epidemiology of Methicillin-Resistant *Staphylococcus aureus* Bacteremia in Children. *Pediatrics* 2017; 139(6): e20170183.
49. ***Tamma PD**, Avdic E, **Li DX**, Dzintars K., & Cosgrove SE. Adverse Events Associated with Antibiotic Use in Hospitalized Patients. *JAMA Internal Medicine*; 2017;177(8):1-8.
50. Avdic E, Wang R, Li DX, **Tamma PD**, Shulder S, Carroll KC, & Cosgrove SE. Sustained Impact of a Rapid Microarray-Based Assay with Antimicrobial Stewardship Interventions on Optimizing Therapy in Patients with Gram-Positive Bacteremia. *Journal of Antimicrobial Chemotherapy* 2017; 72(11):3191-3198.
51. Simner PJ, Opene BNA, Chambers K, **Naumann M**, Carroll KC, & **Tamma PD**. Carbapenemase Detection amongst Carbapenem-Resistant Glucose Nonfermenting Gram-Negative Bacilli. *Journal of Clinical Microbiology* 2017; 55(9):2858-2864.
52. Hsu AJ, Hamdy RF, Huang Y, Olson JA, Ghobrial S, Gerber JS, Hersh AL, & **Tamma PD**. The Association between Vancomycin Troughs and Duration of MRSA Bacteremia in Children. *J Pediatr Infect Dis Society* 2017 Sep 14. doi: 10.1093/jpids/pix068. [Epub ahead of print]
53. **Chotiprasitsakul D**, Han JH, Cosgrove SE, Harris AD, Lautenbach E, Conley AT, Tolomeo P, Wise J, & ***Tamma PD**. Comparing the Outcomes of Adults with *Enterobacteriaceae* Bacteremia Receiving Short-Course versus Prolonged-Course Antibiotic Therapy in a Propensity-Score Matched Multicenter Cohort. *Clinical Infectious Disease* 2018;66(2):172-177.
54. ***Tamma PD**, **Wang R**, Lewis S, Opene NA, and Simner PJ. Is There a Carbapenem MIC Cutoff Value that Distinguishes Carbapenemase-Producing and Non-Carbapenemase-Producing Carbapenem Non-Susceptible *Pseudomonas* and *Acinetobacter* Isolates? *Infection Control and Hospital Epidemiology* 2017; 38(11):1378-1379.
55. **Chiotos K**, **Tamma PD**, Flett K, Naumann M, Karandikar M, Bilker W, Zaoutis T, & Han J. Risk Factors for Colonization or Infection with Carbapenem-Resistant *Enterobacteriaceae* in Children: a Multicenter Study. *Antimicrob Ag Chemother* 2017;61(12). pii: e01440-17.
56. **Chotiprasitsakul D**, **Tamma PD**, Gadala A, & Cosgrove SE. The Role of Negative Methicillin-Resistant *Staphylococcus aureus* Nasal Surveillance Swabs in Predicting the Need for Empiric Vancomycin Therapy. *Infect Control Hosp Epidemiol* 2018;39(3):290-296
57. Liu J, Yu J, Chen F, Yu J, Simner P, **Tamma P**, Liu Y, & Shen L. Emergence and establishment of KPC-2-producing ST11 *Klebsiella pneumoniae* in a general hospital in Shanghai, China. *European Journal of Clinical Microbiology and Infectious Disease* 2018 ;37(2):293-299
58. Simner PJ, Antar AA, Hao S, Gurtowski J, **Tamma PD**, Rock C, Opene BNA, Tekle T, Carroll KC, Schatz MC, & Timp W. Antibiotic Pressure on the Acquisition and Loss of Antimicrobial Resistance Genes in *Klebsiella pneumoniae*. *Journal of Antimicrobial Chemotherapy*. 2018;73(7):1796-1803
59. Khamash DF, Voskertchian A, **Tamma PD**, Akinboyo IC, Carroll KC, Milstone AM. Increasing clindamycin and TMP/SMX resistance in Pediatric *Staphylococcus aureus* Infections. *Journal of the Pediatric Infectious Diseases Society* (in press).

60. Smith TT, **Tamma PD**, Do TB, Dzintars KE, Zhao Y, Cosgrove SE, & Avdic E. Prolonged linezolid use is associated with the development of linezolid-resistant enterococcus faecium. *Diagnostic Microbiology and Infectious Disease*. 2018;91(2):161-163.
61. ***Tamma PD**, Pierce VM, Cosgrove SE, Lautenbach E, Harris AD, Rayapati D, & Han JH. Can the Ceftriaxone Breakpoints be Increased without Compromising Patient Outcomes? *Open Forum Infectious Diseases* 2018; 8;5(6):ofy139.
62. Fabre V, Markou T, DeMallie K, Mehta S, Shoham S, **Tamma PD**, Zhang S, & Cosgrove SE. Single academic center experience of unrestricted β -d-glucan implementation. *Open forum infectious diseases*. 2018;5(9):ofy195.
63. Goodman KE, Simner PJ, Klein EY, Kazmi A, Gadala A, Rock C, **Tamma PD**, Cosgrove SE, Maragakis LL, & Milstone AM. How frequently are hospitalized patients colonized with carbapenem-resistant *Enterobacteriaceae* (CRE) already on contact precautions for other indications? *Infection Control and Hospital Epidemiology*. 2018;39(12):1491-1493.
64. Li DX, Sick-Samuels AS, Suwantarat N, Same R, Simner PJ, & ***Tamma PD**. Risk Factors for Extended-Spectrum Beta-Lactamase-Producing *Enterobacteriaceae* Carriage upon Pediatric Intensive Care Unit Admission. *Infect Control Hosp Epidemiol* 2018;39:116-118
65. Simner PJ, Goodman KE, Carroll KC, Harris AD, Han JH, & **Tamma PD**. Using patient risk factors to identify whether carbapenem-resistant *Enterobacteriaceae* infections are caused by carbapenemase-producing organisms. *Open forum infectious diseases*. 2018;5(5):ofy094.
66. ***Tamma PD**, Fan Y, Bergman Y, Sick-Samuels AS, Hsu AJ, Timp W, & Simner PJ. Successful Treatment of Persistent *Burkholderia cepacia* Complex Bacteremia with Ceftazidime-Avibactam. *Antimicrob Ag Chemother* 2018;62(4):2213-17.
67. Chiotos K, **Tamma PD**, Flett KB, Karandikar MV, Nemati K, Bilker WB, Zaoutis T, & Han JH. Increased 30-day mortality associated with carbapenem-resistant *Enterobacteriaceae* in children. *Open forum infectious diseases*. 2018;5(10):ofy222.
68. ***Tamma PD**, Conley AT, Cosgrove SE, Harris AD, Lautenbach E, Amoah J, Avdic E, Tolomeo P, Wise J, Subudhi S, & Han JH for the Antibacterial Resistance Leadership Group. Association of 30-day mortality with oral step-down vs continued intravenous therapy in patients hospitalized with *Enterobacteriaceae* bacteremia. *JAMA internal medicine*. 2019;179(3):316-323.
69. Thom KA, **Tamma PD**, Harris AD, Dzintars K, Morgan DJ, Li S, Pineles L, Srinivasan A, Avdic E, & Cosgrove SE. Impact of a Prescriber-Driven Antibiotic Time Out on Antibiotic Use in Hospitalized Patients. *Clinical Infectious Diseases*. 2019;68(9):1581-1584.
70. Hsu AJ & **Tamma PD**. Impact of an Antibiotic Stewardship Program on the Incidence of Vancomycin-Induced Acute Kidney Injury in Hospitalized Children. *The Journal of Pediatric Pharmacology and Therapeutics* 2019;24:416-420.
71. Simner PJ, Bergman Y, Trejo M, Roberts A, Marayan R, Tekle T, Campeau S, Kazmi A, Bell D, Lewis S, **Tamma PD**, Humphries R, & Hindler J. Two-site evaluation of the Colistin Broth Disk Elution Test to determine Colistin *in vitro* activity against gram-negative bacilli. *Journal of clinical microbiology*. 2019;57(2).
72. Sick-Samuels AC, Goodman KE, Rapsinski G, Colantouni E, Milstone AM, Nowalk AJ, & **Tamma PD**. A decision tree using patient characteristics to predict resistance to commonly used broad-spectrum antibiotics in children with gram-negative bloodstream infections. *Journal of the Pediatric Infectious Diseases Society*. 2019. doi: 10.1093/jpids/piy137.
73. Fabre V, Nemati K, Avdic E, Cosgrove SE, Amoah J, & **Tamma PD**. The Role of Ertapenem for the Treatment of Complicated Intra-Abdominal Infections with a Positive Culture for *Enterococcus faecalis*. *Open Forum Infectious Diseases*. 2019;6(1): ofy339.
74. Sick-Samuels AC, Woods-Hill CZ, Fackler JC, **Tamma PD**, Klaus SA, Colantuoni EE, & Milstone AM. Association of a Blood Culture Utilization Intervention on Antibiotic Use in a Pediatric Intensive Care Unit. *Infection control and hospital epidemiology*. 2019;40(4):482-484.

75. Goodman KE, Simner PJ, Klein EY, Kazmi AQ, Gadala A, Toerper M, Levin S, **Tamma PD**, Rock C, Cosgrove SE, Maragakis LL, & Milstone AM. Predicting probability of perirectal colonization with carbapenem-resistant *Enterobacteriaceae* (CRE) and other carbapenem-resistant organisms (CROs) at hospital unit admission. *Infection control and hospital epidemiology*. 2019;40(5):541-550.
76. ***Tamma PD**, Cosgrove SE, Avdic E, Carroll KC, Simner PJ. Reporting Extended-Spectrum β -lactamase Positivity May Reduce Carbapenem Overuse. *Open Forum Infectious Diseases*. 2019;6(3):ofz064.
77. **Tamma PD**, Fan Y, Bergman Y, Perteza G, Kazmi A, Lewis S, Carroll KC, Schatz M, Timp W, & Simner PJ. Applying Rapid Whole Genome Sequencing to Predict Phenotypic Antimicrobial Susceptibility Testing Results among Carbapenem-Resistant *Klebsiella pneumoniae* Clinical Isolates. *Antimicrobial agents and chemotherapy*. 2019;63(1).
78. Goodman KE, Lessler J, Harris AD, Milstone AM, & **Tamma PD**. A Methodological Comparison of Risk Scores Versus Decision Trees for Predicting Drug-Resistant Infections: A Case Study using ESBL Bacteremia. *Infection Control and Hospital Epidemiology*. 2019;40(4):400-407.
79. Bell D, Bergman Y, Kazmi A, Lewis S, **Tamma PD**, & Simner PJ. A Novel Phenotypic Method to Screen for Plasmid-Mediated Colistin Resistance Among *Enterobacteriales*. *The Journal of Clinical Microbiology*. 2019;57(5).
80. Fabre V, Amoah J, Cosgrove SE, & ***Tamma PD**. Antibiotic Therapy for *Pseudomonas aeruginosa* Bloodstream Infections: How Long is Long Enough? *Clinical Infectious Diseases*. 2019;69(11):2011-2014.
81. Blanco N, Leekha S, Magder L, Jackson SS, **Tamma PD**, Lemkin D, Harris AD. Admission Laboratory Values Accurately Predict In-Hospital Mortality: a retrospective cohort study. *The Journal of General Internal Medicine*, 2020;35(3):719-723
82. Berk J, Biondi E, **Tamma PD**, Herzke C. Things We Do for No Reason: Lumbar Punctures in Low-Risk Febrile Infants with Bronchiolitis. *The Journal of Hospital Medicine*, 2019 3;14:E1-E3.
83. ***Tamma PD**, Kazmi A, Bergman Y, Goodman KE, Ekunseitan E, Amoah J, & Simner PJ. The Likelihood of Developing a Carbapenem-Resistant *Enterobacteriaceae* Infection during the Hospital Stay. *Antimicrob Ag Chemother* 2019;63:e00757-19.
84. Simner PJ, Bergman Y, & ***Tamma PD**. Imported Cases of Extensively Drug-Resistant *Salmonella* Typhi. *The Pediatric Infectious Diseases Journal*, 2019 Dec;38(12): e340.
85. Kohut M, Keller SC, Linder J, **Tamma PD**, Cosgrove SE, Speck K, Ahn R, Dullabh P, Miller MA, & Szymczak J. The Inconvincible Patient: How Clinicians Perceive Demand for Antibiotics in the Outpatient Setting. *Family Practice*, 2019, cmz066
86. ***Tamma PD**, Sharara SL, Pana ZD, Amoah J, Fisher SL, Tekle T, Doi Y, & Simner PJ. Molecular Epidemiology of Ceftriaxone Non-Susceptible *Enterobacteriales* Isolates in an Academic Medical Center in the United States. *Open Forum Infectious Diseases*, 2019;6(8):ofz353.
87. Workneh M, Wang R, Kazmi A, Chambers K, Opene BNA, Lewis S, Goodman K, **Tamma PD**, Carroll KC, Milstone AM, & Simner PJ. Evaluation of the Direct MacConkey Method for Identification of Carbapenem-Resistant Gram-Negative Organisms from Rectal Swabs: Re-evaluating Zone Diameter Cutoffs. *Journal of Clinical Microbiology*, 2019;57(12).
88. Vock I, Aguilar Biltet L, Egli A, **Tamma PD**, & Tschudin-Sutter S. Independent and external validation of clinical prediction rules for the identification of extended-spectrum β -lactamase-producing *Enterobacteriales* *Eurosurveillance* 2020 Jul;25(26). PMID: 32643598
89. Yin J, Kociulek LK, Same RG, Hsu AJ, Amoah J, & **Tamma PD**. Oral vancomycin may be associated with earlier symptom resolution than metronidazole for hospitalized children with nonsevere *Clostridioides difficile* infection. *Open Forum Infectious Diseases* 2019;6:ofz492.
90. Klein E, Tseng KT, Hinson J, Goodman KE, Smith A, Toerper M, Amoah J, **Tamma PD**, Levin SR, & Milstone AM. The Role of Healthcare Worker-Mediated Contact Networks in the Transmission of Vancomycin-Resistant *Enterococci*. *Open Forum Infectious Diseases* 2020;7(3): ofaa056.

91. [Sharara SL](#), Amoah J, Pana ZD, Simner PJ, Cosgrove SE, & ***Tamma PD**. Is Piperacillin-Tazobactam Effective for the Treatment of Pyelonephritis Caused by ESBL-producing Organisms? *Clinical Infectious Diseases* (accepted for publication).
92. Anesi JA, Lautenbach E, **Tamma PD**, Thom K, Blumberg EA, Alby K, Bilker WB, Werzen A, Tomoleo P, Omorogbe J, Pineles MA, & Han JH. Risk factors for extended-spectrum beta-lactamase-producing Enterobacterales bloodstream infection among solid organ transplant recipients. *Clinical Infectious Diseases*, ciaa190.
93. [Amoah J](#), Stuart EA, Cosgrove SE, Harris AD, Han JH, Lautenbach E, & ***Tamma PD**. Comparing Propensity Score Methods versus Traditional Regression Analysis for the Evaluation of Observational Data: A Case Study Evaluating the Treatment of Gram-Negative Bloodstream Infections. *Clinical Infectious Diseases* (accepted for publication).
94. Maliha GM, Nepps ME, ***Tamma PD**, Ashley ED, Szymczak JE, Kolesar E, & Hamilton KW. Legal Implications of Antibiotic Stewardship. *Infection Control and Hospital Epidemiology* (accepted for publication).
95. Keller SC, **Tamma PD**, Salinas A, Williams D, & Cosgrove SE. Engaging Patients and Caregivers in a Transdisciplinary Effort to Improve Outpatient Parenteral Antimicrobial Therapy Open Forum Infectious Diseases. *Open Forum Infectious Diseases* 2020;7(6):ofaa188. PMID: 32617369
96. [Fox MT](#), [Amoah J](#), Hsu AJ, Herzke CA, Gerber JS, & ***Tamma PD**. The Association of Antibiotic Duration with Successful Treatment of Pyelonephritis in Children. *JAMA Network Open* (accepted for publication).
97. [Same RG](#), [Amoah J](#), Hsu AJ, Hersh AL, Sklansky DJ, Cosgrove SE, & **Tamma PD**. The Association of Antibiotic Duration with Successful Treatment of Community-Acquired Pneumonia in Children. *The Journal of the Pediatric Infectious Diseases Society* (accepted for publication).
98. Vock I, Aguilar-Bultet L, Egli A, **Tamma PD**, & Tschudin-Sutter S. Infections in Patients Colonized with Extended-Spectrum Beta-Lactamase Producing Enterobacterales – A Retrospective Cohort Study. *Clinical Infectious Diseases* (accepted for publication).

Review Articles [RA] (*Corresponding author, [Mentee](#))

1. ***Tamma PD**. The Galactomannan Antigen Assay. *Pediatr Infect Dis J* 2007; 26:641.
2. ***Tamma PD**, Serwint JR. Toxoplasmosis. *Pediatr Rev* 2007;28(12), 470.
3. ***Tamma PD**, Lee CK. The Use of Colistin in Pediatrics. *Pediatr Infect Dis J* 2009; 28:534.
4. ***Tamma PD**, Ault K, del Rio C, Steinhoff MC, Halsey NA, Omer SA. Safety of Influenza Vaccination during Pregnancy. *Am J Obstet Gynecol* 2009; 201:547.
5. ***Tamma PD**, Steinhoff MC, Omer SA. Influenza Vaccination in Pregnant Women. *Expert Rev Respir Med* 2010;4: 321.
6. ***Tamma PD**, Serwint JR. Vaccines in Immunocompromised Patients. *Pediatr Rev* 2010; 31,38.
7. ***Tamma PD**, Cosgrove SE. Antimicrobial Stewardship. *Infect Dis Clin North Am*. 2011;25: 245.
8. ***Tamma PD**, Jenh AM, Milstone AM. Prolonged Infusion Beta-lactams for Gram-negative Infections. *Pediatr Infect Dis J*, 2011;30:336.
9. Jenh AM, **Tamma PD**, Milstone AM. Extended-interval Aminoglycoside Infusion. *Pediatr Infect Dis J*, 2011; 30:338.
10. ***Tamma PD**, Sandora TJ. *Clostridium difficile* Infections in Children: Current State and Unanswered Questions. *J Ped Infect Dis Soc* 2012;1: 230-243.
11. ***Tamma PD**, Cosgrove SE, Maragakis LL. Combination Therapy for Gram-negative Infections. *Clin Micro Rev*. 2012; 25:450.
12. Hsu AJ, ***Tamma PD**. The Treatment of Multidrug-Resistant Gram-Negative Infections in Children. *Clin Infect Dis* 2014; 58:1439.
13. ***Tamma PD**, Holmes A, Dodds AE. Antimicrobial Stewardship: Another Focus for Patient Safety? *Curr Op Infect Dis* 2014;27(4):348-55.
14. ***Tamma PD**, Srinivasan A, Cosgrove SE. Antimicrobial Stewardship. *Infect Dis Clin North Am* 2014; 28:11-12.
15. [Larru B](#), **Tamma PD**. Antimicrobial Stewardship: A National Priority. *Pediatr Rev* 2015;36:39-4047.
16. Tamma SM, Hsu AJ, ***Tamma PD**. Prescribing Ceftolozane/Tazobactam for Pediatric Patients: Current Status and Future Implications. *Pediatr Drugs* 2016;18:1-11.

17. [Chiotos K](#), Han J, ***Tamma PD**. Carbapenem-Resistant *Enterobacteriaceae* Infections in Children. *Curr Infect Dis Rep* 2016;18(1):2-10.
18. [Goodman K](#), Simner P, **Tamma P**, Milstone A. Infection control implications of heterogeneous resistance mechanisms in carbapenem-resistant *Enterobacteriaceae* (CRE). *Expert Rev of Anti-Infective Therapy* 2016;14:95-108.
19. Anderson DJ, Jenkins TC, Evans SR, Harris AD, Weinstein RA, **Tamma PD**, Han JH, Banerjee R, Patel R, Zaoutis T, Lautenbach E. The Role of Stewardship in Advancing Antibacterial Resistance: Stewardship and Infection Control Committee of the Antibacterial Resistance Leadership Group. *Clin Infect Dis* 2017; 15:64:S36-S40.
20. Katz MJ, Gurses AP, **Tamma PD**, Cosgrove SE, Miller MA, Jump RLP. Implementing Antimicrobial Stewardship in Long-Term Care Settings: An Integrative Review Using a Human Factors Approach. *Clin Infect Dis* 2017;65(11):1943-1951.
21. Kronman MP, Banerjee R, Duchon J, Gerber JS, Green MD, Hersh AL, Hyun D, Maples H, Nash CB, Parker S, Patel SJ, Saiman L, **Tamma PD**, Newland JG. Expanding Existing Antimicrobial Stewardship Programs in Pediatrics: What Comes Next? *J Pediatric Infect Dis Soc* 2018, 2018;7(3):241-248
22. Schuetz A, Salcedo SR, & **Tamma PD**. Point-Counterpoint: Piperacillin-tazobactam should be used to treat infections with ESBL-positive organisms. *Journal of clinical microbiology* 2018;56(3).
23. Keller S, **Tamma PD**, Gurses A, Miller M, Cosgrove SE, & Linder JA. Ambulatory Antibiotic Stewardship through a Human Factors Engineering Approach: A Systematic Review. *Journal of the American Board of Family Medicine* 2018 May-Jun;31:417-430.
24. [Same RG](#) & ***Tamma PD**. *Campylobacter* Infections in Children. *Pediatrics* in review. 2018;39(11):533-541.
25. Doernberg SB, Abbo LM, Burdette SD, Fishman NO, Goodman EL, Kravitz GR, Leggett JE, Moehring RW, Newland JG, Robinson PA, Spivak ES, **Tamma PD**, & Chambers HF. Essential resources and strategies for antibiotic stewardship programs in the acute care setting. *Clinical Infectious Diseases*. 2018;67(8):1168-1174
26. [Chiotos K](#), **Tamma PD**, & Gerber JS. Antibiotic Stewardship in the Intensive Care Unit: Challenges and Opportunities. *Infection Control and Hospital Epidemiology* 2019;40(6):693-698
27. ***Tamma PD** & Simner PJ. Phenotypic detection of carbapenemase-producing organisms in clinical isolates. *Journal of clinical microbiology*. 2018;56(11).
28. Plazak ME, **Tamma PD**, & Heil EL. The Antibiotic Arms Race: Current and Emerging therapy for *Klebsiella pneumoniae* Carbapenemase-Producing Bacteria. *Expert Opinion on Pharmacotherapy* 2018;19(18):2019-2031.
29. Monsees E, **Tamma PD**, Cosgrove SE, Miller MA, & [Fabre V](#). Integrating Bedside Nurses into Antibiotic Stewardship: A Practical Approach. *Infection Control and Hospital Epidemiology* 2019;40(5):579-584.
30. ***Tamma PD**, Doi Y, Bonomo RA, Johnson JK, & Simner PJ. A Primer on AmpC Beta-Lactamases: Necessary Knowledge for an Increasingly Multidrug-Resistant World. *Clinical infectious diseases : an official publication of the Infectious Diseases Society of America*. 2019;69(8):1446-1455.
31. ***Tamma PD** & Hsu AJ. Defining the Role of Novel β -Lactam Agents that Target Carbapenem-Resistant Gram-Negative Organisms. *The Journal of the Pediatric Infectious Diseases Society* 2019;8(3):251-260
32. [Same RG](#), Hsu AJ, & ***Tamma PD**. Optimizing the Management of Uncomplicated Gram-Negative Bloodstream Infections in Children: Translating Evidence from Adults into Pediatric Practice. *The Journal of the Pediatric Infectious Diseases Society* 2019;8(5):485-488.
33. Morris AM, Calderwood MS, Fridkin SK, Livorsi DJ, McGregor JC, Moehring RW, Pakyz AL, Stenehjem E, Szymczak JE, & **Tamma PD**. Research Needs in Antibiotic Stewardship. *Infection Control and Hospital Epidemiology* 2019;40:1334-1343
34. [Chiotos K](#), Hayes M, Gerber JS, & **Tamma PD**. Treatment of Carbapenem-Resistant *Enterobacteriaceae* Infections in Children. *The Journal of the Pediatric Infectious Diseases Society* 2020;9:56-66.
35. Chiotos K, Hayes M, Kimberlin DW, Jones S, James SH, Pinniti SG, Yarborough A, Abzug MJ, MacBrayne C, Soma V, Dulek DE, Vora SB, Waghmare A, Wolf J, Olivero R, Grapentine S, Wattier RL, Bio L, Cross SJ, Dillman NO, Downes KJ, Timberlake K, Young J, Orscheln RC, Tamma PD, Schwenk HT, Zachariah P, Aldrich M, Goldman DL, Groves H, Lamb GS, Tribble AC, Hersh AL, Thorell EA, Denison MR, Ratner AJ, Newland JG, Nakamura MM. Multicenter initial guidance on use of antivirals for children with COVID-19/SARS-CoV-2. *The Journal of the Pediatric Infectious Diseases Society* (accepted for publication).

1. ***Tamma PD**, Migeon C. Androgen Insensitivity Syndrome. *Pediatr Rev* 2006; 27:351.
2. Hunt R, ***Tamma PD**. Herpes Gladiatorum. *Pediatr Rev* 2010; 31:477-482.
3. Cantey JB, ***Tamma PD**. Viridans Streptococcal meningitis following penetrating cervical injury. *Pediatr Emerg Care*, 2011; 27:34.
4. ***Tamma PD**, Agwu AL, Hartman AL. Behavior outbursts, orofacial dyskinesias, and CSF Pleocytosis in a child with anti-NMDA receptor encephalitis. *Pediatrics*, 2011;128:e242.

Book Chapters [BC] (Mentee)

1. **Tamma PD**. Oski's Pediatric Certification and Recertification Board Review: Infectious Diseases, Lippincott Williams & Wilkins, 2011.
2. Jaganath D, Same RG, **Tamma PD**. The Harriet Lane Handbook, 20th Edition. Chapter 17: Microbiology and Infectious Disease, Lippincott Williams & Wilkins, 2014.
3. **Tamma PD** & Harris AD. Detecting and Limiting the Transmission of Multidrug-Resistant Gram-Negative Pathogens. *Practical Healthcare Epidemiology*, 2016.
4. Arshad M, Nowalk A, **Tamma PD**. Multidrug-Resistant Gram-negative Infections in Transplant and Oncology Patients. Steinbach: Pediatric Transplant and Immunocompromised Infectious Disease, 2019.

Letters, Correspondence [LT] (*Corresponding author, Mentee)

1. ***Tamma PD**, Sklansky DJ, Palazzi DL, Swami S, Milstone AM. Reply to Nguyen et al. "Making sense of cephalosporin and amoxicillin/clavulanate susceptibility testing for uropathogens." *Clin Infect Dis* 2014;59:135.
2. Chotiprasitsakul D, Han JH, Cosgrove SE, Harris AD, Lautenbach E, ***Tamma PD**. Reply to authors "Impairment of validity of comparison between short-course and prolonged-course antibiotic therapy using propensity score matching and Duration of Antimicrobial Therapy for Enterobacteriaceae Bacteremia: Using Convenient End Points for Convenient Conclusions." *Clin Infect Dis* 018 Jun 1;66(12):1979-1981
3. Chotiprasitsakul D, Han JH, Cosgrove SE, Harris AD, Lautenbach E, ***Tamma PD**. Reply to authors "Efficacy and safety of short courses of antibiotic therapy for bacteremia caused by *Enterobacteriaceae*." *Clin Infect Dis* 2018 Jul 18;67(3):483

Editorials [ED] (*Corresponding author, Mentee)

1. **Tamma PD** & Cosgrove SE. Let the Games Begin: The Race to Optimize Antibiotic Use. *Lancet Infect Dis* 2014;14:667-8.
2. ***Tamma PD** & Milstone AM. Outpatient Antibiotic Therapy for Acute Osteomyelitis in Children: Balancing Safety and Efficacy. *JAMA Pediatr* 2015;169:108-9; *corresponding author.
3. ***Tamma PD** & Cosgrove SE. Duration of Antibiotic Therapy for Community-Acquired Pneumonia in Children. *Clin Infect Dis* 2012; 54:883; *corresponding author.
4. ***Tamma PD** & Powers JH. Do Patient Data Really Support the CLSI Recommendation for Lowering Third-Generation Cephalosporin Interpretive Breakpoints? *Clin Infect Dis* 2013;57:624; *corresponding author.
5. **Tamma PD** & Cosgrove SE. Addressing the Appropriateness of Outpatient Antibiotic Prescribing in The United States: An Important First Step. *JAMA* 2016;315:1839-41.
6. ***Tamma PD** & Villegas MV. The Use of Beta-Lactam/Beta-Lactamase Inhibitors for ESBL Infections: Defining the Right Patient Population. *Antimicrob Agents Chemo* 2017;61(8): e01094-17.
7. ***Tamma PD**, Miller MA, Cosgrove SE. Rethinking How Antibiotics Are Prescribed: Incorporating the Four Moments of Antibiotic Decision Making into Clinical Practice. *JAMA* 2019;321(2):139-140.

8. ***Tamma PD.** Extended-Spectrum β -lactamase Production: To Test or Not to Test? Contagion Live (accepted for publication).
9. **Tamma PD** & Cosgrove SE. Unlikely Bedfellows: The Partnering of Antibiotic Stewardship Programs and the Pharmaceutical Industry. *Clinical Infectious Diseases* 2020, ciaa056
10. Jenkins T & **Tamma PD.** Thinking Beyond the “Core” Antibiotic Stewardship Interventions: Shifting the Onus for Appropriate Antibiotic Use from Stewardship Teams to Prescribing Clinicians. *Clinical Infectious Diseases* (accepted for publication).

FUNDING

EXTRAMURAL Funding

Research Extramural Funding – Current

- | | |
|--------------------|--|
| 12/01/19– 11/30/23 | A Phase II Clinical Trial of the Effect of Bacteriophages in Persons with Cystic Fibrosis who are Colonized with <i>Pseudomonas aeruginosa</i>
National Institutes of Health
Role: Co-PI (Schooley/Tamma)
Grant #: UM1-AI104681-08 |
| 12/9/16 – 11/30/20 | Use of MALDI TOF for the Rapid Detection of Carbapenemases from Clinical Isolates
National Institutes of Health
Role: PI (Tamma)
Grant #: K23-AI127935-01 |
| 9/2/16 – 3/22/22 | AHRQ Safety Program for Improving Antibiotic Use
Agency for Healthcare and Quality Research
Role: Co-PI (Tamma/Cosgrove)
Grant #: HHSP2332015000201 |
| 9/30/16-9/30/20 | Development of an Automated and Sustainable Electronic Approach for Data Mining to Evaluate Clinical Outcomes of Patients with Resistant Gram-Negative Bacterial Infections
Food and Drug Administration
Role: PI (Tamma)
Grant # HHSF223201610070C |
| 1/1/17- 3/31/22 | Integrated modeling of <i>Klebsiella pneumoniae</i> infections based on bacterial genotype, patient factors, and colonization status
National Institutes of Health
Role: Co-Investigator
PI: Bachman (University of Michigan)
Grant #: R01 AI125307-01A1 |

Research Extramural Funding – Previous

- | | |
|-------------------|---|
| 04/01/17-03/31/19 | Real Time Whole Genome Sequencing Analysis of Carbapenemase-Producing Organisms in the Non-Outbreak Hospital Setting.
National Institutes of Health
Role: Co-Investigator |
|-------------------|---|

- PI: Simner (Hopkins)
R21AI130608
Budget: \$175,000
- 12/1/16-12/31/18 Clinical and Molecular Epidemiology of Extended-Spectrum β -Lactamase Producing *Enterobacteriaceae* among Solid Organ Transplant Recipients
Antibacterial Resistance Leadership Group
National Institutes of Health
Role: Co-Investigator
PI: Anesi (University of Pennsylvania)
Budget: \$307,171
- 7/1/14 – 12/31/17 Effectiveness of Piperacillin-Tazobactam versus Ertapenem for the Treatment of Intra-Abdominal Infections
Merck
Role: PI (Tamma)
Budget: \$33,835
- 10/1/14 – 9/30/16 Establishing Clinically Relevant Antibiotic Breakpoint Interpretive Criteria
Food and Drug Administration
Role: PI (Tamma)
Grant #: HHSP233201400096C
Budget: \$ 356,533
- 5/1/14 – 06/30/16 Development of a Multicenter Gram-negative Database
Antibacterial Resistance Leadership Group
National Institutes of Health
Role: PI (Tamma)
Budget: \$46,805
- 1/1/14 – 12/31/16 Impact of Post-Antibiotic Prescription Review on Antibiotic Use and Resistance
Centers for Disease Control and Prevention
PI: Cosgrove/Thom (Hopkins/University of Maryland)
Role: Co-investigator
Grant #: 200-2011-42064
Budget: \$697,507
- 7/1/14 – 6/30/16 Preventing the Spread of Multidrug-Resistant Gram-Negative Organisms in Children
Thomas Wilson Award
Role: PI (Tamma)
Budget: \$25,000
- 9/1/13 – 8/31/16 Defining the Optimal Antimicrobial Stewardship Strategy: Pre-Prescription Authorization or Post-Prescription Review and Feedback
Pfizer Independent Grants for Learning and Change/The Joint Commission
Role: Co-PI (Tamma/Cosgrove)
Budget: \$388,417
- 7/1/12 – 12/31/14 Epidemiology of Multidrug-Resistant Gram-negative Organisms in Children
Thrasher Research Fund Early Career Award
Role: PI (Tamma)
Budget: \$56,750
- 7/1/12 – 6/30/13 Does Combination Therapy Improve the Clinical Outcomes of Children with Gram-negative Bacteremia?

Thomas Wilson Award

Role: PI (Tamma)

Budget: \$24,500

7/1/10 – 6/30/12 Defining the Appropriate Treatment Duration for Ventilator-Associated Infections in Children
K12 RR025006-03
National Institutes of Health
Role: PI (Tamma)
Budget: \$210,000

7/1/10 – 12/31/11 Therapeutic Options for Treating AmpC-beta-lactamase Producing Infections
Baurenschmidt Award
Role: PI (Tamma)
Budget: \$50,000

INTRAMURAL Funding

Research Intramural Funding - Current

7/1/18 – 6/30/19 The Use of Whole Genome Sequencing to Reduce the Time to Determining Antibiotic Susceptibility Results in Children with Gram-Negative Infections
Innovation Grant
Role: PI (Tamma)
Budget: \$30,000

Research Intramural Funding- Previous

1/4/16 – 12/31/17 Use of MALDI TOF MS for the Rapid Detection of Carbapenemase-Producing Organisms
inHealth Pilot Project Discovery Program
Role: PI (Tamma)
Budget: \$75,000

7/1/14 – 6/30/17 Evidence-Based Screening Approach to Identify Children at High-Risk for Harboring Multidrug-Resistant Gram-negative Organisms in the PICU
Fisher Center Discovery Program Grant
Role: PI (Tamma)
Budget: \$58,219

7/1/12 – 6/20/14 Antimicrobial Resistance as a Consequence of Antibiotic Therapy
Clinician Scientist Award
Role: PI (Tamma)
Budget: \$150,000

CLINICAL ACTIVITIES

Clinical Focus

I attend on the Pediatric Infectious Diseases consult service 8 weeks a year and until 2018, on the General Pediatrics service 4 weeks a year. Additionally, while on clinical service, I have half a day of infectious diseases clinic each week. My clinical work focuses on treating children with invasive bacterial, fungal, viral, parasitic, and mycobacterial infections. During my clinical time, I directly supervise medical students, pediatric housestaff, and infectious diseases fellows. I very much enjoy this role and have been presented teaching awards from medical students, residents, and faculty during my time at The Johns Hopkins Hospital.

Certification

Medical, other state/government licensure

2007-present Maryland Medical License

Boards, other specialty certification

2007-present Board Certified, Pediatrics

2011-present Board Certified, Pediatric Infectious Diseases

Clinical (Service) Responsibilities

2012-present Attending Physician, Pediatric Infectious Diseases Service, 8 weeks/year

2012-present Attending Physician, Pediatric Infectious Diseases Clinic, 0.5 days/week

2012-2018 Attending Physician, General Inpatient Pediatrics, 4 weeks/year

Clinical Program Building / Leadership (all guidelines updated on an annual basis and distributed as a handbook to all pediatric clinical providers)

- 2011 Johns Hopkins Pediatric Vancomycin Dosing and Therapeutic Drug Monitoring Guidelines
- 2013 Johns Hopkins Pediatric Aminoglycoside Dosing and Therapeutic Drug Monitoring Guidelines
- 2012 Johns Hopkins Pediatric Catheter-Associated Bloodstream Infection Guidelines
- 2012 Johns Hopkins PICU Antibiotic Algorithm
- 2012 Johns Hopkins NICU Sepsis Guidelines
- 2012 Johns Hopkins Pediatric Cytomegalovirus Prevention and Treatment Guidelines for Pediatric Solid Organ Transplantation
- 2012 Johns Hopkins Pediatric Voriconazole Dosing and Therapeutic Drug Monitoring Guidelines
- 2013 Johns Hopkins Pediatric Posaconazole Dosing and Therapeutic Drug Monitoring Guidelines
- 2013 Johns Hopkins Pediatric Cystic Fibrosis Treatment Guidelines
- 2013 Johns Hopkins Pediatric Guidelines for the Use of Palivizumab
- 2013 Johns Hopkins Pediatric Guidelines for Prophylactic Antimicrobials for Oncology Patients with Expected Profound and Prolonged Neutropenia
- 2013 Johns Hopkins Pediatric Ventilator-Associated Tracheitis and Ventilator-Associated Pneumonia Diagnostic and Treatment Guidelines
- 2014 Johns Hopkins Pediatric Community-Acquired Pneumonia Treatment Guidelines
- 2014 Johns Hopkins Pediatric Guidelines for the Diagnosis & Treatment of *Clostridium difficile* Infection
- 2014 Johns Hopkins Pediatric Guidelines for Central Line Lock Therapy for the Treatment and Prevention of Central-Related Bloodstream Infections
- 2014 Johns Hopkins Pediatric Guidelines for the Diagnosis and Treatment of Multidrug-Resistant Gram-Negative Infections
- 2014 Johns Hopkins Pediatric Guidelines for the Diagnosis and Treatment of Bacterial Meningitis
- 2015 Johns Hopkins Pediatric Guidelines for the Diagnosis and Treatment of Influenza
- 2015 Johns Hopkins Pediatric Guidelines for the Management of Fever and Neutropenia in Oncology Patients
- 2015 Johns Hopkins Pediatric Guidelines for the Diagnosis and Management of Urinary Tract Infections
- 2015 Johns Hopkins Pediatric Guidelines for the Diagnosis and Treatment of Skin and Soft Tissue Infections
- 2016 Johns Hopkins Pediatric Guidelines for the Diagnosis and Management of Adenovirus Infections in Immunocompromised Hosts
- 2017 Johns Hopkins Pediatric Guidelines for the Diagnosis and Management of Intra-Abdominal Infections
- 2017 Johns Hopkins Pediatric Guidelines for the Diagnosis and Management of Osteoarticular Infections
- 2017 Johns Hopkins Pediatric Guidelines for the Diagnosis and Management of Intra-Abdominal Infections
- 2017 Johns Hopkins Pediatric Guidelines for the Diagnosis and Management of Head and Neck Infections
- 2018 Johns Hopkins Pediatric Guidelines for the Diagnosis and Management of Non-Tuberculous Mycobacterial Infections
- 2018 Johns Hopkins Pediatric Guidelines for the Diagnosis and Management of Tuberculosis
- 2018 Johns Hopkins Pediatric Guidelines for the Management of the Newborn with a Fever
- 2018 Johns Hopkins Pediatric Guidelines for the Management of Neonatal Herpes Simplex Virus Infections
- 2018 Johns Hopkins Pediatric Guidelines for the Management of BK Virus Infection
- 2018 Johns Hopkins Pediatric Guidelines for the Management of Glucose Non-Fermenting Bacterial Infections
- 2019 Johns Hopkins Pediatric Guidelines for the Management of Malaria

2019 Johns Hopkins Pediatric Guidelines for the Management of Bacterial Conjunctivitis

EDUCATIONAL ACTIVITIES

Teaching

Classroom instruction

2013-2016 Antibiotic Stewardship Lecture, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

Clinical instruction

2012-present Antibiotic Review Course for Pediatric Housestaff, Johns Hopkins Hospital, Baltimore, MD

2012-present Pediatric noon conference, Johns Hopkins Hospital, Baltimore, MD, 4 lectures/year

2014-2018 Pediatric housestaff morning report. Once per week.

2012-2018 Attending, 3rd and 4th year medical students; Inpatient Pediatrics Service. 1 month per year, Johns Hopkins University School of Medicine

2012-present Inpatient Pediatrics Infectious Diseases Service. 8 weeks per year, Johns Hopkins Hospital

CME instruction

2009 A 2009 Comprehensive Review of the Recommendations for Vaccination in Adolescents, Johns Hopkins University School of Medicine in conjunction with Medical Logix, Baltimore, MD (3 CME credits)

2009 A 2009 Comprehensive Review of the Recommendations for Vaccination in Adults, Johns Hopkins University School of Medicine in conjunction with Medical Logix, Baltimore, MD (3 CME credits)

2009 A 2009 Comprehensive Review of the Recommendations for Vaccination in Infants and Children, Johns Hopkins University School of Medicine in conjunction with Medical Logix, Baltimore, MD (3 CME credits)

2009 A Review of Vaccine Updates from the 2009 Interscience Conference on Antimicrobial Agents and Chemotherapy 2009 Annual Meeting Johns Hopkins University School of Medicine in conjunction with Medical Logix, Baltimore, MD (3 CME credits)

2014 Johns Hopkins Medicine POC-IT Guide, Acute Otitis Media (1 CME credit)

2015 Emerging Antimicrobial Resistance in Pediatric Patients. Washington University School of Medicine, January 2015, St. Louis, Missouri (2 CME credits)

2017 AHRQ Safety Program for Improving Antibiotic Use in the Acute Care Setting Educational Toolkit (15 CME credits)

2018 Making a Difference in Infectious Diseases (MAD ID): Antimicrobial Resistance 2 (2 CME credits)

2018 AHRQ Safety Program for Improving Antibiotic Use in the Long-Term Care Setting Educational Toolkit (15 CME credits)

2019 AHRQ Safety Program for Improving Antibiotic Use in the Ambulatory Care Setting Educational Toolkit (15 CME credits)

2019 Johns Hopkins Medicine POC-IT Guide, Acute Otitis Media (1 CME credit)

Mentoring

Pre-doctoral Advisees /Mentees

2012 Ravindra Gopaul, M.P.H., Medical student, University of Maryland Medical School & Johns Hopkins Bloomberg School of Public Health MPH student. Research project: "Prevalence and risk factors for AmpC-beta-lactamase in children." (Publication in Clinical Infectious Diseases)

2013 Harold Yu, Medical student at Johns Hopkins Medical School: Do the revised CLSI criteria improve outcomes of children with Enterobacteriaceae bacteremia? (Publication in The Pediatric Infectious Diseases Journal)

2013-2016 Rebecca Greene, Medical student at Johns Hopkins Medical School: Appropriate empiric therapy for children with fever and neutropenia.

2014 Gwen Robinson, University of Maryland MPH student: Pediatric antimicrobial susceptibility trends in the United States. (Publication in Infection Control and Hospital Epidemiology)

- 2013-2014 Anna Sick, MD, MPH; Johns Hopkins Hospital Medical Student. Empiric antibiotic therapy in septic children. (Publication in Pediatrics)
- 2014 Sarai Ibrahim, Pharmacy student at Campbell University College of Pharmacy and Health Sciences: The role of aminoglycosides in the treatment of Enterococcal bacteremia (Publication in Clinical Infectious Diseases)
- 2015-2016 Yanjie Huang, MPH: Clinical outcomes related to the treatment of ESBL bacteremia. (Publication in The Journal of Clinical Microbiology).
- 2015 Ruibin Wang, MPH, Epidemiology doctorate student: The Role of Cefepime in the Treatment of ESBL Bacteremia. (Publication in Open Forum infectious Diseases)
- 2015-2016 Katherine Goodman, JD, PhD Student in Epidemiology at The Johns Hopkins Bloomberg School of Public Health: Using classification and regression tree analysis to identify children at risk of colonization with multidrug-resistant gram-negative organisms. (Two publications in Clinical Infectious Diseases, one publication in Antimicrobial Agents and Chemotherapy, and one publication in Open Forum Infectious Diseases).
- 2015 Mercedes Villasoa, Pharmacy student: Combination antibiogram for the treatment of carbapenem-resistant Enterobacteriaceae (Publication in Infection Control and Hospital Epidemiology).
- 2015-2016 David X. Li, Medical Student at The Johns Hopkins University School of Medicine: Use of PNA FISH for blood cultures growing Gram-positive cocci in chains without a concomitant antibiotic stewardship intervention does not improve time to appropriate antibiotic therapy. (Publication in Clinical Infectious Diseases and Diagnostic Microbiology and Infectious Diseases)
- 2016 Anna Conley, Medical Student at The University of Maryland: Conversion of intravenous to oral antibiotic therapy for gram-negative bacteremia in a multicenter cohort (Publication in JAMA Internal Medicine)
- 2016 Miriam Fox, Medical Student at Johns Hopkins University School of Medicine: Comparison of 7 days of ciprofloxacin and 7 days of trimethoprim-sulfamethoxazole for the treatment of Escherichia coli pyelonephritis (Publication in The American Journal of Medicine)
- 2016 Philip Angelides, Johns Hopkins University undergraduate student: Determining the Antibiotic Susceptibility Patterns for Last-Resort Antibiotics for Carbapenem-Resistant Enterobacteriaceae.
- 2017 Divya Rayapati, Medical Student at Johns Hopkins University School of Medicine: Antibiotic-Associated Adverse Events in Children

Post-doctoral Advisees/Mentees

- 2011-2014 Alison Turnbull, D.V.M., P.h.D., Johns Hopkins Bloomberg School of Public Health. Does the piperacillin minimum inhibitory concentration influence clinical outcomes of children with pseudomonal bacteremia? (Two publications in Clinical Infectious Diseases)
- 2013 Sonya Tang-Girdwood, PhD, Medical student at Johns Hopkins Medical School: Clinical outcomes associated with AmpC beta-lactamase inducible resistance (Publication in Clinical Infectious Diseases)
- 2014 Janessa Smith, PharmD, pharmacy resident at Johns Hopkins Hospital: Risk factors and outcomes of β -lactam resistant Bacteroides bacteremia (Publication in Antimicrobial Agents and Chemotherapy)
- 2014 Sun-Hee Park, MD, PhD, Assistant Professor of Pediatrics: Optimal duration of antibiotic therapy for Gram-negative bacteremia in Children (Publication in Journal of Antimicrobial Chemotherapy)
- 2014-2015 Nuntra Suwantararat, MD, Infectious Diseases physician and clinical microbiology fellow at The Johns Hopkins Hospital: Phenotypic and molecular detection of multidrug-resistant Gram-negative organisms in the pediatric critical care population. (Publications in Infection Control and Hospital Epidemiology and The Journal of the Pediatric Infectious Diseases Society)
- 2014 Chou-Cheng Lai, MD, Assistant Professor of Pediatrics: A comparison of post-prescription antibiotic review and prior-approval in the pediatric population: A randomized-controlled study.
- 2015 Tiffeny Smith, PharmD, Infectious Diseases Pharmacy PGY-2 Resident at The Johns Hopkins Hospital: Risk factors for linezolid-resistant Enterococcus faecium bacteremia. (Publication in Diagnostic Microbiology and Infectious Diseases).
- 2015-2016 Darunee Chotiprasitsakul, MD, Infectious Diseases Physician: The Optimal Duration of Therapy for Gram-Negative Bloodstream Infections. (Publications in Clinical *Infectious Disease* and *Infection Control and Hospital Epidemiology*).

- 2015-2016 Candace Johnson, MD, Infectious Diseases Fellow at Columbia University School of Medicine: Antimicrobial Use and Stewardship across the Pediatric Spectrum. (Member of Scholarly Oversight Committee)
- 2015-2016 Sharon Vuppula, MD, Infectious Diseases Fellow at New York University School of Medicine: *Bacteroides* resistance patterns. (Member of Scholarly Oversight Committee)
- 2015-2017 Kathleen Chiotos, MD, Infectious Diseases and Pediatric Critical Care Fellow at The Children's Hospital of Philadelphia: Mechanisms of Carbapenem Resistance in Enterobacteriaceae (Publication in Antimicrobial Agents and Chemotherapy, Open Forum Infectious Diseases, and The Journal of the Pediatric Infectious Diseases Society).
- 2015-2016 Rana Hamdy, MD, Infectious Diseases Fellow at The Children's Hospital of Philadelphia: Risk Factors Associated with Poor Clinical Outcomes in Children with Methicillin-Resistant Staphylococcus aureus Bacteremia in Children (Publications in Pediatrics and The Journal of the Pediatric Infectious Diseases Society)
- 2014-2018 Katherine Goodman, JD, PhD Student in Epidemiology at The Johns Hopkins Bloomberg School of Public Health: Using classification and regression tree analysis to identify children at risk of colonization from multidrug-resistant gram-negative organisms. (Two publications in Clinical Infectious Diseases; publication in Open Forum Infectious Diseases, publication in Infection Control and Hospital Epidemiology)
- 2016-2017 Zoi Pana, MD, PhD, Assistant Professor of Pediatrics from Aristotle University School of Medicine, Greece: Outcomes of Patients with CTX-M-type and SHV-type extended-spectrum β -lactamase Invasive Infections (Publications in Clinical Infectious Diseases and Open Forum Infectious Diseases)
- 2015-ongoing Judith Anesi, MD, Infectious Diseases Fellow at The University of Pennsylvania: Outcomes of ESBL Infections in Solid Organ Transplant Patients.
- 2016-2018 Anna Sick-Samuels, MD, MPH, Pediatric Infectious Diseases Fellow at Johns Hopkins Hospital: Utilization of a Risk Score to Identify Children Infected with Multidrug-Resistant Bacteria. (Publication in The Journal of the Pediatric Infectious Diseases Society).
- 2017-ongoing Rebecca G. Same, MD, Pediatric Infectious Diseases Fellow at Johns Hopkins Hospital: Antibiotic-Associated Adverse Events in Children; The Optimal Duration of Therapy for Community-acquired Pneumonia in Children.
- 2018-2019 Jianyi Yin, MD, PhD, Adult Gastroenterology Fellow at Johns Hopkins Hospital: Optimizing Treatment for Children with Severe Clostridioides difficile Infection
- 2017-2019 Maria Valeria Fabre, MD, Assistant Professor of Medicine, Johns Hopkins University School of Medicine: Defining the Optimal Duration of Therapy for Pseudomonas aeruginosa Bacteremia
- 2018-ongoing Sima Sharara, MD, Research Fellow at Johns Hopkins University School of Medicine: Defining the Role of Piperacillin-Tazobactam for Extended-Spectrum β -lactamase Producing Urinary Tract Infections in the Absence of Bloodstream Infections (Publication in Clinical Infectious Diseases and Open Forum Infectious Diseases)
- 2018-ongoing Joe Amoah, MD, MPH, Post-doctoral Fellow at Johns Hopkins University School of Medicine: Defining the Optimal Duration of therapy for Children Hospitalized with Community-Acquired Pneumonia

Thesis Committees

- 2012 Ketan Jumani, MPH Student in Epidemiology at The Johns Hopkins Bloomberg School of Public Health
- 2013 Alison Turnbull, DVM, PhD Student in Epidemiology at The Johns Hopkins Bloomberg School of Public Health.
- 2014 Chou-Cheng Lai, MD, PhD Student in Epidemiology at The Johns Hopkins Bloomberg School of Public Health.
- 2015 Darunee Chotiprasitsakul, MD, Master's Student in Epidemiology at The Johns Hopkins Bloomberg School of Public Health.
- 2016 Katherine Goodman, JD, PhD candidate in Epidemiology at The Johns Hopkins Bloomberg School of Public Health.
- 2018 Patrick Harris, MD, PhD candidate at The University of Queensland, Australia

Housestaff Clinical Advisor

2015-2018 Keith Kleinman, MD (Pediatric Resident)

2015-2018 Mariju Baluyot, MD (Pediatric Resident)

RESEARCH ACTIVITIES

Research Focus

My research focuses on developing novel methods for detecting multidrug-resistant gram-negative (MDRGN) organisms and identifying optimal treatment approaches for infections caused by MDRGNs. I am particularly interested in extended-spectrum beta-lactamases and carbapenemase-producing *Enterobacteriaceae*, two types of MDRGNs. From 2010 to 2015, my focus was on conducting comparative effectiveness studies to identify optimal treatment approaches for infections caused by these pathogens. I used various methods of accounting for selection bias to evaluate observational data (e.g., propensity score analysis, instrumental variables, multivariable regression) to better understand how to treat critically-ill children and adults infected with these pathogens. Beginning in 2016, I shifted my focus to include optimizing existing and developing novel methods of detecting MDRGNs so that patients infected with these highly drug-resistant organisms will be placed on optimal therapy as soon as possible. I currently have funding from an NIH K23 to enhance a mass spectrometry approach called Matrix-Assisted Laser Desorption/Ionization Time of Flight (MALDI TOF) to rapidly identify carbapenemase-producing *Enterobacteriaceae*. I have also been working with whole genome sequencing techniques to decrease the time to determine antibiotic susceptibility results by correlating genotypic data with anticipated phenotypic data. Ultimately, my goal is to continue translational laboratory work and be involved in the implementation of these assays in clinical practice to better understand their impact on improving the outcomes of patients infected with MDRGNs. I currently Co-Chair the Infectious Diseases Society of America Guidance on the Treatment of Antimicrobial Resistant Infections.

Research Demonstration Activities

Not applicable

Inventions, Patents, Copyrights

Not applicable

Technology Transfer Activities

Not applicable

SYSTEM INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES

System Innovation Focus

I am the Director of the Pediatric Antimicrobial Stewardship Program at JHH. The goal of this program is to optimize the use of anti-infectives while reducing the avoidable harm caused by suboptimal or unnecessary anti-infective use. I began the Pediatric Antimicrobial Stewardship Program when I was an Instructor of Pediatrics in January 2012 and since then have been the Medical Director of this program.

In this role, I assist clinicians with the selection, route, dose, interval, and duration of antibiotics, develop annual JHH Antibiotic guidelines to guide the appropriate and judicious use of antibiotics (<http://intranet.insidehopkinsmedicine.org/asp/pediatric.html>), and monitor patient outcomes after implementation of these practices. These guidelines are updated on an annual basis and distributed as a handbook to all clinicians in the JHH Children's Center. Also in this capacity, I oversee the Prior Approval program for restricted antimicrobials at JHH including oversight of and 24/7 back up for ID fellows who perform prior approval for antimicrobials. Certain antimicrobials require prior approval because they are very broad-spectrum (and increase the likelihood of developing subsequent multidrug-resistance), they are highly toxic, or they are very costly (and more affordable, equally effective agents may be available). I oversee a website to use to facilitate the process of prior-approvals of antimicrobials (<https://gcds.johnshopkins.edu/abx/>).

In addition, I also perform the following tasks as Director of Antimicrobial Stewardship: I am on call 24/7 for approval of certain high cost antimicrobial agents to ensure appropriate use at JHH; I manage antimicrobial shortages by developing and communicating alternative treatment options; I develop and update annual patient and healthcare worker education at

JHH regarding judicious antibiotic use (including eLearning Modules). I participate in multiple associated committees including, Co-Chair of The Johns Hopkins Hospital Antimicrobial Stewardship Committee, member of the JHH Antibiotic Subcommittee of the P&T Committee, and a member of the Infectious Disease Specialty Panel for the JH Health System. Furthermore, I ensure that JHH is in compliance with The Joint Commission Standard for Antimicrobial Stewardship and U.S. News & World Report survey questions related to Antimicrobial Stewardship which directly impact hospital rankings for pediatric hospitals.

I am also involved in national Antimicrobial Stewardship efforts. From 2013-2016, I organized and was Chair of the ID Week Pre-Meeting Antibiotic Stewardship Workshop. I am currently the Co-PI on a 5-year Agency for Healthcare Research and Quality \$16-million contract to improve antibiotic stewardship efforts across the country. I am a Committee Member of the Pediatric Infectious Diseases Society Antimicrobial Stewardship Committee and was a member of the Society of Healthcare Epidemiology Antimicrobial Stewardship Committee from 2014-2016. I am a Voting Member of the Clinical Laboratory Standards Institute Antimicrobial Susceptibility Testing Committee and in this capacity am one of 12 international voting members in establishing antibiotic breakpoints, reviewing the performance of rapid diagnostics for bacterial pathogens, and recommending methods for detection of multidrug-resistance. In addition, I am an Advisor to the CDC's efforts to improve inpatient antibiotic prescribing and participate in national working groups to standardize antibiotic practices. From 2016-2017, I was a member of the Joint IDSA-SHEA-PIDS Antibiotic Stewardship Taskforce that functioned to unify national antimicrobial stewardship efforts across organizations. From 2016-2018, I was a Planning Committee member of the SHEA Antimicrobial Stewardship Research Workshop. I was an editor of the textbook "Practical Implementation of Antibiotic Stewardship Programs" (Cambridge University Press), published in Spring 2018. Finally, in 2019 I founded the Antibiotic Stewardship Implementation Collaborative (ASIC), a collaborative of 19 hospitals across the United States dedicated to robust multicenter quality improvement work. We have weekly calls and a schedule of research studies we plan to pursue.

System Innovation and Quality Improvement Efforts within JHMI

- 2015 Improving the Care of Children Being Considered for PICC Placement for Parenteral Antimicrobial Therapy
- 2016 Decreasing Unnecessary Carbapenem Use at The Johns Hopkins Hospital (MOC credit eligible)
- 2019 The Johns Hopkins Hospital Appendicitis Working Group
- 2019 The Johns Hopkins Hospital Pediatric Sepsis Task Force

ORGANIZATIONAL ACTIVITIES

Institutional Administrative Appointments

- 2012-present Director, Pediatric Antimicrobial Stewardship Program

Editorial Activities

- 2013 *Infectious Diseases Clinics of North America* special issue on Antimicrobial Stewardship, Co-editor
- 2014 *Clinical Infectious Diseases* Special Issue "Antimicrobial Stewardship: Patients over Process," Supplemental Issue Reviewer
- 2016-2018 Practical Implementation of Antibiotic Stewardship Programs Textbook, Cambridge University Press, Editor
- 2019-present Antimicrobial Agents and Chemotherapy, Editor
- 2019-present The Journal of the Pediatric Infectious Diseases Society, Editor

Editorial Board Appointments

- 2017-2018 Editorial board, Antimicrobial Agents and Chemotherapy
- 2016-2018 Editorial board, The Journal of the Pediatric Infectious Diseases Society

Journal Peer Review Activities

- 2012-present The Journal of the Pediatric Infectious Diseases Society
- 2012-present JAMA Pediatrics
- 2013-present Clinical Infectious Diseases
- 2013-present Antimicrobial Agents and Chemotherapy

2013-present Infection Control and Hospital Epidemiology
2013-present Journal of Antimicrobial Chemotherapy
2015-present JAMA

Other Peer Review Activities

2014 Pennsylvania Department of Health, Grant Reviewer
2015 NIH National Heart, Lung and Blood Institute Data and Safety Monitoring Board for the Optimizing Treatment for Early *Pseudomonas aeruginosa* Infection in Cystic Fibrosis/Testing the Effect of Adding Chronic Azithromycin to Inhaled Tobramycin
2015 NIH National Heart, Lung and Blood Institute Data and Safety Monitoring Board for Testing the Effect of Adding Chronic Azithromycin to Inhaled Tobramycin (TEACH) trial
2016 Georgia National Science Foundation, Grant Reviewer
2018 Inova Translational Medicine Institute Data Safety Monitoring Board for Vaginal Microbiome Seeding and Health Outcomes of Cesarean-Delivered Newborns: A Randomized Controlled Trial
2019 Médecins Sans Frontières (Doctors without Borders) Bacteremia Targeted Antibiotic Therapy protocol, Protocol Reviewer

Advisory Committees, Review Groups/Study Sections

Local

2011-present The Johns Hopkins Hospital Antibiotic Subcommittee, Committee Member
2012-present The Johns Hopkins Health Systems Infectious Diseases Panel, Committee Member
2012-2016 The Johns Hopkins Pediatric Intern Selection Committee, member
2016-2017 The Johns Hopkins University Neonatology Chair Search Committee, member
2016-present The Johns Hopkins Hospital Antimicrobial Stewardship Committee, Co-Chair
2018-present Johns Hopkins Medicine Pediatrics High Value Committee, Committee Member

National

2012 Center for Disease Control and Prevention, Experts Meeting on the Assessment of Appropriate Antibiotic use in Acute Care Settings
2012-2013 Pew Charitable Trusts: Judicious Use of Medically Important Antimicrobial Drugs in Food-Producing Animals Advisory Group
2013-2019 Pediatric Infectious Diseases Society, Antimicrobial Stewardship Committee
2013 Pew Charitable Trusts and US Food and Drug Administration: A New Pathway for Antibiotic Innovation: Exploring Drug Development for Limited Populations Advisory Group
2013 Center for Disease Control and Prevention, James A. Ferguson Emerging Infectious Diseases Fellowship Program, Mentor
2014 Brookings Institution's Engelberg Center for Health Care Reform and the U.S. Food and Drug Administration's Antibacterial Drug Development Working Group
2014-2016 Society for Healthcare Epidemiology of America, Antimicrobial Stewardship Committee, Committee Member
2014 Infectious Diseases Society of America Infection Control and Antimicrobial Stewardship Maintenance of Certification Panel Member
2014 Brookings Institution's Engelberg Center for Health Care Reform and the U.S. Food and Drug Administration: Reinvigorating the Oral Antibacterial Drug Development Pipeline
2015-2016 Centers for Diseases Control and Prevention: Inpatient Antibiotic Prescribing: Setting a National Goal for Reducing Inappropriate Use; Committee Member
2016-2017 Joint Infectious Diseases Society of America-Society for Healthcare Epidemiology of America- Pediatric Infectious Diseases Society Antibiotic Stewardship Taskforce, Committee Member
2016-2018 Society for Healthcare Epidemiology of America, Research Methods in Antibiotic Stewardship Workshop, Planning Committee Member
2017-2018 Society for Healthcare Epidemiology of America, White Paper Working Group: Research Gaps in Antibiotic Stewardship
2017 Clinical and Laboratory Standards Committee, Dalbavancin breakpoint working group, Committee Member

2017-2018	Clinical and Laboratory Standards Committee, Ceftaroline breakpoint working group, Committee Member
2018-2019	Centers for Diseases Control and Prevention Epicenter Pediatric Hospital-acquired Infections/Antimicrobial Resistance Research Priorities Working Group
2018-2020	Society for Healthcare Epidemiology of America, Awards Committee, Committee Member
2018-2020	Centers for Disease Control and Prevention, Inpatient Antibiotic Prescribing: Reaching a National Goal for Reducing Inappropriate Use, Committee Member
2018-2019	Plazomicin Breakpoint Working Group, Clinical Laboratory and Standards Institute, Chair
2018-present	Infectious Diseases Society of America Intra-Abdominal Infection Guidelines, Committee Member
2018-present	American Academy of Pediatrics, Antimicrobial Resistance and Stewardship Subcommittee
2019-2020	Pediatric Health Information System Research Working Group, Member
2019-present	Evaluating the Prevalence of Leading Practices in Antimicrobial Stewardship in Joint Commission-accredited Hospitals, Advisory Panel
2018-2019	The Centers for Disease Control and Prevention Core Elements for Acute Care Hospitals, Reviewer
2019-2020	Development of In Vitro Susceptibility Testing Criteria and Quality Control Parameters M23 Working Group, Clinical Laboratory and Standards Institute, Committee Member
2019	The Antibiotic Stewardship Implementation Collaborative (20 hospital initiative), Founder and Chair
2020	NIH Bacteriophage Taskforce, Committee Member

International

2011	Extended-spectrum-beta-lactamase outbreak investigation at Al Corniche Hospital, Abu Dhabi
2013	Antimicrobial Stewardship Course at Asahi General Hospital, July 22-26th, 2012, Chiba, Japan
2013	Global Antibiotic Resistance Partnership, Advisory Group
2014-2017	Antimicrobial Susceptibility Testing Committee of the Clinical and Laboratory Standards Institute, Advisor
2016-2020	International Pediatric Antimicrobial Stewardship Meeting, Planning Committee Member
2018-2020	Antimicrobial Susceptibility Testing Committee of the Clinical and Laboratory Standards Institute, Voting Member
2018-present	Antibacterial Resistance Leadership Group, Gram-Negative Subcommittee, Committee Member
2020-present	Infectious Diseases Society of American (IDSA) Treatment of Antimicrobial Resistant Infections Guidelines, Co-Chair

Professional Societies

2008-present	Member, Pediatric Infectious Disease Society
2008-present	Member, Infectious Disease Society of America
2009-present	Member, Society for Hospital Epidemiology of America

Conference Organizer

<i>National</i>	2013 Infectious Diseases Society of America Antimicrobial Stewardship Workshop, Workshop Organizer. San Francisco, CA.
	2014 Infectious Diseases Society of America Antimicrobial Stewardship Workshop, Workshop Organizer, Philadelphia, PA.
	2015 Infectious Diseases Society of America Antimicrobial Stewardship Workshop, Workshop Organizer, San Diego, CA.
	2016 Infectious Diseases Society of America Antimicrobial Stewardship Workshop, Workshop Organizer, New Orleans, LA.

International

2012	Co-Organizer, Summer Institute of Advanced Epidemiology and Preventive Medicine, August 5-9 th , 2012, Tel Aviv, Israel
2016	International Symposium on Healthcare-Acquired Infections and Antimicrobial Stewardship. Cali, Colombia, Planning Committee.

Session Chair

- 2014 Moderator: Clinical Challenges in Pediatric Antibiotic Management. **Pediatric Academic Societies and Asian Society for Pediatric Research**, Vancouver, Canada.
- 2014 Moderator: Diagnostic Challenges for Multidrug-Resistant Organisms. **The Society for Healthcare Epidemiology of America**, Denver CO.
- 2015 Moderator: Approaches to Decreasing the Spread of Drug-Resistant Organisms within the Acute Care Setting. **The Society for Healthcare Epidemiology of America Conference**, Orlando, FL.
- 2015 Moderator: Challenges in the Treatment of Multidrug-Resistant Infections. **ID Week**. San Diego, CA.
- 2017 Moderator: Stewardship Tools. **ID Week**. San Diego, CA.
- 2017 Moderator: Controversies in ESBL Empiric and Definitive Management. **ID Week**. San Diego, CA.
- 2018 Moderator: Antibiotic Resistance: Burden, Clinical Implications, and Strategies to Fight Back. **Pediatric Academic Society**. Toronto, Canada.
- 2018 Moderator: Old Foes Emerging Threats: MDR Bacterial Infections. **ID Week**. San Francisco, CA.
- 2019 Moderator: Cutting Edge in Pediatric Osteomyelitis: Basic Scientist, ID Clinician, and Orthopedist. **ID Week**. Washington DC. (upcoming)
- 2019 Moderator: Rapid Fire Poster Session: Antimicrobial Resistance. **ID Week**. Washington DC (upcoming)
- 2020 Moderator: Importance of Reliable Generation and Appropriate Interpretation of AST Results in 2020. **Microbe**. Chicago, IL (upcoming)

RECOGNITION

Awards, Honors

- 2004 *summa cum laude* upon graduation from 7-year combined college/medical school program
- 2007 Senior Resident Teaching Award from Johns Hopkins Hospital interns
- 2009 Fellow Teaching Award from Johns Hopkins Hospital residents
- 2010 Baurenschmidt Fellowship Grant Recipient from Johns Hopkins Hospital
- 2010 KL2 Clinical Research Scholarship Awardee
- 2010-2015 National Institutes of Health Pediatric Loan Repayment Program Awardee
- 2011 Fellow Teaching Award from Johns Hopkins School of Medicine Students
- 2011 Infectious Diseases Society of America Travel Award for Outstanding Abstract Submission
- 2013-2018 Baltimore Magazine “Top Pediatric Infectious Diseases Doctor”
- 2015 Faculty Teaching Award from Johns Hopkins Hospital Pediatric Residents
- 2017 Pediatric Infectious Diseases Society Young Investigator Award
- 2017 Society for Healthcare Epidemiology of America Pediatric Investigator Award

Invited Talks

JHMI/Regional

- 12/2010 Grand Rounds: The Changing Epidemiology of *Streptococcus pneumoniae*. **Pediatric Grand Rounds at Saint Agnes Hospital**, Baltimore, MD.
- 5/2011 Grand Rounds: Ventilator-Associated Tracheitis in Children: Does antibiotic duration matter? **Pediatric Rounds at Johns Hopkins Hospital**, Baltimore, MD.
- 10/2011 Symposium: Antimicrobial Stewardship. **Infectious Disease Educational Associates of Pennsylvania**, Harrisburg, PA.
- 4/2012 Symposium: Pediatric Immunizations. **Pediatric Trends for the Primary Care Practitioner**, Baltimore, MD.
- 4/2012 Symposium: Clinical Vignettes in Pediatric Infectious Diseases. **Pediatric Trends for the Primary Care Practitioner**, Baltimore, MD.
- 2/2013 Symposium: The Duration of Therapy for Common Inpatient Infections in Children: What do we know so far? **American Academy of Pediatrics**, Baltimore, MD.
- 3/2013 Grand Rounds: Antibiotics for Hospitalized Children, **Pediatric Grand Rounds at Saint Agnes Hospital** Baltimore, MD.
- 4/2013 Symposium: *Clostridium difficile*. **Pediatric Trends for the Primary Care Practitioner**, Baltimore, MD.
- 4/2013 Symposium: Antibiotics for the General Pediatrician. **Pediatric Trends for the Primary Care Practitioner**, Baltimore, MD.

- 9/2013 Symposium: Antibiotics for the Outpatient Practitioner. **28th Annual Pediatrics for the Practitioner Update**, Baltimore, MD.
- 4/2014 Symposium: Antibiotics in the Outpatient Setting. **Pediatric Trends for the Primary Care Practitioner**, Baltimore, MD.
- 4/2015 Symposium: Outpatient Antimicrobial Use. **Pediatric Trends for the Primary Care Practitioner**, Baltimore, MD.
- 3/2017 Grand Rounds: The Diagnosis and Treatment of Carbapenem-Resistant *Enterobacteriaceae* Infections. **Internal Medicine Grand Rounds at Bayview Medical Center**: Baltimore, MD.
- 4/2017 Grand Rounds: The State of Carbapenem-Resistant *Enterobacteriaceae* Infections in Children. **Pediatric Grand Rounds: University of Maryland Medical Center**, Baltimore, MD.
- 6/2017 Grand Rounds: Duration of Antibiotic Therapy for Common Inpatient Infections, **Grand Rounds at Johns Hopkins Hospital**, Baltimore, MD.
- 8/2017 Symposium: Avoiding Antibiotic Never-Events. **5th Annual Maryland Health Systems Pharmacist Meeting**. Baltimore, MD
- 1/2017 Symposium: Recent Publications in the Infectious Diseases Literature. Maryland Campaign for Appropriate Antibiotic Use (CAAUSE). Baltimore, MD
- 2/2018 Symposium: An Overview of Antibiotic Stewardship: How can the Microbiology Laboratory help? **Eastern Pennsylvania Branch of the American Society for Microbiology**. Philadelphia, PA
- 9/2018 Grand Rounds: The State of Multidrug Resistant Gram-Negative Infections in the United States. **Grand Rounds at the Johns Hopkins University School of Medicine**, Baltimore, MD.
- 12/2018 Symposium: The Epidemiology of Gram-Negative Resistance. **Johns Hopkins Bloomberg School of Public Health**. Baltimore, Maryland
- 05/2019 Symposium: Update on Multidrug-Resistant Gram-Negative Organisms. **13th Annual Infectious Diseases Update for Primary Care and Hospital Medicine**. Baltimore, Maryland (upcoming)
- 05/2019 Symposium: Updates in the Epidemiology and Management of Osteomyelitis. **Pediatric Trends for the Primary Care Practitioner**, Baltimore, Maryland (upcoming)

National

- 5/2010 Symposium: Chlorhexidine use in the Neonatal Intensive Care Unit. **Society for Healthcare Epidemiology of America**, Atlanta, GA.
- 9/2011 Symposium: Do Prolonged Beta-lactam Infusions Improve Clinical Outcomes Compared to Intermittent infusions? **Interscience Conference on Antimicrobial Agents and Chemotherapy Annual Meeting**. Chicago, IL.
- 10/2012 Pre-Meeting Workshop: Duration of Antimicrobial Therapy in Children & Adults. **ID Week Workshop**, San Diego, CA.
- 10/2012 Symposium: The Use of Intravenous Colistin in Children. **ID Week**, San Diego, CA.
- 5/2013 Symposium: Multidrug resistant Gram-negative organisms are a greater threat to neonates than the infection control practices to control them. **Pediatric Academic Society**, Washington DC.
- 6/2013 Symposium: Combination Antibiotic Therapy for the Treatment of Gram-Negative Infections in Children. **Fourth Annual International Pediatric Antimicrobial Stewardship Conference**, Kansas City, MO.
- 6/2013 Symposium: Do the revised ceftriaxone breakpoints translate to improved clinical outcomes for patients with *Enterobacteriaceae* infections? **Antimicrobial Susceptibility Testing Meeting of the Clinical Laboratory and Standards Institute**, Baltimore, MD.
- 10/2013 Pre-Meeting Workshop (moderator & speaker): Duration of Antimicrobial Therapy in Children & Adults. **ID Week Workshop**, San Francisco, CA.
- 10/2013 Symposium: Microbial Ecology as an Antimicrobial Stewardship Measure: Is this an Achievable Endpoint? **ID Week**, San Francisco, CA.
- 5/2014 Symposium: What are our treatment options for multidrug resistant Gram-negative organisms infecting children? **Making a Difference in Infectious Diseases Pharmacotherapy (MAD ID)**, Orlando, FL.
- 6/2014 Symposium: Giving the Proper Dose: How the Clinical and Laboratory Standards Institute can help. **Antimicrobial Susceptibility Testing Meeting of the Clinical Laboratory and Standards Institute**, San Diego, CA.
- 10/2014 Pre-Meeting Workshop (moderator & speaker): An Update on Recent and Pending Breakpoint Changes: Our Role as Stewards. **ID Week Workshop**, Philadelphia, PA.

- 11/2014 Symposium: Preventing *Clostridium difficile* Infection in the Intensive Care Unit. **National Critical Care Conference**. Greensboro, NC.
- 1/2015 Grand Rounds: Pediatric Grand Rounds at St. Jude's Children's Research Hospital: The Use of Combination Antibiotic Therapy for the Treatment of Gram-Negative Infections. Memphis, TN.
- 5/2015 Grand Rounds: Infectious Diseases Grand Rounds at The University of Wisconsin at Madison: The Diagnosis and Treatment of Carbapenem-Resistant *Enterobacteriaceae*. Madison, WI.
- 9/2015 Symposium: *Clostridium difficile* Infection Prevention in Hospitalized Children. **International Antimicrobial Agents and Chemotherapy Conference (ICAAC)**. San Diego, CA.
- 10/2015 Symposium: The Treatment of Multidrug-Resistant Gram-Negative Infections in Children. **ID Week**. San Diego, CA.
- 10/2015 Symposium: Evaluating the Effect of Antibiotic Stewardship Interventions: How to Assess the Impact on Patient-Centered Outcomes? **ID Week**. San Diego, CA.
- 10/2015 Pre-Meeting Workshop (moderator & speaker): Recent Publications all Stewards Should be Aware of. **ID Week**. San Diego, CA.
- 5/2016 Symposium: MDROs in Immunocompromised Children: Rethinking Epidemiology and Empirical Therapies. **Pediatric Academic Society**. Baltimore, MD.
- 5/2016 Grand Rounds: The Epidemiology and Treatment of Carbapenem-Resistant *Enterobacteriaceae* Infections, **Georgetown University School of Medicine**, District of Columbia.
- 6/2016 Pre-meeting Workshop: Antimicrobial Stewardship in Clinical Practice: Institutional Activities & Barriers to Success **American Society of Microbiology Meeting (Microbe)**. Boston, MA.
- 6/2016 Symposium: Utilization of non-carbapenem beta-lactams for directed treatment of ESBL infections. **American Society of Microbiology Meeting (Microbe)**. Boston, MA.
- 9/2016 Symposium: The State of Gram-Negative Resistance in the United States, **Philadelphia Antimicrobial Stewardship Collaborative Meeting**. Philadelphia, PA
- 10/2016 Symposium: Double Coverage for Gram-Negative Infections: Why we do not need it. **ID Week**. New Orleans, LA.
- 10/2016 Pre-Meeting Workshop: The Use of Non-carbapenem Beta-lactams for the Treatment of ESBL Infections **ID Week**. New Orleans, LA.
- 11/2016 Symposium: Discuss the Importance of Appropriately Defining the Exposures and Outcomes Central to Antibiotic Stewardship Research in the Inpatient Setting. **Society for Healthcare Epidemiology of America Antimicrobial Stewardship Research Workshop**, San Diego, CA.
- 11/2016 Symposium: Establishing Clinical Relevant Antibiotic Breakpoint Interpretive Criteria. **The Food and Drug Administration**, Silver Spring, MD.
- 3/2017 Symposium: Interventions to Improve Antibiotic Use in Critically-Ill Children, **Society for Healthcare Epidemiology of America Spring 2017 Meeting**, St. Louis, MO.
- 3/2017 Symposium: The Never Events: Managing Provider and Patient Expectations, **Society for Healthcare Epidemiology of America Spring 2017 Meeting**, St. Louis, MO.
- 6/2017 Symposium: Research Methodology for Antibiotic Stewardship Studies. **Seventh Annual International Pediatric Antimicrobial Stewardship Conference**, St. Louis, MO.
- 6/2017 Symposium: Case Studies in the Treatment of Multidrug-Resistant Gram-Negative Infections. **Seventh Annual International Pediatric Antimicrobial Stewardship Conference**, St. Louis, MO.
- 6/2017 Symposium: Gram-Negative Resistance Literature Review. **Microbe 2017**, New Orleans, LA.
- 10/2017 Symposium: When Should I Prescribed Extended Infusion Beta-Lactam Therapy? **ID Week 2017**. St. Louis, MO.
- 10/2017 Meet the Professor: Controversies in Empiric and Definitive Treatment of ESBL Infections. **ID Week 2017**. St. Louis, MO.
- 10/2017 Pre-Meeting Workshop: Notable Stewardship Publications in the Past Year. **ID Week 2017**. St. Louis, MO.
- 10/2017 National Webinar: Antibiotic Never-Events. Partnership for Patients and the Hospital Improvement Innovation Network.
- 11/2017 Symposium: Defining Exposures and Outcomes in Inpatient Research. **Society for Healthcare Epidemiology of America Antimicrobial Stewardship Research Workshop**. Chicago, IL.
- 3/2018 Symposium: Novel Antibiotic Agents in Development for the Treatment of Multidrug-Resistant Gram-Negative Infections. **Children's Hospital of Philadelphia**, Philadelphia, PA

- 4/2018 Symposium: Antibiotic Stewardship in the Acute Care Setting. **Society for Healthcare Epidemiology of America Spring Meeting**. Portland, OR
- 4/2018 Symposium: Defining Antibiotic Never Events in the Acute Care Setting. **Society for Healthcare Epidemiology of America Spring Meeting**. Portland, OR
- 4/2018 Symposium: My Greatest Antibiotic Stewardship Failure. **Society for Healthcare Epidemiology of America Spring Meeting**. Portland, OR
- 6/2018 Symposium: Gram-Negative Resistance Literature Review. **Microbe**, Atlanta, GA.
- 7/2018 Visiting Professor Talk: Last Resort Agents for the Treatment of Multidrug-Resistant Gram-Negative Infections. Duke University. Durham, NC
- 10/2018 Symposium: Top Papers of the Year for the Infectious Diseases Physician. **ID Week**, San Francisco, CA
- 10/2018 Symposium: Novel Antibiotics in Late Phases of Development. **ID Week**, San Francisco, CA
- 11/2018 Visiting Professor Talk. Novel Antibiotics for the Treatment of Multidrug-Resistant Gram-Negative Infections. **University of Colorado Medical Center**. Denver, CO.
- 11/2018 Symposium: Defining Inpatient Exposures and Outcomes in Research. **Society for Healthcare Epidemiology of America Research Workshop**. Baltimore, MD.
- 3/2019 Symposium: Quantitative Research Methods for the Antibiotic Steward. **Faculty of Three Rivers Antimicrobial Stewardship Symposium 2019**. Pittsburgh, PA
- 3/2019 Symposium: Stewardship in the Setting of Multidrug Resistant Gram Negative Organisms. **Faculty of Three Rivers Antimicrobial Stewardship Symposium 2019**. Pittsburgh, PA
- 4/2019 Symposium: Antibiotic Stewardship in Pediatrics: Reconciling Practice Differences with National Guidelines. **The Society for Healthcare Epidemiology of America Spring Meeting**. Boston, MA
- 4/2019 Symposium: Stewardship in the Microbiology Laboratory in the Setting of Gram-Negative Resistance. **The Society for Healthcare Epidemiology of America Spring Meeting**. Boston, MA (upcoming)
- 5/2019 Visiting Professor Talk. The Current State of Gram-Negative Resistance in the United States. 46th Haker Memorial Visiting Professor of Pediatric Infectious Diseases. **Medical College of Wisconsin**, Milwaukee, WI
- 5/2019 Symposium: Quantitative Approaches to Conducting Clinical Research. **Medical College of Wisconsin**, Milwaukee, WI
- 6/2019 Symposium: Gram-Negative Resistance Literature Review. **Microbe**. San Francisco, CA
- 6/2019 Symposium: Assessing Antibiotic Susceptibility to Guide Selection and Improve Outcomes. **Microbe**. San Francisco, CA
- 7/2019 Symposium: Setting the Scene: Gram-negative bacteria burden of disease. **The Wistar Institute**. Philadelphia, PA
- 10/2019 Oral Presentation: The Agency for Healthcare Research and Quality (AHRQ) Safety Program for Improving Antibiotic Use: Results from a National Antibiotic Stewardship Intervention of 402 United States Hospitals. **ID Week**. Washington DC
- 11/2019 Visiting Professor: The State of Gram-Negative Resistance in the United States. **All Children's Hospital**. St. Petersburg, FL
- 01/2020 Visiting Professor: Making Inroads in the Fight against Gram-negative Resistance. **Texas Children's Hospital**. Houston, TX.
- 01/2020 Grand Rounds: Preventing Antibiotic-Associated Harm in Children. **Texas Children's Hospital**. Houston, TX
- 03/2020 Visiting Professor: Optimizing the Management of Gram-negative Bacteremia. **The University of Utah** Salt Lake City, UT (upcoming)
- 03/2020 Visiting Professor: Can we modify the emergence of resistance to novel antibiotic agents? **Memorial Sloan Kettering Cancer Center**. New York City, NY (upcoming)
- 03/2020 Meet the Professor: Optimizing the Use of New Gram-negative Agents at the Individual and Institutional Level. **The Society for Healthcare Epidemiology of America Spring Meeting**. Atlanta, GA (upcoming)
- 05/2020 Visiting Professor: Emerging Resistance to the Novel Antibiotics: What can the clinician do to control it? **Northwestern University**. Chicago, IL (upcoming)
- 06/2020 Symposium: Gram-Negative Literature Review. **Microbe**. Chicago, IL (upcoming)
- 09/2020 Grand Rounds: When Less is More: Preventing Antibiotic-Associated Harm in Children. **Stanford University School of Medicine**. Stanford, CA (upcoming)

- 09/2020 Visiting Professor: Optimizing Treatment Strategies against Multidrug-Resistant Gram-Negative Infections. **Stanford University School of Medicine**. Stanford, CA (upcoming)
- 10/2020 Meet the Professor: AmpC beta-lactamase: basics and clinical considerations. **ID Week**. Philadelphia, PA (upcoming)

International

- 8/2011 Grand Rounds: The epidemiology of extended-spectrum beta-lactamases in children. **Al Corniche Hospital**. Abu Dhabi, United Arab Emirates.
- 8/2012 Invited Professorship: Decreasing the spread of antibiotic resistance in children. **Tel Aviv University's School of Public Health**. Tel Aviv, Israel.
- 7/2013 Invited Professorship: Antibiotic therapy for inpatient infections: balancing optimizing patient outcomes with the emergence of antibiotic resistance. **Asahi General Hospital**. Chiba, Japan.
- 5/2014 Symposium (moderator & speaker): Clinical Challenges in Pediatric Antibiotic Management. **Pediatric Academic Societies and Asian Society for Pediatric Research**, Vancouver, Canada.
- 3/2015 Symposium: Zero Bacteremia: Myth or Reality? **6th International Symposium on Patient Safety**. Cali, Colombia.
- 3/2015 Symposium: Impact of Antimicrobial Stewardship on Patient Safety. **6th International Symposium on Patient Safety**. Cali, Colombia.
- 3/2016 Symposium: The Diagnosis of Carbapenem-Resistant *Enterobacteriaceae* **9th International Symposium on Antimicrobial Resistance**. Cali, Colombia.
- 3/2016 Symposium: Evaluating the Impact of Antimicrobial Stewardship Interventions **9th International Symposium on Antimicrobial Resistance**. Cali, Colombia.
- 3/2016 Symposium: Antimicrobial Stewardship and Its Impact on Gram-Negative Resistance **9th International Symposium on Antimicrobial Resistance**. Cali, Colombia.
- 9/2016 Symposium: Antibiotic Stewardship in Clinical Practice and Barriers to its Success. **National Academy of Medicine**, Mexico City, Mexico.
- 3/2017 Symposium: Reviewing the Pros and Cons of Various Outcome Measures for Antimicrobial Stewardship Programs. **International Symposium on Health-care Acquired Infections and Antimicrobial Stewardship**. Cali, Colombia.
- 3/2017 Symposium: Non-Carbapenem Options for the Treatment of ESBL-Producing Infections. **International Symposium on Health-care Acquired Infections and Antimicrobial Stewardship**. Cali, Colombia.
- 8/2018 Symposium: **The First International Conference on Infectious Diseases and Clinical Microbiology**. Top Papers in Gram-Negative Resistance. Beijing, China.
- 9/2019 Symposium: The State of the Art of Gram-Negative Resistance. **National Brazilian Meeting of Infectious Diseases**. Sao Paulo, Brazil
- 4/2020 Symposium: Stewardship Novel Antibiotic Agents. **Scottish Microbiology Society Annual Conference**. Edinburgh, Scotland (upcoming)
- 4/2020 Symposium: Decision Trees and Risk Scores to Predict Drug-Resistant Infections. **European Congress of Clinical and Microbiological Infectious Diseases (ECCMID)**. Paris, France. (upcoming)

HUMANITARIAN ACTIVITIES

- 2004 – 2007 Big Sister, Big Brothers and Big Sisters of America, Baltimore Chapter
- May 2006 Voluntary medical work, Peru
- October 2007 Voluntary medical work, Haiti
- October 2008 Voluntary medical work, Guyana
- May 2011 Operation Smile Medical Mission, Honduras