

# Emily L. Heil, PharmD, BCIDP, BCPS – AQ ID, AAHIVP

**Associate Professor – Infectious Diseases**  
University of Maryland School of Pharmacy  
Baltimore, MD

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## Education and Training

<i>Master of Science in Clinical Research</i> University of Maryland School of Medicine Baltimore, MD Advisor: Anthony Harris, MD, MPH	Anticipated 2019
<i>Infectious Diseases Specialty Resident</i> University of North Carolina Hospitals Chapel Hill, NC Director: Ralph Raasch, PharmD, BCPS, FCCP	2010 - 2011
<i>Pharmacy Practice Resident</i> University of North Carolina Hospitals Chapel Hill, NC Director: Stephen Eckel, PharmD, MHA, BCPS	2009 - 2010
<i>Doctor of Pharmacy with Highest Distinction</i> Eshelman School of Pharmacy University of North Carolina at Chapel Hill Chapel Hill, NC	2005 - 2009
<i>Clinical Scholars Program</i> Duke Area Health Education Center Duke University Medical Center Durham, NC Director: Philip Rodgers, PharmD, BCPS, CPP, CDE, FCCP	2008 - 2009
<i>Bachelor of Science in Pharmaceutical Science</i> Eshelman School of Pharmacy University of North Carolina at Chapel Hill Chapel Hill, NC	2005 - 2008
<i>Pre-Pharmacy Curriculum</i> University of North Carolina at Chapel Hill Chapel Hill, NC	2003 - 2005

## Professional Experience

### Academic Appointments

<i>Associate Professor</i> Pharmacy Practice and Science University of Maryland School of Pharmacy Baltimore, MD	2019 – Present
<i>Assistant Professor</i> Pharmacy Practice and Science University of Maryland School of Pharmacy Baltimore, MD	2016 - 2019
<i>Clinical Assistant Professor</i> Department of Medicine, Division of Infectious Diseases University of Maryland School of Medicine Baltimore, MD	2014 – Present
<i>Clinical Assistant Professor</i> University of Maryland School of Pharmacy Baltimore, MD	2011 - 2016
<i>Clinical Instructor</i> University of North Carolina Eshelman School of Pharmacy Chapel Hill, NC	2007 - 2011

### Practice Experience

<i>Infectious Diseases Clinical Pharmacy Specialist</i> University of Maryland Medical Center Baltimore, MD	2011 – Present
<i>Clinical Pharmacist (resident)</i> University of North Carolina Hospitals Chapel Hill, NC	2009 - 2011
<i>Pharmacy Intern</i> Clinic Pharmacy Durham, NC	2005 – 2009

### Trainee Leadership

<i>PGY2 Infectious Diseases Pharmacotherapy Residency Director</i> University of Maryland School of Pharmacy Baltimore, MD	2017 – Present
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## Professional Development and Certifications

<i>Board Certified Infectious Diseases Pharmacist</i>	2019- Present
<i>Johns Hopkins Armstrong Institute for Patient Safety and Quality Fundamentals in Leadership for Patient Safety and Quality</i>	Completed 2017
<i>American Academy of HIV Medicine Pharmacist</i>	2013 – Present
<i>Board Certified Pharmacotherapy Specialist Added Qualifications in Infectious Diseases</i>	2010 – Present 2013 - Present
<i>Making a Difference in Infectious Diseases Pharmacotherapy Advanced Antimicrobial Stewardship Certificate</i>	Awarded 2011
<i>Making a Difference in Infectious Diseases Pharmacotherapy Basic Antimicrobial Stewardship Certificate</i>	Awarded 2010
<i>Teaching Certificate University of North Carolina Eshelman School of Pharmacy</i>	Awarded 2010
<i>American Pharmacists Association Pharmacy-Based Immunization Delivery Certification</i>	2007 - 2011
<i>Basic Life Support Certification</i>	2006 - Present

## Honors and Awards

<i>University of Maryland School of Pharmacy American Association of Colleges of Pharmacy Teacher of the Year</i>	2019
<i>American College of Clinical Pharmacy Infectious Diseases Practice and Research Network Clinical Practice Award</i>	2016
<i>Maryland Society of Health System Pharmacy Medication Safety Award</i>	2016
<i>Maryland Society of Health System Pharmacy Pharmacist of the Year Award</i>	2015
<i>University of Maryland Residency &amp; Fellowship Programs Preceptor of the Year Award</i>	2014
<i>Maryland Society of Health System Pharmacy Medication Safety Award Awarded to MSHP members for significant contributions to medication</i>	2013

use safety.

<i>Linda Rodgers Memorial Award</i> Kappa Epsilon Professional Pharmacy Fraternity <i>Awarded by the national Grand Council to one collegiate member who exemplifies the qualities of leadership, dedication, diplomacy, friendship, and is an inspiration to others</i>	2008
<i>Phi Lambda Sigma Leadership Society</i> Eshelman School of Pharmacy University of North Carolina at Chapel Hill	2007 – 2009
<i>Rho Chi Pharmacy Honor Society, Xi Chapter</i> Eshelman School of Pharmacy University of North Carolina at Chapel Hill	2007 – 2009
<i>Howard and Mescal Ferguson Scholarship</i> Pharmacy Foundation of North Carolina, Inc. <i>Awarded to PharmD students with above average academic achievement, excellent communication skills, capacity for leadership and service, high moral and ethical character, and excellence in pharmacokinetics, and pharmacotherapy</i>	2007 – 2009
<i>J. Barnwell and Mary Blair Allison Scholarship</i> Pharmacy Foundation of North Carolina, Inc. <i>Awarded to PharmD students for academic achievement and leadership</i>	2006 - 2007

## Professional Affiliations

Infectious Diseases Society of America	2019- Present
Society for Healthcare Epidemiology of America	2016 - Present
American Society for Microbiology	2015 - Present
Maryland Society of Health-System Pharmacy	2011 - Present
Society of Infectious Diseases Pharmacists	2010 – Present
American College of Clinical Pharmacists	2008 – Present
American Society of Health-System Pharmacists	2005 – 2011
American Pharmacists Association	2005 - 2009
Kappa Epsilon Professional Pharmacy Fraternity	2005 - Present
North Carolina Association of Pharmacists	2005 – 2011

## Leadership and Service

### National Involvement

#### ***Infectious Diseases Society of America***

Pharmacy Representative, Sepsis Task Force	2019 – Present
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### ***Society for Healthcare Epidemiology of America***

Member, Public Policy and Government Affairs Committee	2016 – Present
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### ***American Society of Consultant Pharmacists***

Member, Innovations and Business Development Group	2015 – 2018
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### ***Society of Infectious Diseases Pharmacists***

Secretary/Treasurer	2018 - Present
Past Chair, Fundraising Committee	2018 - Present
Chair, Fundraising Committee	2016 - 2017
Past Chair, Political Advocacy Committee	2016 - Present
Chair, Political Advocacy Committee	2014 – 2016
Member, Long-Term Care Stewardship Certificate Working Group	2016 - Present
Member, Inter-organizational Relations Committee	2013 – 2014
Member, Political Advocacy Committee	2011 - Present

### ***American College of Clinical Pharmacists***

Member, Annual Meeting Program Committee	2014 – 2016
Student Travel Award Application Reviewer	2013 - Present
Infectious Diseases Practice and Research Network	2008 - Present
Member, Social Media Committee	2016 - Present
Member, Education and Programming Committee	2008 - 2010

### **State Involvement**

#### ***Maryland Health Care Commission***

Member, Maryland Campaign for Appropriate Antibiotic Use	2016 - Present
Pharmacist Liaison, Healthcare-Associated Infections Advisory Committee	2012 - Present

#### ***Maryland Society of Health System Pharmacists***

Chair, Antimicrobial Stewardship Committee	2011 – 2017
Member, Antimicrobial Stewardship Committee	2011 - Present

#### ***North Carolina Association of Pharmacists***

Member at Large, New Practitioner Executive Committee	2009 – 2011
Member, Governmental Affairs Committee	2010 – 2011

#### ***Kappa Epsilon Professional Pharmacy Fraternity***

Founder, Greater Triangle Area Alumni Chapter	2008
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### University Involvement

#### **University of North Carolina Hospitals Pharmacy Residency Program**

Chief Resident	2010 - 2011
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#### **Carolina Association of Pharmacy Students**

Chair, Student Political Information Network	2006 – 2008
Member at Large, APhA – ASP Executive Committee	2006 - 2008

#### **Kappa Epsilon Professional Pharmacy Fraternity (KE)**

President	2007 – 2008
Vice President	2006 – 2007
Executive Committee Member at Large	2005 – 2006

### Institutional Service

#### **University of Maryland Medical System**

Chair, Antimicrobial Stewardship Clinical Performance Workgroup	2016 – Present
Pharmacy Representative, Sepsis Task Force	2013 - 2015

#### **University of Maryland Medical Center**

Editor, UMMC Antibiotic Guidebook	2015 - Present
Chair, Multi-disciplinary <i>C. difficile</i> Task Force	2015 - Present
Pharmacy Representative, Surgical Site Infection Reduction Task Force	2015- 2016
Pharmacy Representative, Microbiology Performance Improvement Committee	2015 - 2016
QIPS (Quality Improvement Patient Safety) Resident Interest Group, Faculty	2014 - Present
Pharmacy Representative, Novel Pathogens Management Committee	2014 - Present
Pharmacy Representative, Executive Resource Utilization Committee	2014 - Present
Pharmacy Representative, Sepsis Performance Workgroup	2014 - Present
Member, PGY2 Emergency Medicine Residency Advisory Committee	2013 - Present
Infectious Diseases Fellowship Selection, Faculty Interviewer	2013 - Present
Member, Drug Shortages Committee	2011 - Present
Secretary, Antimicrobial Subcommittee	2011 - Present
Pharmacy Representative, Infection Control Executive Committee	2011 - Present
Chair, Antimicrobial Management Taskforce for Surgical Infections	2012 – 2013
Member, PGY1 & PGY2 Pharmacotherapy Residency Advisory Committee	2011 - Present

#### **University of Maryland School of Pharmacy**

Faculty Affairs Committee	2018 - Present
Faculty Advisor, Phi Lambda Sigma	2018 - Present
Chair, Student Affairs Committee	2017 – Present
Pediatric Faculty Search Committee	2017 - Present
Practice Workgroup, Strategic Planning Committee	2016 – Present

Residency and Fellowship Directors Committee	2016 - Present
<u>Professional Service</u>	
<b>Board of Pharmacy Specialties</b>	2017
Infectious Diseases Specialty Exam Question Writer	
<b>National Quality Forum</b>	2017 – 2018
Long-term Care Antimicrobial Stewardship Working Group	
<b>Contagion @ Infectious Diseases Today</b>	2017 - Present
Editorial Advisory Board	
<b>Positively Aware Annual HIV Drug Guide</b>	
Contributing Editor	2013 - 2015
<b>Journal Reviewer</b>	
Antimicrobial Agents and Chemotherapy	2016 - Present
Journal of Antimicrobial Chemotherapy	2016 - Present
Clinical Infectious Diseases	2015 - Present
Annals of Pharmacotherapy	2011 – Present
Pharmacotherapy	2011 – Present
American Journal of Health System Pharmacy	2011 –
Present	
<u>Community Service</u>	
<b>City Uprising HIV Outreach</b>	
Volunteer Faculty Preceptor	2013 - Present
<b>Student Health Action Coalition Clinic</b>	
Volunteer Pharmacy Faculty Preceptor	2009 - 2011
<b>Interfaith Council Clinic</b>	
Volunteer Pharmacy Faculty Preceptor	2009 - 2011

### ***Taking Action By Service (TABS)***

University of North Carolina Children's Hospital Playroom	2005 -2008
Ronald McDonald House	2005 - 2008
SeniorCare Medication Reviews	2005- 2008

### **Teaching Experience**

#### **Didactic Education**

#### ***University of Maryland, Baltimore – Interprofessional Courses***

Critical Issues in Global Health (PREV 664/NRSG 664) Global Burden of Infectious Diseases/Antimicrobial Stewardship	2018 – Present
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Introduction to Interprofessional Practice Interprofessional Communication Values and Ethics for Interprofessional Practice	2017 – Present
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#### ***University of Maryland School of Pharmacy***

Clinical Pharmacokinetics (PHAR 556) Vancomycin and Aminoglycoside Dosing	2018 – Present
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Geriatric Pharmacotherapy (PHMY 517) Infectious Diseases in Geriatric Patients	2018 – Present
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Health-System Pharmacy Practice (PHMY 5007) Antimicrobial Stewardship	2016 – Present
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Infectious Diseases Therapeutics (PHAR5016) – Course Manager Basic Antibiotic Pharmacokinetics and Pharmacodynamics Aminoglycoside and Vancomycin Pharmacokinetics and Pharmacodynamics <i>C. difficile</i> Infection Intra-abdominal Infections Hospital Acquired Pneumonia Infective Endocarditis Multi-drug Resistant Infections Sepsis/Septic Shock Antimicrobial Stewardship Emerging Infectious Diseases	2016 - Present
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Acute Care Adult Internal Medicine (PHMY 5004) Respiratory Infections HIV Opportunistic Infections	2016 – Present
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Case-Based Infectious Diseases (PHMY 513) Infections in Burn Patients	2012 - Present
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Pneumonia Management of Multidrug Resistant Gram Negative Organisms Opportunistic Infections in Solid Organ Transplant Recipients Treatment of Hepatitis C Virus	
Interdisciplinary Management of HIV (PHMY 539) Gardiner's Cascade and Gaps in HIV Care	2013 – 2016
<b><i>University Teaching Hospital (Lusaka, Zambia) - Internal Medicine/Infectious Diseases Residents</i></b>	2017-Present
Antibiotics 101 Antibiotic Resistance	
<b><i>University of Maryland School of Nursing – Nurse Practitioner Program</i></b>	
Clinical Pharmacology and Therapeutics Across the Lifespan (NURS 723) Antimicrobial Agents and General Principles Antifungal Agents and Anti-mycobacterial Agents Antiviral and Antiretroviral Agents	2012 - Present
<b><i>University of Maryland School of Medicine</i></b>	
Host Defenses and Infectious Diseases (MMIC520)	2017 - Present
Humanism Symposium (MSPR 500)	2017 - Present
Pharmacokinetic Problem Solving (MSPR 520)	2014 – 2016
<b><i>University of Maryland Institute of Human Virology International Physician Exchange Program</i></b>	
Antimicrobial Stewardship	2016 – Present
<b><i>University of Maryland School of Medicine – Infectious Diseases Fellows</i></b>	
Antibiotic Dosing in Special Populations	2017 - Present
Vancomycin AUC-Based Dosing	2016 - Present
Antibiotic Boot Camp	2012 - Present
Pharmacokinetics and Pharmacodynamics of Antimicrobial Agents	2012 - Present
Antimicrobial Stewardship	2012 - Present
Medication Errors with Antiretrovirals	2012 - Present
Antimicrobial Drug Interactions	2012 - Present
Beta-lactam Allergy and Penicillin Skin Testing	2012 - Present
<b><i>University of Maryland School of Medicine – Center for Infectious Diseases</i></b>	
Novel Direct Acting Antivirals (DAAs) – Drug interaction potential	2015

### ***University of Maryland Pathology Laboratory***

Management of Gram Negative Infections 2016

### ***University of Maryland School of Medicine – Internal Medicine Program***

Durations of Therapy in Common Infections 2019  
Antimicrobial Stewardship Update 2019  
Infections in Persons Who Inject Drugs 2018  
Antimicrobial Stewardship Updates 2017  
Antimicrobial Stewardship – Rapid Technologies and Vancomycin Dosing 2017  
Management of *C. difficile* Infection 2016  
What's New in Antimicrobial Stewardship 2015  
Infectious Diseases Update – New Antimicrobials 2015  
Bad Bugs, No Drugs – An Antimicrobial Stewardship Primer 2014  
A Potpourri of Antibiotic Wisdom 2013

### ***University of Maryland Emergency Medicine Program – Grand Rounds***

Management of Skin and Soft Tissue Infections 2016  
Infectious Diseases Top 10 2014

### ***University of North Carolina Eshelman School of Pharmacy***

Urinary Tract Infections (DPPE 811) 2011  
Skin and Soft Tissue Infections (DPPE 811) 2011

### ***Laboratory Instructor***

Pharmaceutical Care Laboratory (PHCY 405) 2010  
Pharmaceutical Care Laboratory (PHCY 404) 2010 - 2011  
Pharmaceutical Care Laboratory (PHCY 403) 2009  
Pharmaceutical Care Laboratory (PHCY 402) 2008  
Pharmaceutical Care Laboratory (PHCY 401) 2007

### ***University of North Carolina School of Medicine***

Clinical Medicine Cases – CNS Infections (MSDI 246) 2011

### ***Experiential Education and Mentorship***

### ***Johns Hopkins University***

2016 - 2017

### ***Center for Bioengineering Innovation and Design***

Graduate Advisory Committee

### ***University of Maryland Medical Center***

### ***Preceptor***

Antimicrobial Stewardship (students, residents, ID Fellows) 2016 - Present  
Medicine – Infectious Diseases Service (students, residents) 2011 - Present

**Residency Advisor**

Ana Vega

2016-2017

Sharon Martin

2013-2014

Omayma Kishk

2012-2013

**Publications**Peer Reviewed

1. Johnson M, Jones B, **Heil E**, Stover K, Trone S, Fulford M, Bland C. Self-Perceived knowledge and confidence regarding infectious diseases of advanced pharmacy practice experience students. *Curr Pharm Teach Learn* 2019 (epub ahead of print).
2. Schmalzle S, Mark A, **Heil E**, Deming M, Palmeiro R, Nyemba V. Cognitive biases and knowledge deficits leading to delayed recognition of cryptococcal meningitis. *IDCases* 2019 [epub ahead of print].
3. Freedman SR, Ravichandran BR, Masters BM, Bromberg JS, Haririan A, Saharia KS, **Heil EL**, Sparkes TM. Clinical Outcomes of Valganciclovir Prophylaxis in High Risk (D+/R-) Renal Transplant Recipients Experiencing Delayed Graft Function. *Transplant Infect Dis* 2019;00:e13125.
4. Bork JT, **Heil EL**, Berry S, Lopes E, Dave R, Gilliam BL, Amoroso A. Dalbavancin Use in Vulnerable Patients Receiving Outpatient Parenteral Antibiotic Therapy for Invasive Gram-Positive Infections. *Infect Dis Ther* 2019 [epub ahead of print], DOI: 10.1007/s40121-019-0247-0.
5. Claeys KC, Hopkins T, Brown J, **Heil EL**. Pharmacists' Perceptions of Implementing an Area Under the Concentration Time Curve Pharmacist-to-Dose Program at a Large Academic Medical Center. *J Am Coll Clin Pharm* 2019 [epub ahead of print], DOI:10.1002/jac5.1092.
6. Mattingly TJ, Meninger S, **Heil EL**. Penicillin skin testing in methicillin-sensitive staphylococcus aureus bacteremia: A cost-effectiveness analysis. *PLoS ONE* 2019; 14(1):e0210271.
7. Bland CM, Bookstaver PB, Griffith NC, **Heil EL**, Jones BM, Justo JA, Staicu ML, Torney NP, Wall GC. From Theory to Practice: A Practical Guide for Pharmacists to Implement Penicillin Allergy Skin Testing. *Am J Health Syst Pharm* 2019;76:136-47.
8. Gallagher JC, Satlin MJ, Elabor A, Saraiya N, McCreary EK, Molnar E, El-Beyrouy C, Jones BM, Dixit D, **Heil EL**, Claeys KC, Hiles J, Vyas NM, Bland CM, Suh J, Bason K, McCoy D, King MA, Richards L, Harrington N, Guo Y, Chaudhry S, Lu X, Yu D. Ceftolozane-tazobactam for the treatment of multidrug-resistant *Pseudomonas aeruginosa* infections: A multicenter study. *Open Forum Infect Dis* 2018;5(11):ofy280., doi:10.1093/ofid/ofy280.
9. Plazak ME, Tamma PD, **Heil EL**. The antibiotic arms race: current and emerging therapy for *Klebsiella pneumoniae* carbapenemase (KPC)-producing bacteria. *Expert Opin Pharmacother* 2018 [epub ahead of print]. Doi:10.1080/14656566.2018.153854.

10. Vega A, Hynicka L, Claeys KC, **Heil EL**. Effectiveness of Eight Weeks of Ledipasvir/Sofosbuvir for Hepatitis C in HCV/HIV-coinfected Patients. *Antivir Ther* 2018 [epub ahead of print].
11. Claeys KC, Schlaffer KE, **Heil EL**, Leekha S, Johnson JK. Validation of an Antimicrobial Stewardship Driven Verigene Blood-Culture Gram-Negative Treatment Algorithm to Improve Appropriateness of Antibiotics. *Open Forum Infect Dis* 2018;5(10) doi:10.1093/ofid/ofy223.
12. **Heil EL**, Nicolau DP, Farkas A, Roberts JA, Thom KA. Pharmacodynamic target attainment for cefepime, meropenem and piperacillin/tazobactam using a pharmacokinetic/pharmacodynamic-based dosing calculator in critically ill patients. *Antimicrob Agent Chemother* 2018; 62:e01008-18.
13. Lewis PO, **Heil EL**, Covert KL, Cluck DB. Treatment Strategies for Persistent Methicillin-Resistant *Staphylococcus aureus* Bacteremia. *J Clin Pharm Ther* 2018; 43:614-25. doi:10.1111/jcpt.12743.
14. **Heil EL**, Claeys KC, Mynatt RP, Hopkins TL, Brade K, Watt I, Rybak MJ, Pogue JM. Making the Shift to Area Under the Curve-Based Vancomycin Dosing: The Why and the How. *Am J Health Syst Pharm* 2018;75:1986-95.
15. Outpatient Stewardship Working Group: Blanchette L, Gauthier T, **Heil E**, Klepser M, Madaras Kelly K, Nailor M, Wei W, Suda K. The Essential Role of Pharmacists in Antibiotic Stewardship in Outpatient Care: An Official Position Statement of the Society of Infectious Diseases Pharmacists. *J Am Pharm Assoc* 2018; 58:481-4. doi:10.1016/j.japh.2018.05.013.
16. Blanco N, O'Hara LM, Robinson GL, Brown J, **Heil E**, Brown CH, Stump BD, Sigler BW, Belani A, Miller HL, Chiplinski AN, Perlmutter R, Wilson L, Morgan DJ, Leekha S. Healthcare worker perceptions toward computerized clinical decision support tools for *Clostridium difficile* Infection reduction. *Am J Infect Control* 2018;46:1160-6. doi:10.1016/j.ajic.2018.04.204.
17. Claeys KC, **Heil EL**, Pogue JM, Lephart PR, Johnson JK. The Verigene Dilemma: Gram-negative Polymicrobial Bloodstream Infections and Clinical Decision Making. *Diag Microbiol Infect Dis* 2018;91:144-6. doi 10.1016/j.diagmicrobio.2018.01.012
18. Pogue JM, **Heil EL**, Lephart P, Johnson JK, Mynatt RP, Salimnia H, Claeys KC. An Antibiotic Stewardship Program Blueprint for Optimizing Verigene BC-GN within an Institution: a Tale of Two Cities. *Antimicrob Agents Chemother* 2018;62(5). doi: 10.1128/AAC.02538-17.
19. **Heil EL**, Pineles L, Mathur P, Morgan DJ, Harris AD, Srinivasan A, Thom KA and the CDC Epicenters. Accuracy of provider-selected indications for antibiotic orders. *Infect Control Hosp Epidemiol* 2018;39:111-113.
20. Mattingly TJ, Fulton A, Lumish R, Williams A, Yoon S, Yuen M, **Heil EL**. The cost of self-reported penicillin allergy: a systematic review. *J Allergy Clin Immunol Pract* 2018;6:1649-54. DOI: 10.1016/j.jaip.2017.12.033.
21. Claeys KC, Hopkins TL, Vega A, **Heil EL**. Fluoroquinolone restriction as an effective antimicrobial stewardship intervention. *Curr Infect Dis Report* 2018;20:7. DOI:10.1007/s11908-018-0615-z.

22. Bork JT, Morgan D, **Heil EL**, Pineles L, Kleinberg M. Peer Comparison of Anti-MRSA Agent Prescription in the Inpatient Setting. *Infect Control Hosp Epidemiol* 2017;38:1506-8.
23. Bork JT, **Heil EL**, Leekha S, Fowler RC, Hanson ND, Majumdar A, Johnson JK. Impact of CLSI and EUCAST Cefepime Breakpoint Changes on the Susceptibility Reporting for *Enterobacteriaceae*. *Diagn Microbiol Infect Dis* 2017;89:328-33.
24. King M, **Heil E**, Kuriakose S, Bias T, Huang V, El-Beyrouy C, McCoy D, Hiles J, Richards L, Gardner J, Harrington N, Bason K, Gallagher J. Outcomes with ceftazidime/avibactam in patients with carbapenem-resistant Enterobacteriaceae (CRE) infections: a multi-center study. *Antimicrob Agents Chemother* 2017; 61(7)e00449-17.
25. Kumarachandran G, Johnson JK, Shirley DA, Graffunder E, **Heil EL**. Predictors of adverse outcomes in children with *Staphylococcus aureus* bacteremia. *J Pediatr Pharmacol Ther* 2017;22:218-226.
26. Oliver WD, **Heil EL**, Thom KA, Martinez JP, Hayes BD. Allergy profile should be updated after uneventful administration of a penicillin or penicillin-related antibiotic to a patient with penicillin allergy. *J Allergy Clin Immunol Pract* 2017;5:184-6.
27. Mattingly TJ, **Heil EL**, Hoke KS. Exploring the case for eminent domain of Hepatitis C virus treatment patents. *J Health Care Poor Underserved* 2017;28:621-5.
28. **Heil EL**, Bork JT, Schmalzle SA, Kleinberg M, Kewalramani A, Gilliam BL, Buchwald UK. Implementation of an Infectious Diseases Fellow Managed Penicillin Allergy Skin Testing Service. *Open Forum Infect Dis* 2016, 3(3): doi: 10.0193/ofid/ofw155.
29. Allison MG, **Heil EL**, Hayes BD. Appropriate antibiotic therapy: Severe Sepsis Care in the Emergency Department. *Emerg Med Clin North Am* 2016, 35:25-42.
30. Thom KA, **Heil EL**, Croft L, Duffy A, Morgan DJ, Johantgen M. Advancing interprofessional patient safety education for medical, nursing and pharmacy learners during clinical rotations. *J Interprof Care* 2016;30:819-22. doi 10.1080/13561820.2016.1215972.
31. Kishk OA, Lardieri A, **Heil EL**, Morgan JA. Vancomycin AUC/MIC and Corresponding Troughs in a Pediatric Population. *J Pediatr Pharmacol Ther* 2017;22:41-7.
32. Brandt NJ, **Heil EL**. Antimicrobial Stewardship in the Post-Acute Long-Term Care Setting. *J Gerontol Nurs* 2016;42:10-14.
33. Aitken SL, Dilworth T, **Heil EL**, Nailor M. Antibiotics in Agriculture: a Danger to Human Health and a Call to Action from the Society of Infectious Diseases Pharmacists. *Pharmacotherapy* 2016;36:422-32. doi: 10.1002/phar.1737.
34. D'Angelo R, Johnson JK, Bork JT, **Heil EL**. Treatment options for extended-spectrum beta-lactamase (ESBL) and AmpC producing bacteria. *Expert Opin Pharmacother* 2016;17:953-67.
35. **Heil EL**, Johnson JK. Impact of CLSI Breakpoint Changes on Microbiology Laboratories and Antimicrobial Stewardship Programs. *J Clin Microbiol* 2016;54:840-4.

36. Sarg M, Waldrop G, Beier M, **Heil EL**, Thom KA, Preas MA, Johnson JK, Harris AD, Leekha S. Impact of Changes in Urine Culture Ordering Practices on Antimicrobial Utilization in Intensive Care Units at an Academic Medical Center. *Infect Control Hosp Epidemiol* 2016;37:448-54.
37. Oliver W, **Heil EL**, Gonzales JP, Mehrotra S, Robinett K, Saleeb P, Nicolau DP. Ceftolozane/tazobactam pharmacokinetics in a critically ill patient on continuous veno-venous hemofiltration. *Antimicrob Agents Chemother* 2015; 60:1899-1901.
38. **Heil EL**, Hynicka L, Kotttilil S, Tang L. What does the pharmacological future of treating chronic hepatitis C look like? *Expert Rev Clin Pharmacol* 2015;8:605-22. doi: 10.1586/17512433.2015.1074859.
39. Hines MC, Al-Salamah T, **Heil EL**, Witting M, Johnson JK, Winters M, Mallemat H, Hayes BD. Resistance patterns of *Escherichia coli* in women with uncomplicated urinary tract infection does not correlate with institutional antibiogram. *J Emerg Med* 2015;49:998-1003. doi: 10.1016/j.jemermed.2015.06.028.
40. Hollis AL, **Heil EL**, Nicolau DP, Odonkor P, Dowling TC, Thom KA. Validation of a dosing strategy for Cefazolin for surgery requiring cardiopulmonary bypass. *Surg Infect* 2015;16:829-32. doi: 10.1089/sur.2014.250.
41. Wiener ES, **Heil EL**, Hynicka LM, Johnson JK. Are fluoroquinolones appropriate for the treatment of extended-spectrum beta-lactamase producing gram-negative bacilli? *J Pharm Tech* 2016;32:16-21. doi: 10.1177/8755122515599407.
42. Bork JT, Leekha S, **Heil EL**, Zhao L, Badamas R, Johnson JK. Rapid Testing Using Verigene® BC-GN Microarray in Combination with Antimicrobial Stewardship Intervention in Gram-negative Bacteremia. *Antimicrob Agents Chemother* 2015;59:1588-95. doi:10.1128/AACo4259-14.
43. Nguyen AD, **Heil EL**, Patel NK, Duffy A, Gilmore S. A single-center evaluation of the risk for colonization or bacteremia with piperacillin-tazobactam and cefepime resistant bacteria in patients with acute leukemia receiving fluoroquinolone prophylaxis. *J Oncol Pharm Pract* 2016;22:303-7. doi: 10.1177/1078155214567161.
44. **Heil EL**, Shah KP, Amoroso A. Successful salvage therapy using daptomycin and ceftaroline following the emergence of daptomycin non-susceptible *Staphylococcus aureus* endocarditis and infected pacemaker/implantable cardioverter-defibrillator. *Infect Dis Clin Prac* 2015;23:155-7. doi:10.1097/IPC.000000000000222.
45. **Heil EL**, Lowery AV, Thom KA, Nicolau DP. Treatment of Multi-Drug Resistant *Pseudomonas* Using Extended-Infusion Antibiotic Regimens. *Pharmacotherapy* 2015;35:54-8. Doi:10.1002/phar.1514.
46. Memoli D, Shepardson A, Joshi M, **Heil E**. Reducing daptomycin expenditures by standardizing doses. *Am J Health System Pharm* 2014;71:12-14. doi: 10.2146/ajhp130391.
47. Fleming E, **Heil EL**, Hynicka LM. Treatment Strategy for a Multi-drug Resistant *Klebsiella* UTI: A Case Report. *Ann Pharmacother* 2014;48:123-7. doi: 10.1177/1060028013509974.

48. Shirley DA, **Heil EL**, Johnson JK. Ceftaroline Fosamil: A Brief Clinical Review. *Infect Dis Ther* 2013; doi: 10.1007/s40121-013-0010-x.
49. Hynicka L, **Heil EL**. Anemia management in patients with chronic Hepatitis C Virus. *Ann Pharmacother* 2013;47:228-236. doi: 10.1345/aph.1R513.
50. **Heil E**, Daniels L, Long D, Rodino K, Weber D, Miller M. Impact of Yeast Traffic Light Peptide Nucleic Acid Fluorescence In Situ Hybridization (PNA FISH) identification of *Candida* species in conjunction with pharmacy intervention at an academic medical center. *Am J Health System Pharm.* 2012;69:1910-14. doi: 10.2146/ajhp110604.
51. **Heil E**, Daniels L, Walko C, Nicolau D, Smith E. Validation of doripenem dosing in patients with end-stage renal disease receiving hemodialysis. *Ann Pharmacother.* 2011;45:1455-6. doi: 10.1345/aph.1Q395.
52. **Heil E**, Corbett A. Guidelines for the use of extended-release nevirapine in HIV-infected patients. *Expert Opin Pharmacother* 2011;12:2713-18. doi: 10.1517/14656566.2011.630391.
53. **Heil E**, Townsend M, Shipp K, Johnson M, Clarke A. Incidence of Severe Hepatotoxicity Related to Antiretroviral Therapy in HIV/HCV Coinfected Patients. *AIDS Res Treat.* 2010;2010: 856542. doi: 10.1155/2010/856542.

#### Non-Peer Reviewed

1. Tang K, **Heil EL**. Antimicrobial Stewardship for the Hospital Pharmacist. *Pharmacy Times Health Systems Edition.* 2015.
2. Talwani R, **Heil EL**, Gilliam B, Temesgen Z. Simeprevir: A Macrocyclic HCV Protease Inhibitor. *Drugs Today* 2013;49:769-779.
3. Kapelusznik L, **Heil EL**, Temesgen Z, Talwani R. Setrobuvir: RNA-directed RNA polymerase inhibitor. *Drugs Fut.* 2012;37:725-35.
4. Talwani R, **Heil EL**, Temesgen Z, Kapelusznik L. Filibuvir. *Drugs Fut.* 2012;37:767-75.
5. **Heil E**. Pharmacist Rounds: MRSA Endocarditis. *Pharmacy Times Health Systems Edition.* 2012;78:20-1.
6. Askew JP, **Heil EL**. Obsessive-Compulsive Disorder: An Overview for Pharmacists. *America's Pharmacist*, 2007; 129(12):36-51.

#### Letters and Other Communications

1. Dodds-Ashley E, Davis SL, **Heil EL**, LaPlante KL, Chahine EB, Bosso JA. Best care for patients is achieved through multi-disciplinary stewardship. *Clin Infect Dis* 2018;67(10):1637.
2. **Heil EL**, Gallagher JC, Kuti JL, Bearden D on behalf of the Society of Infectious Diseases Pharmacists and the American Society of Health System Pharmacy. The Essential Role of

Pharmacists in Antimicrobial Stewardship. *Infect Control Hosp Epidemiol* 2016;37:753-4.  
doi:10.1017/ice.2016.82.

3. Hynicka L, **Heil EL**. Hepatitis C Treatment Exposed or Experienced? *Ann Pharmacother* 2016;50:328.
4. **Heil EL**, Thomas J. CDC Antimicrobial Stewardship Recommendations: One State's Assessment Identifies Need for Compliance. *Am J Health System Pharm* 2014;71:1833-84.  
doi:10.2146/ajhp140273.

#### Book Chapters

1. **Heil EL**. Sepsis. In: *Infectious Diseases Case Study Approach for PharmDs*. Burr Ridge, IL: McGraw-Hill 2019.
2. Pandit NS, **Heil EL**. Principles of applied clinical pharmacokinetics and pharmacodynamics in antiretroviral therapy. In: *Fundamentals of HIV Medicine*. Oxford, UK: Oxford University Press 2019.
3. **Heil EL**, Banoub M, Corbett AH. Human Immunodeficiency Virus Infection. In: Chisholm-Burns et al., eds. *Pharmacotherapy Principles & Practice*, 5<sup>th</sup> Ed. Burr Ridge, IL: McGraw-Hill 2017.
4. Vanschoonveld T, **Heil EL**. Syndrome-driven antimicrobial stewardship. *Practical Implementation of Antimicrobial Stewardship Programs*. Chicago, IL: University of Chicago Press 2017 [in press].
5. Pandit NS, **Heil EL**. Principles of applied clinical pharmacokinetics and pharmacodynamics in antiretroviral therapy. In: *Fundamentals of HIV Medicine*. Oxford, UK: Oxford University Press 2016.
6. **Heil EL**, Corbett AH. Opportunistic Infections in HIV Infected Patients. In: Koda-Kimble et al., eds. *Applied Therapeutics: The Clinical Use of Drugs*, 11<sup>th</sup> Ed. Philadelphia, PA: Lippincott, Williams & Williams 2015.
7. **Heil EL**, Corbett AH. Human Immunodeficiency Virus Infection. In Katz et al., eds. *Pharmacotherapy Principles and Practice Study Guide: A Case Based Care Plan Approach*, 4<sup>th</sup> Ed. Burr Ridge, IL: McGraw-Hill 2015.
8. **Heil EL**, Trezza CR, Corbett AH. Human Immunodeficiency Virus Infection. In: Chisholm-Burns et al., eds. *Pharmacotherapy Principles & Practice*, 4<sup>th</sup> Ed. Burr Ridge, IL: McGraw-Hill 2015.
9. **Heil EL**, Standiford H. Approaches in Benchmarking. In: Mylonakis, ed. *Antimicrobial Stewardship: Principles and Practice*, 1<sup>st</sup> Ed. London, England: CTY Publishers 2015 [in press].
10. **Heil EL**, Sheth NU, Wright W. Introduction to Antimicrobial Agents. In: Wright, ed. *Clinical Infectious Diseases Essentials*, 1<sup>st</sup> Ed. New York, NY: DemosMedical 2013.
11. Corbett A, **Heil E**. Opportunistic Infections in HIV Infected Patients. In: Koda-Kimble et al., eds. *Applied Therapeutics: The Clinical Use of Drugs*, 10<sup>th</sup> Ed. Philadelphia, PA: Lippincott, Williams & Williams 2012.



## Research

### Grants and Contracts

1. Bland CM, Principal Investigator. **Heil EL**, Co-Investigator. Assessment of long-term antimicrobial prescribing in patients who have documented negative allergy after receiving penicillin skin testing: A multi-center study. ALK-Abello. July 1, 2019-July 31, 2020. \$42,636.
2. Claassen C, Principal Investigator. **Heil EL**, Co-Investigator. Advancing antimicrobial stewardship in Lusaka, Zambia. Center for Global Education Initiatives, University of Maryland, November 1, 2018. \$5,000.
3. Leekha S, Principal Investigator. **Heil EL**, Co-investigator. Implementation of a *Clostridium difficile* Infection Reduction Statewide Collaborative. Centers for Disease Control Contract, collaboration with Maryland Department of Health and Mental Hygiene. September 1, 2018 – August 31, 2019. \$750,000. Percent effort, 20.
4. Brandt NJ, Principal Investigator. **Heil EL**, Co-Investigator. Pilot of Implementing Antibiotic Stewardship Programs in the Post Acute-Long Term Care Setting. Maryland Department of Health and Mental Hygiene. March 30, 2018. \$200,000. Percent effort, 10.
5. Pandit N, Principal Investigator. **Heil EL**, Co-Investigator. Assessment of medical and pharmacy student knowledge of antimicrobial spectrum in Lusaka, Zambia. Center for Global Education Initiatives, University of Maryland, November 11, 2017. \$5,000.
6. Claeys KC, **Heil EL**, Pandit NP, Co-Principal Investigators. Design and Implementation of a Novel Interactive Application to Enhance Learning of Antimicrobial Spectrum of Activity. University of Maryland School of Pharmacy SharkTank Competition, May 2017. \$50,000.
7. **Heil EL**, Mattingly TJ, Co-Principal Investigators. Cost-effectiveness of penicillin skin testing services to confirm patient-reported penicillin allergy on admission in the acute care setting. Alk-Abello, April 2017. \$60,000. Percent effort, 10.
8. **Heil EL**, Principal Investigator. Society of Infectious Diseases Residency Expansion Grant. July 1, 2017-June 30, 2018. \$60,000.
9. **Heil EL**, Principal Investigator. Building the foundation for an antimicrobial stewardship program in Lusaka, Zambia. Center for Global Education Initiatives, University of Maryland, November 11, 2016. \$5,000.
10. Hynicka L, Principal Investigator. **Heil EL**, Co-investigator. Hepatitis C Medication Management. Maryland Department of Health and Mental Hygiene. \$474,579. Percent effort, 10.
11. Leekha S, Principal Investigator. **Heil EL**, Co-investigator. Implementation of a *Clostridium difficile* Infection Reduction Bundle in Acute Care Hospitals: Feasibility and Pilot to Guide a Multicenter Stepped Wedge Cluster Trial. Centers for Disease Control Epicenter Contract. September 30, 2016 – September 30, 2017. \$455,478. Percent effort, 10.

12. Gulati M, Principal Investigator. **Heil EL**, Co-investigator. Building a high-reliability organization – inter-professional development for safer care. Interprofessional Education and Interprofessional Care Seed Grant. University of Maryland Center for Interprofessional Education, March 17, 2016. \$9,000.
13. **Heil EL**, Principal Investigator. Clinical validation of an antibiotic dosing program in critically ill patients. Society of Infectious Disease Pharmacists Young Investigator Award, September 2015. \$20,000.
14. Buchwald U, Principal Investigator. **Heil E**, Co-Investigator. Implementation and outcomes of an Infectious Disease Fellow Run Penicillin Allergy Consult Service. Alk-Abello, September 2014. \$10,000.
15. Thom K, Principal Investigator. **Heil E**, Co-Investigator. Patient Safety and Quality Improvement at the Point of Care. Interprofessional Education and Interprofessional Care Seed Grant. University of Maryland Center for Interprofessional Education, March 3, 2014. \$9,000.
16. Mellemat H, Principal Investigator. **Heil E**, Co-Investigator. Identification of susceptibility patterns of urinary isolates in patients with uncomplicated urinary tract infections in the University of Maryland Medical Center Adult Emergency Department. University of Maryland Emergency Medicine Intramural Research Grant, October 2013. \$5,000.

## Abstracts

1. Panagos K, Blanco-Herrera N, Leekha S, von Rosenvinge E, **Heil E**. Assessing the time course of proton pump inhibitor use and *Clostridioides difficile* infection. ID Week. Washington DC. October 2019.
2. Ntem-Mensah A, **Heil E**, Pajoumand M, Rabinowitz R, Galvagno S, Schrank G. Baloxavir marboxil in combination with oseltamivir in 2 critically ill patients with Influenza A (H1N1; 2009 strain) on veno-venous Extra-Corporeal Membrane Oxygenation. ID Week. Washington DC. October 2019.
3. Shams M, Oni I, **Heil E**, Morales M, Bork J. Liposomal amphotericin B use before and after implementation of voriconazole prophylaxis in cancer patients. ID Week. Washington DC. October 2019.
4. Blackman A, Jarugula P, Nicolau D, Chui S, Joshi M, Gopalakrishnan M, **Heil EL**. Evaluation of linezolid pharmacokinetics in obese patients with severe skin and soft tissue infections. ID Week. Washington DC. October 2019.
5. Blackman A, Ali S, Gao X, Mesumbe R, Cheung C, Banoub M, Claeys KC, **Heil EL**. Evaluation of intraoperative topical vancomycin and the incidence of acute kidney injury. ID Week. Washington DC. October 2019.
6. Claeys KC, **Heil EL**, Loughry N, Chainani S, Johnson JK, Leekha S. Use of rapid diagnostic testing in Gram-negative bloodstream infections with and without antimicrobial stewardship. ID Week. Washington DC. October 2019.

7. Vega AD, Blackman AL, Banoub M, **Heil EL**, Leekha S, Johnson JK, Claeys KC. No mortality benefit to adding intravenous metronidazole to oral vancomycin for critically-ill patients with severe *C.difficile* infection. ID Week. Washington DC. October 2019.
8. Bork JT, Claeys KC, Johnson JK, Obiekwe U, Lusby M, Jones J, **Heil EL**, Leekha S. Back to the future: The impact of multi-step algorithm *C. difficile* testing at a large tertiary medical center. ID Week. Washington DC. October 2019.
9. Fong G, Chahine E, Justo J, Narayanan N, **Heil E**, Stover K, Cho J, Jenkins Z, MacDougall C. Assessment of antimicrobial pharmacokinetics curriculum in schools and colleges of pharmacy across the United States. American Association of Colleges of Pharmacy Annual Meeting. Chicago IL. July 2019.
10. Vega A, **Heil EL**, Blackman A, Banoub M, Johnson JK, Leekha S, Hopkins T, Claeys KC. No mortality benefit to adding intravenous metronidazole to oral vancomycin in for critically ill patients with severe *C.difficile* infection. Making a Difference in Infectious Diseases (MAD-ID) Annual Meeting. Orlando, FL. May 2019.
11. Claeys KC, **Heil EL**, Loughry N, Chainani S, Johnson JK, Leekha S. Impact of Verigene Blood Culture Gram-Negative without Active Stewardship Intervention. Making a Difference in Infectious Diseases (MAD-ID) Annual Meeting. Orlando, FL. May 2019.
12. Herbert A, Callahan P, Vega A, Masich A, **Heil E**, Pandit NS, Hachaambwa L, Claassen C. Building a Foundation for Antimicrobial Stewardship at University Teaching Hospital in Lusaka, Zambia. Consortium of Universities for Global Health Annual Global Health Conference. Chicago, IL. March 2019.
13. Zarowitz BJ, Sheikh F, Naqvi F, **Heil E**, Brandt N. Interprofessional Collaboration Improves Antibiotic Stewardship. AMDA – The Society of Post-Acute and Long-Term Care Medicine 2019 Annual Conference. Atlanta, GA. March 2019.
14. **Heil E**, Callahan P, Vega A, Claeys K. Impact of an AUC-guided versus trough-guided vancomycin dosing strategy. American College of Clinical Pharmacy Global Conference on Clinical Pharmacy. Seattle, WA. October 2018.
15. Claeys K, Hopkins T, Brown J, **Heil E**. Perceptions of a transition to an AUC-guided pharmacist-to-dose vancomycin practice at a large academic medical center. American College of Clinical Pharmacy Global Conference on Clinical Pharmacy. Seattle, WA. October 2018.
16. Vega A, Ibikunle S, Hopkins T, **Heil E**, Leekha S, Johnson JK, Claeys K. Oral vancomycin plus intravenous metronidazole for severe *Clostridium difficile* infection in critically ill patients. American College of Clinical Pharmacy Global Conference on Clinical Pharmacy. Seattle, WA. October 2018.
17. Vega A, Nguyen C, Claeys K, **Heil E**. Characterizing variability in calculated vancomycin pharmacokinetic parameters using an AUC-based dosing strategy in hospitalized patients.

American College of Clinical Pharmacy Global Conference on Clinical Pharmacy. Seattle, WA. October 2018.

18. Pizzuti A, Patel K, McCreary E, **Heil E**, Bland C, Love B, Bookstaver PB. Views of social media for educational use in healthcare. American College of Clinical Pharmacy Global Conference on Clinical Pharmacy. Seattle, WA. October 2018.
19. Masich A, Kalaria S, Gonzales J, **Heil E**, Tata A, Claeys K, Patel D, Gopalakrishnan M. Characterization of vancomycin pharmacokinetics and pharmacodynamics in obese septic shock patients. American College of Clinical Pharmacy Global Conference on Clinical Pharmacy. Seattle, WA. October 2018.
20. **Heil EL**, Martinelli A, Oliver W, Claeys KC. Emergency Department Resource Utilization after Implementation of a Dalbavancin Pathway for Skin and Soft Tissue Infections. ID Week. San Francisco, CA. October 2018.
21. Gandotra S, Ravichandran B, Lockman DK, Thom KA, Amoroso A, Pajoumand M, **Heil EL**. Impact of de-escalation of antibiotic surgical prophylaxis in lung transplant recipients. ID Week. San Francisco, CA. October 2018.
22. Vega A, Hopkins T, **Heil E**, Johnson JK, Leekha S, Claeys K. Oral Vancomycin plus Intravenous Metronidazole for Severe *Clostridium difficile* Infection in Critically Ill Patients. ID Week. San Francisco, CA. October 2018.
23. Roth B, Laps A, Stafford K, **Heil E**, Hachaambwa L, Yamba K, Kalumbi M, Patel D, Johnson JK, Claassen C. High Frequency of Multi-Drug Resistant Organisms at University Teaching Hospital, Lusaka, Zambia. ID Week. San Francisco, CA. October 2018.
24. Claeys KC, Loughry N, Chainani S, Leekha S, **Heil EL**. Oral Antibiotics for the Treatment of Gram-negative Bloodstream Infections: Prescribing Practices and Outcomes at a Large Academic Medical Center. ID Week. San Francisco, CA. October 2018.
25. Meninger S, **Heil EL**, Mattingly TJ. Cost-effectiveness of Penicillin Allergy Skin Testing in Methicillin-Sensitive *Staphylococcus aureus* (MSSA) bacteremia. ID Week. San Francisco, CA. October 2018.
26. Berry S, Brinckhaus E, **Heil EL**, Dave R, Amoroso A, Gilliam BL, Bork JT. Multicenter experience with dalbavancin for non-acute bacterial skin and skin structure infections. American Society of Microbiology Microbe. Atlanta, GA. June 2018.
27. Freedman SR, Ravichandran BR, Masters BM, **Heil EL**, Saharia KK, Bromberg JS, Haririan A, Sparkes TM. Cytomegalovirus prophylaxis following alemtuzumab induction in high risk renal transplant recipients experiencing delayed graft function. American Transplant Congress. Seattle, WA. June 2018.

28. Claeys KC, **Heil EL**, Nguyen C. Can previously published literature combined with a small institution-specific data-set aid in the prediction of drug resistance in pneumonia presenting from the community? ECCMID 2018. Madrid, Spain. April 2018.
29. Gallagher JG, **Heil EL**, Claeys KC, Hiles J, Dixit D, King MA, Vyas N, Elabor A, El-Beyrouy C, Satlin M, Saraiya N, Guo Y, Harrington NS. Ceftolozane-tazobactam for the treatment of multi-drug resistant *Pseudomonas aeruginosa* (MDRPA) infections: a multicentre study. ECCMID 2018. Madrid, Spain. April 2018.
30. Rinomhota G, **Heil E**, Pandit N, Valentine D, Doyle K, Claassen C. Analysis of Antibiotic Administration in Patients Admitted in Medical and Surgical Wards at the University Teaching Hospital in Lusaka, Zambia. Consortium of Universities for Global Health Annual Global Health Conference. New York, NY. March 2018.
31. Ma S, Claeys KC, Gandotra S, **Heil EL**. Nephrotoxicity of colistimethate versus polymyxin B after a change in dosing strategy at University of Maryland Medical Center. American Society of Health-System Pharmacy Midyear Meeting. Orlando, FL. December 2017.
32. Fulton A, Mattingly TJ, **Heil EL**. Risk factors for invalid immunoglobulin E (IgE) mediated penicillin skin testing results in an inpatient setting. American Society of Health-System Pharmacy Midyear Meeting. Orlando, FL. December 2017.
33. Nguyen C, **Heil EL**, Claeys KC. Determining risk for pneumonia caused by drug resistant pathogens after health-care associated pneumonia. American Society of Health-System Pharmacy Midyear Meeting. Orlando, FL. December 2017.
34. Reed BN, **Heil EL**. Accuracy of an Abbreviated Cockcroft-Gault Equation for Predicting Creatinine Clearance. American College of Clinical Pharmacy Annual Meeting. Pheonix, AZ. October 2017.
35. Pandit NS, **Heil EL**. Virologic outcomes in HIV infected patients following bariatric surgery. American College of Clinical Pharmacy Annual Meeting. Pheonix, AZ. October 2017.
36. Bland CM, Bookstaver PB, Gauthier T, Goff D, **Heil EL**, McCreary EK, Stover KR, Young HN, Hurst HE. Evaluation of Pharmacist Use of Social Media for Educational Purposes. American College of Clinical Pharmacy Annual Meeting. Pheonix, AZ. October 2017.
37. Masich AM, Gonzales JP, Kalaria SN, **Heil EL**, Tata AL, Claeys K, Patel D, Gopalakrishnan M. Characterization of vancomycin pharmacokinetics and pharmacodynamics in obese septic patients with gram-positive bacteremia. American College of Clinical Pharmacy Annual Meeting. Pheonix, AZ. October 2017.
38. **Heil EL**, Farkas A, Robinson G, Nicolau D, Thom KA. Pharmacodynamic Target Attainment for Meropenem and Piperacillin/Tazobactam Using a PK/PD-based Dosing Calculator in Critically Ill Patients. ID Week. San Diego, CA. October 2017. [Platform].
39. **Heil EL**, Pineles L, Morgan D, Harris AD, Thom KA. Indications for antibiotic orders: How accurate are they? ID Week. San Diego, CA. October 2017.

40. Heil EL, Sivasailam B, Park S, Diaz J, von Rosenvinge E, Claeys KC, Hopkins T, Leekha S. Impact of a Multi-Disciplinary *C. difficile* Action Team. ID Week. San Diego, CA. October 2017.
41. Vega A, Hynicka L, Claeys KC, Heil EL. Effectiveness of 8 or 12 Week Treatment Duration of Ledipasvir/Sofosbuvir for Hepatitis C: Evidence from a Large Academic Medical Center. ID Week. San Diego, CA. October 2017.
42. Schlaffer KE, Heil EL, Leekha S, Johnson JK, Claeys KC. Validation of an Antimicrobial Stewardship Derived Verigene Blood-Culture Gram-Negative Treatment Algorithm to Improve Appropriateness of Antibiotics in Gram-Negative Bacteremia. ID Week. San Diego, CA. October 2017.
43. Claeys KC, Pogue JM, Lephart PR, Johnson JK, Heil EL. Gram-Negative Polymicrobial Bloodstream Infections and Clinical Decision Making with a Microarray Testing System. ID Week. San Diego, CA. October 2017.
44. Molnar EM, Heil EL, Claeys KC, Hiles J, Gallagher JC. Ceftolozane-tazobactam for the Treatment of Multi-drug Resistant *Pseudomonas aeruginosa* (MDRPA) Infections. ID Week. San Diego, CA. October 2017.
45. Bland CM, Jones BM, Heil EL, Hinton S, Maguire C, Fulford MJ, Stover KR. Self-perceived knowledge and confidence regarding infectious diseases advanced pharmacy practice experience (APPE) students. American Association of Colleges of Pharmacy Annual Meeting. Nashville, TN. July 2017.
46. Sivasailam B, Park E, von Rosenvinge E, Leekha S, Heil EL. Gastroenterology consults and fecal microbiota transplant for *C. difficile* infection patients after the implementation of a multi-disciplinary *C. difficile* action team. American College of Physicians Maryland Region Annual Associates Meeting. May 2017. 12<sup>th</sup> Annual UVA Annual Conference of Liver Disease and Gastroenterology. June 2017.
47. Claeys KC, Heil EL, Johnson JK, Lephart P, Mynatt RP, Salimnia H, Pogue JM. An Antimicrobial Stewardship Program (ASP) blueprint for optimizing Verigene BC-GN within an institution: A tale of two cities. ECCMID. Vienna, Austria. April 2017.
48. King M, Huang V, Gallagher J, Heil EL. Outcomes with ceftazidime/avibactam in patients with carbapenem-resistant *Pseudomonas* infections: a multi-center study. ID Week. New Orleans, LA. October 2016.
49. King M, Heil EL, Kuriakose S, Bias T, Huang V, El-Beyrouy C, McCoy D, Hiles J, Gardner J, Gallagher J. Outcomes with ceftazidime/avibactam in patients with carbapenem-resistant Enterobacteriaceae (CRE) infections: a multi-center study. ID Week. New Orleans, LA. October 2016.
50. Shah K, Fay E, Kleinberg M, Heil EL, Bork JT. Outcomes and Safety of De-escalation Therapy in Cancer Patients Receiving Empiric Meropenem. American Society of Microbiology/ Interscience Conference on Antimicrobial Agents and Chemotherapy Microbe Conference. Boston, MA. June 2016.

51. Thom KA, **Heil EL**, Croft L, Duffy A, Morgan DJ, Johantgen M. Advancing interprofessional patient safety education during clinical rotations. National Academies of Practice Annual Meeting and Forum. Baltimore, MD. April 2016 [platform].
52. Oliver W, Gonzales JP, **Heil EL**, Mehrotra S, Robinett K, Saleeb P, Nicolau D. Ceftolozane-tazobactam pharmacokinetics in a patient on continuous venovenous hemofiltration. 44<sup>th</sup> Critical Care Congress Society of Critical Care Medicine. Orlando, FL. February 2016 [platform].
53. D'Angelo R, Gonzales JP, Tata A, **Heil EL**, Patel D, Shanholtz C. Healthcare-associated pneumonia treatment characterization in medical intensive care unit patients. 44<sup>th</sup> Critical Care Congress Society of Critical Care Medicine. Orlando, FL. February 2016.
54. **Heil EL**, Bork JT, Buchwald U. Implementation of an Infectious Disease Fellow Managed Penicillin Allergy Skin Testing Service. ID Week. San Diego, CA. October 2015.
55. Bork JT, **Heil EL**, Pineles L, Kleinberg M. How to 'Excel' at Antimicrobial Stewardship without Clinical Decision Support System. ID Week. San Diego, CA. October 2015.
56. D'Angelo RG, Gonzales JP, Tata AL, **Heil EL**. Characterization of *Clostridium difficile* infection treatment during the use of concomitant antibiotics. American College of Clinical Pharmacy Annual Meeting. San Francisco, CA. October 2015.
57. Patel Z, **Heil EL**, Magarakis M, Klyushnenkova E, Leekha S, Bruns B, Tesoriero R, Diaz JD. Time to onset of bacterial versus fungal infectious complications in acute pancreatitis. Surgical Infection Society 35<sup>th</sup> Annual Meeting. Westlake Village, CA. April 2015.
58. Bork JT, **Heil EL**, Leekha S, Badamas R, Johnson JK. Rapid testing using Verigene Microarray in combination with antimicrobial stewardship intervention in Gram-negative bacteremia. ID week. Philadelphia, PA. October 2014.
59. Al-Salamah T, Hines MC, Hayes B, **Heil EL**, Witting M, Johnson JK, Winters M, Gaasch W, Mallemat H. Antibigram does not predict *Escherichia Coli* resistance to ciprofloxacin in women presenting with uncomplicated urinary tract infection to an urban, academic medical center emergency department: a prospective, observational study [Abstract program #254]. 2014 American College of Emergency Physicians Scientific Assembly. Chicago, IL. Ann Emerg Med 2014;64(4 Supplement):S91.
60. **Heil EL**, Leekha S, Bork JT, Johnson JK. Impact of CLSI Enterobacteriaceae Breakpoint Changes on Antibiotic Use at a Large Academic Medical Center. Interscience Conference on Antimicrobial Agents and Chemotherapy, Washington DC. September 2014.
61. Bork JT, **Heil EL**, Leekha S, Johnson JK. Impact of CLSI Guideline 2014 Changes on the Reporting of Cefepime Susceptibility for Enterobacteriaceae. Interscience Conference on Antimicrobial Agents and Chemotherapy. Washington DC. September 2014.
62. Hollis A, **Heil EL**, Nicolau DP, Odonokor P, Dowling T, Thom K. Validation of a dosing strategy for cefazolin for surgery requiring cardiopulmonary bypass. American College of Clinical Pharmacy

Annual Meeting. Austin TX. October 2014 [poster]. Interscience Conference on Antimicrobial Agents and Chemotherapy. Washington DC. September 2014 [platform presentation].

63. Kishk O, **Heil EL**, Morgan J. Vancomycin AUC/MIC and corresponding troughs in a pediatric population. Pediatric Pharmacy Advocacy Group 23<sup>rd</sup> Annual Meeting. Nashville, TN. April 2014 [platform presentation].
64. Good BL, Lee SJ, **Heil EL**, Hynicka LM. Evaluation of the therapeutic drug monitoring process at a large academic medical center for quality improvement. American Society of Health-System Pharmacist Annual Midyear Meeting. Orlando, FL. December 2013.
65. Thakkar N, **Heil EL**, Hollis A, Yeung A, Patel D. Assessment of Appropriateness of Carbapenem Prescribing in the Medical Intensive Care Unit at a Large Academic Medical Center. American Society of Health-System Pharmacist Annual Midyear Meeting. Orlando, FL. December 2013.
66. **Heil E**, Johnson JK. Characterizing Ceftaroline and Daptomycin MICs Compared to Vancomycin MICs in *S. aureus* Blood Culture Isolates at a Large Academic Medical Center. Interscience Conference on Antimicrobial Agents and Chemotherapy. Denver, CO. September 2013.
67. Flurie R, **Heil E**, Hynicka L. Characterizing Anemia Management in Patients Receiving Telaprevir, Ribavirin and Peginterferon for Hepatitis C Virus. University Health System Consortium at the American Society of Health-System Pharmacist Annual Midyear Meeting. Las Vegas, NV. December 2012.
68. Karani M, Johnson JK, **Heil E**. Treatment of urinary tract infections caused by vancomycin resistant Enterococcus. University Health System Consortium at the American Society of Health-System Pharmacist Annual Midyear Meeting. Las Vegas, NV. December 2012.
69. **Heil E**, Daniels L, Weber D, Miller M. Impact of Peptide Nucleic Acid Fluorescence In Situ Hybridization (PNA FISH™) -Based Identification of *Candida* Species on Antifungal Therapy Costs and Patient Outcomes. Making Difference in Infectious Diseases Annual Meeting. Orlando, FL. May 2011; Infectious Diseases Society of America Annual Meeting. Boston, MA. October 2011.
70. **Heil E**, Lewis A, Oertel M. Evaluation of prophylactic enoxaparin use and adherence to institutional prescribing guidelines. University Health System Consortium at the American Society of Health-System Pharmacist Annual Midyear Meeting. Las Vegas, NV. December 2009.
71. **Heil E**, Johnson M, Shipp K, Townsend M. Incidence of severe hepatotoxicity related to antiretroviral therapy in HIV/HCV co-infected patients at Duke University Medical Center. 43<sup>rd</sup> ASHP Midyear Clinical Meeting, Orlando, FL, Dec 2008 [Poster], North Carolina Association of Pharmacists, April 2009 [Platform presentation].

## Invited Presentations

### *International*

*Antimicrobial Resistance: Epidemiology and Mechanisms*  
Antimicrobial Resistance Symposium

March 2016



Rwanda Ministry of Health/University of Maryland School of Medicine/World Health Organization  
Kigali, Rwanda

*Antimicrobial Resistance: Focus on Bacterial Resistance* March 2016  
Antimicrobial Resistance Symposium  
Rwanda Ministry of Health/University of Maryland School of Medicine/World Health Organization  
Kigali, Rwanda

### **National**

*Definitive Treatment for Penicillin Allergies: How Do We Improve Antimicrobial Stewardship?* June 2019  
ASM Microbe  
San Francisco, CA  
ACCME/ACPE Accredited Continuing Education Program

*Probiotics: What Do We Tell Our Patients?* March 2019  
Edmund G. Beacham 46<sup>th</sup> Annual Current Topics in Geriatrics  
Baltimore, MD  
ACCME Accredited Continuing Education Program

*HIV/HCV* September 2018  
Infectious Diseases Pharmacotherapy Webinar  
American College of Clinical Pharmacy

*Stewardship PR: Marketing Your Program* May 2018  
Making a Difference in Infectious Diseases Annual Meeting  
Orlando, FL  
ACPE Accredited Continuing Education Program

*Penicillin Allergy: Practice and Policies* May 2018  
Making a Difference in Infectious Diseases Annual Meeting  
Orlando, FL  
ACPE Accredited Continuing Education Program

*Probiotic Stewardship* February 2018  
Edmund G. Beacham 45<sup>th</sup> Annual Current Topics in Geriatrics  
Baltimore, MD  
ACCME Accredited Continuing Education Program

*Are you really allergic to penicillin? Effectively managing self-reported cases* December 2017  
American Society of Health-System Pharmacy  
Midyear Clinical Meeting  
Orlando, FL  
ACPE Accredited Continuing Education Program

<i>Accurately Assessing Antibiotic History and Patient Allergies</i> Vizient Antimicrobial Stewardship Education Webinar ACPE Accredited Continuing Education Program	July 2017
<i>Social Media Lite</i> Vizient Programming, Innovation and Engagement Webinar ACPE Accredited Continuing Education Program	July 2017
<i>What Every Steward Should Know About Pharmacokinetics and Pharmacodynamics</i> Society for Healthcare Epidemiology of America Spring 2017 Conference St. Louis, MO ACCME/ACPE Accredited Continuing Education Program	March 2017
<i>Allergies, Interactions and Adverse Events, oh my!</i> Society for Healthcare Epidemiology of America Spring 2017 Conference St. Louis, MO ACCME/ACPE Accredited Continuing Education Program	March 2017
<i>It's Time to Regulate: Antimicrobial Stewardship Standards in Acute Care Settings.</i> Maryland Healthcare Education Institute 13 <sup>th</sup> Annual Maryland Patient Safety Conference Baltimore, MD AACME Accredited Continuing Education Program	March 2017
<i>The abCs of HCV</i> Society of Infectious Diseases Pharmacists Education Center ACPE Accredited Continuing Education Program	January 2017
<i>Antibiotic dosing in special populations: Hunting for Goldilocks</i> ID Week New Orleans, LA ACCME/ACPE Accredited Continuing Education Program	October 2016
<i>Regulatory standards related to antimicrobial stewardship in acute care</i> American College of Clinical Pharmacy Annual Meeting Hollywood, FL ACPE Accredited Continuing Education Program	October 2016
<i>2016 CLSI Updates and Controversies in Gram Negative Antimicrobial Stewardship</i> ACCP ID-PRN/CLSI/SIDP Annual CE Webinar ACPE Accredited Continuing Education Program	October 2016

<i>Guess the Resistance Mechanism!</i> Microbe (ASM/ICAAC) Boston, MA ACCME/ACPE Accredited Continuing Education Program	June 2016
<i>FARMaceuticals: Antibiotic Use in Animals and Agriculture</i> Society of Infectious Diseases Pharmacists Annual Meeting Boston, MA ACPE Accredited Continuing Education Program	June 2016
<i>Antimicrobial Stewardship in Long-Term Care</i> Edmund G. Beacham 43 <sup>rd</sup> Annual Current Topics in Geriatrics Johns Hopkins, Baltimore, Maryland ACCME Accredited Continuing Education Program	March 2016

### **Regional**

<i>The Role of Antibiotic Allergies in Antimicrobial Stewardship in Long-Term Care</i> Maryland Department of Health & Peter Lamy Center ACPE/CNE Accredited Continuing Education Program	April 2019
<i>Goodbye Fluoroquinolone Use, Hello Reduced C.difficile Rates</i> Maryland SPARC Collaborative	March 2019
<i>Microbiology, Antibigrams, and Anti-Infective Basics 101</i> Maryland Long-Term Care Stewardship Summit ACPE Accredited Continuing Education Program	September 2018
<i>Strategies and Opportunities for Reducing the Incidence of Clostridium difficile Colitis in the Hospital.</i> Society of Hospitalist Medicine – Maryland Chapter Meeting Baltimore, MD	January 2018
<i>Addressing Antibiotic Allergies for Antibiotic Stewardship</i> North Carolina Association of Pharmacists Annual Convention ACPE Accredited Continuing Education Program	September 2017
<i>No Allergist? No Fear! The Role of Penicillin Skin Testing in Antimicrobial Stewardship</i> Medication Safety Dinner Maryland Society of Health System Pharmacy ACPE Accredited Continuing Education Program	November 2016
<i>Incorporating AUC-based Vancomycin Dosing into Practice</i> Advancing Clinical Knowledge in Pharmacotherapeutics Washington Metro Society of Health-System Pharmacy	September 2016

ACPE Accredited Continuing Education Program

<i>Goodbye Troughs, Hello AUC? A New Era of Vancomycin Dosing</i> 4 <sup>th</sup> Annual Updates in Infectious Diseases Maryland Society of Health System Pharmacy ACPE Accredited Continuing Education Program	September 2016
<i>Overview of Antimicrobial Stewardship Program Essentials</i> Antimicrobial Stewardship Workshop DC- College of Clinical Pharmacy ACPE Accredited Continuing Education Program	June 2014
<i>Probiotics for C. difficile Prevention: You Make the Call</i> Tackling C. difficile Infection Through Prevention and Stewardship Delmarva Foundation Conference AACME Accredited Continuing Education Program	September 2013
<i>Microbiology 101 for Pharmacists</i> Updates in Infectious Diseases Maryland Society of Health System Pharmacists ACPE Accredited Continuing Education Program	June 2013
<i>Key Components of an Antimicrobial Stewardship Program</i> Tackling C. difficile Infection Through Prevention and Stewardship Delmarva Foundation Conference AACME Accredited Continuing Education Program	January 2013
<i>Time for a Revolution? Telaprevir for Previously Treated Chronic Hepatitis C Virus</i> 12 <sup>th</sup> Annual North Carolina Anti-Infective Workshop Greensboro, North Carolina ACPE Accredited Continuing Education Program.	November 2010

**Local**

<i>Pharmacokinetic Dosing of Antimicrobials</i> Duke School of Medicine Infectious Diseases Grand Rounds Durham, NC ACCME Accredited Continuing Education Program	April 2018
<i>AUC/MIC Based Vancomycin Dosing</i> Clinical Updates in Pharmacotherapy Conference University of Maryland ACPE Accredited Continuing Education Program	December 2016
<i>Just Child's Play? Taking advantage of the seesaw effect for difficult to treat Gram Positive infections</i> Clinical Updates in Pharmacotherapy Conference University of Maryland	March 2015

ACPE Accredited Continuing Education Program

Infectious Diseases Grand Rounds  
University of Maryland  
AACME Accredited Continuing Education Program  
February 2015

*Pharmacotherapeutics Update: Antibiotics*  
9<sup>th</sup> Annual Nurse Practitioner and Physician Assistant Clinical Conference  
University of Maryland  
ANCC Accredited Continuing Education Program  
November 2014

*An Inescapable Trough? Why Vancomycin May be Obsolete in the Next 10 Years.*  
Clinical Updates in Pharmacotherapy Conference  
ACPE Accredited Continuing Education Program  
June 2012

*Emerging Treatment Options for Hepatitis C – A Look into the Future*  
University of North Carolina Hospitals  
ACPE Accredited Continuing Education Program  
November 2010

*Cystic Fibrosis: An Update on the Management of Acute Exacerbations*  
ACPE Accredited Continuing Education Program  
University of North Carolina Hospitals  
March 2010

**Other Selected Presentations**

*Medication Allergies – Areas for Optimization*  
Quality Improvement and Patient Safety Council  
University of Maryland Medical Center  
August 2017

*Medication Reconciliation*  
Quality Improvement and Patient Safety Council  
University of Maryland Medical Center  
April 2017

*Medication Safety*  
Quality Improvement and Patient Safety Council  
University of Maryland Medical Center  
January 2015

*Fighting Back: Closing the Knowledge Gap Between Antibiotic Resistance and C. difficile*  
Delmarva Foundation Webinar  
November 2013

*Anemia Management in Hepatitis C Treatment*  
Hepatitis C Interest Group Meeting  
University of Maryland Hepatology and Infectious Disease physicians  
August 2012

<i>Not Your Average Runny Nose – A Case of Zygomycosis in a Liver Transplant Patient</i>	January 2011
Department of Pharmacy Seminar Series University of North Carolina Hospitals	
<i>Proton Pump Inhibitors and Clostridium difficile Infection: What's the Connection?</i>	August 2010
Department of Pharmacy Seminar Series University of North Carolina Hospitals	
<i>An Atypical Case of an Atypical Bacteria</i>	April 2010
Department of Pharmacy Seminar Series University of North Carolina Hospitals	
<i>Gimme a Boost! The Development of New Pharmacokinetic Enhancers for Antiretroviral Therapy</i>	November 2009
Department of Pharmacy Seminar Series University of North Carolina Hospitals	
<i>When Oral Medications No Longer Suffice: Insulin Glargine versus Exenatide in an Uncontrolled Type 2 Diabetic Patient</i>	January 2009
Duke Area Health Education Center Seminar Series Duke University Hospital	
<i>The Role of Integrase Inhibitors in HIV Management</i>	September 2008
Duke Area Health Education Center Grand Rounds Duke University Hospital	

## **Innovative Educational Programs and Curricula**

### *Academic Life in Emergency Medicine CAPSULES Pharmacology Curriculum*

1. Reviewer of Concepts in Infectious Diseases module

### *ID Stewardship medical blog*

1. 5 Things People in Healthcare Should Know About Antibiotics and Agriculture. Published online July 6, 2016. <https://www.idstewardship.com/5-things-healthcare-providers-know-antibiotic-use-agriculture/>

### *Academic Life in Emergency Medicine medical blog*

1. Sulfamethoxazole-trimethoprim for Skin and Soft Tissue Infections: 1 or 2 tablets BID? Published online Feb 16, 2015. <https://www.aliem.com/2015/sulfamethoxazole-trimethoprim-ssti-1-2-tablets-bid/>
2. The Not-so-sick health-care associated pneumonia patient: new treatment strategy. Published online Nov 26, 2013. <https://www.aliem.com/2013/new-treatment-strategy-not-so-sick-health-care-associated-pneumonia/>

## Media

*Ralph Nader Radio Hour*

Fighting Superbugs, Air Date April 8, 2017.

*Washington Post*

How Maryland can combat the spread of antibiotic-resistant bacteria. OpEd, February 3, 2017.

*Contagion® Infectious Diseases Today*

The Globalization of Antibiotic Stewardship Programs: The World is Waiting, August 2018

Antibiotic Indications, October 2017

IV to PO Conversions: What Should Clinicians Know? April 9, 2017.

How Can Pharmacokinetics and Pharmacodynamics Impact Stewardship? April 6, 2017.

What is the Ideal Antimicrobial Stewardship Team? March 30, 2017.

Current Concerns About the Use of Antibiotics in Animals and Agriculture, June 18, 2016.

*WYPR Midday Show*

The Arms Race Against Antibiotic Resistance, Air Date March 25, 2016

## Licensure

*Maryland Pharmacy License #20231*

2011 – Present

*North Carolina Pharmacy License #20428*

2009 - Present

## References

*Available upon request*

I CERTIFY THAT THIS CURRICULUM VITAE IS ACCURATE AND TRUE



Rev 7/30/19