

CURRICULUM VITAE

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BRIEF BIO

I am the Founder, President and CEO of *EviMed* Research Group, LLC, a research consultancy specializing in epidemiology, evidence-based medicine, health services and outcomes research. Our area of focus is prevention and management of healthcare-associated complications and promotion of efficient and high quality healthcare delivery with the emphasis on the hospital and ICU settings. I am also an Adjunct Associate Professor at the School of Public Health and Health Sciences at the University of Massachusetts, Amherst, and a Senior Fellow at the Jefferson School of Population Health, Thomas Jefferson University, Philadelphia, PA.

I earned my MD from the Boston University School of Medicine, and completed a residency in Internal Medicine followed by a fellowship in Pulmonary and Critical Care Medicine at the Tufts-New England Medical Center in Boston, Massachusetts. I also hold a Masters in Public Health in Epidemiology.

With nearly two decades of experience in evidence-based medicine (EBM) and outcomes research, I have participated in EBM from several perspectives, including that of an academic physician-researcher; a principal investigator on systematic reviews, meta-analyses and healthcare technology assessments as a part of an Agency for Healthcare Research and Quality (AHRQ)-designated Evidence-based Practice Center (EPC); a health services researcher-consultant; and as faculty and scientific mentor at the University of Massachusetts School of Public Health and Health Sciences. I am a frequent invited speaker on evidence-based healthcare, research methods, as well as healthcare-associated complications. I have authored over 130 peer-reviewed articles, scientific presentations and monographs. My most recent work has focused on hospital-acquired complications with a specific emphasis on infections with resistant pathogens, including *Clostridium difficile*. I am a member of the Editorial Board for Critical Care Medicine journal and Comparative Effectiveness Research journal, and a peer reviewer for multiple other journals. In addition to being an active member of several professional societies, I am also a member of the leadership of the American College of Chest Physicians.

PROFESSIONAL EXPERIENCE

EviMed Research Group, LLC

Founder, President and CEO

2/07-current

EviMed is an independent consultancy specializing in epidemiology, evidence-based medicine, health services and outcomes research. We work strategically to articulate the value proposition of interventions and technologies through rigorous research and evidence development. Our area of focus is prevention and management of healthcare-associated complications and promotion of efficient and high quality healthcare delivery with the emphasis on the hospital and ICU settings.

University of Massachusetts School of Public Health and Health Sciences

Associate Professor, Adjunct

1/10-current

Assistant Professor, Adjunct

9/06-12/09

Jefferson School of Population Health, Thomas Jefferson University

Senior Fellow

10/10-current

Editorial Board Member

Critical Care Medicine journal

1/10-current

Comparative Effectiveness Research journal

7/10-current

MD Zilberberg, MD, MPH

Ortho Biotech, Johnson & Johnson 1/01-2/07

Associate Director, Outcomes Research, Clinical Affairs 4/04-2/07

MetaWorks Inc., AHRQ-designated evidence-based practice center

Associate Medical Director 12/99-12/00

Clinical Medicine

Staff Physician, Beverly Hospital, Beverly, Massachusetts 1998-2000

*Internist/Pulmonologist, The Medical Group, Inc.,
Beverly, Massachusetts* 1998-2000

UNDERGRADUATE AND GRADUATE EDUCATION

University of Massachusetts, Amherst, MA

MPH, Epidemiology 2009

Boston University, Boston, Massachusetts 1992

MD

Harvard University 1985-1986

Molecular Biology and Immunology graduate courses

Brown University, Providence, Rhode Island 1984

ScB Biology; AB Russian Literature

POST-GRADUATE AND POST-DOCTORAL TRAINING

Tufts-New England Medical Center Hospital, Boston

Fellowship, Pulmonary and Critical Care Medicine 1995-1998

Residency, Internal Medicine 1993-1995

Internship, Internal Medicine 1992-1993

ACADEMIC APPOINTMENTS

University of Massachusetts School of Public Health and Health Sciences

Associate Professor, Adjunct 2010-present

Assistant Professor, Adjunct 2006-2009

Beverly Hospital

Faculty, Family Practice Residency Program 1998-1999

Tufts University School of Medicine

Instructor in Medicine 1992-1998

HONORS AND AWARDS

Fellow of the College of Chest Physicians	2002-present
Standards of Leadership Award, Johnson & Johnson	2001
Resident Teaching Award, Beverly Hospital Family Practice Residency Program	1999
Excellence in Internal Medicine Award, Boston University School of Medicine	1992

PROFESSIONAL SOCIETIES

Society for Healthcare Epidemiology of America	2008-present
American Thoracic Society	1997-present
Massachusetts Thoracic Society	1998-present
Society of Critical Care Medicine	1997-present
American College of Chest Physicians	1997-present
Steering committee, Members in Industry Network	2007-2008
Vice Chair, Members in Industry Network	2008-2010
Membership committee	2009-present
Chair, Members in Industry Network	2010-present
Massachusetts Medical Society	1990-present

PEER REVIEWER

Critical Care Medicine	2003-present
Chest	2004-present
Critical Care	2008-present
Journal of Clinical Epidemiology	2008-present
Annals of Epidemiology	2008-present
American Journal of Critical Care	2008-present
Cochrane Reviews	2008-present
Clinical Epidemiology	2008-present
Emerging Infectious Diseases	2008-present
American Journal of Public Health	2009-present
Archives of Internal Medicine	2010-present
Annals of Internal Medicine	2010-present
Clinical Infectious Diseases	2010-present
JAMA	2010-present

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Manuscripts

Published or in press (peer-reviewed)

1. E.R. Spindel, M.D. Zilberberg, J.F. Habener, W.W. Chin. Two prohormones for gastrin-releasing peptide are encoded by two mRNA's differing by 19 nucleotides. *Proc. Nat'l. Acad. Sci. USA* 1986; 83:19-23
2. E.R. Spindel, M.D. Zilberberg, W.W. Chin. Analysis of the gene encoding human gastrin-releasing peptide. *Mol. Endo.* 1987; 1:224
3. E.R. Spindel, B.A. Eipper, M.D. Zilberberg, R.E. Mains, W.W. Chin. Cerulein mRNA and peptide alfa-amidation activity in the skin of *Xenopus laevis*: Stimulation by norepinephrine. *General and Comparative Endocrinology* 1987; 66
4. M.D. Zilberberg, S.K. Epstein. Acute lung injury in medical ICU: comorbid conditions, age, etiology and hospital outcome. *American Journal of Respiratory and Critical Care Medicine*, 1998; 157:1159-1164
5. S.K. Epstein, R.L. Ciubotaru, M.D. Zilberberg, L.M. Kaplan, C. Jacoby, R. Freeman, M.M. Kaplan. Analysis of impaired exercise capacity in patients with cirrhosis. *Dig. Dis. Sci.*, 1998; 43: 1701-1707
6. S.K. Epstein, M.D. Zilberberg, C. Jacoby, R. Ciubotaru, L. Kaplan. Response to symptom limited exercise in patients with hepatopulmonary syndrome. *Chest*, 1998; 736-741
7. Trotti A, Bellm LA, Epstein JB, Frame D, Fuchs HJ, Gwede CK, Komaroff E, Nalysnyk L, Zilberberg, MD. Mucositis incidence, severity and associated outcomes in patients with head and neck cancer receiving radiotherapy with or without chemotherapy: a systematic literature review. *Radiother Oncol* 3003;66:253-62
8. M.M. Levy, E. Abraham, M.D. Zilberberg, N.R. MacIntyre. A descriptive evaluation of transfusion practices in mechanically ventilated patients. *Chest* 2005;127:928-935
9. Katz L, Stern L, Zilberberg MD, Howell JB, Piech CT. Outcomes and charges of elderly patients with acute myeloid leukemia. *Am J Hematol* 2006;81:850-857
10. Halpern MT, Zilberberg MD, Schmier JK, Lau EC, Shorr AF. Anemia, costs and mortality in Chronic Obstructive Pulmonary Disease. *Cost Eff Resour Alloc* 2006;4:17

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11. Langer CJ, Fastenau JM, Howell JB, Piech CT, Bolge SC, Allen JG, Zilberberg MD. Effectiveness versus convenience: A choice-based conjoint analysis of patient preferences in the selection of an erythropoietic agent to treat cancer-related anemia. *Curr Med Res Opin* 2007;23:85-92
12. Cote C, Zilberberg MD, Mody S, Dordelly L, Celli BR. Haemoglobin level and its clinical impact in a cohort of patients with COPD. *Eur Respir J* 2007;29:923-929
13. Bolge SC, Mody SH, Ambegaonkar BM, McDonnell DD, Zilberberg MD. HIV-related anemia: impact on quality of life and healthcare resource utilization. *Curr Med Res Opin* 2007;23:803-810
14. Zilberberg MD, Carter C, Lefebvre P, Raut M, Vekeman F, Duh MS, Shorr AF. Red blood cell transfusions and the risk of ARDS among critically ill: a cohort study. *Crit Care* 2007;11:R63 (6 June 2007) [High Access designation]
15. Zilberberg MD, Shorr AF. US-based model of transfusion-attributable severe acute complications reduction and accompanying costs using a restrictive transfusion strategy in the ICU: a model simulation. *BMC Health Services Research* 2007;7:138 (August 31, 2007)
16. Zilberberg MD. US-based model of transfusion-attributable ARDS and its accompanying costs. *Transfusion Alternatives in Transfusion Medicine* 2008 Feb 14; doi: 10.1111/j.1778-428X.2007.00087.x. [E-Pub ahead of print]
17. Zilberberg MD, Luippold RS, Sulsky S, Shorr AF. Prolonged Acute Mechanical Ventilation, Hospital Resource Utilization and Mortality in the United States. *Crit Care Med* 2008;36:724-30
18. Zilberberg MD, de Wit M, Pirone JR, Shorr AF. Growth in Adult Prolonged Acute Mechanical Ventilation: Implications for Healthcare Delivery. *Crit Care Med* 2008;36:1451-55
19. Shorr AF, Doyle JJ, Stern L, Dolgitsers M, Zilberberg MD. Anemia in Chronic Obstructive Pulmonary Disease: Epidemiology and Economic Implications. *Curr Med Res Opin* 2008;24:1123-30
20. Zilberberg MD, Shorr AF, Kollef MH. Increase in Adult *Clostridium difficile*-related Hospitalizations and case fatality in the US, 2000-2005. *Emerg Infect Dis* 2008;14:929-31
21. Zilberberg MD, Exuzides A, Spalding J, Foreman A, Graves Jones A, Shorr AF. Epidemiology, clinical and economic outcomes of hyponatremia in a cohort of hospitalized patients. *Curr Med Res Opin* 2008;24:1601-8

22. Shorr AF, Zilberberg, MD, Micek ST, Kollef MH. Prediction of infection due to antibiotic-resistant bacteria by select risk factors for healthcare-associated pneumonia. *Arch Int Med* 2008;168:2205-10
23. Zilberberg MD, Stern LS, Wiederkehr DP, Doyle JJ, Shorr AF. Anemia, transfusions and hospital outcomes among critically ill patients on prolonged acute mechanical ventilation. *Crit Care* 2008;12;R60 [High Access designation]
24. de Wit M, Gennings C, Zilberberg MD, Burnham EL, Moss M, Balster RL. Drug withdrawal, cocaine and sedative use disorders increase the need for mechanical ventilation. *Addiction* 2008;203:1500-8
25. Zilberberg MD, Shorr AF, Kollef MH. Increase in *Clostridium difficile*-related hospitalizations among infants in the US, 2000-2005. *Ped Infect Dis J* 2008;27:1111-3
26. Zilberberg MD. Assessment of Reporting Bias for *Clostridium difficile* Hospitalizations, United States. *Emerg Inf Dis* 2008;14:1334
27. Zilberberg MD, Shorr AF, Micek MT, Mody SH, Kollef MH. Antimicrobial therapy escalation and hospital mortality among patients with HCAP: a single center experience. *Chest* 2008;134:963-8
28. Zilberberg MD, Shorr AF, Kollef MH. Secular trends in candidemia-related hospitalizations in the US, 2000-2005. *Infect Control Hosp Epidemiol* 2008;29:978-80
29. Zilberberg MD, Shorr AF, Kollef MH. Growth in the incidence of hospitalizations with resistant infections among the elderly in the US, 2000-2006. *J Am Geriatr Soc* 2008;56:2356-8
30. Zilberberg MD, Exuzides A, Spalding J, Foreman A, Graves Jones A, Shorr AF. Hyponatremia and hospital outcomes among patients with pneumonia: a retrospective cohort study. *BMC Pulm Med*, 2008 Aug 18;8:16
31. Zilberberg MD, Shorr AF, Kollef MH. Implementing quality improvements in the ICU: Ventilator bundle as an example. *Crit Care Med* 2008 Nov 28 [Epub ahead of print]
32. Zilberberg MD, Shorr AF, Kollef MH. Growth and geographic variation in hospitalizations with resistant infections in the US, 2000-2005. *Emerg Inf Dis* 2008;14:1756-8
33. Zilberberg MD, Shorr AF. What conclusions should be drawn between critical care physician management and patient mortality in the intensive care unit? *Ann Intern Med* 2008;149:771-2

34. Zilberberg MD. Clostridium difficile-related hospitalizations among US adults, 2006. *Emerg Infect Dis* 2009;15:122-4
35. Ramsey A, Zilberberg MD. Secular trends in vancomycin-resistant Enterococcus hospitalizations in the US, 2000-2006. *Infect Control Hosp Epidemiol* 2009;30:184-6
36. Zilberberg MD, Shorr AF. Prolonged acute mechanical ventilation and hospital bed utilization in 2020 in the United States: implications for budgets, plant and personnel planning. *BMC Health Services Research* 2008;8:242
37. Zilberberg MD, Kramer AA, Higgins TL, Shorr AF. Prolonged acute mechanical ventilation: implications for hospital benchmarking. *Chest* 2009;135:1157-62
38. Shorr AF, Zilberberg, MD, Kollef MH. Cost-Effectiveness Analysis of a Silver-Coated Endotracheal Tube to Reduce the Incidence of Ventilator-Associated Pneumonia. *Infect Control Hosp Epidemiol* 2009 Jun 19 [Epub ahead of print]
39. Zilberberg MD, Shorr AF, Micek ST, Doherty JA, Kollef MH. Clostridium difficile-associated disease and mortality among the elderly critically ill. *Crit Care Med* 2009;37:2583-9
40. Zilberberg MD, Nathanson BH, Sadigov S, Higgins TL, Kollef MH, Shorr AF. Epidemiology and Outcomes of Clostridium difficile-Associated Disease Among Patients on Prolonged Acute Mechanical Ventilation. *Chest* 2009 May 22 [E-pub ahead of print]
41. Zilberberg MD, Shorr AF, Micek ST, Hoban AP, Pham V, Doherty JA, Ramsey AM, Kollef MH. Epidemiology and outcomes of hospitalizations with complicated skin and skin structure infections: Implications of healthcare associated infection risk factors . *Infect Control Hosp Epidemiol* 2009;30:1203-10
42. Zilberberg MD, Kothari S, Shorr AF. Cost-effectiveness of micafungin as an alternative to fluconazole empiric treatment of suspected intensive care unit-acquired candidemia among patients with sepsis: a model simulation. *Crit Care* 2009 Jun 19;13(3):R94 [Epub ahead of print]
43. Zilberberg MD, Sandrock C, Shorr A. Swine origin influenza A (H1N1) virus and ICU capacity in the US: Are we prepared? *PLoS Curr Influenza* 2009 Aug 22:RRN1009

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44. Micek ST, Hoban AP, Pham V, Doherty JA, Zilberberg MD, Shorr AF, Kollef MH. Bacteremia increases the risk of death among patients with soft tissue infections. *Surgical Infect* 2010;11:169-76
45. Zilberberg MD, Tillotson G, McDonald LC. Clostridium difficile infection among children hospitalized in the US, 1997-2006. *Emerg Infect Dis* 2010;16:604-9
46. Zilberberg MD, Kollef MH, Arnold H, Labelle A, Micek ST, Kothari S, Shorr AF. Inappropriate empiric antifungal therapy for candidemia in the ICU and hospital resource utilization: A retrospective cohort study. *BMC Infect Dis* 2010 Jun3;10(1):150
47. Zilberberg MD, Mody SH, Chen J, Shorr AF. Cost-Effectiveness Model of Empiric Doripenem Compared with Imipenem-Cilastatin in Ventilator-Associated Pneumonia. *Surg Infect (Larchmont)* 2010;11:409-17
48. Zilberberg MD, Shorr AF. Ventilator-associated pneumonia: the clinical pulmonary infection score as a surrogate for diagnostics and outcome. *Clin Infect Dis* 2010;51: S131-5
49. Zilberberg MD, Shorr AF, Micek ST, Chen J, Ramsey AM, Hoban AP, Pham V, Doherty JA, Mody SH, Kollef MH. Hospitalizations with healthcare-associated complicated skin and skin structure infections: Impact of inappropriate empiric therapy on outcomes. *J Hosp Med* 2010 Aug 23. [Epub ahead of print]
50. Zilberberg MD, Chen J, Mody SH, Ramsey AM, Shorr AF. Imipenem resistance of Pseudomonas in pneumonia: a systematic literature review. *BMC Pulm Med* 2010 Aug 26;10(1):45. [Epub ahead of print]
51. Zilberberg MD, Jacobsen T, Tillotson G. The burden of hospitalizations and emergency department visits with hereditary angioedema and angioedema in the United States, 2007. *Allergy Asthma Proc* 2010 Oct 20. [Epub ahead of print]
52. Kollef MH, Zilberberg MD, Shorr AF, Vo L, Schein J, Micek ST, Kim M. Epidemiology, microbiology and outcomes of healthcare-associated and community-acquired bacteremia: A multicenter cohort study. *J Infect* 2010 Dec 30. [Epub ahead of print]
53. Zilberberg MD. The clinical research enterprise: Time to change course? *JAMA* 2011;305:604-5

Invited reviews and editorials

MD Zilberberg, MD, MPH

1. Ciubotaru RL, Zilberberg MD, Epstein SK. Cardiopulmonary exercise testing: interpretation and indications. *Hospital Physician* 1997; 33:18-31
2. Zilberberg MD, Higgins TL. Translational highway: It helps to have a map. *Crit Care Med* 2007;35:1416-1417
3. Zilberberg MD. Case mix as the determinant of outcomes: The devil is in the details. *Crit Care Med* 2008;36:2940-1
4. Zilberberg MD, Shorr AF. Epidemiology of healthcare-associated pneumonia (HCAP). *Semin Respir Crit Care Med* 2009;30:10-5
5. Zilberberg MD, Shorr AF. Fungal infections in the ICU. *Infect Dis Clinics of North America* 2009;23:625-42
6. Zilberberg MD, Shorr AF. Prolonged mechanical ventilation: Pushing the limits of magic in medicine. *Crit Care Med* 2009;37:2983-5
7. Zilberberg MD. Understanding cost-effectiveness studies in the ICU. *Semin Respir Crit Care Med* 2010;31:13-8
8. Chan CM, Zilberberg MD. Preferences in traumatic intracranial hemorrhage: bleeding vs. clotting. *Crit Care* 2010;14(3):153
9. de Wit M, Jones DG, Sessler CN, Zilberberg MD, Weaver MF. Alcohol and other drug use disorders in the critically ill patient. *Chest* 2010;138:994-1003
10. Zilberberg MD, Shorr AF. Understanding cost-effectiveness. *Clin Microbiol Infect*. 2010 Jul 29. [Epub ahead of print]
11. Shorr AF, Chan CM, Zilberberg MD. Diagnostics and epidemiology in ventilator-associated pneumonia. *Ther Adv Respir Dis*. 2011 Jan 17. [Epub ahead of print]
12. Zilberberg MD, Shorr AF. HCAP: The state of evidence to date. *Curr Opin Pulm Med* 2011 Jan 19 [Epub ahead of print]
13. Zilberberg MD, Shorr AF. Ventilator-associated pneumonia as a model for cost-effectiveness and infection prevention in the ICU. *Curr Opin Infect Dis* 2011, In press

Book chapters

1. M.D. Zilberberg, C.L. Levine, M. Guldin, M.J. Gordon, E. Komaroff, S.D. Ross. "Clinical uses of gamma-linolenic acid (GLA): A systematic review of

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- the literature". In: Huang, YS, Ziboh, VA, eds. Gamma linolenic acid: Recent advances in biotechnology and clinical applications. AOCs Press. Champaign, IL; (2001); pp 90-104
2. Zilberberg MD, Shorr AF. MRSA in the ICU. In: Vincent JL, Hall J, eds. Encyclopedia of Intensive Care Medicine. Springer. In press for 2011.

Abstracts

Poster Presentations

1. E.R. Spindel, M.D. Zilberberg, W.W. Chin. Molecular mechanism of the origin of two gastrin-releasing prohormones. 67th Annual Endocrine Society Meeting, 1985
2. E.R. Spindel, M.D. Zilberberg, W.W. Chin. Human gastrin-releasing peptide: An intron interrupts the coding region of the bioactive neuropeptide. 68th Annual Endocrine Society Meeting, 1986
3. T. Viechnicki, R. Ciubotaru, M.D. Zilberberg, C. Jacoby, R. Freeman, S.K. Epstein. Can cardiopulmonary exercise testing (CPX) predict mortality of liver transplantation (OLTx)? A preliminary report. *Amer. J. Respir. Crit. Care Med.* 155:A169, 1997
4. S.K. Epstein, R. Ciubotaru, M.D. Zilberberg. Independent effects of etiology of failure and time to reintubation on outcome for patients failing extubation. *Amer. J. Respir. Crit. Care Med.* 157:A850, 1998
5. S.K. Epstein, M. Zilberberg, R. Ciubotaru, C. Jacoby, L. Kaplan, R. Freeman, M. Kaplan. Analysis of impaired exercise capacity in patients with cirrhosis without confounding cardiopulmonary disease. *Amer. J. Respir. Crit. Care Med.* 157:A93, 1998
6. S.K. Epstein, M. Zilberberg, R. Ciubotaru, C. Jacoby, L. Kaplan. Response to symptom-limited exercise in patients with the hepatopulmonary syndrome. *Amer. J. Respir. Crit. Care Med.* 157:A93, 1998
7. S.K. Epstein, R. Freeman, C. Jacoby, R. Ciubotaru, M. Zilberberg, L. Kaplan, T. Viechnicki, M. Kaplan. Reduced aerobic capacity is associated with increased short-term mortality after hepatic transplantation. *Amer. J. Respir. Crit. Care Med.* 159:A413, 1999
8. E.A. Fagan, D. Frame, I.E. Allen, M. Privetera, M. Zilberberg. Short-term survival in acute liver failure (ALF): impact of transplantation on future design of treatment protocols. *Hepatology* 34(4):81A, 2001
9. M.M.Park, J. Durrani, M. Zilberberg. Correlation of Anemia with COPD Severity. *Amer. J. Respir. Crit. Care Med.* 167:A234, 2003

10. C. Cote, M. Zilberberg, S. Mody, B. Celli. Anemia is associated with increased breathlessness and decreased 6-minute walk distance in COPD patients *Proc Amer Thorac Soc* 2005;2:A498
11. M. Zilberberg, C. Cote, S. Mody, B. Celli. Predictors of anemia in patients with COPD. *Proc Amer Thorac Soc* 2005;2:A640
12. M. Zilberberg, S.H. Mody, B.M. Ambegaonkar. Anemia in HIV/AIDS in the HAART era: clinical and humanistic impact. *Value in Health* 2005;8:313
13. M. Zilberberg, M. Pisano. Pulmonologists' perceptions of anemia in COPD: a survey. *Value in Health* 2005;8:325
14. Zilberberg M, Howell JB, Bolge SC, Piech CT. Effectiveness Versus Convenience: A choice-based conjoint analysis of patient preferences in the selection of an erythropoietic agent to treat cancer-related anemia – results in the elderly cohort. *Presented at the Geriatric Oncology Consortium Conference in Washington, DC, September 2005*
15. Duh MS, Zilberberg MD, Lefebvre P, Gosselin A, Piech CT. Societal impact of increased red blood cell transfusions associated with darbepoetin alfa Q2W therapy relative to epoetin alfa QW in patients with chemotherapy-induced anemia. *Presented at the Society for the Advancement of Blood Management in Phoenix, AZ, September 2005*
16. Zilberberg MD, Pandit A, Luce B, Stern E. Anemia in COPD: Impact on Health-related Quality of Life (HRQL). *Quality of Life Res* 2005;14:2108
17. Ben-Hamadi R, Mitchell D, Duh MS, Zilberberg M. Quality of life improvement in human immunodeficiency virus-infected population treated with epoetin alfa and its association with gender. *Presented at the 2005 American College of Clinical Pharmacy in San Francisco, CA*
18. Halpern MT, Schmier JK, Zilberberg M, Lau E. Evaluation of Healthcare Utilization and Costs of Anemia among chronic Obstructive Pulmonary Disease Patients. *Chest* 2005;128:257S
19. Zilberberg M, Pisano M. Intensivists' Perception of Anemia in Intensive care Unit patients with COPD: a survey. *Chest* 2005;128:263S
20. Zilberberg M, Cote C, Mody SH, Celli B. Anemia in COPD: Association with Supplemental O2 Use and Hospitalizations. *Chest* 2005;128:264S
21. Cote C, Zilberberg M, Mody SH, Celli B. The Prevalence of Polycythemia in a COPD Cohort. *Chest* 2005;128:264S

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22. Mannino DM, Shorr AF, Doyle JJ, Stern, LS, Dolgitsers M, Siegartel LR, Zilberberg MD. Prevalence of anemia in subjects with COPD. Presented at *ATS 2006 International Meeting, May 2006, San Diego, CA*
23. Shorr AF, Mannino DM, Doyle JJ, Stern, LS, Dolgitsers M, Siegartel LR, Zilberberg MD. Anemia in COPD: Impact on cost and healthcare resource utilization. Presented at *ATS 2006 International Meeting, May 2006, San Diego, CA*
24. Zilberberg MD, Shorr AF. Reduction in transfusion-attributable serious acute complications using erythropoietin in the Intensive Care Unit: a US model. Presented at *the SMDM Annual Meeting, October 2006, Cambridge, MA*
25. Sulsky S, Luippold RS, Raut M, Zilberberg MD. Evaluation of hospitalization outcomes and costs of anemia among hospitalized patients with Chronic Obstructive Pulmonary Disease. Presented at *the Annual Chest Meeting, October 2006, Salt Lake City, UT*
26. Zilberberg MD, Lefebvre P, Carter C, Raut M, Vekeman F, Duh MS, Shorr AF. Transfusing at lower hemoglobin triggers: a model-based estimate of transfusion risk and utilization in United States intensive care units. Presented at *the Annual Chest Meeting, October 2006, Salt Lake City, UT*
27. Shorr AF, Stern LS, Raut MK, Rosenblatt LR, Mody S, Hendlish S, Doyle JJ, Zilberberg MD. Anemia and Transfusions among Critically Ill Patients on Prolonged Mechanical Ventilation. Presented at *the Annual Chest Meeting, October 2006, Salt Lake City, UT*
28. Zilberberg MD, Shorr AF. Reduction in transfusion-attributable serious acute complications using erythropoietin in the Intensive Care Unit: a US model. Presented at *the ASHP Annual Meeting, December 2006, Anaheim, CA*
29. Shorr AF, Stern LS, Raut MK, Rosenblatt LC, Mody S, Hendlish SK, Doyle JJ, Zilberberg MD. Anemia, transfusions and outcomes among critically ill patients on prolonged acute mechanical ventilation. Presented at *the ASHP Annual Meeting, December 2006, Anaheim, CA*
30. Carter C, Zilberberg MD, Lefebvre P, Raut M, Vekeman F, Duh MS, Shorr AF. Red blood cell transfusions and the risk of ARDS among critically ill. Presented at *the ASHP Annual Meeting, December 2006, Anaheim, CA*
31. Zilberberg MD, Carter C, Lefebvre P, Raut M, Vekeman F, Duh MS, Shorr AF. Red blood cell transfusions and the risk of ICU-onset ARDS. Presented at *the annual SCCM meeting, February 2007, Orlando, FL*
32. Zilberberg MD, Carter C, Lefebvre P, Raut M, Vekeman F, Duh MS, Shorr AF. Descriptive evaluation of ICU patients with early- vs. late-onset ARDS. Presented at *the annual SCCM meeting, February 2007, Orlando, FL*

33. Shorr AF, Stern LS, Raut MK, Rosenblatt LC, Chalfin DB, Hendlish SK, Doyle JJ, Zilberberg MD. Outcomes of transfusion among critically ill patients on prolonged acute mechanical ventilation. *Presented at the annual SCCM meeting, February 2007, Orlando, FL*
34. Lefebvre P, Laliberte F, Mody SH, Zilberberg M, Bookhart B, Duh MS. Impact of Untreated Anemia on Hospitalization Rates in Patients with Diabetes-induced Chronic Kidney Disease. *2007 American Diabetes Association annual meeting*
35. Zilberberg MD, de Wit M, Pirone JR, Shorr AF. Growth in Adult Prolonged Acute Mechanical Ventilation: Implications for Healthcare Delivery. *2007 American College of Chest Physicians annual meeting*
36. Zilberberg MD, Exuzides A, Spalding J, Foreman A, Graves Jones A, Shorr AF. Clinical outcomes, ICU utilization and costs among hyponatremic ICU patients. *Annual Congress of the Society of Critical Care Medicine 2008*
37. Zilberberg MD, Exuzides A, Spalding J, Foreman A, Graves Jones A, Shorr AF. Hyponatremia, mechanical ventilation (MV), ICU and hospital outcomes among patients with pneumonia. *Annual Congress of the Society of Critical Care Medicine 2008*
38. Zilberberg MD, Shorr AF, Micek ST, Kollef MH. Initial antimicrobial therapy and late hospital mortality among patients with HCAP. *American Thoracic Society 2008*
39. Zilberberg MD, Kramer A, Higgins TL, Shorr AF. The effect of Hospital Volume on Outcomes for Patients with Prolonged Acute Mechanical Ventilation (PAMV). *Annual meeting of the American Thoracic Society 2008*
40. Zilberberg MD, Shorr AF. Projections for Growth in Adult Prolonged Acute Mechanical Ventilation: Implications for ICU and Hospital Bed Utilization. *Annual meeting of the American Thoracic Society 2008*
41. Zilberberg MD, de Wit M. Regional Variations in Tracheostomy Practices and Hospital Outcomes Among Adult Hospital Discharges with Prolonged Acute Mechanical Ventilation. *Annual meeting of the American Thoracic Society 2008*
42. de Wit M, Gennings C, Zilberberg M, Burnham EL, Moss M, and Balster R. Impact of Drug Use Disorders (DUD) on Risk for Mechanical Ventilation (MV) in Medical Patients. *Annual meeting of the American Thoracic Society 2008*
43. Tabak YP, Zilberberg M, Sun X, Spalding J, Johannes RS, Gupta V, Shorr AF. Optimal Serum Sodium Management Shortens Hospitalization for

- Pneumonia Patients with Hyponatremia on Admission. *Annual meeting of the American Thoracic Society 2008*
44. Cohen L, Marano K, Ramsey A, Zilberberg MD. TRENDS IN CLOSTRIDIUM DIFFICILE HOSPITALIZATIONS IN THE UNITED STATES, 2001-2005. *Annual meeting of the American College of Epidemiology 2008*
 45. Cohen L, Ramsey A, Piwonka M, Singh A, Marano K, Zilberberg M. 2008 Divergent trends in case fatality rates between Clostridium difficile-associated disease, Pseudomonas pneumonia and disseminated Candidiasis in the US, 2000-2005. *Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) and the Infectious Diseases Society of America (IDSA) Annual Meeting. October 25-28, 2008. Washington, DC.*
 46. Ramsey AM, Piwonka M, Singh A, Cohen LC, Zilberberg MD. The simultaneous burden of Methicillin Resistant Staphylococcus aureus and Clostridium difficile associated diseases in US hospitals, 2003-2005. *Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) and the Infectious Diseases Society of America (IDSA) Annual Meeting. October 25-28, 2008. Washington, DC.*
 47. Ramsey AM, Cohen LC, Zilberberg MD. The Growing Burden of Vancomycin Resistance in US hospitals, 2000- 2005. *Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) and the Infectious Diseases Society of America (IDSA) Annual Meeting. October 25-28, 2008. Washington, DC.*
 48. Ramsey AM, Singh A, Piwonka M, Cohen LC, Zilberberg MD. Population density and CDAD hospitalizations in the US, 2003-2005. *Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) and the Infectious Diseases Society of America (IDSA) Annual Meeting. October 25-28, 2008. Washington, DC.*
 49. Zilberberg MD, Shorr AF, Micek ST, Kollef MH. Bacteremia Modifies the Effect of Initial Antibiotic Treatment on Hospital Mortality Differentially in CAP and HCAP. *American College of Chest Physicians Annual Meeting October 25-29, 2008, Philadelphia, PA*
 50. Zilberberg MD, Nathanson BH, Shorr AF, Higgins TH, Kollef MH. Rates and Outcomes of Clostridium difficile-Associated Disease (CDAD) Among Patients on Prolonged Acute Mechanical Ventilation (PAMV). *American College of Chest Physicians Annual Meeting October 25-29, 2008, Philadelphia, PA*
 51. Zilberberg MD, Chen J, Mody SH, Evangelista A, Shorr AF. Cost-Benefit Model of Empiric Doripenem Compared to Imipenem in Ventilator-

Associated Pneumonia. *American College of Chest Physicians Annual Meeting October 25-29, 2008, Philadelphia, PA*

52. Ramsey AM, Zilberberg MD. Epidemiology and Outcomes of Sepsis in the US, 2001-2006. *Society of Critical Care Medicine annual meeting, 2009*
53. Ramsey AM, Zilberberg MD. Microbial etiology of sepsis in the US, 2001-2006. *Society of Critical Care Medicine annual meeting, 2009*
54. Ramsey AM, Zilberberg MD. Antimicrobial resistance in sepsis in the US, 2001-2006. *Society of Critical Care Medicine annual meeting, 2009*
55. Zilberberg MD, Shorr AF, Micek ST, Doherty JA, Kollef MH. Mortality among elderly critically ill patients with *Clostridium difficile*-associated disease. *Society of Critical Care Medicine annual meeting, 2009*
56. Zilberberg MD, Kothari S, Shorr AF. Cost-effectiveness of micafungin as an alternative to fluconazole empiric treatment of suspected ICU-acquired candidemia among patients with sepsis: A model simulation. *Society of Critical Care Medicine annual meeting, 2009*
57. Zilberberg MD, Bigelow C, Ramsey A, Shorr AF. Epidemiology and outcomes of *Clostridium difficile* infection among patients hospitalized with sepsis. *Society for Healthcare Epidemiology of America annual meeting 2009*
58. Zilberberg MD, Chen J, Mody SH, Ramsey A, Shorr AF. Imipenem resistance of *Pseudomonas* in pneumonia: A systematic literature review. *Society for Healthcare Epidemiology of America annual meeting 2009*
59. Zilberberg MD, Chen J, Mody SH, Ramsey A, Shorr AF. Imipenem resistance of *Pseudomonas* in nosocomial pneumonia: A systematic literature review. *Annual meeting of the American Thoracic Society 2009*
60. Zilberberg MD, Kothari S, Arnold H, Micek ST, Shorr AF, Labelle AJ, Kollef MH. Hospital length of stay and costs associated with inappropriate treatment of candidemia in the ICU. *Annual meeting of the International Society of Pharmacoeconomics and Outcomes Research 2009*
61. Zilberberg MD, Tillotson G, McDonald LC. *Clostridium difficile* infection among children hospitalized in the US, 1997-2006. *Annual meeting of the Interscience Conference on Antimicrobial Agents and Chemotherapy 2009*
62. Zilberberg MD, Kothari S, Arnold H, Micek ST, Shorr AF, Labelle AJ, Kollef MH. Inappropriate antifungal therapy for candidemia and hospital resource utilization. *Annual meeting of the American College of Chest Physicians 2009*

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63. Zilberberg MD, Kollef MH, Shorr AF. Healthcare-associated pneumonia: The state of evidence to date. A qualitative review. *Annual meeting of the American College of Chest Physicians 2009*
64. Shorr AF, Zilberberg MD, Kim M, Vo L, Schein J, Kollef MH. Healthcare-associated bacteremia: A distinct concept. *Annual meeting of the American College of Chest Physicians 2009*
65. Zilberberg MD, Shorr AF, Micek ST, Hoban AP, Pham V, Doherty JA, Ramsey AM, Kollef MH. Hospitalizations with healthcare-associated complicated skin and skin structure infections: Inappropriate empiric therapy and outcomes. *Annual Society for Healthcare Epidemiology of America meeting 2010*
66. Zilberberg MD, Kothari S, Campbell RS, Emons, MF, Fiske S, Hays HD, Shorr AF. Epidemiology and outcomes of hospitalizations with MRSA vs MSSA or MRSA+MSSA complicated skin and skin structure infections. *Annual Society for Healthcare Epidemiology of America meeting 2010*

Oral Presentations

1. M.D. Zilberberg, S.K. Epstein. Influence of chronic disease, sepsis and preceding organ dysfunction on acute lung injury (ALI) mortality. *Amer. J. Resp. Crit. Care Med.* 155:A504, 1997
2. M.D. Zilberberg, S.K. Epstein. Changes in acute lung injury mortality (ALI) correlate with variations in prevalence of important cofactors. *Amer. J. Respir. Crit. Care Med.* 157:A498, 1998
3. M.D. Zilberberg, S.K. Epstein. Barotrauma in the MICU patients with acute lung injury (ALI): Low incidence and absence of effect on mortality. *Amer. J. Respir. Crit. Care Med.* 1998 157:A43, 1998
4. M.D. Zilberberg, C.L. Levine, M. Guldin, M.J. Gordon, E. Chadbourne. Efficacy and safety of gamma-linolenic acid (GLA): A systematic review of the literature. *American Oil Chemists Society Annual Meeting, April 2000*
5. C. Cote, M. Zilberberg, S. Mody, B. Celli. Anemia is a predictor of mortality in patients with COPD. *Proc Amer Thorac Soc* 2005;2:A890 Presented at the ATS 2005 annual meeting
6. Shorr AF, Mannino DM, Doyle JJ, Stern, LS, Dolgitsers M, Siegartel LR, Zilberberg MD. The GOLD staging system: Implications for healthcare utilization. *Presented at ATS 2006 International Meeting, May 2006, San Diego, CA*
7. Zilberberg MD, Luippold RS, Sulsky S, Shorr AF. Prolonged Acute Mechanical Ventilation, Hospital Resource Utilization and Mortality in a

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- US Cohort. *Crit Care Med* 2006;34:A126. Presented at the SCCM annual meeting, February 2007, Orlando, FL
8. Zilberberg MD, de Wit M. Timing of Tracheostomy and Hospital Outcomes Among Adult Hospital Discharges with Prolonged Acute Mechanical Ventilation. Presented at the 2007 American College of chest Physicians annual meeting
 9. Zilberberg MD, Exuzides A, Spalding J, Foreman A, Graves Jones A, Shorr AF. Epidemiology, clinical and economic outcomes of hyponatremia in a cohort of hospitalized patients. Presented at the Annual Congress of the Society of Critical Care Medicine 2008
 10. Zilberberg MD, Exuzides A, Spalding J, Foreman A, Graves Jones A, Shorr AF. Impact of rate of hyponatremia correction on hospital costs and length of stay. Presented at the Annual Congress of the Society of Critical Care Medicine 2008
 11. Shorr AF, Zilberberg MD, Micek ST, Kollef MH. Methicillin Resistant Staphylococcus aureus Pneumonia: The Value of the Health Care Associated Pneumonia Concept. Annual meeting of the American Thoracic Society 2008
 12. Shorr AF, Zilberberg MD, Kollef MH. Cost Effectiveness of Silver-Coated Endotracheal Tube in Preventing Ventilator-Associated Pneumonia. Annual meeting of the American Thoracic Society 2008
 13. Zilberberg MD, Shorr AF, Micek ST, Kollef MH. Healthcare Associated Pneumonia, Initial Choice of Antimicrobial Therapy and Outcomes Among Patients Hospitalized With Pneumonia in the Presence and Absence of Respiratory Failure. American College of Chest Physicians Annual Meeting October 25-29, Philadelphia, PA
 14. Zilberberg MD, Bigelow C, Ramsey A, Shorr AF. Prevalence and outcomes of Clostridium difficile infection among patients hospitalized with sepsis in the US. Annual meeting of the American Thoracic Society 2009
 15. Arnold H, Micek ST, Zilberberg MD, Shorr AF, Labelle AJ, Kollef MH. Hospital resource utilization and costs of inappropriate treatment of candidemia. Annual meeting of the American Thoracic Society 2009
 16. Zilberberg MD, Tabak YP, Sievert DM, Brossette SE, Johannes RS, Sun X, McDonald LC. Community-versus Hospital-Onset Clostridium difficile Infections: Prevalence on Admission and Incidence in US Hospitals, 2007-2008. Annual meeting of the Interscience Conference on Antimicrobial Agents and Chemotherapy 2009

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17. Tabak YP, Sievert DM, Zilberberg MD, Derby KG, Johannes RS, Brossette SE, McDonald LC. The Epidemiology of Initial and Recurrent *Clostridium difficile* Infections in US Hospitals, 2007-2008. *Annual meeting of the Infectious Diseases Society of America 2009*

INVITED PRESENTATIONS

Evidence-based Practice: US View 2000. Presented at the BIO 2000 Annual Conference on March 27, 2000

Evidence-based Healthcare Policy. Presented to the School of Public Health and Health Sciences faculty and students in October 2006

Evidence-based Healthcare: a User's Manual. Presented at the 4th Annual Scientific Advantage MSL Conference in Bridgewater, NJ on May 1, 2007

Evidence-based Healthcare Technology Development: a Paradigm for the 21st century. Presented at the American College of Chest Physicians annual meeting 2008

Epidemiology of Resistant Infections: Implications for US Hospitals. Presented at the 7th annual conference of the Northwest Regional Critical Access Hospitals in Spokane, WA, March 19, 2009

Health and Healthcare in the US: Are we barking up the wrong tree? Presented at the annual BIL:PIL conference, San Diego, CA, October 31, 2009

Clostridium difficile: A bug for the 21st century. Presented at the Annual meeting of the American College of Chest Physicians 2009

Clostridium difficile in the era of change. A Grand Rounds presentation given at:

- Noble Hospital, Westfield, MA
- Florida Hospital at Waterman, Tavares, FL
- Western Massachusetts Hospital, Westfield, MA
- Kindred Hospital, Brighton, MA
- North Adams Regional Hospital, North Adams, MA
- US Naval Hospital, Pensacola, FL
- Androscoggin Valley Hospital, MA

Incorporating the value proposition into development decisions: A 21st century approach to internal technology assessment. Presented at a HEOR conference in Washington, DC, January 21, 2010

Risk perception and evaluation: Evolution, thought and ethics. Presented at a Risk Sharing conference in Philadelphia, PA, June 4, 2010

Alternative trial designs: N-of-1 trials. Presented at the Annual meeting of the American College of Chest Physicians 2010

Prolonged Acute Mechanical Ventilation: A novel population for studying trends in ICU care over time.

- BayState Medical Center, Springfield, MA

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- University of Connecticut Medical Center, Farmington, CT

“Defragilizing” the medical profession.

- Presented to the Pulmonary and Critical Care Fellows at the University of Connecticut Medical Center, Farmington, CT

COURSES TAUGHT

Evidence-based healthcare: An evaluative scientist’s toolbox. Graduate level course at the School of Public Health and Health Sciences, University of Massachusetts, Amherst, MA, spring semesters 2008, 2009, fall 2010 (online)