

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Douglas Hayden

eRA COMMONS USER NAME (credential, e.g., agency login): DHAYDEN

POSITION TITLE: Assistant Professor of Medicine Harvard Medical School

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Massachusetts, Boston, MA	BA	06/1983	Mathematics
Boston University, Boston, MA	MA	06/1986	Mathematics
Boston University, Boston, MA	PhD	06/2012	Mathematics

A. Personal Statement

I am a biostatistician with training in pure mathematics and thirty years of professional experience in clinical research, including seven years as a research mathematician in the biomedical technology industry, and sixteen years as a master's level statistician at the Massachusetts General Hospital Biostatistics Center. I was the statistician for the NHLBI ARDS Network Clinical Coordinating Center and for the Computational Analysis and Modeling Core of the NIGMS Inflammation and Host Response to Injury Glue Grant. I spent ten years on both projects as well as providing statistical support for sixteen years for the MGH General Clinical Research Center (now Harvard Catalyst). I was lead statistician on the ARDS Network Lower Tidal Volume Trial and the Fluid and Catheter Treatment Trial performing the statistical analysis for the papers reporting the final study results. I also pioneered the use of software algorithms for monthly computer-generated patient by patient on-target reports based on daily ventilator settings and physiologic parameters to provide the clinical sites with nearly real time feedback to improve study protocol compliance. I have co-authored over 70 clinical papers and first authored original methodology papers in causal inference and genomics. I currently serve as the biostatistician on a U01, a consulting biostatistician on two K23s, and a consulting biostatistician for Harvard Catalyst.

B. Positions and Honors**Positions and Employment**

1986–1987 Math Teacher, Winthrop High School, Boston, MA
 1989–1995 Mathematician, Oculon Corporation, Boston, MA
 1995–Present Biostatistician, Massachusetts General Hospital, Boston, MA
 2008–Present Consulting Statistician, Harvard University, Boston, MA
 2012–2013 Lecturer, Harvard Medical School, Boston, MA
 2013–Present Assistant Professor, Harvard Medical School, Boston, MA

Honors

2010 Poster of Distinction, MGH Clinical Research Day, Boston, MA
 2010 Partners in Excellence Award, Massachusetts General Hospital

C. Contributions to Science

1. Conduct of Clinical Research: I have a published methodology paper on the use of counterfactuals for the analysis of secondary outcomes in survivors in randomized clinical trials. Despite random allocation to treatment, survivors in randomized clinical trials are not necessarily balanced on potential confounders due to differential probability of mortality on the two treatments. Baseline covariates can be used to rebalance surviving patients by weighting by the estimated probability of survival on the un-assigned treatment.
 - a. **Hayden D**, Pauler DK, Schoenfeld D. An estimator for treatment comparisons among survivors in randomized trials. *Biometrics*. 2005; 61(1):305-10. PMID: 15737107
 - b. **Hayden D**, Lazar P, Schoenfeld D, Inflammation and the Host Response to Injury Investigators. Assessing statistical significance in microarray experiments using the distance between microarrays. *PLoS One*. 2009; 4(6):e5838. PMID: 19529777 PMCID: PMC2691999
 - c. Healy BC, **Hayden DL**, Sampat MP, Bakshi R, Guttmann CR. Unbiased treatment effect estimates by modeling the disease process of multiple sclerosis. *J Neurol Sci*. 2009; 278(1-2):54-9. PMID: 19121526
 - d. Healy BC, Arora A, **Hayden DL**, Ceccarelli A, Tauhid SS, Neema M, Bakshi R. Approaches to Normalization of Spinal Cord Volume: Application to Multiple Sclerosis. *J Neuroimaging*. 2012; 22 (3): e12-9. PMID: 21854479 PMCID: PMC3290735

2. ARDS research: For nearly 20 years, I have worked extensively in the area of pulmonary and critical care research and served as a biostatistician for the NHLBI ARDS and PETAL networks. In conjunction with multiple investigators, I have published numerous ancillary trials that utilized the extensive ARDS network database. As a result, I am very familiar with the intricacies of critical care research.
 - a. Rice TW, Wheeler AP, Bernard GR, **Hayden DL**, Schoenfeld DA, Ware LB. Comparison of the SpO₂/FIO₂ ratio and the PaO₂/FIO₂ ratio in patients with acute lung injury or ARDS. *Chest*. 2007; 132(2):410-7. PMID 17573487
 - b. Hager DN, Krishnan JA, **Hayden DL**, Brower RG. Tidal volume reduction in patients with acute lung injury when plateau pressures are not high. *Am J Respir Crit Care Med*. 2005; 172(10):1241-5. PMID 16081547, PMCID: PMC2718413
 - c. Brower RG, Morris A, MacIntyre N, Matthay MA, **Hayden D**, Thompson T, Clemmer T, Lanken PN, Schoenfeld D. Effects of recruitment maneuvers in patients with acute lung injury and acute respiratory distress syndrome ventilated with high positive end-expiratory pressure. *Crit Care Med*. 2003; 31(11):2592-7. PMID: 14605529
 - d. Eisner MD, Thompson T, Hudson LD, Luce JM, **Hayden D**, Schoenfeld D, Matthay MA. Efficacy of low tidal volume ventilation in patients with different clinical risk factors for acute lung injury and the acute respiratory distress syndrome. *Am J Respir Crit Care Med*. 2001; 164(2):231-6. PMID 11463593

3. Clinical Trials Management: I have been fortunate to serve as the biostatistician on several high impact multi-center clinical trials. I was the lead biostatistician on the NHLBI ARDS network Fluid and Catheter Treatment Trial (FACTT).
 - a. Cudkowicz ME, Titus S, Kearney M, Yu H, Sherman A, Schoenfeld D, **Hayden D**, Shui A, Brooks B, Conwit R, Felsenstein D, Greenblatt DJ, Keroack M, Kissel JT, Miller R, Rosenfeld J, Rothstein JD, Simpson E, Tolkoff-Rubin N, Zinman L, Shefner JM. Safety and efficacy of ceftriaxone for amyotrophic lateral sclerosis: a multi-stage, randomised, double-blind, placebo-controlled trial. *Lancet Neurol*. 2014; 13(11):1083-91 PMID 25297012 PMCID: PMC4216315
 - b. Wiedemann HP, Wheeler AP, Bernard GR, Thompson BT, **Hayden D**, deBoisblanc B, Connors AF, Hite RD, Harabin AL. Comparison of two fluid-management strategies in acute lung injury. *N Engl J Med*. 2006; 354(24):2564-75. PMID 16714767
 - c. Smith MR, McGovern FJ, Zietman AL, Fallon MA, **Hayden DL**, Schoenfeld DA, Kantoff PW, Finkelstein JS. Pamidronate to prevent bone loss during androgen-deprivation therapy for prostate cancer. *N Engl J Med*. 2001; 345(13):948-55. PMID:11575286
 - d. Grinspoon S, Corcoran C, Parlman K, Costello M, Rosenthal D, Anderson E, Stanley T, Schoenfeld D, Burrows B, **Hayden D**, Basgoz N, Klibanski A. Effects of testosterone and progressive resistance training in eugonadal men with AIDS wasting. A randomized, controlled trial. *Ann Intern Med*. 2000; 133(5):348-55. PMID:10979879

4. Epidemiological Research: I have also participated in epidemiological trials in the area of critical care medicine including burn, trauma, and cardiology. Several of these studies have been published in high impact journals such as the New England Journal of Medicine.
- a. Klein MB, Goverman J, **Hayden DL**, Fagan SP, McDonald-Smith GP, Alexander AK, Gamelli RL, Gibran NS, Finnerty CC, Jeschke MG, Arnoldo B, Wispelwey B, Mindrinos MN, Xiao W, Honari SE, Mason PH, Schoenfeld DA, Herndon DN, Tompkins RG. Benchmarking outcomes in the critically injured burn patient. *Ann Surg.* 2014; 259(5):833-41. PMID: 24722222 PMCID: PMC4283803
 - b. Truong QA, **Hayden D**, Woodard PK, Kirby R, Chou ET, Nagurney JT, Wiviott SD, Fleg JL, Schoenfeld DA, Udelson JE, Hoffmann U. Sex differences in the effectiveness of early coronary computed tomographic angiography compared with standard emergency department evaluation for acute chest pain: the rule-out myocardial infarction with Computer-Assisted Tomography (ROMICAT)-II Trial. *Circulation.* 2013; 127(25):2494-502. PMID: 23685743 PMCID: PMC3753028
 - c. Hoffmann U, Truong QA, Schoenfeld DA, Chou ET, Woodard PK, Nagurney JT, Pope JH, Hauser TH, White CS, Weiner SG, Kalanjian S, Mullins ME, Mikati I, Peacock WF, Zakrofsky P, **Hayden D**, Goehler A, Lee H, Gazelle GS, Wiviott SD, Fleg JL, Udelson JE. Coronary CT angiography versus standard evaluation in acute chest pain. *N Engl J Med.* 2012; 367(4):299-308. PMID: 22830462 PMCID: PMC3662217

Complete List of Published Work: <http://www.ncbi.nlm.nih.gov/myncbi/collections/bibliography/47952679/>