

Natalie Exner Dean

Curriculum Vitae

CONTACT INFORMATION

Department of Biostatistics
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EDUCATION

Ph.D. Biostatistics, Harvard University	2014
<i>“Surveillance methods for monitoring HIV incidence & drug resistance”</i>	
A.M. Biostatistics, Harvard University	2011
B.A. Mathematics/Statistics, Biology, Boston University, <i>summa cum laude</i>	2009

PROFESSIONAL EXPERIENCE

Assistant Professor, Department of Biostatistics, University of Florida	2017–Present
Postdoctoral Associate, Department of Biostatistics, University of Florida	2015–2017
External Statistical Consultant, HIV Department, World Health Organization	2014–2015

RESEARCH INTERESTS

Public health surveillance, Infectious disease epidemiology, Emerging pathogens, Vaccine evaluation, Clinical trial design, Adaptive design

PUBLICATIONS

Refereed Journal Articles

1. Galler JR, Bryce CP, Waber D, Hock RS, **Exner N**, Eaglesfield D, Fitzmaurice G, Harrison R (2010). Early childhood malnutrition predicts depressive symptoms at ages 11-17. *Journal of Child Psychology and Psychiatry* 51(7): 789-798.
2. Galler JR, Bryce CP, Zichlin ML, Waber DP, **Exner N**, Fitzmaurice GM, Costa PT (2013). Malnutrition in the first year of life and personality at age 40. *Journal of Child Psychology and Psychiatry* 54(8): 911-919.

3. Russo GS, Ferrucci AM, Miller CP, Dean EW, Strohbehn GW, **Dean NE**, Sharkey MS (2015). Factors associated with the transfer of pediatric patients with supracondylar humerus fractures to a level I pediatric trauma center. *Connecticut Medicine* 79(8): 461-466.
4. Ebola ça suffit ring vaccination trial consortium (coauthor **Dean NE**) (2015). The ring vaccination trial: a novel cluster randomised controlled trial design to evaluate vaccine efficacy and effectiveness during outbreaks, with special reference to Ebola. *British Medical Journal* 351: h3740.
5. Henao-Restrepo A-M, Longini IM, Egger M, **Dean NE**, Edmunds WJ, Camacho A, Carroll MW, Doumbia M, Duraffour S, Enwere G, Grais R, Gunther S, Hossmann S, Kondé MK, Kone S, Kuisma E, Levine M, Mandal S, Norheim G, Riveros X, Soumah A, Trelle S, Vicari AS, Watson CH, Draguez B, Kéïta S, Røttingen J-A, Kieny M-P (2015). Efficacy and effectiveness of an rVSV-vectored vaccine expressing Ebola surface glycoprotein: interim results from the Guinea ring vaccination cluster-randomised trial. *The Lancet* 386(9996): 857-866. **International Society for Vaccines 2015 Paper of the Year*.
6. **Dean NE**, Pagano M (2015). Evaluating Confidence Interval Methods for Binomial Proportions in Clustered Surveys. *Journal of Survey Statistics and Methodology* 3(4): 484-503.
7. Fang LQ, Yang Y, Jiang JF, Yao H, Kargbo D, Li X, Jiang BG, Kargbo B, Tong YG, Wang YW, Liu K, Kamara A, Dfafe F, Kanu A, Jiang RR, Sun Y, Sun RX, Chen WJ, Ma M, **Dean NE**, Thomas H, Longini IM, Halloran ME, Cao WC (2016). Transmission Dynamics of Ebola Virus Disease and Intervention Effectiveness in Sierra Leone. *Proceedings of the National Academy of Sciences* 113(16): 4488-4493.
8. **Dean NE**, Halloran ME, Yang Y, Longini IM (2016). Transmissibility and Pathogenicity of Ebola Virus: A Systematic Review and Meta-analysis of Household Secondary Attack Rate and Asymptomatic Infection. *Clinical Infectious Diseases* 62(10): 1277-1286.
9. Rojas DP, **Dean NE**, Yang Y, Kenah E, Quintero J, Tomasi S, Ramirez EL, Kelly Y, Castro C, Carrasquilla G, Halloran ME, Longini IM (2016). The epidemiology and transmissibility of Zika virus in Girardot and San Andres Island, Colombia, September 2015 to January 2016. *Eurosurveillance* 21(28): pii=30283.
10. Ajelli M, Merler S, Fumanelli L, Pastore Y Piontti A, **Dean NE**, Longini IM, Halloran ME, Vespignani A (2016). Spatiotemporal dynamics of the Ebola epidemic in Guinea and implications for vaccination and disease elimination: a computational modeling analysis. *BMC Medicine* 14: 130.
11. Merler S, Ajelli M, Fumanelli L, Parlamento S, Pastore Y Piontti, **Dean NE**, Putoto G, Carraro D, Longini IM, Halloran ME, Vespignani A (2016). Containing Ebola at the source with ring vaccination. *PLoS Neglected Tropical Diseases* 10(11): e0005093.
12. Mutenda N, Bukowski A, Nitschke AM, Nakanyala T, Hamunime N, Mekonen T, Tjituka F, Mwinga S, Mazibuko G, Mbirizi D, Sagwa E, **Dean N**, Jordan MR, Hong SY (2016). HIV

Drug Resistance Early Warning Indicators in Main and Decentralized Outreach Antiretroviral Therapy Sites in Namibia. *PLoS ONE* 11(12): e0166649.

13. Henao-Restrepo AM, Camacho A, Longini IM, Watson CH, Edmunds WJ, Egger M, Carroll MW, **Dean NE**, Doumbia M, Draguez B, Duraffour S, Enwere G, Grais R, Gunther S, Gsell PS, Hossmann S, Kondé MK, Kéïta S, Kone S, Kuisma E, Levine M, Mandal S, Mauget T, Norheim G, Rivveros X, Soumah A, Trelle S, Vicari AS, Røttingen J-A, Kieny MP (2017). Efficacy and effectiveness of an rVSV-vectored vaccine in preventing Ebola virus disease: final results from the Guinea ring vaccination, open-label, cluster-randomised trial (Ebola Ça Suffit!). *The Lancet* 389(10068): 505-518.
14. Zhang Q, Sun K, Chinazzi M, Pastore-Piontti A, **Dean NE**, Rojas DP, Merler S, Mistry D, Poletti P, Rossi L, Bray M, Halloran ME, Longini IM, Vespignani A (2017). Spread of Zika virus in the Americas. *Proceedings of the National Academy of Sciences* 114(22): E4334-E4343.
15. Wilder-Smith A, Longini I, Zuber P, Bärnighausen T, Edmunds WJ, **Dean NE**, Masseray-Spicher V, Benissa MR, Gessner BG (2017). The public health value of vaccines beyond efficacy: methods, measures and outcomes. *BMC Medicine* 15: 138.
16. Gsell P, Camacho A, Kucharski A, Watson CH, Bagayoko A, Danmadji S, **Dean NE**, Diallo A, Djidonou H, Doumbia M, Fallah M, Enwere G, Higgs ES, Mauget T, Mory D, Riveros X, Thierno Oumar F, Toure A, Vicari AS, Longini IM, Edmunds WJ, Henao-Restrepo AM, Kéïta S (2017). Ring vaccination of adults and children with rVSV-ZEBOV in response to an outbreak of Ebola virus disease in Guinea, 2016: an operational and vaccine safety report. *Lancet Infectious Diseases* 17(12): 1276-1284.
17. **Dean NE**, Halloran ME, Longini IM (2018). Design of Vaccine Trials during Outbreaks with and without a Delayed Vaccination Comparator. *Annals of Applied Statistics* 12(1): 330-347.
18. Ma MJ, Zhao T, Chen SH, Xia X, Yang XX, Wang GL, Fang LQ, Ma GY, Wu MN, Qian YH, **Dean NE**, Yang Y, Lu B, Cao WC (2018). Avian Influenza A Virus Infection among Workers at Live Poultry Markets, China, 2013-2016. *Emerging Infectious Diseases* 24(7): 1246-1256.
19. Sun K, Zhang Q, Pastore-Piontti A, Chinazzi M, Mistry D, **Dean NE**, Rojas DP, Merler S, Poletti P, Rossi L, Halloran ME, Longini IM, Vespignani A (2018). Quantifying the risk of local Zika virus transmission in the contiguous US during the 2015–2016 ZIKV epidemic. *BMC Medicine* 16: 195.
20. Hunt GM, Ledwaba J, Kalimashe M, Salimo A, Cibane S, Singh B, Puren A, **Dean NE**, Morris L, Jordan MR (2019). Provincial and national prevalence estimates of HIV-1 drug resistance in South Africa measured using two WHO-recommended methods. *Antiviral Therapy*. doi: 10.3851/IMP3294
21. Ding AA, Wu SS, **Dean NE**, Zahigian RS (2019). Two-stage Adaptive Enrichment Design for Testing an Active Factor. *Journal of Biopharmaceutical Statistics*

doi: 10.1080/10543406.2019.1609015.

22. **Dean NE**, Gsell PS, Brookmeyer R, De Gruttola V, Donnelly CA, Halloran ME, Jasseh M, Nason M, Riveros X, Watson C, Henao-Restrepo AM, Longini IM (2019). Considerations for the design of vaccine efficacy trials during public health emergencies. *Science Translational Medicine* 11(499): eaat0360.
23. Bellan SE, Eggo RM, Gsell PS, Kucharski A, **Dean NE**, Donohue R, Zook M, Odhiambo F, Longini I, Brisson M, Mahon B, Edmunds WJ, Henao-Restrepo AM (2019). An online decision tree for vaccine trial design during infectious disease epidemics: The InterVax-Tool. *Vaccine* 37(31): 4376-4381.

Other Publications

World Health Organization (coauthor **Dean NE**) (2014). HIV Drug Resistance Concept Note – Surveillance of HIV drug resistance in adults receiving antiretroviral therapy (acquired HIV drug resistance). <http://www.who.int/hiv/topics/drugresistance/protocols/en/>

World Health Organization (coauthor **Dean NE**) (2014). HIV Drug Resistance Concept Note – Surveillance of HIV drug resistance in adults initiating antiretroviral therapy (pretreatment HIV drug resistance). <http://www.who.int/hiv/topics/drugresistance/protocols/en/>

Longini IM, Egger M, **Dean NE**, Edmunds WJ, Henao-Restrepo AM, on behalf of the study steering group (2015). Ebola vaccination – Authors’ reply. *The Lancet* 386(10012): 2480.

World Health Organization (coauthor **Dean NE**) (2016). Global report on early warning indicators of HIV drug resistance: Technical report. <http://www.who.int/hiv/pub/drugresistance/ewi-hivdr-2016/en/>

Dean NE, Vespignani A, Halloran ME, Longini IM, Halloran ME (2016). Zika virus: only a few small outbreaks likely to occur in the continental US. *The Conversation*. <http://theconversation.com/zika-virus-only-a-few-small-outbreaks-likely-to-occur-in-the-continental-us-64719>

World Health Organization (coauthor **Dean NE**) (2017). Guidance for sampling ART clinics in countries combining surveillance of pre-treatment HIV drug resistance and acquired HIV drug resistance at 12 and 48+ months. <http://www.who.int/hiv/pub/drugresistance/hivdr-sampling-guidance-2017/en/>

World Health Organization (coauthor **Dean NE**) (2017). Surveillance of HIV drug resistance in children newly diagnosed with HIV by early infant diagnosis - Concept note. <http://www.who.int/hiv/pub/drugresistance/hivdr-concept-note-2017/en/>

World Health Organization (lead author **Dean NE**) (2017). Informing Vaccination Programs: A Guide to the Design and Conduct of Dengue Serosurveys.
http://www.who.int/immunization/research/development/dengue_serosurveys/en/

Dean NE (2019). Letter to the Editor. RE: "Measurement of vaccine direct effects under the test-negative design." American Journal of Epidemiology.

Software & Technical Tools

World Health Organization (developed by **Dean NE**) (2014). Excel-based sample size calculators to design pre-treatment HIV drug resistance (PDR) surveys.

World Health Organization (developed by **Dean NE**) (2014). Excel-based sample size calculators to design acquired HIV drug resistance (ADR) surveys.

World Health Organization (developed by **Dean NE**) (2014). Excel-based sample size calculators to design concurrent PDR and ADR surveys.
<http://www.who.int/hiv/topics/drugresistance/protocols/en/>

HONORS AND AWARDS

Winner, Do-Bui Travel Award for promising early career researchers, Caucus for Women in Statistics	2019
Winner, Edward C. Bryant scholarship for an outstanding student in survey statistics, American Statistical Association	2013
Honorable Mention, Gertrude M. Cox scholarship for women students in statistics, American Statistical Association	2013
Recipient, Department of Biostatistics Certificate of Distinction in Teaching, Harvard University	2012
Overall and Student Winner, Modeling & Prediction RAB Poster Award, ENAR Spring Meeting, Washington DC	2012
Winner, John E. Alman Award in Statistics, Department of Mathematics & Statistics, Boston University	2009
Inductee, Phi Beta Kappa Society, Boston University	2009
Trustee Scholar (full-tuition merit scholarship), Boston University	2005-2009
Corporate National Merit Scholar, Osram Sylvania	2005-2009
College Scholar, College of Arts & Sciences, Boston University	2008

FUNDED RESEACH GRANTS & CONTRACTS

Principal Investigator Role

“Design and Analysis of Vaccine Trials for Emerging Infectious Disease Threats,” **PI Dean**, Agency NIH/NIAID, Type R01, Period of funding 08/2018–07/2023, Amount \$3.57 million

“Vaccine Clinical Evaluation in Public Health Emergencies,” **PI Dean**, Agency WHO, Type Contract, Period 07/2017–09/2017

“Dengue Vaccine Seroprevalence Surveys,” **PI Dean**, Agency WHO, Type Contract, Period 08/2016–01/2017

Co-Investigator Role

“Quantifying the Epidemiological Impact of Targeted Indoor Residual Spraying on Aedes-borne Diseases,” PI Vazquez-Prokopec (Emory), Agency NIH/NIAID, Type U01, Period of funding 12/2019–11/2024.

Trainee Role

“Modeling of Infectious Disease Agent Study Centers for Excellence Center for Statistics and Quantitative Infectious Diseases,” PI M. Elizabeth Halloran, Agency NIH/NIGMS, Period of funding 2017–2018

“Methods for Evaluating Vaccine Efficacy Supplement,” PI M. Elizabeth Halloran, Agency NIH/NIAID, Type R37, Period of funding 2018

“Methods for Evaluating Vaccine Efficacy,” PI M. Elizabeth Halloran, Agency NIH/NIAID, Type R37, Period of funding 2015–2017

“Statistical analysis of the Ebola ring vaccine trial in Guinea,” PI Ira Longini, Agency WHO, Type Contract, 2015–2016

“Accurate and Efficient Measures for HIV Incidence,” PI Marcello Pagano, Agency NIH/NIAID, Type R01, Period of funding 2013–2014

“Biostatistics/Epidemiology Training Grant in AIDS,” PI Marcello Pagano, Agency NIH, Type T32, Period of funding 2009–2013

Other Funding

Summer Institute in Statistics & Modeling of Infectious Diseases, Registration Scholarship, University of Washington, 2017

Women in Statistics & Data Science Conference, Travel Award, National Science Foundation, 2016

Summer Institute in Statistics & Modeling in Infectious Diseases, Registration Scholarship and Travel Award, University of Washington, 2010

PRESENTATIONS

Invited Seminars

“Applying the test negative design to evaluate vaccine effectiveness during outbreaks.” Infectious Disease Epidemiology and the Center for Communicable Disease Dynamics Spring Seminar Series, Harvard University, Boston, MA 2019

Conference Invited Seminars

“Chasing cases: Customizing vaccine trials for emerging infectious diseases.” Joint Statistical Meetings, Denver, CO 2019

“Methods for vaccine evaluation in outbreaks.” Modeling of Infectious Disease Agents Study (MIDAS) Network Annual Meeting, Bethesda, MD 2019

“Vaccine efficacy trial design for emerging infectious disease threats.” IISA International Conference on Statistics, Gainesville, FL 2018

“Risk estimates of microcephaly and other birth defects from prospective Zika cohorts.” MIDAS Network Meeting, Reston, VA 2016

“Evaluating Ebola vaccine Efficacy under Outbreak Conditions using a Ring Vaccination Trial Design.” ENAR Spring Meeting, Austin, TX 2016

Conference Contributed Seminars

“Combining Evidence from Randomized Clinical Trials Across Outbreaks.” ENAR Spring Meeting, Philadelphia, PA 2019

“Design Considerations for Vaccine Efficacy Trials in Outbreak Settings.” Joint Statistical Meetings, Chicago, IL 2016

“Analysis of an Ebola Vaccine Trial using a Ring Vaccination Design in Guinea, West Africa.” Epidemics 5, Clearwater, FL 2015

“Practical and Statistical Challenges in Developing an HIV Drug Resistance Surveillance Protocol.” ENAR Spring Meeting, Baltimore, MD 2014

“A Comparison of Methods for Estimating Confidence Intervals for Proportions in Clustered Surveys.” Joint Statistical Meetings, Montreal, Canada 2013

“Adapting Shannon’s Entropy to Strengthen Relationship between Time since HIV-1 Infection and Within-Host Viral Diversity.” ENAR Spring Meeting, Orlando, FL 2013

Selected Other Presentations

“Vaccine Efficacy Trials for Emerging Pathogens.” CATALySES summer program for high school STEM teachers. Gainesville, FL 2017-2019

“Framework on accumulating evidence across outbreaks.” World Health Organization’s Blueprint 5th consultation on clinical trial design. Geneva, Switzerland 2018

“Our Community, Our Health: Everything You Wanted to Know About Zika” HealthStreet interactive town hall, University of Florida, Gainesville, FL 2017

“Recommended Guidelines for Dengue Serosurveillance.” WHO Immunization and vaccines related implementation research advisory committee meeting (IVIR-AC), Annecy, France 2017

- “Surveillance of Pre-Treatment & Acquired HIV Drug Resistance.”
- Geneva, Switzerland 2015
 - Port of Spain, Trinidad and Tobago 2014
 - Brasilia, Brazil 2013
 - Kunming, China 2013

TEACHING EXPERIENCE

Instructor, Department of Biostatistics, University of Florida

- PHC6059: Introduction to Applied Survival Analysis 2018–2019
- STA6177/PHC6937: Applied Survival Analysis 2017
- PHC4094: Intro to Biostatistics for Health Science and Public Health 2016

Instructor, Department of Biostatistics, Harvard University

- Problem Solving in Advanced Statistics 2012–2013

Teaching Assistant, Department of Biostatistics, Harvard University

- BIO210: Analysis of Rates and Proportions 2013
- BIO287: Public Health Surveillance 2013
- BIO507: Quantitative Methods for Monitoring & Evaluation 2012
- BIO206: Introductory Statistics for Medical Research 2012
- BIO201: Introduction to Statistical Methods 2010–2011

ADVISING

Graduate Students at University of Florida

1. Yanan Huo (PhD, Biostatistics, active)

2. Amy Crisp (PhD, Biostatistics, active)
3. Yancheng Li (MS, Biostatistics, completed 2019)

Doctoral Committees at University of Florida

1. Rachel Zahigian (PhD, Biostatistics, completed 2019)
2. Neda Jalali (PhD, Biostatistics, active)
3. Ashton Creasy (PhD, Environmental & Global Health, active)

PROFESSIONAL SERVICE

Peer Review

Journal Reviewer, *AIDS Research and Human Retroviruses*; *Annals of Global Health*; *Biometrics*; *BMC Medicine*; *BMC Public Health*; *BMJ Open*; *Clinical Trials*; *Communications in Statistics - Simulation and Computation*; *Current Drug Targets*; *Emerging Infectious Diseases*; *Health Security*; *Lancet Infectious Diseases*; *Parasites & Vectors*; *PLOS Neglected Tropical Diseases*; *Statistical Methods in Medical Research*; *Statistics in Medicine*; *Transactions of the Royal Society of Tropical Medicine and Hygiene*

Book Reviewer, *CRC Press*, *Wiley*

Grant Proposal Reviewer, *US Department of Defense*

Service to the Profession

Member, HIVResNET Monitoring & Surveillance Working Group, World Health Organization	2018–Present
Member, R&D Blueprint for Action to Prevent Epidemics Clinical Trials Working Group, World Health Organization	2016–Present
Session Chair, Women in Statistics & Data Science Conference, Cincinnati, OH	2018
Session Moderator, AAAS Annual Meeting, Boston, MA	2017
Session Chair, ENAR Spring Meeting, Orlando, FL	2013

University Service

Organizer, CSQUID Working Group, University of Florida	2015–Present
Member, Department of Biostatistics Committee on Space, University of Florida	2018–Present
Member, Strategic Planning Committee - Connecting our Undergraduate Students to our Advanced Degree Programs, University of Florida	2018

Judge, Florida Statewide Graduate Student Research Symposium, Gainesville, FL	2016
Judge, Three Minute Thesis (3MT), University of Florida	2016
Judge, Graduate Student Research Day, University of Florida	2015
Co-Coordinator, HIV Working Group Seminar Series, Department of Biostatistics, Harvard University	2012–2013
Chair, Department of Biostatistics Student Committee, Harvard University	2012–2013
Member, Department of Biostatistics Student Committee, Harvard University	2009–2012
Coordinator, McGoldrick Fellowship Reading Group, Harvard University	2011–2012

PROFESSIONAL AFFILIATIONS

American Statistical Association	2012–Present
American Association for the Advancement of Science	2018–Present
Eastern North American Region of the International Biometric Society	2018–Present
Caucus for Women in Statistics	2018–Present

Last updated August 7, 2019