

**CURRICULUM VITAE**  
(updated on January 11, 2018)

**Bryan E. Shepherd**

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**Education**

Brigham Young University, Provo, UT

B.S. in Statistics, 1999

University Honors and Magna Cum Laude

Minors in Mathematics and Botany

University of Washington, Seattle, WA

M.S. in Biostatistics, 2001

Ph.D. in Biostatistics, 2005

Dissertation: “Causal Inference in HIV Vaccine Trials: Sensitivity analyses comparing outcomes only existing in a subset chosen post-randomization”

**Academic Appointments**

Assistant Professor, Department of Biostatistics, Vanderbilt University School of Medicine,  
2005-2011

Associate Professor, Department of Biostatistics, Vanderbilt University School of Medicine,  
2011-2017

Professor (with tenure), Department of Biostatistics, Vanderbilt University School of  
Medicine, 2017-present

Vice Chair of Research, Department of Biostatistics, Vanderbilt University School of  
Medicine, 2017-present

## **Affiliate Appointments**

Vanderbilt Institute for Global Health, 2006-present

Visiting Scientist, Fundacion Huesped, Buenos Aires, Argentina, summer 2013

Vanderbilt Tuberculosis Center, 2013-present

Board of Directors, Nashville Health Management Foundation, 2014-2016

Visiting Scientist, Fred Hutchinson Cancer Research Center, Seattle, summer 2016

Director of the Biostatistics and Biomedical Informatics Core of the Tennessee Center for AIDS Research (TN-CFAR), 2015-present

## **Other Employment**

Computer Programmer, Department of Statistics, Brigham Young University, 1997

SAS Programmer, McBride Biostatistical Research, Morristown, NJ, summer 1998.

Teaching Assistant, Department of Statistics, Brigham Young University, 1998-1999

Research Assistant, Kenya Medical Research Institute and University of Washington, Nairobi, Kenya, summer 2000.

Teaching Assistant, Department of Biostatistics, University of Washington, 2000-2001

Research Assistant, Department of Biostatistics, University of Washington, 2002-2005

## **Professional Organizations**

American Statistical Association

Chapter Representative, Middle Tennessee Chapter, 2006-2008

International Biometric Society

## **Professional Activities**

### **Intramural**

Chair of Allocation Committee, 2005-2012

Department of Biostatistics, Vanderbilt University

Member of Faculty Search Committee, 2005-present  
Department of Biostatistics, Vanderbilt University

Member of Graduate Program Committee, 2008-present  
Department of Biostatistics, Vanderbilt University

Member of Biostatistics Faculty and Promotions Committee (BFAPC), 2011-present  
Department of Biostatistics, Vanderbilt University

Member of Biostatistics Promotions Committee, 2014-present  
Department of Biostatistics, Vanderbilt University

Member of Admissions Committee, 2010-2014  
Department of Biostatistics, Vanderbilt University

Member of Vanderbilt Clinical and Translational Research Scholar program (VCTRS/VPSD)  
Selection Committee, 2012-present

Reviewer for Vanderbilt Edge for Scholars program, 2013-present

Chair of Publication Award Committee, 2014-present  
Department of Biostatistics, Vanderbilt University

### **Extramural**

Ad hoc reviewer for The Bill and Melinda Gates Foundation, 2007

Member of Technical Expert Panel, 2010  
“Future Research Priorities in Clinically Localized Prostate Cancer”, Blue Cross Blue  
Shield Association project sponsored by Agency for Healthcare Research and Quality

Member of Scientific Organizing Committee, 2010-2011  
“Causal Inference in Health Research”, Centre de Recherche Mathematiques  
Conference to be held in Montreal, Canada, May 9-13, 2011

Ad hoc reviewer for Wellcome Trust, 2011

Ad hoc reviewer for National Institute of Allergy and Infectious Diseases, National Insti-  
tutes of Health, “Targeted Clinical Research to Address Select Viral Infections,” April  
2011

Ad hoc reviewer for National Institute of Allergy and Infectious Diseases, National Insti-  
tutes of Health, “Targeting Inflammation and Immune Activation in HIV Disease,”  
October 2012

Ad hoc reviewer for the Medical Research Council, United Kingdom, November 2013

Chair of Data Safety and Monitoring Board, “Discontinuation of trimethoprim-sulfamethoxazole prophylaxis in adults on antiretroviral therapy in Kenya: a randomized trial,” 2012-2013

Member of Data Safety and Monitoring Board, “CAPRISA 008: Open-label randomized controlled trial to assess the implementation effectiveness and safety of 1% tenofovir gel provision through family planning services in KwaZulu-Natal, South Africa,” 2012-2015

Member of Data Safety and Monitoring Board, “Providing Online Counseling for Home-Based HIV Testing with MSM Couples,” 2015-present

Ad hoc reviewer for National Institutes of Health, “National Institute of Allergy and Infectious Diseases Special Emphasis Panel: NIAID Clinical Trial Planning Grant (R34) and Clinical Trial Implementation Cooperative Agreement (U01),” January 2015

Ad hoc reviewer for National Institutes of Health, “National Institute of Allergy and Infectious Diseases Special Emphasis Panel: Investigator Initiated Clinical Trial Applications (R34) and NIAID Clinical Trial Implementation Cooperative Agreement (U01),” December 2015

Ad hoc reviewer for Medical Research Council, January 2017

Chair of Data Safety and Monitoring Board, “Mobile WACHX: Evaluation of mHealth strategies to optimize adherence and efficacy of PMTCT/ART,” 2016-present

Associate Editor for the *American Journal of Epidemiology*, 2016-present

Ad hoc reviewer for the National Institutes of Health, AIDS Clinical Epidemiology Study Section, November 2017

Have reviewed papers for the following journals

*AIDS Research and Human Retroviruses*

*Australian and New Zealand Journal of Statistics*

*American Journal of Epidemiology*

*Biometrics*

*Biostatistics*

*Blood*

*BMC Health Services Research*

*BMC Infectious Diseases*

*Contemporary Clinical Trials*

*Clinical Trials*  
*Drug and Alcohol Dependence*  
*Epidemiology*  
*Methods of Information in Medicine*  
*International Journal of Biostatistics*  
*International Journal of Epidemiology*  
*International Journal of Women's Health*  
*Journal of Acquired Immune Deficiency Syndromes*  
*Journal of Applied Statistics*  
*Journal of Biopharmaceutical Statistics*  
*Journal of Clinical Epidemiology*  
*Journal of Infectious Diseases*  
*Journal of Statistical Software*  
*Journal of the American Medical Association*  
*JAMA Oncology*  
*Journal of the American Statistical Association*  
*Journal of the International AIDS Society*  
*Journal of the Royal Statistical Society, Series B*  
*Lancet HIV*  
*PLoS Computational Biology*  
*PLoS ONE*  
*PLoS Medicine*  
*Proceedings of the Royal Society B: Biological Sciences*  
*Scandinavian Journal of Statistics*  
*Statistics in Medicine*  
*Statistical Methods in Medical Research*  
*The American Statistician*

## **Academic Awards**

Trustees Scholarship, 1993, Brigham Young University

Edwin Hinckley Scholarship, 1998, Brigham Young University

Undergraduate Research Award, 1998, Brigham Young University

Graduate Merit Award, 1999, Department of Biostatistics, University of Washington

Senior Student Award, 2005, Department of Biostatistics, University of Washington

Shayle Searle Fellow, 2016, School of Mathematics and Statistics, Victoria University of Wellington, New Zealand

Outstanding Faculty Mentor, 2016, Department of Biostatistics, Vanderbilt University Medical School

Canadian Journal of Statistics Award, 2016, Statistical Society of Canada

## Teaching Activities

### Courses

Introduction to Probability and Statistical Theory

- Fall 2011
- Fall 2012
- Fall 2013
- Fall 2014
- Fall 2015
- Fall 2016
- Fall 2017

Causal Inference

- Spring 2018

### Individualized Courses for Specific Students

Advanced Methods for Epidemiology (Epidemiology 332) (Spring 2012); Lan Zhang;  
*Respondent Driven Sampling*

Independent Study in Biostatistics (Biostatistics 393) (Fall 2011 - Spring 2012);  
Nate Mercaldo; *Dynamic optimal treatment regimens applied to initiating therapy  
in HIV*

### Research Supervision

Primary Advisor:

Valentine Wang (Biostatistics MS 2014, took position at Institute for Health Metrics and Evaluation, Seattle, WA)

Qi Liu (Biostatistics PhD 2016, took position at Merck, Rahway, NJ)

Lingjun Fu (Biostatistics MS 2017, took position at Amazon, Seattle, WA)

Mark Giganti (Biostatistics PhD student, 2013-present)

Svetlana Eden (Biostatistics PhD student, 2016-present)

Sarah Lotspeich (Biostatistics PhD student, 2017-present)

## PhD Student Committees:

Sangsoo Park (Economics PhD 2008)  
Jisong Wu (Economics PhD 2009)  
Stephany Duda (Biomedical Informatics PhD 2011)  
Heng Chen (Economics PhD 2012)  
Lan Zhang (Epidemiology PhD 2013)  
Webster Kasongo (Epidemiology PhD 2013)  
Xi Huo (Mathematics PhD 2014)  
Jun Tao (Epidemiology PhD 2016)  
Laurie Samuels (Biostatistics PhD 2016)  
Chen Zhang (Epidemiology PhD 2017)  
Nate Mercaldo (Biostatistics PhD 2017)

## Mentoring Committees:

Pingsheng Wu (Research Assistant Professor, Department of Medicine; 2012-present)  
Carolyn Audet (Assistant Professor, Institute for Global Health; 2012-present)  
April Pettit (Assistant Professor, Division of Infectious Diseases; 2013-present)  
Celestine Wanjalla (Research Fellow, Division of Infectious Diseases; 2016-present)  
Peter Rebeiro (Assistant Professor, Division of Infectious Diseases; 2017-present)

## Other Mentoring:

James Carlucci (Medical School Emphasis project, 2007)  
Tera Howard (Medical School Emphasis project, 2008)  
Diana Lemly (Medical School Emphasis project, 2008)  
Keipp Talbot (Infectious Diseases Fellow, 2008-2009)  
Vlada Melekhin (Infectious Diseases Fellow, 2007-2011)  
Yuri Van der Heijden (Infectious Diseases Fellow, 2012-present)

## Internal Seminars, Lectures, and Workshops

1. Stochastic modeling of hematopoiesis.  
Department of Biostatistics, Vanderbilt University, November 9, 2005

2. An analysis problem arising in HIV vaccine trials and our proposed solution.  
Infectious Disease Grand Rounds, Vanderbilt University, February 1, 2006
3. The causal effect of finasteride on the severity of prostate cancer.  
Department of Biostatistics, Vanderbilt University, September 20, 2006
4. Baseline CD4 lymphocyte percentage and HIV/AIDS disease progression on therapy: the promise and problems of predictive modeling.  
Vanderbilt-Meharry Center for AIDS Research Work in Progress Seminar, May 24, 2007
5. Guest lectures to Vanderbilt Master of Science in Clinical Investigation Program  
Design of medical studies, September 20, 2007  
Some analysis advice, September 24, 2008
6. Sensitivity analyses comparing time-to-event outcomes only existing in a subset selected post-randomization, with application to HIV vaccine trials.  
Department of Economics, Vanderbilt University, Statistics Study Group Seminar Series, February 14, 2008
7. Biostatistics 101.  
2nd Annual Administrative Retreat, Department of Biostatistics, Vanderbilt University, April 4, 2008
8. The cost of checking proportional hazards.  
Department of Biostatistics, Vanderbilt University, April 23, 2008
9. An introduction to linear mixed effects models.  
MS Continuing Education Meeting, Department of Biostatistics, Vanderbilt University, April 17 and May 1, 2008
10. Statistical methods to account for data errors discovered from an audit.  
Department of Biostatistics, Vanderbilt University, July 15, 2009
11. This American Statistician's Life.  
School for Math and Science at Vanderbilt, December 3, 2009
12. Test of Association between Two Ordinal Variables while Adjusting for Covariates.  
Department of Mathematics, Vanderbilt University, Biomathematics Group, April 6, 2010
13. Multiple imputation strategies for handling missing data.  
National Institute of Mental Health International HIV/AIDS Conference, Nashville, June 17, 2010
14. Presentations to the James Crowe Jr. Lab, Vanderbilt University  
Power and sample size, September 8, 2006  
T-tests and wilcoxon rank sum tests, February 2, 2007  
Power and sample size, June 21, 2007



- Linear regression, December 7, 2007  
 Analyzing neut data, June 6, 2008  
 Analyzing correlated data, December 5, 2008  
 Sample size and power calculations, May 15, 2009  
 Assessing the effect of vaccination on post-infection outcomes, October 30, 2009  
 Statistical issues to consider in translational research, March 19, 2010
15. Ordered logistic regression.  
 Guest Lecture to Epidemiology Graduate Students: November 9, 2010; October 27, 2011; October 25, 2012; October 17, 2013; November 20, 2014; November 1, 2016.
  16. Estimating the optimal CD4 count for HIV-infected individuals to start antiretroviral therapy.  
 Department of Biostatistics, Vanderbilt University, January 12, 2011
  17. Estimating the optimal CD4 count for HIV-infected individuals to start antiretroviral therapy.  
 Vanderbilt Institute for Global Health Faculty Meeting, January 25, 2011
  18. Design of Medical Studies and Some Analysis Advice.  
 Vanderbilt Institute for Global Health Institute in Research Development and Ethics: May 16, 2011; August 17, 2012; October 18, 2013; September 19, 2014; October 29, 2015; October 13, 2016.
  19. IeDEA Network Coordinating Center (INCC) at Vanderbilt. With Bill Wester and Mary Louise Lindegren. Vanderbilt Institute for Global Health Faculty Research Development Meeting, November 29, 2011
  20. The Caribbean, Central and South America network for HIV Epidemiology: experiences from an observational HIV cohort. With Catherine McGowan.  
 Infectious Diseases Grand Rounds, Vanderbilt University, December 7, 2011
  21. Contemporary statistical inference (Biostatistics 342); guest lecture.  
 January 18 and 20, 2012; January 16 and 18, 2013
  22. Advanced statistical inference (Biostatistics 362); guest lecture.  
 February 13, 2013
  23. Principal stratification: an analysis approach for dealing with post-randomization selection and truncation by death.  
 Health Services Research Work in Progress Seminar, Vanderbilt University, March 12, 2013
  24. Probability-scale residuals.  
 Department of Biostatistics, Vanderbilt University, January 22, 2014
  25. Comparing different methods for assessing when to start antiretroviral therapy.  
 Infectious Diseases Grand Rounds, Vanderbilt University, March 13, 2014

26. The Caribbean, Central and South American Network for HIV Research (CCASAnet). Vanderbilt Institute for Global Health Faculty Research Development Meeting, May 5, 2014.
27. Incorporating partially validated data into analyses of error-prone datasets to improve estimation. Center for Quantitative Sciences Seminar, April 17, 2015.
28. Methods for Research in Implementation Science. Short course co-taught with Sten Vermund and Meridith Blevins as part of Vanderbilt-UEM Partnership for Research in Implementation Science Mozambique (PRISM). Universidade Eduardo Mondlane. Maputo, Mozambique. December 5-9, 2016.
29. Modeling continuous response variables using ordinal regression. Department of Biostatistics, Vanderbilt University, January 17, 2018

## Research Program

R03 AI068069    PI: Talbot    02/01/07-01/31/09  
 Epidemiology and Clinical Features of Human Coronavirus  
 Role: Biostatistician

R01 DA023879    PI: Frangakis    07/15/07-06/30/11  
 Statistical Designs and Methods for Partially Controlled HIV/AIDS Studies  
 Role: Co-Investigator / PI of Vanderbilt subcontract

R01 DA026207    PI: Markham    09/01/08-07/31/10  
 Effect of cocaine and an LTR polymorphism on HIV-1 pathogenesis  
 Role: Co-investigator

APW200653698/SR-1400313190                          PI: Vermund    08/01/12-04/30/13  
 Factors Influencing Changes in Child Survival in sub-Saharan Africa from 1990 to 2009  
 Role: Co-Investigator

P30 AI054999    PI: Kalams    05/15/03-08/31/13  
 Vanderbilt Meharry Center For AIDS Research  
 Role: Co-Investigator

U01 AI069918    PI: Moore    07/01/13-06/30/15  
 NA-ACCORD Supplement; obesity and ACE-inhibitors (Vanderbilt PI: Sterling)  
 Role: Co-Investigator

VUMC 41254 Bringing K-RITH into IeDEA Role: Co-Investigator	PI: Sterling	01/01/13-06/30/14
R01 AI094562 Multi-component HIV Intervention Packages for Chinese MSM Role: Co-Investigator	PI: Vermund	03/15/11-02/28/15
R34 AI091446 Expanding Testing, Linkage, and Treatment for AIDS Prevention Among MSM in China Role: Co-Investigator	PI: Vermund	08/01/11-07/31/14
R01 HD075075 Optimizing integrated PMTCT services in rural North-Central Nigeria Role: Co-Investigator	PI: Aliyu	09/28/12-06/30/14
U01 AI069923 Caribbean, Central and South America Network for HIV epidemiology (CCASAnet) Role: Co-Investigator	PI: McGowan	06/15/06-06/30/21
R01 AI093234 Statistical Methods for Ordinal Variables in HIV/AIDS Studies Role: Principal Investigator	PI: Shepherd	05/18/11-04/30/18
P30 AI110527 Tennessee Center for AIDS Research (TN-CFAR) Role: Co-Investigator and Director of Biostatistics and Biomedical Informatics Core	PI: Mallal	04/01/15-03/31/20
K08 AI106420 Fluoroquinolone Resistance in Patients with Multidrug-Resistant Tuberculosis Role: Co-Investigator	PI: Van der Heijden	08/01/14-07/31/19
R24 AI124872 Harmonist: A Scalable Toolkit for Standardizing and Coordinating Data Sharing Across International Research Networks Role: Co-Investigator	PI: Duda	04/30/16-03/31/21
R01 MH113478-01 Partners-based HIV Treatment for Sero-concordant Couples attending Antenatal Care Role: Co-Investigator	PI: Audet	05/12/17-04/30/22

U01 DK112271-01 PI: Wester 9/15/17-08/31/22  
Optimal Management of HIV Infected Adults at Risk for Kidney Disease in Nigeria  
Role: Co-Investigator

R01 MH113438-01A1 PI: Pettit 12/01/17-11/30/20  
Multi-level Social and Behavioral Determinants of Health and Missed HIV Healthcare  
Provider Visits  
Role: Co-Investigator

R-1609-36207 PI: Shepherd 08/01/17-12/31/21  
Patient-Centered Outcomes Research Institute (PCORI)  
Statistical methods and designs for addressing correlated errors in outcomes and covariates in studies using electronic health records data  
Role: Principal Investigator

## Publications and Presentations

### Peer-Reviewed Publications

1. Shepherd BE, Schaalje GB, Smith MJ, Murray BK, O'Neill KL. Statistical analysis of the comet assay using a mixture of gamma distributions. *Quantitative Microbiology* 2000; 2: 69–79.
2. Mwachari CW, Shepherd BE, Cleopa O, Odhiambo JA, Cohen CR. Mortality and burden of disease in a cohort of HIV-seropositive adults in Nairobi, Kenya. *International Journal of STD and AIDS* 2004; 15: 120–126.
3. Shepherd BE, Guttorp P, Lansdorp PM, Abkowitz JL. Estimating human hematopoietic stem cell kinetics using granulocyte telomere lengths. *Experimental Hematology* 2004; 32: 1040–1050.
4. Gilbert PB, Ackers M, Berman PW, Francis DP, Popovic V, Hu D, Heyward WL, Sinangil F, Shepherd BE, Gurwith M. HIV-1 virologic and immunologic progression and antiretroviral therapy initiation among HIV-1-infected participants in an efficacy trial of recombinant glycoprotein 120 vaccine. *Journal of Infectious Diseases* 2005; 192: 974–983.
5. Shepherd BE, Rossini AJ, Soto RJ, de Rivera IL, Mullins JI. Sampling designs for HIV molecular epidemiology with application to Honduras. *AIDS Research and Human Retroviruses* 2005; 21: 907–914.
6. Shepherd BE, Gilbert PB, Jemai Y, Rotnitzky A. Sensitivity analyses comparing outcomes only existing in a subset selected post-randomization, conditional on covariates, with application to HIV vaccine trials. *Biometrics* 2006; 62: 332–342.

7. Parham GP, Sahasrabudde VV, Mwanahamuntu MH, Shepherd BE, Hicks ML, Stringer EM, Vermund SH. Prevalence and predictors of squamous intraepithelial lesions of the cervix in HIV-infected women in Lusaka, Zambia. *Gynecologic Oncology* 2006; 103: 1017–1022.
8. Drake WP, Dhason MS, Nadaf M, Shepherd BE, Vivedulu S, Hajizadeh R, Newman LS, Kalams SA. Cellular recognition of Mycobacterium ESAT-6 and katG peptides in systemic sarcoidosis. *Infection and Immunity* 2007; 75: 527–530.
9. Hulgán T, Shepherd BE, Raffanti SP, Fusco JS, Beckerman R, Barkanic G, Sterling TR. Absolute and percentage CD4+ lymphocytes are independent predictors of disease progression in HIV-infected persons initiating HAART. *Journal of Infectious Diseases* 2007; 195: 425–431.
10. Tian C, Luskin GK, Dischert KM, Higginbotham JN, Shepherd BE, Crowe JE Jr. Evidence for preferential Ig gene usage and differential TdT and exonuclease activities in human naive and memory B cells. *Molecular Immunology* 2007; 44: 2173–83.
11. Shepherd BE, Gilbert PB, Mehrotra DV. Eliciting a counterfactual sensitivity parameter. *The American Statistician* 2007; 61: 56–63.
12. Shepherd BE, Gilbert PB, Lumley T. Sensitivity analyses comparing time-to-event outcomes only existing in a subset selected post-randomization. *Journal of the American Statistical Association* 2007; 102: 573–582.
13. Hajizadeh R, Sato H, Carlisle J, Nadaf MT, Evans W, Shepherd BE, Miller RF, Kalams SA, Drake WP. Mycobacterium tuberculosis antigen 85A induces Th-1 immune responses in systemic sarcoidosis. *Journal of Clinical Immunology* 2007; 27: 445–454.
14. Williams JV, Chen Z, Cseke G, Wright DW, Keefer CJ, Tollefson SJ, Hessell A, Podsiad A, Shepherd BE, Sanna PP, Burton DR, Crowe JE Jr, Williamson RA. A Recombinant Human Monoclonal Antibody to Human Metapneumovirus Fusion Protein that Neutralizes Virus in Vitro and is Effective Therapeutically in Vivo. *Journal of Virology* 2007; 81: 8315–8324.
15. Shepherd BE, Kiem HP, Lansdorp PM, Aubert G, Dunbar CE, LaRochelle A, Seggewiss R, Guttorp P, Abkowitz JL. Hematopoietic stem cell behavior in non-human primates. *Blood* 2007; 110: 1806–1813.
16. Mok H, Lee S, Utley TJ, Shepherd BE, Polosukhin VV, Collier ML, Davis NL, Johnston RE, Crowe JE Jr. Venezuelan equine encephalitis replicon particles encoding respiratory syncytial virus surface glycoproteins induce protective mucosal responses in mice and cotton rats. *Journal of Virology* 2007; 81: 13710–13722.
17. Jemai Y, Rotnitzky A, Shepherd BE, Gilbert PB. Semiparametric estimation of treatment effects given baseline covariates on an outcome measured after a post-randomization event occurs. *Journal of the Royal Statistical Society, Series B* 2007; 69: 879–901.

18. Riviello ED, Sterling TR, Shepherd B, Fantan T, Makhema J. HIV in the workplace in Botswana: incidence, prevalence, and disease severity. *AIDS Research and Human Retroviruses* 2007; 23: 1453–1460.
19. Carlisle J, Evans W, Hajizadeh R, Shepherd BE, Ott RD, Richter K, Drake WP. Multiple Mycobacterium antigens induce interferon-gamma production from sarcoidosis peripheral blood mononuclear cells. *Journal of Clinical and Experimental Immunology* 2007; 150: 460–468.
20. Tian C, Luskin GK, Dischert KM, Higginbotham JN, Shepherd BE, Crowe JE Jr. Immunodominance of the VH1-46 antibody gene segment in the primary repertoire of human rotavirus-specific B cells is reduced in the memory compartment through somatic mutation of nondominant clones. *Journal of Immunology* 2008; 180: 3279–3288.
21. Shepherd BE. The cost of checking proportional hazards. *Statistics in Medicine* 2008; 27: 1248–1260.
22. Carlucci JG, Kamanga A, Sheneberger R, Shepherd BE, Jenkins CA, Spurrier J, Vermund SH. Predictors of adherence to antiretroviral therapy in rural Zambia. *Journal of Acquired Immune Deficiency Syndromes* 2008; 47: 615–622.
23. Allen SS, Evans W, Carlisle J, Hajizadeh R, Nadaf M, Pride DT, Shepherd BE, Johnson JE, Drake WP. Superoxide dismutase A antigens derived from molecular analysis of sarcoidosis granulomas elicit systemic Th-1 immune responses. *Respiratory Research* 2008; 9: 36.
24. Utley TJ, Ducharme NA, Varthakavi V, Shepherd BE, Santangelo PJ, Lindquist ME, Goldenring JR, Crowe JE Jr. Respiratory syncytial virus uses a Vps4-independent budding mechanism controlled by Rab11-FIP2. *Proceedings of the National Academy of Sciences* 2008; 105: 10209–10214.
25. Morel KR, Shepherd BE. Developing a symptom validity test for posttraumatic stress disorder: application of the binomial distribution. *Journal of Anxiety Disorders* 2008; 22: 1297–1302.
26. Mok H, Tollefson SJ, Podsiad AB, Shepherd BE, Polosukhin VV, Johnston RE, Williams JV, Crowe JE Jr. An alphavirus replicon-based human metapneumovirus vaccine is immunogenic and protective in mice and cotton rats. *Journal of Virology* 2008; 82: 11410–11418.
27. Shepherd BE, Redman MW, Ankerst DP. Does finasteride affect the severity of prostate cancer? A causal sensitivity analysis. *Journal of the American Statistical Association* 2008; 103: 1392–1404.
28. Tsai CS, Shepherd BE, Vermund SH. Does douching increase risk for sexually transmitted infections? A prospective study in high-risk adolescents. *American Journal of Obstetrics and Gynecology* 2009; 200: 38.e1–8.

29. Pettit AC, Barkanic G, Stinnette S, Rebeiro P, Blackwell R, Raffanti SP, Shepherd BE, Sterling TR. Potentially-preventable tuberculosis among HIV-infected persons in the era of highly active antiretroviral treatment. *International Journal of Tuberculosis and Lung Disease* 2009; 13: 355–359.
30. Aliferis CF, Statnikov A, Tsamardinos I, Schildcrout JS, Shepherd BE, Harrell FE Jr. Factors influencing the statistical power of complex data analysis protocols for molecular signature development from microarray data. *PLoS ONE* 2009; 4: e4922.
31. Lemly DC, Shepherd BE, Hulgan T, Rebeiro P, Stinnette S, Blackwell RB, Bebawy S, Kheshti A, Sterling TR, Raffanti SP. Race and sex differences in antiretroviral therapy use and mortality among HIV-infected persons in care. *Journal of Infectious Diseases* 2009; 199: 991–998.
32. Shepherd BE, Sterling TR, Moore RD, Raffanti SP, Hulgan T. Cross-cohort heterogeneity encountered while validating a model for HIV disease progression among antiretroviral initiators. *Journal of Clinical Epidemiology* 2009; 62: 729–737.
33. Tuboi SH, Schechter M, McGowan CC, Cesar C, Krolewiecki A, Cahn P, Wolff M, Pape JW, Padgett D, Madero JS, Gotuzzo E, Masys DR, Shepherd BE. Mortality during the first year of potent antiretroviral therapy in HIV-1-infected patients in 7 sites throughout Latin America and the Caribbean. *Journal of Acquired Immune Deficiency Syndromes* 2009; 51: 615–623.
34. Talbot HK, Shepherd BE, Crowe JE Jr, Griffin MR, Edwards KM, Podsiad AB, Tollefson SJ, Wright PF, Williams JV. The pediatric burden of human coronaviruses evaluated for twenty years. *The Pediatric Infectious Disease Journal* 2009; 28: 682–687.
35. Oswald-Richter KA, Culver DA, Hawkins C, Hajizadeh R, Abraham S, Shepherd BE, Jenkins CA, Judson MA, Drake WP. Cellular responses to mycobacterial antigens are present in sarcoidosis diagnostic bronchoalveolar lavage. *Infection and Immunity* 2009; 77: 3740–3748.
36. Li AH, Phanuphak N, Sahasrabudde VV, Chaithongwongwatthana S, Vermund SH, Jenkins CA, Shepherd BE, Teeratakulpisarn N, van der Lugt J, Avihingsanon A, Ruxrungtham K, Shikuma C, Phanuphak P, Ananworanich J. Anal squamous intraepithelial lesions among HIV-positive and HIV-negative men who have sex with men in Thailand. *Sexually Transmitted Infections* 2009; 85: 503–507.
37. Melekhin VV, Shepherd BE, Stinnette SE, Rebeiro PF, Barkanic G, Raffanti SP, Sterling TR. Antiretroviral therapy initiation before, during, or after pregnancy in HIV-1-infected women: maternal virologic, immunologic, and clinical response. *PLoS ONE* 2009; 4: e6961.
38. Sahasrabudde VV, Bhosale RA, Joshi SN, Kavatkar AN, Nagwanshi CA, Kelkar RS, Jenkins CA, Shepherd BE, Sahay S, Risbud AR, Vermund SH, Mehendale SM. Prevalence and predictors of colposcopic-histopathologically confirmed cervical intraepithelial neoplasia in HIV-infected women in India. *PLoS ONE* 2010; 5: e8634.

39. Oswald-Richter K, Sato H, Hajizadeh R, Shepherd BE, Sidney J, Sette A, Newman LS, Drake WP. Mycobacterial ESAT-6 and katG are Recognized by Sarcoidosis CD4+ T Cells When Presented by the American Sarcoidosis Susceptibility Allele, DRB1\*1101. *Journal of Clinical Immunology* 2010; 30:157-166.
40. Heimbürger DC, Koethe JR, Nyirenda C, Bosire C, Chiasaera JM, Blevins M, Munoz AJ, Shepherd BE, Potter D, Zulu I, Chisembele-Taylor A, Chi BH, Stringer JSA, Kabagambe EK. Serum Phosphate Predicts Early Mortality in Adults Starting Antiretroviral Therapy in Lusaka, Zambia: A Prospective Cohort Study. *PLoS ONE* 2010; 5: e10687.
41. Cesar C, Shepherd BE, Krolewiecki AJ, Fink VI, Schechter M, Tuboi SH, Wolff M, Pape JW, Leger P, Padgett D, Madero JS, Gotzso E, McGowan CC, Masys DR, Cahn PE. Rates and reasons for early change of first HAART in HIV-1-infected patients in 7 sites throughout the Caribbean and Latin America. *PLoS ONE* 2010; 5: e10490.
42. Li C, Shepherd BE. Test of association between two ordinal variables while adjusting for covariates. *Journal of the American Statistical Association* 2010; 105: 612-620.
43. Shepherd BE, Jenkins CA, Rebeiro PF, Stinnette SE, Bebawy SS, McGowan CC, Hulgán T, Sterling TR. Estimating the optimal CD4 count for HIV-infected patients to start antiretroviral therapy. *Epidemiology* 2010; 21:698–705.
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  142. Kipp AM, Rebeiro PF, Shepherd BE, Brinkley-Rubinstein L, Turner M, Bebawy S, Sterling TR, Hulgán T. Daily marijuana use is associated with missed clinic appointments among HIV-infected persons engaged in HIV care. *AIDS and Behavior* 2017; 21: 1996–2004.

143. Shepherd BE, Blevins M, Rebeiro PF, Duda SN, McGowan CC. A pragmatic approach for reproducible research with sensitive data. *American Journal of Epidemiology* 2017; 186: 387–392.
144. Crabtree Ramirez B, Caro Vega Y, Shepherd BE, Le C, Turner M, Cahn P, Grin-sztejn B, Cortes C, Padgett D, Sterling TR, McGowan CC, Person A. Outcomes of HIV-positive patients with cryptococcal meningitis in the Americas. *International Journal of Infectious Diseases* 2017; 63: 57–63.
145. \*Liu Q, Shepherd BE, Li C, Harrell FE. Modeling continuous response variables using ordinal regression. *Statistics in Medicine* 2017; 36: 4316–4335.
146. Norwood J, Koethe JR, Turner M, Bofill C, Rebeiro P, Shepherd BE, Bebawy S, Hulgán T, Raffanti S, Haas DW, Sterling TR. Weight gain in persons with HIV switched from efavirenz-based to integrase strand transfer inhibitor-based regimens. *Journal of Acquired Immune Deficiency Syndromes* 76: 527–531.

#### In Press

147. \*Liu Q, Li C, Wanga V, Shepherd BE. Covariate-adjusted Spearman’s rank correlation with probability-scale residuals. *Biometrics* (in press).
148. Oh EJ, Shepherd BE, Lumley T, Shaw PA. Considerations for analysis of time-to-event outcomes measured with error: bias and correction with SIMEX. *Statistics in Medicine* (in press).
149. Pettit AC, Giganti MJ, Ingle SM, May MT, Shepherd BE, Gill MJ, Fatkenheuer G, Abgrall S, Saag MS, Del Amo J, Justice AC, Miro JM, Cavasinni M, Dabis F, Monforte AD, Reiss P, Guest J, Moore D, Shepherd L, Obe N, Crane HM, Smith C, Teira R, Zangerle R, Sterne JAC, Sterling TR. Increased non-AIDS mortality among persons with AIDS defining events after antiretroviral therapy initiation. *Journal of the International AIDS Society* (in press).

\* First author is student supervised by Dr. Shepherd.

\*\* Won *Canadian Journal of Statistics Award*, given annually by the Statistical Society of Canada to one paper published in *CJS*.

#### Invited Discussion

Shepherd BE, Liu Q. Discussion of ‘Regularized regression for categorical data.’ *Statistical Modelling* 2016; 16: 238–248.

#### Book Chapter

Shepherd BE, Liu Q, Wanga V, Li C. Probability-scale residuals in HIV/AIDS research: diagnostics and inference. *Quantitative Methods for HIV/AIDS Research*, editors Chan C, Hudgens MG, Chow SC. 2017. Chapman and Hall/CRC.

## Book Reviews

Shepherd BE. Review of “Global Sensitivity Analysis. The Primer” by Saltelli A et al. *Biometrics* 2009; 65: 1311–1312.

Shepherd BE, Jarrett R, Fu L. Review of “Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction” by Imbens G and Rubin D. *Biometrics* 2016; 72: 1387-1388.

## Letter to the Editor

Morel KR, Shepherd BE (2008). Meta-analysis of the Morel Emotional Numbing Test for PTSD: comment on Sing, Avasthi, and Grover. *German Journal of Psychiatry* 11: 128-131.

## **Presentations**

### Invited

1. An analysis problem arising in HIV vaccine trials and our proposed solution.  
Department of Statistics, Brigham Young University, February 28, 2006.
2. Comparing outcomes that only exist in a group chosen after randomization.  
Causal Inference Working Group, Department of Biostatistics, Johns Hopkins University, December 14, 2006.
3. Design of medical studies and some analysis advice.  
The Caribbean, Central, and South American network, Educational Visit, Huesped Foundation, Buenos Aires, Argentina, September 26, 2007.
4. Kaplan-Meier survival estimates.  
The Caribbean, Central, and South American network, Educational Visit, Hospital Universitario Clementino Fraga Filho, Rio de Janeiro, Brazil, November 7, 2007.
5. Assessing causal effects in the doomed.  
Western North American Region of the International Biometric Society, University of California, Davis, June 25, 2008.
6. Vaccine efficacy among the doomed when monotonicity is unreasonable.  
Joint Statistical Meetings. Denver. August 5, 2008.
7. Assessing the effect of vaccination in the doomed.  
Department of Health Studies, University of Chicago, October 22, 2008.
8. The cost of checking proportional hazards.  
Biostatistics Research Branch, National Institute of Allergy and Infectious Diseases, National Institutes of Health, November 14, 2008.

9. Data analysis: science and art.  
Workshop on behavior intervention for people with high-risk for AIDS, National Center for STD/AIDS Control and Prevention, China Centers for Disease Control, Beijing, China, April 25, 2009.
10. Assessing the effect of vaccination on post-infection outcomes.  
Department of Economics, Indiana University Purdue University Indianapolis, October 15, 2009.
11. Test of association between two ordinal variables while adjusting for covariates.  
Department of Biostatistics, Johns Hopkins University, October 21, 2009.
12. The Caribbean, Central and South America Network for HIV Epidemiology: outcomes and errors.  
Infectious Diseases / Center for AIDS Research Conference, University of North Carolina, Chapel Hill, November 6, 2009.
13. Estimating the optimal CD4 count for HIV-infected individuals to start antiretroviral therapy.  
Causal Inference Group, Department of Epidemiology, University of North Carolina, Chapel Hill, November 6, 2009.
14. Eliciting a counterfactual sensitivity parameter.  
Atlantic Causal Inference Conference, New York City, May 20, 2010.
15. Sensitivity analyses to assess the effect of vaccination on those who would have been infected regardless of treatment assignment.  
Western North American Region of the International Biometric Society, University of Washington, June 21, 2010.
16. Estimating the optimal CD4 count for HIV-infected individuals to start antiretroviral therapy.  
Division of Epidemiology, University of Utah, July 6, 2010.
17. A new residual for ordinal outcomes and a new test of association for ordinal predictors.  
Department of Biostatistics and Epidemiology, University of Pennsylvania, April 12, 2011.
18. Accounting in analysis for data errors discovered through sampling.  
University of Pennsylvania Annual Conference on Statistical Issues in Clinical Trials, Philadelphia, April 13, 2011.
19. Sensitivity analysis of per-protocol treatment efficacy in randomized blinded trials.  
Workshop on Causal Inference in Health Research, Centre de Recherches Mathématiques, Université de Montréal, May 11, 2011.
20. Practical applications of principal stratification in HIV research.  
Eastern North American Region of the International Biometric Society, Washington DC, April 3, 2012.

21. Discussion of four papers on ‘Mismeasurement of time-to-event outcomes: issues and methods of analysis.’  
Joint Statistical Meetings, Montreal, August 4, 2013.
22. Comparing results from two methods for estimating the optimal CD4 threshold for initiating antiretroviral therapy.  
Joint Statistical Meetings, Montreal, August 8, 2013.
23. Comparing different methods for assessing when to start treatment.  
Division of Biostatistics, University of Minnesota, December 4, 2013.
24. Methods to use audit data in observational studies.  
Joint Statistical Meetings, Boston, August 5, 2014.
25. Covariate-adjusted Spearman’s rank correlation with probability-scale residuals.  
School of Mathematics and Statistics, Victoria University of Wellington, New Zealand, February 2, 2016.
26. Covariate-adjusted Spearman’s rank correlation with probability-scale residuals.  
Department of Epidemiology and Biostatistics, Case Western Reserve University, February 17, 2016.
27. Covariate-adjusted Spearman’s rank correlation with probability-scale residuals.  
Department of Bioinformatics and Biostatistics, University of Louisville, February 19, 2016.
28. Let’s make America great again: principal stratification is the principal way forward.  
(pro side of debate)  
Epidemiology Congress of the Americas, Miami, June 24, 2016.
29. Covariate-adjusted Spearman’s rank correlation with probability-scale residuals.  
Biostat and Biomath Seminar, Fred Hutchinson Cancer Research Center, 5 July, 2016.
30. Covariate-adjusted Spearman’s rank correlation with probability-scale residuals.  
International Chinese Statistical Association Conference, Shanghai, China, 20 December, 2016.
31. Probability-scale residuals for continuous, discrete, and censored data.  
Canadian Journal of Statistics Award Address. 45th Annual Meeting of the Statistical Society of Canada, 14 June, 2017.
32. Lengthening TB therapy in persons co-infected with HIV and tuberculosis: Challenges and considerations for designing a multi-national pragmatic trial.  
Workshop on Risk Modeling, Management and Mitigation in Health Sciences. Centre de Recherches Mathématiques. University of Montreal, December 12, 2017.

1. Shepherd BE, O'Neill K. Analysis of tail moments in the comet assay. American Microbiology Association. Idaho Falls. May 28, 1998.
2. Shepherd BE, Schaalje GB. Statistical analysis of the comet assay using a mixture of gamma distributions. 42nd Annual Conference on Cardiovascular Disease Epidemiology and Prevention. Honolulu. April 23, 2002.
3. Shepherd BE, Gilbert PB. Causal inference in HIV vaccine trials: Comparing biomarkers measured only in a subgroup chosen post-randomization. Joint Statistical Meetings. San Francisco. August 5, 2003.
4. Shepherd BE, Guttorp P, Abkowitz JL. Estimating human hematopoietic stem cell kinetics using granulocyte telomere lengths. American Society of Hematology. San Diego. December 7, 2003.
5. Shepherd BE, Gilbert PB, Gurwith M, Francis D. Assessment of HIV vaccine effects on viral load in the first Phase III trial of AIDSVAX B/B. Eleventh Conference on Retroviruses and Opportunistic Infections. San Francisco. February 11, 2004.
6. Shepherd BE. Comparing outcomes that only exist in a group chosen after randomization. Department of Biostatistics, UCSF, April 6, 2005.
7. Shepherd BE. Comparing outcomes that only exist in a group chosen after randomization. Department of Statistics, Simon Fraser University, March 7, 2005.
8. Shepherd BE. Comparing outcomes that only exist in a group chosen after randomization. Department of Biostatistics, Harvard University, March 3, 2005.
9. Shepherd BE. Comparing outcomes that only exist in a group chosen after randomization. Statistics Group, RAND Corporation, February 21, 2005.
10. Shepherd BE. Comparing outcomes that only exist in a group chosen after randomization. Department of Biostatistics, Emory University, February 18, 2005.
11. Shepherd BE. Comparing outcomes that only exist in a group chosen after randomization. Department of Biostatistics, Vanderbilt University, January 19, 2005.
12. Shepherd BE, Kiem HP, Dunbar CE, Larochelle A, Donahue RE, Seggewiss R, Lansdorp PM, Guttorp P, Abkowitz JL. Estimating the replication rate of hematopoietic stem cells in non-human primates: a test of Hayflick's hypothesis. American Society of Hematology. Atlanta. December 10, 2005.
13. Shepherd BE. The causal effect of finasteride on the severity of prostate cancer. Joint Statistical Meetings. Seattle. August 7, 2006.
14. Shepherd BE, Sterling TR, Moore RD, Raffanti SP, Hulgán T. Evaluation of a prognostic model for HIV disease progression after initiation of HAART. 11th International Workshop on HIV Observational Databases. Monte Carlo, Monaco. March 23, 2007.

15. Shepherd BE. Modelling HIV disease progression among persons initiating HAART: the cost of checking and correcting violations of the proportional hazards assumption. 11th International Workshop on HIV Observational Databases. Monte Carlo, Monaco. March 23, 2007.
16. Shepherd BE. The cost of checking proportional hazards. Joint Statistical Meetings. Salt Lake City. August 1, 2007.
17. Shepherd BE, Jenkins CA, Rebeiro PF, Stinnette SE, Bebawy SS, Kheshti A, Blackwell R, Raffanti S, Hulgán T, Sterling TR. When to start highly active antiretroviral therapy: a pilot study of inverse probability weighted methods. 12th International Workshop on HIV Observational Databases. Malaga, Spain. March 29, 2008.
18. Shepherd BE, Jenkins CA, Rebeiro PF, Stinnette SE, Bebawy SS, McGowan CC, Hulgán T, Sterling TR. When to start highly active antiretroviral therapy: estimates of an optimal rule based on CD4 count. 13th International Workshop on HIV Observational Databases. Lisbon, Portugal. March 26, 2009.
19. Shepherd BE, Yu C. Statistical methods to account for data errors discovered from an audit. Joint Statistical Meetings. Washington DC. August 4, 2009.
20. Shepherd BE, Jenkins CA, Rebeiro PF, Stinnette SE, McGowan CC, Hulgán T, Sterling TR. Comparing three methods for estimating the optimal CD4-threshold for HAART initiation. 14th International Workshop on HIV Observational Databases. Sitges, Spain. March 26, 2010.
21. Shepherd BE, Li C. Tests for conditional association between an ordinal predictor and continuous, binomial, or ordinal outcomes. Joint Statistical Meetings. Vancouver, BC. August 1, 2010.
22. Shepherd BE. Statistical methods to account for data errors discovered from an audit. Executive Committee Meeting for the International Epidemiologic Databases to Evaluate AIDS. Boston, MA. March 3, 2011.
23. Shepherd BE, Li C. Methods for leveraging the order information in ordered categorical variables. 15th International Workshop on HIV Observational Databases. Prague, Czech Republic. March 25, 2011.
24. Shepherd BE, Jenkins CA, Sterling TR for the ART-CC. Higher rates of AIDS during the first year of therapy among those born outside Europe, the United States, and Canada. 16th International Workshop on HIV Observational Databases. Athens, Greece. March 29, 2012.
25. Shepherd BE. Multiple imputation methods to account for data errors discovered by an audit. 16th International Workshop on HIV Observational Databases. Athens, Greece. March 30, 2012.
26. Shepherd BE, Giganti MJ. Comparing different approaches to account for cohort heterogeneity in the Cox proportional hazards model. 17th International Workshop on HIV Observational Databases. Cavtat, Croatia. April 11, 2013.



27. Shepherd BE. Assessing and interpreting the association between continuous covariates and outcomes using splines. 19th International Workshop on HIV Observational Databases. Catania, Sicily. March 27, 2015.
28. Shepherd BE, Jenkins C, Luque M, Cesar C, Rouzier V, Machado D, Maia M, Padgett D, Pinto J, McGowan C. 19th International Workshop on HIV Observational Databases. Mortality and regimen change among children starting antiretrovirals in Latin America. Catania, Sicily. March 27, 2015.
29. Shepherd BE, Li C, Liu Q. Probability-scale residuals for continuous, discrete, and censored data. Joint Statistical Meetings. Seattle, WA. August 9, 2015.
30. Shepherd BE, Blevins M. Reproducible research with observational HIV cohort data. 20th International Workshop on HIV Observational Databases. Budapest, Hungary. April 8, 2016.