

## Erinn M. Hade

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### Current Positions

- **Research Assistant Professor**  
Department of Biomedical Informatics, The Ohio State University      Sept 2014 – present
- **Research Assistant Professor**  
Department of Obstetrics and Gynecology (*Joint appointment*)      October 2018 – present
- **Research Assistant Professor**  
College of Public Health, Division of Biostatistics (*Courtesy appointment*)      March 2016 - present
- **Program Leader, Population Studies Program**  
Center for Biostatistics  
Department of Biomedical Informatics      March 2014 - present

### Previous Positions

- **Research Scientist**  
Department of Biomedical Informatics, The Ohio State University      August 2013 – Sept 2014
  - **Senior Clinical Trials Statistician**  
Edinburgh University, Edinburgh Clinical Trials Unit      April 2013 – June 2013
  - **Biostatistician II, Center for Biostatistics**  
The Ohio State University, Columbus, OH, USA.      2006 – August 2013
  - **Biostatistician I, Center for Biostatistics**  
The Ohio State University, Columbus, OH, USA.      2002 – 2006
  - **Operations Programmer, ST $\Delta$ TPROBE, Inc.**  
Dublin, OH, USA.      2002
  - **Research Assistant, The Cardiovascular Health Study (CHS)**  
The Coordinating Center, University of Washington, Seattle, WA, USA.      1999-2001
  - **Teaching Assistant, Department of Biostatistics**  
University of Washington, WA, USA.      2000
  - **Statistical Programmer, The Center for Research on Child Wellbeing**  
The Office of Population Research, Princeton University, NJ, USA.      1998-1999
  - **Research Assistant, The Center for Research on Child Wellbeing**  
The Office of Population Research, Princeton University, NJ, USA.      1998
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### Education

- **PhD, Biostatistics/Public Health**  
August 2012, The Ohio State University, College of Public Health, Columbus, OH USA  
Dissertation: "Propensity Score Adjustment in Multiple Group Observational Studies: Comparing Matching and Alternative Methods", under the supervision of Drs. Bo Lu, Hong Zhu, and Jason Hsu.
- **MS, Biostatistics.**  
December 2001, University of Washington, Seattle, WA USA.  
Master's Thesis: "An Analysis of Background Noise in Microarray data for Ovarian Cancer", under the supervision of Drs. Jon Wakefield and Martin McIntosh.

- **BA, Statistics and French (minor in Economics).**

May 1998, Rutgers University, Rutgers College, New Brunswick, NJ USA.

Junior year abroad, Université de François Rabelais, Tours, France, 1996 -97.

## Personal Statement

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My interests in statistical and epidemiologic methods have been fostered through growing collaborative partnerships. My methodologic research focuses on the efficient and pragmatic design and implementation of population-based trials, including both observational and randomized designs as well as in causal inference in observational settings. Over the past 6 years, I have developed a strong collaborative record as a biostatistician, and maintained a line of primary research that compliments the methodologic challenges in these collaborations. I have expanded my research interests and expertise to include work in design and inference of randomized and non-randomized population based trials. I have experience in the design of pragmatic trials, expertise in developing and applying statistical methods in adaptive trials and in the use of causal inference methods for non-randomized trials. My methods work has been funded by several NIH grants including *R01CA097375 Luteal Adjuvant Oophorectomy in Asian Breast Cancer*, and *The Ohio State University Clinical and Translational Science Award*. My experience in statistical and data coordination for several large observational and clinical trials (NIH P50 and R01 & PCORI grants) has informed these methodologic contributions and developments. I serve as principal investigator (PI) or site PI for five federally funded federal grants, including being MPI on a community focused randomized trial (the Prenatal Trip Assistance Project, Rides4Baby), Co-I/Site PI on an ongoing patient choice surgical trial (PI: Minneci) and Co-I/Site PI on a multi-site observational study (PI: J. Slaughter). These collaborations have included strong relationships with investigators in the Department of Obstetrics and Gynecology, Pediatrics, and the Women's Health Initiative Midwest regional center and Cancer Population Health.

A continued area of interest has been in population and epidemiologic study design. As a PhD student, I was involved with a small team of epidemiologists and biostatisticians working to improve methods in group-randomized trials. These experiences informed my future PhD work in developing causal inference and propensity score methods. While the majority of my previous research investigated methodologies applied to cancer patient populations, these techniques and methodologies have been applicable to numerous research areas. As examples of areas of application, investigation to improve design and inference of group-randomized designs and inference were developed as part of a collaboration in a large programmatic grant to investigate and combat the high rates of cervical cancer in Appalachian communities. In studying treatments for recurrent preterm birth, we have developed extensions to propensity score methodology for time to event outcomes in observational data. As part of a research team investigating rehabilitation treatments for patients with traumatic brain injury, we detail and explore use of propensity score methodology to improve inference in a large observational cohort.

Since 2014 I have led a group of (6-8 MS and Ph.D. level) statisticians in the Center for Biostatistics who focus on research applications and methodology in Population Health. As leader of the Population Studies group, I manage and mentor the team, lead group meetings that provide continued education and exposure to relevant topics in biostatistics and collaboration, and maintain and monitor funding for each staff scientist and am involved in new hiring and onboarding. Consistently, our group is well funded. In 2018, one member transitioned to a tenure track position in the Department of Biomedical Informatics after the award of an NIH R21 grant. Another member was promoted to manage our department Data Core in 2018. In 2019, two members were promoted, and we have hired a new research scientist.

Moreover, I have worked to develop a cross-disciplinary research team, with expertise in maternal and child health epidemiology and applied biostatistical methods (<https://u.osu.edu/osumch/>). In this time, I have led an agreement between the Center for Biostatistics and the Department of Obstetrics and Gynecology that covers approximately 0.5 FTE of biostatistics effort. Given this long collaboration with faculty, fellows and residents from Obstetrics and Gynecology, in 2019 I was appointed to the faculty in Obstetrics and Gynecology. As previously mentioned, these efforts have led to the award of funds, as PI, to conduct a community based clinical trial for expectant women on Medicaid. These funds support the salary for: the PI's E. Hade & C. Lynch, 3 full time research assistants, 3 summer students, one full time GRA, and 40% FTE

biostatistician and 10% FTE for a data manager for approximately 2 ½ years. This collaboration (*Prenatal Trip Assistance Project*) with the City of Columbus, as part of SmartColumbus Initiative, is funded by the Department of Transportation. Further collaboration in perinatal epidemiology and applied biostatistical methods has developed with investigators from the Department of Pediatrics, College of Medicine and Nationwide Children's Hospital (PIs: Drs. P Gabbe, M. Klebanoff, J. Slaughter, C. Backes). As of July 2019, we have three funded NICHD grants where I serve as the site PI (R03: M. Klebanoff, R03: J. Slaughter, R01: J. Slaughter/C. Backes). Finally, I lead the biostatistics and data coordination team for a large (>1000 participant) patient choice surgical trial (PI: Minneci) funded by PCORI that is due to be completed next year.

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## Honors, Awards, Scholarships

- Statistical Society of Canada Travel Award, May 2020
  - NIH Travel Award, ENAR Junior Biostatisticians in Health Research, March 2017
  - Dean's list, Rutgers College 1994-1998
  - Golden Key Honor Society, 1996-1998
  - NJ State Scholar, 1994-1998
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## Peer Reviewed Articles (H-index: 25)

*^co-first author*

*\* Senior/author methodologist with substantial contribution*

*\*\* Junior biostatistician mentee*

1. Hebert C, Gao Y, Rahman P, Dewart C, Lustberg M, Pancholi P, Stevenson K, Shah N, **Hade EM**. Prediction of antibiotic susceptibility for urinary tract infection in a hospital setting. *Antimicrob Agents Chemother*. 2020 Apr 20;. doi: 10.1128/AAC.02236-19. [Epub ahead of print] PubMed PMID: 32312778
2. Park A, Ambrogio K, **Hade EM\***. Randomized pilot trial for the efficacy of the MMF07 foot massager and heat therapy for restless legs syndrome. *PLoS One*. 2020;15(4):e0230951. doi: 10.1371/journal.pone.0230951. eCollection 2020. PubMed PMID: 32240228.
3. Reynolds TS, Lynch CD, **Hade EM\***, Allain DC, Westman JA, Toland AE. Maternal age at delivery and fertility of the next generation. *Paediatr Perinat Epidemiol*. 2020 Mar 9;. doi: 10.1111/ppe.12666. [Epub ahead of print] PubMed PMID: 32150298.
4. Paskett ED, Pennell ML, Ruffin MT, Weghorst CM, Lu B, **Hade EM**, Peng J, Bernardo BM, Wewers ME. A Multi-level Model to Understand Cervical Cancer Disparities in Appalachia. *Cancer Prev Res (Phila)*. 2020 Mar;13(3):223-228. doi: 10.1158/1940-6207.CAPR-19-0239. PubMed PMID: 32132116; PubMed Central PMCID: PMC7080299.
5. Knobloch TJ, Peng J\*\*, **Hade EM**, Cohn DE, Ruffin MT 4th, Schiano MA, Calhoun BC, McBee WC Jr, Lesnock JL, Gallion HH, Pollock J, Lu B, Oghumu S, Zhang Z, Sears MT, Ogbemudia BE, Perrault JT, Weghorst LC, Strawser E, DeGraffinreid CR, Paskett ED, Weghorst CM. Inherited alterations of TGF beta signaling components in Appalachian cervical cancers. *Cancer Causes Control*. 2019 Oct;30(10):1087-1100. doi: 10.1007/s10552-019-01221-y. Epub 2019 Aug 21. PubMed PMID: 31435875; PubMed Central PMCID: PMC6768402
6. **Hade EM**, Nattino, G, Frey H, Lu B. Propensity Score Matching with Time-varying Covariates for Observational Survival Data. *Stat Methods Med Res*. 2019 Oct 1; 962280219877908. doi: 10.1177/0962280219877908. [Epub ahead of print] PubMed PMID: 31571522.

7. **Hade EM**, Bogner J, Corrigan JD, Horn SD, Peng J\*\*. Comparative Effectiveness of Inpatient Rehabilitation Interventions for Traumatic Brain Injury (TBI-CER): Introduction. *Arch Phys Med Rehabil.* 2019 Oct;100(10):1986-1989. doi: 10.1016/j.apmr.2019.04.007. PubMed PMID: 31561814.
8. **Hade EM**, Young G, Love RR. Follow up after sample size re-estimation in a breast cancer trial for disease free survival. *Trials.* 2019 Aug 23;20(1):527. doi: 10.1186/s13063-019-3632-9. PubMed PMID: 31443726; PubMed Central PMCID: PMC6708130.
9. Slaughter JL, Cua CL, Notestine JL, Rivera BK, Marzec L, **Hade EM**, Maitre NL, Klebanoff MA, Ilgenfritz M, Le VT, Lewandowski DJ, Backes CH. Early prediction of spontaneous Patent Ductus Arteriosus (PDA) closure and PDA-associated outcomes: a prospective cohort investigation. *BMC Pediatr.* 2019 Sep 13;19(1):333. doi: 10.1186/s12887-019-1708-z. PubMed PMID: 31519154; PubMed Central PMCID: PMC6743099
10. Hatsu I, Gunther C, **Hade E\***, Vandergriff S, Slesnick N, Williams R, Bruno RS, Kennel J. Unaccompanied homeless youth have extremely poor diet quality and nutritional status. *Int J Adolesc Youth.* 2019; 24(3): 319-332. PMID: 31485095
11. Vetter MH, Smith B, Benedict J\*\*, **Hade EM\***, Bixel K, Copeland LJ, Cohn DE, Fowler JM, O'Malley D, Salani R, Backes FJ. Preoperative predictors of endometrial cancer at time of hysterectomy for endometrial intraepithelial neoplasia or complex atypical hyperplasia. *Am J Obstet Gynecol.* 2019. PMID: 31401259.
12. Minneci PC, **Hade EM\***, Lawrence AE, Saito JM, Mak GZ, Hirschl RB, Gadepalli S, Helmrath MA, Leys CM, Sato TT, Lal DR, Landman MP, Kabre R, Fallat ME, Fischer BA, Cooper JN, Deans KJ; Midwest Pediatric Surgery Consortium. Multi-institutional trial of non-operative management and surgery for uncomplicated appendicitis in children: Design and rationale. *Contemp Clin Trials.* 2019 Jun 26;83:10-17. doi: 10.1016/j.cct.2019.06.013. [Epub ahead of print] PMID:31254670
13. Bogner J, **Hade EM^**, Peng J\*\*, Beaulieu CL, Horn SD, Corrigan JD, Hammond FM, Dijkers MP, Montgomery E, Gilchrist K, Biuffrida C, Lash A, Timpson M. Family Involvement in Traumatic Brain Injury Inpatient Rehabilitation: A Propensity Score Analysis of Effects on Outcomes during the First Year after Discharge. *Archives of Physical Medicine and Rehabilitation.* 2019 May 9. pii: S0003-9993(19)30301-6. doi: 10.1016/j.apmr.2019.04.008. [Epub ahead of print] PMID: 31077646
14. Bogner J, **Hade EM^**. Comparative effectiveness of Rehabilitation Interventions for Traumatic Brain Injury. Patient Centered Outcomes Research Institute. *Feb 2019.*
15. Buchanan L, Bushroe K, Malthaner L, McCarthy T, Zhao S\*\*, **Hade E\***, Leonard JC. Test Accuracy of the Screening Tool for Early Predictors of Post-traumatic Stress Disorder for Post-injury Mental Health in a Managed-Medicaid Population. *J Pediatr.* 2019 Jul;210:127-133. doi: 10.1016/j.jpeds.2019.03.016. Epub 2019 May 2. PMID: 31056203
16. Hutchcraft ML, Smith B, McLaughlin EM\*\*, **Hade EM\***, Backes FJ, O'Malley DM, Cohn DE, Fowler JM, Copeland LJ, Salani R. Conization pathologic features as a predictor of intermediate and high risk features on radical hysterectomy specimens in early stage cervical cancer. *Gynecol Oncol.* 2019 May;153(2):255-258. doi: 10.1016/j.ygyno.2019.01.026. Epub 2019 Feb 2. PubMed PMID: 30718123.
17. Smith PE, **Hade EM\***, Tan Y\*\*, Pandya LK, Hundley AF, Hudson CO. Mode of anesthesia and major perioperative outcomes associated with vaginal surgery. *Int Urogynecol J.* 2019 Mar 12;. doi: 10.1007/s00192-019-03908-x. [Epub ahead of print] PubMed PMID: 30863946.

18. Pandya LK, McLaughlin EM\*\*, Hudson CO, Nekkanti S, Smith PE, **Hade EM\***, Hundley AF. Utility of Preoperative Laboratory Testing in Women Undergoing Suburethral Sling. *Female Pelvic Med Reconstr Surg*. 2019 Mar/Apr;25(2):99-104. doi: 10.1097/SPV.0000000000000664. PubMed PMID: 30807408.
19. Beaulieu CL, Peng J\*\*, **Hade EM\***, Corrigan JD, Seel RT, Dijkers MP, Hammond FM, Horn SD, Timpson ML, Swan M, Bogner J. Level of Effort and 3 Hour Rule Compliance. *Arch Phys Med Rehabil*. 2019 Feb 20;. doi: 10.1016/j.apmr.2019.01.014. [Epub ahead of print] PubMed PMID: 30796920.
20. Bogner J, Dijkers M, **Hade EM\***, Beaulieu C, Montgomery E, Giuffrida C, Timpson M, Peng J\*\*, Gilchrist K, Lash A, Hammond FM, Horn SD, Corrigan JD. Contextualized Treatment in Traumatic Brain Injury Inpatient Rehabilitation: Effects on Outcomes During the First Year After Discharge. *Arch Phys Med Rehabil*. 2019 Feb 1;. doi: 10.1016/j.apmr.2018.12.037. [Epub ahead of print] PubMed PMID: 30716280.
21. Timpson M, **Hade EM\***, Beaulieu C, Horn SD, Hammond FM, Peng J\*\*, Montgomery E, Giuffrida C, Gilchrist K, Lash A, Dijkers M, Corrigan JD, Bogner J. Advanced Therapy in Traumatic Brain Injury Inpatient Rehabilitation: Effects on Outcomes During the First Year after Discharge. *Arch Phys Med Rehabil*. 2018 Dec 19;. doi: 10.1016/j.apmr.2018.11.015. [Epub ahead of print] PubMed PMID: 30578774.
22. Rosenbaum AJ, Smith RM\*\*, **Hade EM\***, Gupta A, Yilmaz A, Cackovic M. Use and experiences with external fetal monitoring devices among obstetrical providers. *J Matern Fetal Neonatal Med*. 2018 Dec 12;:1-6. doi: 10.1080/14767058.2018.1548604. [Epub ahead of print] PubMed PMID: 30541361; NIHMSID:NIHMS1520174.
23. Jacobson LT, **Hade EM\***, Collins TC, Margolis KL, et al. Breastfeeding History and Risk of Stroke Among Parous Postmenopausal Women in the Women's Health Initiative. *J Am Heart Assoc*. 2018;7:e008739. DOI: 10.1161/JAHA.118.008739
24. Cho YI, Irby DJ, Li J, Sborov DW, Mould DR, Badawi M, Dauki A, Lamprecht M, Rosko AE, Fernandez S, **Hade EM**, Hofmeister CC, Poi M, Phelps MA. Pharmacokinetic-Pharmacodynamic Model of Neutropenia in Patients with Myeloma Receiving High Dose Melphalan for Autologous Stem Cell Transplant. *CPT Pharmacometrics Syst Pharmacol*. 2018 Oct 20. PMID: 30343510
25. ElNaggar AC, **Hade EM\***, O'Malley DM, Liang MI, Copeland LJ, Fowler JM, Salani R, Backes FJ, Cohn DE. Time to chemotherapy in ovarian cancer: Compliance with ovarian cancer quality indicators at a National Cancer Institute-designated Comprehensive Cancer Center. *Gynecol Oncol*. 2018 Sep 30.
26. Swoboda CM, Benedict JA\*\*, **Hade E\***, McAlearney AS, Huerta TR. Effectiveness of an infant mortality prevention home-visiting program on high-risk births in Ohio. *Public Health Nurs*. 2018 Sep 27.
27. Rosko AE, **Hade EM\***, Li W, Ing S, Jackson RD, Paskett ED, Naughton MJ. Bone Health and Survival in Women with Multiple Myeloma. *Clin Lymphoma Myeloma Leuk*. 2018 Jun 8.
28. Patterson EW, Dewart C, Stevenson K, Mbodj A, Lustberg M, **Hade EM**, Hebert C. A Mixed Methods Approach to Tailoring Evidence Based Guidance for Antibiotic Stewardship to One Medical System. *Proc Int Symp Hum Factors Ergon Healthc*. 2018 Jun. PMID: 30046637.
29. Dewart CM\*\*, Gao Y, Rahman P, Mbodj A, **Hade EM\***, Stevenson K, Hebert CL. Penicillin allergy and association with ciprofloxacin coverage in community onset urinary tract infection. *Infect Control Hosp Epidemiol*. 2018 Jul 23. PMID: 30033886
30. Bushroe KM, **Hade EM\***, McCarthy TA, Bridge JA, Leonard JC. Mental Health after Unintentional Injury in a Pediatric Managed-Medicaid Population. *J Pediatrics*. April 2018. PMID: 29747938
31. Vetter MH, Palettas M\*\*, **Hade E\***, Fowler J, Salani R. Time to consider integration of a formal robotic-assisted surgical training program into obstetrics/gynecology residency curricula. *J Robot Surg*. 2017 Dec 28. doi: 10.1007/s11701-017-0775-0. [Epub ahead of print] PMID: 29285654

32. Rossfeld K, **Hade EM\***, Gangi A, Perez M, Kinsey EN, Grabska J, Ederle A, Zager J, Salama A, Olencki TE, Beasley GM. Metastatic melanoma patients' sensitivity to ipilimumab cannot be predicted by tumor characteristics. *Int J Surg Onc.* 2017.
33. Brook M, Christian L, **Hade EM\***, Ruffin M. The Effect of Perceived Stress on Epstein-Barr Virus Antibody Titers in Appalachian Ohio Women. *Neuroimmunomodulation.* 2017 Sept22. PMID 28934729.
34. McAlearney AS, Hefner JL, Sieck CJ, Walker DM, Aldrich AM, Sova LN, Gaughan AA, Slevin CM, Hebert C, **Hade EM**, Buck J, Grove M, Huerta TR. Searching for management approaches to reduce HAI transmission (SMART): a study protocol. *Implement Sci.* 2017 Jun; 12(1): 82. PMID:28659159 PMCID: [PMC5490089](#)
35. Sborov DW, Cho YK, Cottini F, **Hade EM**, Lamprechet M, Tackett K, Sharma N, Williams N, Li J, Devine S, Poi M, Phelps AM, Hofmeister C. G-CSF improves safety when you start the day after autologous transplant in Multiple Myeloma. *Leuk Lymphoma.* 2017 Dec;58(12): 2947-2951 PMID 28509594
36. Tzilos Wernette, Golfo, **Hade, EM\***, Ruffin IV, Mack, D. Paskett, Electra. (2017). Correlates of Risky Alcohol Use Among Women From Appalachian Ohio. *Journal of Rural Mental Health.* 10.1037/rmh0000067. PMID: 29085525
37. Sborov DW, Canella A, **Hade EM\***, Mo X, Khountham S, Wang J, Ni W, Poi M, Coss C, Liu Z, Phelps MA, Mortazavi A, Andritsos L, Baiocchi RA, Christian BA, Benson DM, Flynn J, Porcu P, Byrd JC, Pichiorri F, Hofmeister CC. A phase 1 trial of the HDAC inhibitor AR-42 in patients with multiple myeloma and T- and B-cell lymphomas. *Leuk Lymphoma.* 2017 Mar 7:1-9. doi: 10.1080/10428194.2017.1298751. [Epub ahead of print] PubMed PMID: 28270022.
38. Hatsu I, **Hade E\***, Campa A. Food Security Status is Related to Mental Health Quality of Life Among Persons Living with HIV. *AIDS Behav.* 2017 Mar;21(3):745-753. doi: 10.1007/s10461-016-1573-9. PubMed PMID: 27699597; PubMed Central PMCID: PMC5303547.
39. Cho YK, Sborov DW, Lamprecht M, Li J, Wang J, **Hade EM**, Gao Y, Tackett K, Williams N, Benson DM, Efebera YA, Rosko AE, Devine SM, Poi M, Hofmeister CC, Phelps MA. Associations of high-dose melphalan pharmacokinetics and outcomes in the setting of a randomized cryotherapy trial. *Clin Pharmacol Ther.* 2017 Feb 4. doi: 10.1002/cpt.644. [Epub ahead of print] PubMed PMID: 28160288.
40. Page SJ, **Hade EM\***, Peng J\*\*. Retention of the spacing effect with mental practice in hemiparetic stroke. *Exp Brain Res.* 2016 Oct;234(10):2841-7. doi: 10.1007/s00221-016-4686-5. Epub 2016 Jun 7. PubMed PMID: 27271870; PubMed Central PMCID: PMC5026896.
41. Billingsley CC, Cohn DE, Mutch DG, **Hade EM\***, Goodfellow PJ. Prognostic Significance of POLE Exonuclease Domain Mutations in High-Grade Endometrioid Endometrial Cancer on Survival and Recurrence: A Subanalysis. *Int J Gynecol Cancer.* 2016 Jun;26(5):933-8. doi: 10.1097/IGC.0000000000000681. PubMed PMID: 26937754; PubMed Central PMCID: PMC4874836.
42. Love RR, Hossain SM, Hussain MM, Mostafa MG, Laudico AV, Siguan SS, Adebamowo C, Sun JZ, Fei F, Shao ZM, Liu Y, Akram Hussain SM, Zhang B, Cheng L, Panigaro S, Walta F, Chuan JH, Mirasol-Lumague MR, Yip CH, Navarro NS Jr, Huang CS, Lu YS, Ferdousy T, Salim R, Akhter C, Nahar S, Uy G, Young GS, **Hade EM**, Jarjoura D. Luteal versus follicular phase surgical oophorectomy plus tamoxifen in premenopausal women with metastatic hormone receptor-positive breast cancer. *Eur J Cancer.* 2016 Jun;60:107-16. doi: 10.1016/j.ejca.2016.03.011. Epub 2016 Apr 20. PubMed PMID: 27107325; PubMed Central PMCID: PMC5052674.

43. Backes FJ, Walker CJ, Goodfellow PJ, **Hade EM\***, Agarwal G, Mutch D, Cohn DE, Suarez AA. Estrogen receptor-alpha as a predictive biomarker in endometrioid endometrial cancer. *Gynecol Oncol*. 2016 May;141(2):312-7. doi: 10.1016/j.ygyno.2016.03.006. Epub 2016 Mar 10. PMID: 26957478
44. Harshman SW, Canella A, Ciarlariello PD, Agarwal K, Branson OE, Rocci A, Cordero H, Phelps MA, **Hade EM**, Dubovsky JA, Palumbo A, Rosko A, Byrd JC, Hofmeister CC, Benson DM Jr, Paulaitis ME, Freitas MA, Pichiorri F. Proteomic characterization of circulating extracellular vesicles identifies novel serum myeloma associated markers. *J Proteomics*. 2016 Mar 16;136:89-98. doi: 10.1016/j.jprot.2015.12.016. Epub 2016 Jan 13. PMID: 26775013
45. Villalona-Calero MA, Lam E, Otterson GA, Zhao W, Timmons M, Subramaniam D, **Hade EM**, Gill GM, Coffey M, Selvaggi G, et al. Oncolytic reovirus in combination with chemotherapy in metastatic or recurrent non-small cell lung cancer patients with KRAS-activated tumors. *Cancer*. 2015 Dec 28. doi: 10.1002/cncr.29856. [Epub ahead of print] PubMed PMID: 26709987.
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47. Bonny AE, Lange HL, **Hade EM\***, Kaufman B, Reed MD, Mesiano S. Serum adipocytokines and adipose weight gain: a pilot study in adolescent females initiating depot medroxyprogesterone acetate. *Contraception*. 2015 Jun 10. PMID: 26071674
48. Billingsley CC, Jacobson SN, Crafton SM, Crim AK, Li Q, **Hade EM\***, Cohn DE, Fowler JM, Copeland LJ, Salani R, Backes FJ, O'Malley DM. Evaluation of the Hematologic Safety of Same Day Versus Standard Administration (24- to 72-Hour Delay) of Pegfilgrastim in Gynecology Oncology Patients Undergoing Cytotoxic Chemotherapy. *Int J Gynecol Cancer*. 2015 Sep;25(7):1331-1336. PMID: 26067861
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51. Liang MI, Rosen MA, Rath KS, **Hade EM\***, Clements AE, Backes FJ, Eisenhauer EL, Salani R, O'Malley DM, Fowler JM, Cohn DE. Predicting Inpatient Stay Lasting Two Midnights or More after Robotic Surgery for Endometrial Cancer. *J Minim Invasive Gynecol*. 2015 Jan 5. PMID 25573182
52. Hofmeister CC, Williams N, Geyer S, **Hade EM**, Bowers MA, Earl CT, Vaughn J, Bingman A, Humphries K, Lozanski G, Baiocchi RA, Jaglowski SM, Blum K, Porcu P, Flynn J, Penza S, Benson DM, Andritsos LA, Devine SM. A Phase 1 study of Vorinostat Maintenance after Autologous Transplant in High Risk Lymphoma. *Leuk Lymphoma*. 2014 Sep 11:1-16. PMID: 25213183

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56. Turner KR, Fisher EC, **Hade EM\***, Houle TT, Rocco MV. The role of perioperative sodium bicarbonate infusion affecting renal function after cardiothoracic surgery. *Front Pharmacol.* 2014 Jun 2;5:127. doi: 10.3389/fphar.2014.00127. eCollection 2014. PMID: 24917818
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## Books

1. Paul S. Levy, Stanley Lemeshow, **Erinn M. Hade**, Amy K. Ferketich. *Sampling of Populations Solutions Manual: Methods and Applications*. John Wiley & Sons, February 2009.

## Peer-Reviewed Book Chapters

1. **Erinn M. Hade**, Stanley Lemeshow. Probability Sample. *The Encyclopedia of Survey Research Methods*. November 2008.

## Book Reviews

1. **Erinn M. Hade** (2005). A book review of M. Palta (2003). *Quantitative Methods in Population Health: Extensions of Ordinary Regression*, Wiley, NY. *Journal of the American Statistical Association*, Vol. 100

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## Grants and Contract Awards

As a collaborative biostatistician (co-I), I submit numerous extramural grant awards each year (8-10). More recently, I have submitted larger grants as a principal investigator (PI and MPI). In 2019-2020 I submitted three grants to NIH as PI or MPI. These included two U24 awards and one R01:

- *Percutaneous intervention versus observational trial of arterial ductus in low weight infants (PIVOTAL)* (DCC PI: Hade)
- *Comparing treatment approaches to promote inpatient rehabilitation effectiveness for traumatic brain injury (CARE 4 TBI)* (MPI: Bogner, Hade, Beaulieu)
- *Increasing the validity and generalizability of studies with Internet based recruitment* (R01 MPI: Lynch, Hade).

*This grant was a re-submission of a well-scored, but not funded, R21 (32 at NLM).*

In the coming year, I plan to re-submit the R01 (June 2020) and develop another R or U award with Dr. Lynch as a follow up to our current funding with our pregnancy cohorts. Dr. Hebert and I will further develop a competitive renewal for the current R01 funding, to be submitted in 2020.

## Active Research Support

- NICHD: Do short inter-pregnancy intervals really cause adverse pregnancy outcomes (R03)  
Klebanoff M (PI) 7/1/2019–6/30/2021

**Role:** Site PI & Biostatistician. I am the primary methodologist/biostatistician on this NIH award, which supports only the PI (Mark Klebanoff) and me.

- Smart Columbus (DOT) - Prenatal Trip Assistance Project Hade EM/Lynch CD (MPI)  
10/1/2018-12/31/2020

**Role:** PI. I am the co-leader, with Courtney Lynch, on this community based randomized trial. I lead the methods core, and Dr. Lynch leads the clinical core.

- NICHD: Early prediction of Spontaneous Patent Ductus Arteriosus (PDA) Closure and PDA associated Outcomes (R01)  
Slaughter J (PI) 1/1/2019–12/31/2023

**Role:** Site PI & Core leader. I am the primary methodologist/biostatistician on this NIH award. This project supports me and a junior biostatistician, plus the clinical team at our partner institution.

- NICHD: Comparative effectiveness of diuretics and inhaled corticosteroids for bronchopulmonary dysplasia in preterm infants (R03)  
Slaughter J (PI) 8/1/2017–7/31/2019 (NCE)  
**Role:** Site PI & Biostatistician. I am the primary methodologist/biostatistician on this award, which supports my time and one junior biostatistician.
- NCI: A pooled analysis of dietary long-chain omega-3 fatty acid intake and endometrial cancer risk (R03).  
Brasky T (PI) 8/1/2017-7/31/2019 (NCE)  
**Role:** Co-Investigator & Biostatistician. I am the primary methodologist/biostatistician on this award.
- NIH: Automation and Multi-site Validation of a Personalized Empiric Antibiotic Advisor.  
Hebert, C (PI) 5/1/2015-4/30/2020  
**Role:** Co-Investigator & Biostatistician. I am the primary methodologist/biostatistician on this award. In years 2-4 I supervised two GRAs in data analysis.
- NCRR Clinical and Translational Science Award.  
Jackson RD (PI) 5/1/2018-4/30/2023  
**Role:** Co-Investigator & Biostatistician. In this support grant, I work to develop education programs for the medical center community, related to research design and analysis.
- NHLBI Women's Health Initiative Regional Field Center Program.  
Jackson RD (PI) 10/1/2015-9/30/2019  
**Role:** Co-Investigator & Biostatistician. I am the senior biostatistician for the WHI Midwest regional center. We work to develop proposals and analyze data with investigators from the Midwest region.
- PCORI: a people-centered mid-Atlantic research network.  
McTigue, K (PI, UPitt) 4/1/2019-3/31/2022  
**Role:** Co-Investigator. As part of the PATH PCORI network, we work to facilitate research within and across the PCORnet.

### ***Completed Research Grants (last 5 years)***

- PCORI: Multi-institutional trial of non-operative management of uncomplicated pediatric appendicitis (CER-1507-31325).  
Minneci P (PI) 8/1/2016–11/30/2019  
**Role:** Site PI & Core leader. I am the primary methodologist/biostatistician on this PCORI award. I lead a team of a data manager and junior biostatistician.
- PCORI: Learning Health System.  
Role: Co-Investigator Roger V (PI, Mayo Clinic)  
9/1/2015-8/31/2018
- NCI Comprehensive Cancer Center Support Grant - Biostatistics Core Shared Resource.  
Role: Co- Investigator & Biostatistician Pollock, R (PI)  
12/1/2015-11/30/2020
- PCORI Comparative effectiveness of rehabilitation interventions for traumatic brain injury.  
Role: Co-Investigator & Biostatistician Bogner J (PI)  
1/1/2015 – 6/30/2018

- NCI: Overcoming IMiD resistance in myeloma (R01 CA201382). Hofmiester C (PI)  
Role: Co-Investigator & Biostatistician 8/1/2016-7/31/2018
- NCI: Reolysin based combination therapy in relapsed multiple myeloma (R01 CA194742). Hofmiester C (PI)  
Role: Co-Investigator & Biostatistician 9/1/2016-8/31/2018
- NCI SPORE The Ohio State University and MD Anderson Cancer Center Thyroid Cancer SPORE. Ringel, M(PI)  
Role: Biostatistician 09/27/2013-09/30/2018
- 2015 Ohio Medicaid Assessment Survey: Health Status, Access to Health Care and Utilization of Health Care: A Determinants of Health Perspective. Raiz L (PI)  
Role: Co-Investigator & Biostatistician 10/1/2015-6/30/2016
- NCI: Reducing cervical cancer in Appalachia. Paskett E (PI)  
Role: Co-Investigator & Biostatistician 4/01/2010-3/31/2015 (+1 year NCE through 3/31/16)
- NCI: Mast cells and immunosuppression in skin cancer. Wilgus, T(PI)  
Role: Co-Investigator & Biostatistician 8/2012-9/2015
- NCI: Luteal adjuvant oophorectomy in Asian breast cancer. Love R (PI)  
Role: Co-Investigator & Biostatistician 5/1/2009-12/31/2014
- NIH: Feasibility of an Internet-based fertility and early pregnancy study in the U.S. Lynch, CD (PI)  
Role: Co-Investigator & Biostatistician 8/2012-7/2014

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## Oral Presentations

- Organizer & Talk: Invited Session: *Propensity Score Propensity Score Matching with time-varying covariates for observational survival data: An application to 17-P treatment in patients with recurrent preterm birth*. Statistical Society of Canada, May 2020. Cancelled due to Covid-19 **(invited)**.
- Organizer & Talk: Invited Session: *Follow up after sample size re-estimation for disease free survival*. Society for Clinical Trials, May 2020. Rescheduled to webinar later this year due to Covid-19 **(invited)**.
- Organizer & Talk: Topic Contributed Session: *Propensity Score Matching with Time-varying Covariates: An Application in the Prevention of Recurrent Preterm Birth and treatment timing*. ENAR, March 2020. Virtual conference **(topic contributed)**.
- Washington State University, Institute for Research and Education to Advance Community Health. December 2019. *Design and Methods in Community Health Research* **(invited)**.
- NYU School of Medicine, Department of Population Health, Division of Biostatistics October 2019. *Propensity Score Propensity Score Matching with time-varying covariates for observational survival data: An application to 17-P treatment in patients with recurrent preterm birth* **(invited)**.
- McGill University, Department of Epidemiology, Biostatistics, Occupational Health, Montreal, Canada. February 2019. *Propensity Score Propensity Score Matching with time-varying covariates for observational survival data: An application to 17-P treatment in patients with recurrent preterm birth* **(invited)**.

- Organizer & Talk: Topic Contributed Session: *Epidemiologic methods for the re-use of existing data*. JSM, August 2018. Vancouver, CA **(topic contributed)**.
- *Accounting for bias due to selective participation, attrition and confounding in an internet based pilot study of fecundity*. SPER, June 2017. Seattle, WA (poster)
- ENAR. Atlanta, Georgia. March 2018. *Using data to defeat antibiotic resistance* **(invited)**.
- Nationwide Children's Hospital. Columbus, Ohio. April 2016. *Follow up after sample size re-estimation in a breast cancer trial for time to recurrence*. Division of Adolescent Medicine **(invited)**.
- Division of Biostatistics, College of Public Health, The Ohio State University. Columbus, Ohio. November 2015. *Follow up after sample size re-estimation in a breast cancer trail for time to recurrence* **(invited)**.
- Session Chair - Topic Contributed Session: *Strategies for the Recruitment, Retention, and Successful Career Development of the Collaborative Biostatistician in an Academic Health Center*. JSM, August 2015. Seattle, WA **(topic contributed)**.
- Annual Ohio ACCN Research Seminar. May 2015. Columbus, Ohio. *CARE II Project 3: HPV Immunization Response and Stress (HIRS)* **(invited)**.
- *Safety Monitoring in a Pediatric Patient Choice Trial*. ENAR, March 2017. Washington, DC (poster).
- Improving Treatment Effect Estimation In the Presence of Treatment Delay through Triplet Matching, ENAR, March 2015, Miami, FL **(contributed)**.
- CTSA The Ohio State University. February 2014. Design and Methods for Community Engaged Research **(invited)**.
- CTSA Data and Safety Monitoring Working Group. The Ohio State University, March 2014. Introduction to Statistical Approaches to Data Monitoring in Clinical Trials **(invited)**.
- Annual Conference of the Americas Association of Sarcoidosis and Other Granulomatous Disorders. September 2014. Columbus, Ohio. *Challenges relating to the design of clinical trials for rare diseases* **(invited)**.
- *Follow up after sample size re-estimation in a time to event trial*, Clinical Trials Methodology Conference, Edinburgh, Scotland, November 2013 **(invited)**
- *Sample Size Re-Estimation in an Adjuvant Cancer Trial*, Joint Statistical Meetings, Denver, CO, August 2008 **(contributed)**
- *Sample Size Re-estimation for Time to Event Studies*, Joint Statistical Meetings, Seattle, WA, August 2006 **(contributed)**
- The Ohio Lead Advisory Committee, The Ohio Department of Health, April 2003. *Summary of the Lead Model of Census Tracts at High Risk for Elevated Blood Lead in Children under Six Years Old: 2000 Census and 2001 Blood Lead Data* **(invited)**.

## Professional Activities

### National Service

#### **Review panels and Study Sections**

- National Academies of Sciences, Engineering and Medicine, March 24, 2020 – December 18, 2020.
  - Committee to Review Monograph (No.1) of the Department of Veterans Affairs on the Potential Effects of Service and Emotional Support Dogs on Post-Traumatic Stress Disorder
- NIH 2020/05 ZDK1 GRB-K (M1) Ad-hoc reviewer
  - Consortium for the Study of Chronic Pancreatitis, Diabetes, And pancreatic Cancer Clinical Centers Special Emphasis Panel, April 2020
- NIH/NICHD Ad-hoc reviewer
  - Non-invasive Diagnostics to Improve Gynecologic Health (R43/R44), July 2018

### **Data safety Monitoring Committees**

- Data Safety Monitoring Board: Multi-Dose Depot Medroxyprogesterone Acetate Study (PI: A. Bonny, 2012-2014)
- Data Safety Monitoring Board: Neonatal Esophagus and Airway Interaction in Health and Disease (5P01DK068051-10): Mechanisms and Management of Infant Dysphagia (PI: S. Jadcherla, 2015-present)

### **National Organizing and Conference Activities**

- Ohio Joint Biostatistics Symposium Organizing Committee. 2018, 2019, 2020
- Society for Clinical Trials 2020 (*cancelled due to COVID-19*): Invited Session organizer: Sample size re-estimation: Reflections on implementation and extensions to complex designs.
- Statistical Society of Canada 2020 (*cancelled due to COVID-19*): Invited Session organizer: *Policies and politics: Statistical analyses of health outcomes in the real world.*
- International Conference on Health Policy Statistics 2020: Invited Session Chair. *Leveraging existing data on the opioid epidemic to quantify risk and inform policy.*
- Program committee: Society for Pediatric and Perinatal Epidemiologic Research Annual Meeting 2019
- Joint Statistical Meetings (JSM) 2018: Topic contributed session. *Epidemiologic methods for the re-use of existing data*
- ENAR 2018: Invited Session organizer. *Statistics and Informatics: Stronger Together.*
- JSM 2015: Topic Contributed Session Co-organizer. *Strategies for the Recruitment, Retention, and Successful Career Development of the Collaborative Biostatistician in an Academic Health Center.*

### **Professional Associations & Editorships**

2003-2009	Member, American Public Health Association
2002-present	Member, American Statistical Association
2005-present	Member, Biometric Society (ENAR)
2017-present	Member, Society for Pediatric and Perinatal Epidemiologic Research
2017-present	Member, Society for Epidemiologic Research
2018-present	Member, CTSA Biostatistics, Epidemiology & Research Design Special Interest Group
2019-present	Associate Editor in training, Journal of Paediatric and Perinatal Epidemiology

### **Journal Referee (in past 5 years):**

Paediatric and Perinatal Epidemiology, Journal of Clinical Epidemiology, Obstetrics and Gynecology, Preventive Medicine, Preventing Chronic Disease, Cancer, Contemporary Clinical Trials, BMJ Open, Statistics in Medicine, PLOS ONE, BMC Medical Research Methodology

### **University Service**

#### **Program Leader for Population Studies, Center for Biostatistics**

As leader of the Population Studies group in the Center for Biostatistics since 2014, I manage and provide mentorship to a team of biostatisticians who focus on research applications and methodology in Population Health. In this role, I lead group meetings, which provide continued education and exposure to topics of interest, and maintain and monitor funding and work load for each biostatistician. Finally, I conduct the yearly annual review with the Center Director. Our group currently consists of (1 junior faculty member, 1 PhD, 7 MS biostatisticians).

#### **College and Departmental Service**

- Department of Biomedical Informatics Leadership Council, 2020 - present

- Population Health Informatics and Biostatistics (PHIB) Lab co-leader 2019- present (<https://u.osu.edu/phib/>)
- Maternal and Child Health Research Group co-leader 2019- present (<https://u.osu.edu/osumch/>)
- College of Medicine Faculty Council, BMI alternate member, Spring 2019-present
- Program Leader for Population Studies: Center for Biostatistics, 2014-present
- Department of Obstetrics & Gynecology Fellowship research committee: 2018-present
- CCTS David Bremer grant reviews, Spring 2019, 2020
- OSU CCC Pelatonia Population Sciences grant reviewer, Spring 2018
- The Ohio State University Comprehensive Cancer Center Clinical Scientific Review Committee: (2007-2009, 2014- 2017)
- Co-Organizer: Department of Biomedical Informatics Seminar Series, 2016-2017, 2017-2018, 2018-2019

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## Teaching

### *The Ohio State University*

- Population Health Informatics and Biostatistics (PHIB) Lab Journal Club: Fall 2019, Spring 2020 (7 lectures each semester) (<https://u.osu.edu/phib/journal-club/>).
- PUBHBIO 7245: Spring 2017-2020 (1 lecture/year)
- PUBHEPI 6412: Fall 2017, Fall 2019 (1 lecture/year)
- BMI 7891: Fall 2018, Spring 2019 (co-taught with E. Mathé)
- Clinical Trials Workshop: May 2017, May 2018. Workshop organizer & lecturer
- OSU College of Medicine, FAMEPro Series: February 2017; October 2017-2019 (1 lecture/year)
- BMI 8193: Spring 2017 (2 credits w/ Stephanie Vandergriff, MS Human nutrition advisee).
- MPH program in Clinical Translational Science: Fall 2016 (1 lecture)
- GYN ONC Fellows lecture: February 2016 (Basic biostatistics lecture – 2 hrs)
- BMI 7891: Spring 2016 (1 lecture)
- BMI 5750: Summer 2015 (co-taught with A. Lai).
- COM 7670: Autumn 2014 (clinical trials lecture)
- Summer Program in Applied Statistical Methods: Survey Sampling short course, The Ohio State University, 2005. (Lab instructor)
- Summer Program in Applied Statistical Methods: Applied Survival Analysis short course, The Ohio State University, 2003-2005 (Lab instructor)
- Hematology/Oncology Fellows Lecture Series, OSU CCC. Basic Medical Statistics, September-October 2004.
- Hematology/Oncology Fellows Lecture Series, OSU CCC. Reporting Statistics in Medical Journals. May 2003.

### *Other*

- Biostatistics 503: Applications of Statistics to Health Sciences, Department of Biostatistics, University of Washington, June-August 2000 (Teaching assistant)
- Linear and Logistic Regression (co-taught with S. Lemeshow), Erasmus Summer Program, The Erasmus University, Rotterdam, The Netherlands, 2007.



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## Student Advising

### PhD

- Sara Conroy: Candidacy and PhD committee, GRA advisor. Division of Epidemiology, College of Public Health; Graduated December 2019. **Research Scientist in the Center for Biostatistics.**
- Christine Griffin: Candidacy and PhD committee. Division of Occupational Therapy, School of Health and Rehabilitation Sciences, College of Medicine (expected May 2020)
- Yuan Gao: Interdisciplinary Program in Biostatistics, College of Public Health. GRA co-advisor with C. Hebert.
- Brittney Bailey: Candidacy and PhD committee. Interdisciplinary Program in Biostatistics, College of Public Health; Graduated May 2018.
- Heather Tanksley: Candidacy and PhD committee, Division of Occupational Therapy, School of Health and Rehabilitation Sciences, College of Medicine. (on leave)
- Robert Bennett: PhD committee. College of Social Work; Graduated June 2017.

### MD

- Bradley Disbrow. Co-mentor (with Heather Hampel) MD Summer Research Experience. 2017.
- Benjamin Bazin. MD Summer Research Experience. 2019.

### MS/MPH

- Sarah Schlotter: MPH-BMI **advisor**. *Risk factors for Having an Unanticipated Hospitalization in Individuals with Developmental Disabilities*. May 2020.
- 
- Jordee Wells, MD MPH: committee member. December 2019.
- Julie Nemeth: MPH-Biostatistics committee member. May 2019
- Stephanie (Deering) Vandergriff: committee member, Human Nutrition Program, Department of Human Sciences, College of Education and Human Ecology. Graduated May 2017.
  
- Evan Morgan: MS- BMI advisor (expected May 2021)
- Sean Puscas: MS- BMI advisor (expected May 2021)
- Swati Sharma: MPH- BMI advisor (expected December 2020)