BIOGRAPHICAL SKETCH

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NAME: Zhou, Guohai

eRA COMMONS USER NAME (credential, e.g., agency login): gz085

POSITION TITLE: Associate Biostatistician and Instructor

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

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Sun Yat-sen University, Guangzhou, P.R. China	B.S	06/2010	Computational Science
University of Illinois Urbana-Champaign, Urbana-Champaign, USA	M.S	05/2012	Statistics
University of British Columbia, Vancouver, Canada	Ph.D.	12/2017	Statistics

A. Personal Statement

I am currently a biostatistician at the Center for Clinical Investigation at Brigham and Women's Hospital. I have completed rigorous doctorate level training on statistical methodology research. I have also accumulated extensive collaboration experiences in both observational and experimental studies with health care researchers from diverse backgrounds since 2013. My contributions to these collaborative efforts include sample size and power calculation, consultations on study design (such as the pros and cons of cross-over trial designs) and data management and analysis plans, and performing various types of statistical analysis (such as analysis for longitudinal data and survival data, evaluation of agreement and repeatability, and observational causal inference using Mendelian Randomization and propensity score based methods). In addition to being familiar with common supervised learning tools such as generalized linear models and random forests, and common unsupervised learning tools such as clustering analysis and principal component analysis, I also have expertise in advanced methods for missing data and semi-continuous data, and in adaptive clinical trial designs such as Phase I dose-finding trials.

B. Positions and Honors

Positions and Employment

2013–2016 Part-time Statistician, Pediatric Anesthesia Research Team, BC Canada
2016–2017 Biostatistician, Centre for Heart Lung Innovation, University of British Columbia, BC Canada
2017–2019 Statistician II, Yale School of Medicine, New Haven, CT
2019– Associate Biostatistician, Brigham and Women's Hospital, Boston, MA
2019– Instructor, Harvard Medical School, Boston, MA

Honors

2017 Rick White Award for excellence in applying statistical methods in collaborative studies, granted by the Department of Statistics at University of British Columbia

C. Contribution to Science

1. My biostatistical methodology research focuses on developing methods to more efficiently handle common data complexities arising from various real-world applications. For example, I extended the traditional one-sided tests to deal with problems involving missing data and semi-continuous data. I also developed a transformation of oxygen saturation to improve its utility as a predictor for clinical outcomes.
   a. Zhou, G., Wu, L., Brant, R. and Ansermino, J.M., 2017. A likelihood-based approach for multivariate one-sided tests with missing data. *Journal of Applied Statistics*, 44(11), pp.2000-2016.
   b. Zhou, G. and Wu, L., 2018. Modeling semicontinuous longitudinal data with order constraints. *Statistics in medicine*, 37(30), pp.4758-4770
   c. Zhou, G., Karlen, W., Brant, R., Wiens, M., Kissoon, N., Ansermino, J.M. 2019. A transformation of oxygen saturation (the saturation virtual shunt) to improve clinical prediction model calibration and interpretation. *Pediatric Research* in press

2. In addition to research on innovative biostatistical methods, I collaborated with pediatricians to a) build predictive models to improve the effectiveness and efficiency of pediatric care in resources-limited countries such as Bangladesh and Uganda, and b) apply and review several popular clinical trial design methods on dose-finding.
   a. Raihana, S., Dunsmuir, D., Huda, T., Zhou, G., Rahman, Q.S.U., Garde, A., Moinuddin, M., Karlen, W., Dumont, G.A., Kissoon, N. and El Arifeen, S., 2015. Development and internal validation of a predictive model including pulse oximetry for hospitalization of under-five children in Bangladesh. *PloS one*, 10(11), p.e0143213
   b. Lowlaavar, N., Larson, C.P., Kumbakumba, E., Zhou, G., Ansermino, J.M., Singer, J., Kissoon, N., Wong, H., Ndamira, A., Kabakyenga, J. and Kiwanuka, J., 2016. Pediatric in-hospital death from infectious disease in Uganda: derivation of clinical prediction models. *PloS one*, 11(3), p.e0150683.
   c. Garde, A., Zhou, G., Raihana, S., Dunsmuir, D., Karlen, W., Dekhordi, P., Huda, T., El Arifeen, S., Larson, C., Kissoon, N. and Dumont, G.A., 2016. Respiratory rate and pulse oximetry derived information as predictors of hospital admission in young children in Bangladesh: a prospective observational study. *BMJ Open*, 6(8), p.e011094.
   d. Dawes, J., Myers, D., Görges, M., Zhou, G., Ansermino, J.M. and Montgomery, C.J., 2014. Identifying a rapid bolus dose of dexmedetomidine (ED 50) with acceptable hemodynamic outcomes in children. *Pediatric Anesthesia*, 24(12), pp.1260-1267
   e. Görges, M., Zhou, G., Brant, R. and Ansermino, J.M., 2017. Sequential allocation trial design in anesthesia: an introduction to methods, modeling, and clinical applications. *Pediatric Anesthesia*, 27(3), pp.240-247

3. I also collaborated with respirologists on the discovery of genetic factors and biomarkers related to chronic obstructive pulmonary disease (COPD), as a first step to promote precision medicine for millions of COPD patients.
   a. Obeidat, M., Zhou, G., Li, X., Hansel, N.N., Rafaels, N., Mathias, R., Ruczinski, I., Beaty, T.H., Barnes, K.C., Paré, P.D. and Sin, D.D., 2018. The genetics of smoking in individuals with chronic obstructive pulmonary disease. *Respiratory Research*, 19(1), p.59
   b. Obeidat, M.E., Li, X., Burgess, S., Zhou, G., Fishbane, N., Hansel, N.N., Bosse, Y., Joubert, P., Hao, K., Nickle, D.C. and van den Berge, M., 2017. Surfactant protein D is a causal risk factor for COPD: results of Mendelian randomisation. *European Respiratory Journal*, 50(5), p.1700657.

4. I also collaborated with health policy researchers on improving the quality measures used in various accountability programs such as the Hospital Readmissions Reduction Program, as a first step to promote better quality of health care.
   a. Lloren, A., Liu, S., Herrin, J., Lin, Z., Zhou, G., Wang, Y., Kuang, M., Zhou, S., Farietta, T., McCole, K., Charania, S., Sheares, K., and Bernheim, S, 2019. Measuring hospital-specific disparities by dual eligibility and race to reduce health inequities. *Health services research*, 54, pp.243-254.
   b. Du, C., Zhou, G., and Li, S. 2019. “Evaluating Readmission - More Considerations on Both Model Assumptions and Results Interpretations” *JAMA internal medicine* in press.

Complete List of Published Work in MyBibliography: https://www.ncbi.nlm.nih.gov/pubmed/?term=guohai+zhou

D. Research Support

Active

U01AI148306 Rachael A. Clark (PI) 03/01/2020 - 01/31/2025

NIH/NIAID
Using human skin grafted mice to identify biomarkers of exposure and study effects of radiation on skin
Role: Contract Biostatistician

Past

R01AG053325 Luc Djousse (PI) 09/01/2019 - 04/30/2020

NIH/NIA
Non-esterified Fatty Acids and Cardiometabolic Disease in Older Adults NIH
Role: Contract Biostatistician