

BOSHAO ZHANG

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EDUCATION

PhD, Biostatistics / Epidemiology, Medical University of South Carolina May 2009

Dissertation: Two Stage Clonal Expansion Models of Carcinogenesis for Acute, Continuous, and Multiple Exposure with Applications to Radiation

M.S., Statistics, University of Texas, Dallas 2003

M.S., Statistics, Beijing College of Economics 1992

B.S., Mathematical Statistics, Hangzhou University 1989

RESEARCH INTERESTS

Statistical Genetics and Epidemiology, Survival analysis. Statistical testing procedure for clinical trials and other fields.

COMPUTER SKILLS

Splus / R, Matlab, SAS, nQuery, Stata, Excel

MANUSCRIPTS / PUBLICATIONS

1. Boshao Zhang, David Hoel. *Two Stage Clonal Expansion Models of Carcinogenesis for Acute, Continuous, and Multiple Exposure*. In submission.
2. Boshao Zhang, David Hoel. *The analysis of lung cancer of dogs exposed to Pu 238/239 using two-stage model*. In submission.
3. Boshao Zhang, David Hoel. *Hazard analysis of solid tumor of mice exposed to low dose radiation*. In preparation.

4. Boshao Zhang. *Hypothesis Testing With a Buffer Area. Proceedings of JSM 2008*
5. Boshao Zhang, David Hoel. *RBE of Alpha radiation vs Beta radiation through simulation, a Bayesian method.* In preparation.

PRESENTATIONS AND POSTERS

- JSM 2008, Denver. *Hypothesis Testing With a Buffer Area.* Oral Presentation.
- Research day, 2007, Medical University of South Carolina. *Two Stage Models of Carcinogenesis for Acute, Continuous, and Multiple Exposure with Application to Radiation.* Poster.

POSITIONS

Post Doctoral fellow, University of Alabama at Birmingham (07/2009 --- present)

- Genome Wide Haplotype Association Analysis

Research Assistant, Dept of Bioinformatics, Biostatistics and Epidemiology,
Medical University of South Carolina (06/2004 –05/2009).

Low Dose Effect of Radiation Project (sponsored by Dept of Energy):

- Developed the hazard and survival functions for Two-Stage Clonal Expansion Models of Carcinogenesis of the models, a type of cancer survival model, for acute, multiple and continuous exposures.
- Used the survival functions and hazard functions thus obtained to construct the log-likelihood function and implement the MLE algorithm in Matlab.
- Predicted the hazards, or survival rates for both exposed and control groups in terms of functions of age. Relative risk, fractionation effect (the effect of splitting the dose over time), relative biological effect of one agent compared with another agent, among other quantities can also be given in functions of age. The curves of these functions are generated by Splus / R. Whenever needed, simulation using Monte Carlo method and bootstrap re-sampling are conducted for the applications.
- Applied the acute and multiple acute exposure models to the data of animals exposed to radiation. Kaplan-Meier survival curves are used to check the fitness of the models, and Cox proportional hazard model is used to compare the relative risks obtained from the two stage models.

- Applied the continuous exposure model to the data of animals exposed to radiation through inhalation. The pharmacokinetics as the retention rates of two isotopes in the lung are incorporated in the model. The two isotopes are compared in terms of carcinogenic capability, and the cumulative hazards as function of age are used for prediction of risks of lung cancer.

Hypothesis Testing Procedure With a Buffer Area:

- Design a testing procedure to overcome some of the problems of the classic t-test procedure. The new testing procedure allows separate control of type I and II errors, and an interval to distinguish between the negative test and positive test, instead of single value of critical value. The sample size and power of the test have been formulated for use. The procedure may be used to clinical trials, quality control and other areas.

Clinical Pathway For Inpatient Asthma Management:

- Assist physicians, pediatricians to design the experiment, develop the statistical analysis plan, data monitoring plan for the protocol of the study. The protocol *A Multi-center, Randomized Controlled Trial Evaluating a Clinical Pathway for Inpatient Asthma Management for Children and Adults and Its Effect on Quality of Care* was submitted.

Teaching Assistant, Dept of Mathematics, University of Texas, Dallas (2000 – 2003).

- Grading, tutoring for the courses of statistics, Calculus.

COURESE RELATED TO MEDICAL RESEARCH:

Design and Conduct of Clinical Trials:

- Covered all the phases of clinical trials, randomization (including blocking, group sequential techniques, adaptive randomization, crossover design), Maximum Tolerated Dose finding (including “3+3” up-and-down design, continuous reassessment method), Safety and efficacy trial, Comparative Treatment Efficacy trial, sample size and power, statistical analysis plans (including interim analysis, intent-to-treat principle), data monitoring, missing data issue, case report forms, GCP, ICH guidelines, etc.
- Submitted a protocol with clinicians.

Other Related Courses:

MUSC:

- Statistical and epidemiologic collaboration
- Bayesian Biostatistics
- Epidemiology I - III
- Design and Conduct of Epidemiologic Studies
- Grant Develop
- Ethical Issues in Biomedical Science
- Mathematical Models in Biology and Medicine

UTD:

- Probability Model
- Statistical Inference I, II
- Advanced Statistical Methods I, II
- Nonparametric & Robust Statistical Methods
- Multivariate Analysis
- Decision Analysis
- Sequential Analysis
- Biostatistics
- Experiment Design and Analysis
- Optimal Control

MEMBERSHIP AND SERVICES

Member , American Statistics Association	2007---2009
President , International Association Medical University of South Carolina	2007
President , International Scientific Presenters Toastmaster Club, Medical University of South Carolina	2007
President , Chinese Association of Students and Scholars, Medical University of South Carolina	2005 – 2007
Representative , Graduate Student Association, Medical University of South Carolina	2005 – 2006