Public Health Practice

Stories from the Field
The University of Texas School of Public Health
Student Practicum Experiences
Fall 2012 - Biostatistics
The practicum experience is an integral part of the MPH and DrPH curricula. Public health students are provided with the opportunity to apply their classroom knowledge to real world settings through which they make a meaningful contribution to a public health organization.

Under the guidance of a community preceptor and faculty sponsor, students from all divisions gain a deeper understanding of public health practice, interact with professionals in the field, and expand their repertoire of professional skills.

This ninth-edition e-magazine showcases student practicum experiences throughout the Fall 2012 semester. (Prior semesters may be accessed through the e-book, a collection of student abstracts and e-magazines describing their experiences.)
# Practicum Topics

Serving Size: 1 Practicum per Student  
Servings per e-Magazine: 5

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## Biostatistics

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Coronary Heart Disease and Genetics

Public Health Significance

Coronary heart disease is the leading cause of death in the United States and accounts for approximately 1/3 of total annual deaths. It is also the leading cause of death worldwide based on data from WHO. CHD incidence is still increasing worldwide.

Identification of genetic risk factors of CHD will provide more insights in understanding the mechanisms of CHD development, which will lead to better disease risk prediction and prevention.

Identifying Genetic risk factors of Coronary Heart Disease

By: Ying Cao

I worked on a genetic study to decipher the genetic risk factors of coronary heart disease (CHD) in the human genetics center of UTSPH. CHD is a complicated disease involving many genetic and environment risk factors. We are interested in not only single amino acid substitutions but also genetic interactions in the modification of CHD risk.

Most genetic studies only focus on genetic effect on mean heterogeneity. We are also interested in genetic effect on variance heterogeneity. Genetic variance heterogeneity is more complicated and interesting, which may due to true variance heterogeneity, or an interaction, or just in linkage disequilibrium with a genetic factor causing mean heterogeneity.

Practicum

Interesting? Worth it?

- A great opportunity to apply classroom knowledge in real world.
- It makes boring academic concepts vivid and makes you want to learn more and better.

Practicum

Be Prepared.

- Try to find a “perfect” one, matching your academic interests, or your future career goal.
- Always be prepared. The more homework you do, the more you will gain.

An example of genetic variance heterogeneity. (Shen et al. 2012. PLOS Genetics Figure 3b)
Overall survival in renal cell cancer metastasizing to pancreas

Practicum Highlights

- Studying the overall survival in patients of renal cell carcinoma with metastasis to pancreas.
- Studying the characteristics of renal cell cancer patients with metastasis to pancreas.

Advice for Future Practicum Students

It is a wonderful opportunity to apply all that we have transpired during our training years at the school of public health. It has been a great integrative experience.

“Overall survival in renal cell cancer patients metastasizing to the pancreas”

By: Sarathi Kalra

I was working on a patient population of patients with renal cell cancer having metastasis spread to the pancreas. It has been studied that these patients have different characteristics of the tumor per se - and therefore I invested my time in looking at the overall survival of patients who developed metastasis to pancreas.

The host organization collaborated in arranging database and literature review.

Public Health Significance

In 2012, it has been estimated that 64,770 people would be diagnosed with renal cell and renal pelvic cancer, and nearly 13,570 people would die of this disease in the United States. Comprising of 5% of all cancers and 3% of all cancer deaths, RCC is a relatively less studied topic by most oncologists. Most closely related Public Health Essential Service(s) to my practicum experience was to monitor health status, investigate trends of this health problems, inform and educate the practicing doctors and patients and research for better treatment options that can be provided to the patient.

My responsibilities were to generate a database, which comprised of all the baseline characteristics of renal cell cancer patients with pancreatic metastasis.

The final result targeted is a manuscript from the results after the analysis is accomplished.

The final product generated is a database defining all the patient characteristics and a summary report.

The public health significance of this project will help in

- Creating awareness amongst the medical fraternity towards understanding the nature of renal cell cancers that metastasize to the pancreas.
- Create awareness amongst the patients of renal cell cancer about their illness.
- Instigate further studies on understanding the nature and patterns of growth in renal cell carcinoma.
Which Cancer Drug for Whom?

Predicting Drug Sensitivity from Gene Expression Profiles

By: Sumit Makashir

I performed Analysis of the gene expression and drug sensitivity data from the Cancer Cell Line Encyclopedia using Statistical methods.

The aim was to build predictive models for 24 drugs from the gene expression profiles.

The attempt was to find which gene expression profiles are best suited for the use of a specific cancer drug.

I worked with the Bioinformatics unit and did the analyses and model building using R programming.

The model building was done using linear regression and using greedy algorithm.

I found out the gene expression profiles that best predict the drug sensitivity for 24 cancer drugs.

However, more work needs to be done to achieve better predictions.

Public Health Significance

My practicum was clearly related with the ‘diagnose and investigate’ service.

There is need of identifying which patients are best suited to which cancer drugs.

I tried to investigate this by using statistical methods and computer programming.

No doubt, personalized medicine will have enormous public health significance.

I worked in department of Genomic Medicine MD Anderson Cancer Center.

The department has made great contributions to cancer research. It integrates Biology, Computers and Mathematics in the cancer research.

One of the goals of the department is personalized medicine. The researchers are working extremely hard to get closer to this goal.
My duty is

- Reading
- Thinking
- Analyzing

It’s never too late to find a practicum for yourself because this opportunity will bring you a big improvement for future career.

Statistical Analysis for Chemical Products

By: Xi Rong

In my practicum, I focused on the how to perform the statistical analysis and make statistically relevant conclusion for the chemical products.

Selleck Chemicals is one of the world leading suppliers of high-performance life-science products. It has over 8,000 products which consist of inhibitors, antibodies, RNAs, proteins and peptides which focus on signaling pathways such as MAPK, PI3K/Akt, and apoptosis etc. My duty in this practicum was to perform statistical analysis to the dataset, and further provide predictions as part of inputs for the decision on the product research and development.

The final product was a summary report and presentation in the monthly meeting held by our department.

Public Health Significance

The PHES that most closely relates to my practicum is “Mobilize community partnerships to identify and solve health problems.”.

The goal of Selleck Chemicals is to provide scientists worldwide an easy access to the most innovative life science reagents, and to help them make more significant discoveries cancer biology or related field. The Research & Development department mainly focuses on researching and developing new products for the research in cancer biology, biochemistry, molecular biology, and related field.

The purpose of the work I involved in is to make our products can be helpful in the research on identifying and solve the problems in public health.
Public Health Accreditation

Helping Raise the Standard of Public Health

By: Yan Shi

As an intern of Performance Improvement Accreditation Team (PIAT) in Houston Department of Health and Human Service (HDHHS), my practicum duty mainly focuses on how to assist and push accreditation process. It includes:

- collecting and organizing documentation that meet the requirements of Public Health Accreditation Board (PHAB) Standards and Measures
- collaborating with different divisions to help health department employees better understand, assess, and meet the standards of public health accreditation

I’m very lucky to have this opportunity and I want to be part of this accreditation process by assisting the health department to go through this long but amazing journey.

Public Health Significance

Public Health Accreditation Board (PHAB) provides Standards and Measures Documentation of which is developed based on the ten essential public health services with two additional domains covering administration and governance.

The accreditation process can assist the public health department to advance public health practicing and increase the performance quality by meeting these nationally recognized set of standards and measures.

I helped PIAT successfully draft the Workforce Development Plan based on Domain 8 of PHAB, which is aiming to assist HDHHS to advance workforce development to not only meet the needs of public health in the City of Houston but to also meet nationally recognized standards.

Advice for Future Practicum Students

Practicum is a great chance to see and learn how to practice public health in real life. Keep an open mind and maintain a positive attitude, you will have opportunity for real life experiences that cannot be learned in books.

Houston Department of Health and Human Services

The Houston Department of Health and Human Services (HDHHS) has engaged in a mission to promote and protect the health and social well-being of Houstonians.

Picture source: http://www.houstontx.gov/health/index.html
For more information regarding The University of Texas School of Public Health, Office of Public Health Practice and the practicum program, please visit: https://sph.uth.tmc.edu/practicum/