Public Health Practice

Stories from the Field
The University of Texas School of Public Health
Student Practicum Experiences
Summer 2014 – 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 fourteenth-edition e-magazine showcases student practicum experiences throughout the Summer 2014 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:** 4

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Big Data in Cancer Care

How Watson is Helping the Fight

Accelerating Research
IBM Watson will accelerate MD Anderson’s research, so promising new therapies can be deployed more quickly in the fight against cancer, for the Center’s 100,000 patients per year.

Unlocking Big Data’s potential to improve cancer care

By: Junghyun Choi

Using Big Data to Help Accelerate Translation of Cancer-Fighting Knowledge to Cutting Edge Medical Practices

APOLLO: Adaptive Patient-Oriented Longitudinal Learning & Optimization: a Platform to enable iterative and continued learning between clinical care and research by creating an environment that streamlines and standardizes the longitudinal collection, ingestion and integration of patient’s medical and clinical history, laboratory data as well as research data into centralized patient data warehouse. Participate in Phase I APOLLO initiative project at Leukemia Center to create Process Flow Chart

Approaches: Observation/Interview with Frontline medical teams at Leukemia Center. Discussion, Measured time for each activity in the process

Findings: Create/validate current state process in order to estimate time spent thus establishing a baseline for next phase II APOLLO initiative/Capture opportunities for improvement of current practice

However, up to 80 percent of the healthcare industry’s data remains unstructured because of its volume and diversity of data type, which can be neither easily searched nor accessed. APOLLO initiatives unlocking Big Data’s potential is aligned with one of the essential public health service: “Research for new insights and innovative solutions to health problems”, which intends to expand the project to include greater amounts of big data and analytical tools to Improve cancer treatment and to reduce burden on humanity around the world.

Special events/ duties during your practicum

■ Creating Process Flow (PFC) Chart at Leukemia Center
■ Calculating Direct Cost based on PFC
■ Clinical Safety and Effectiveness Educational Program training
■ Application of PDSA
■ Facilitating Meeting

Lessons Learned [OR] Advice for Future Students

■ You should actively tell your preceptors, coworkers and your supervising preceptor about your goal/objectives you want to achieve during practicum. More people knows what you want to do, more people can help you achieve your goal during practicum.

Inforgraphic: MD Anderson Taps IBM Watson for Moon Shots Mission to End Cancer

Summer 2014 Junghyun Choi ▪ MD Anderson Cancer Center ▪ Big Data in Cancer Care

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center
Making Cancer History®
Categorical Data Analysis of Multifactorial Genomic Data of Patients with a Lethal Brain Cancer

For my practicum, I worked with Dr. Arvind Rao who is an Assistant professor at MD Anderson Cancer center’s Department of Bioinformatics and Computational Biology. The focus of research in the Department of Bioinformatics and Computational Biology includes, but is not limited to microarray data analysis, biomarker identification, drug target discovery, functional genomics and proteomics. My practicum involved conducting gene expression analysis using imaging data of patients diagnosed with Glioblastoma, the most aggressive brain cancer. This practicum provided me the opportunity to apply the skills learnt in various statistical courses, here at the School of Public Health, in a real life setting using R as the statistical analysis software.

Public Health Significance

The Public Health Essential Service(s) (PHES) that most closely relates to my practicum experience is: Research for new insights and innovative solutions to health problems.

Glioblastoma multiforme is the most lethal brain cancer with dismal prognosis and poor survival rates. The genetics and pathogenesis of this dreaded cancer are still being elucidated. Knowledge of genetic pathways not only will enable better understanding of the biology of this cancer but may lead to better diagnostics and therapeutic implications.

Large scale statistical analysis of existing gene profiles of this cancer may lead to identification of driver mutations and metabolic pathways. This may guide researchers in the right direction for pursuing clinical research which subsequently may lead to change in management paradigms.

Gene expression analysis using multifactorial genomic data

By: Rajeshwari Prasad

Special duties during your practicum

Application of sophisticated statistical analyses to large and complex databases.

Exposure to correlation of clinical and genomic profiles of brain cancer.

Advice for Future Students

• Find the right working group that matches your practical interests
• Don’t hesitate to ask questions or to request help.
• Try to learn the clinical background of the disease in question and the implications of public health research.

Source: http://www.aboutcancer.com/mri_gbm.htm

Source: newswise.com
Public Health Significance

The Public Health Essential Services (PHES) from the American Public Health Association that most closely relate to my practicum experience are “Inform, educate and empower people about health issues” and “Research for new insights and innovative solutions to health problems”.

The project that I am involved in contributes to public health because it strives to improve adherence to antiretroviral therapy among a specific undeserved population in Houston. My host organization, The University of Texas Medical School, contributes to public health through its various research endeavors and involvement in community health care.

Lastly, Thomas Street Clinic is a HIV/AIDS clinic that partners with physicians from Baylor and UTHealth to provide health care and social services to those diagnosed with HIV/AIDS.

Duties during my practicum

- Designed text messages to improve adherence to HIV treatment
- Reviewed literature on texting interventions and antiretroviral therapy

Lessons Learned & Advice for Future Students

- IRB takes a long time – be patient. Look for opportunities to be helpful and make friends with your co-workers!

Text Message Intervention to Increase Retention to Care in HIV Infected Women

By: YILING WU

This summer, I worked with Dr. Tanvir Bell on a behavioral text message intervention to improve retention to care in women with HIV. The behavioral intervention is part of a research study conducted at The University of Texas Medical School and Thomas Street Clinic.

To meet the main goal of the study (i.e., improving treatment adherence), I designed text messages reminding and encouraging women to take their medications and come into clinic.

Secondary issues that we focused on were substance abuse, depression, and social stigma; the text messages included coping strategies to deal with each of these issues.

In addition to writing the text messages, I also assisted in designing survey questionnaires and creating patient handouts.


Thomas Street Clinic.
Factors Related to Changes in CD4+ Counts and Viral Load in Patients Living with HIV/AIDS - A Multilevel Analysis

By: Bo ZHAO

The Houston Medical Monitoring Project (HMMP) is a special HIV surveillance project conducted by the Houston Department of Health and Human Services in collaboration with the Centers for Disease Control and Prevention (CDC). The project is designed to provide local, state, national estimates of the clinical and behavioral characteristics of persons receiving HIV care in Houston/Harris County. Data are collected from an annual sample of 400 patients through personal interviews and medical record abstractions.

Public Health Significance

My practicum project relates to two components of the Essential Services of Public Health as follows:

1. Monitor: Data from the HMMP survey is used to monitor health care services utilization, quality of care, met and unmet needs, risk behaviors and preventive services for people living with HIV/AIDS.
2. Evaluate: Using the survey data, attempt was made at evaluating the impact of selected demographic, socio-economic and behavioral factors on treatment response to ART among patients in care over time.

My job:

1) Conduct quality assurance of survey data.
2) Data management – involved merging, appending, concatenating and developing new variables.
3) Identification of factors associated with CD4 count and viral load.
4) Use multilevel model to analyze this longitudinal data set and identify factors associated with CD4 count and viral load in HIV patient.

My final products:

1) Summary Report of Statistical Analysis
2) PowerPoint presentation of findings

My project:

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The use of combinations of antiretroviral drugs (ART) generally results in the suppression of virus replication and hence increased levels of CD4. The success or failure in controlling levels in patients on antiretroviral therapy may be associated with factors related to treatment adherence, habits, other correlated infections unrelated to HIV, as well as socio-economic and psychosocial factors and access to healthcare. My project involved modeling the change in CD4 and Viral load associated with these factors by conducting a multilevel analysis.
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/