Public Health Practice

Stories from the Field
The University of Texas School of Public Health
Student Practicum Experiences
Fall 2013 – Epidemiology
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 twelfth-edition e-magazine showcases student practicum experiences throughout the Fall 2013 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:** 12

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## Epidemiology

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This fall I worked for Wyle Integrated Science & Engineering Group at NASA’s Johnson Space Center. I verified, cleaned and supplemented biomedical datasets for the manned Apollo missions (7-17). I chose cardiovascular health as my topic of interest, with a particular focus on post-flight orthostatic hypotension. I extracted relevant information from hard copy astronaut medical records as well as from NASA’s Life Sciences Data Archive.

A challenge in my project was to de-identify data collected on individual astronauts so it could be made publically available. I was able to create summary tables, with results pooled across missions, to supplement data previously published in Biomedical Results of Apollo (1975).

In supplementing electronic datasets and summary tables for the Apollo missions, I have aided the research efforts of NASA and its stakeholders. Hopefully, my work will also be of use to future students who wish to study the effects of microgravity exposure on cardiovascular health.

My work complements the goals of NASA’s Lifetime Surveillance of Astronaut Health (LSAH) project, which monitors the health of current astronauts to help define occupational hazards and health risks associated with spaceflight.

Advice for Future Students

• For the best learning experience, take charge and be proactive.
• Network to make the best possible use of available resources.
Transition to Adult Healthcare

By: AWATIF ALBALAWI

I did my practicum in the department of Adolescents’ Medicine at Texas Children’s Hospital (TCH), Houston, Texas. I worked with Dr. Albert Hergenroader on a project to assess readiness to transition from pediatric health care to adult health care among children with special health care needs. The main objective of the project is to assess factors associated with poor transition rate in selected clinics (Retrovirology, Cardiology, Hematology and physical medicine & Rehabilitation clinic), according to the electronic transition planning tool (TPT) which is an EMR-based transition readiness assessment tool, created to help identifying any gap in the patients’ ability to take care of them selves. My duties in this project are:

- Abstract data from both TPT and physicians’ notes.
- Creating my own thesis question.
- Literature review, looking for factors interfere with successful transition to adult health care.

PUBLIC HEALTH SIGNIFICANCE

Adolescents account for 18 million of the US population. One quarter of them are living with a chronic health condition, have no medical home and not prepared for transition and their health providers are deficient in transition assessment skills.

Unorganized transition is associated either with an increased burden on the pediatric health care facilities or loss of follow up, poor compliance, increased morbidity and mortality among adolescents with special health care needs which lead to increased rates of admission and increased costs. Consequently, The US was ranked very low in transition related health care. This project will help to evaluate the current transition tool usability which will help to explore factors related to low transition rate at TCH, Houston, Texas.

My duties during my practicum

- Data abstraction from the patients’ medical charts.
- Formulating my thesis question.
- Literature review.
- I learned how deal with some research ethical issues.
- I mastered the art of time management.

It’s the experience that will open doors for you in your future career......so take the advantage of it.
Pathogenesis of Clostridium Difficile-Associated Diarrhea (CDAD) - An emerging public health threat
By: Shima Bozorgui

According to CDC, Clostridium Difficile causes diarrhea linked to 14,000 American deaths each year. Those most at risk are people, especially older adults, who take antibiotics and also get medical care. [1] I worked with a research group investigating Clostridium Difficile (C. Diff) infections at St. Luke’s Episcopal Hospital, internal medicine service. The group consists of people of different backgrounds who carry out several projects from observational to clinical trials. One of the most recent and novel studies is “Fecal microbiota transplantation (FMT)” which has been extremely successful in reducing relapse rate of C. difficile. The project that I worked on is a prospective observational study to evaluate the host inflammatory and immune response to Clostridium Difficile-Associated Diarrhea in relation to recurrent infections. My responsibilities included enrolling patients and obtaining informed consent, following up participants and data entry. I also reviewed recent literature on CDAD, and participated in weekly journal clubs in which I presented a recently published article. At the end of my practicum I had an oral assessment with Prof. Dr. DuPont.

Public Health Significance
C. Difficile is a nosocomial infection and it is best known for causing antibiotic-associated diarrhea (AAD). The mortality rate related to C. Difficile increased 400% between 2000 and 2007, due in part to a stronger germ strain. [2] This has been caused in part by antibiotics resistance. More than 90% of deaths occur in people 65 and older. About 25% of C. Difficile infections first show symptoms in hospital patients; 75% first show in nursing home patients or in people recently cared for in doctors’ offices and clinics. [3] Among Public Health Essential Services the most related one to my practicum is research. The second one is to monitor, diagnose, and investigate health problems through recruiting CDI patients and working on pathogenesis of the disease. The group also informs, educates, and empowers patients about C. Difficile through explaining them how to prevent the disease. This is crucial since C. Difficile has a high rate of relapsing. The last but not least is to mobilize community partnerships through enrolling patients in the study and spread the message and goals of the group to the society.

1) http://www.cdc.gov/HAI/organisms/cdiff/Cdiff_infect.html
2) http://www.cdc.gov/VitalSigns/Hai/StoppingCdifficile/
ENHANCED SURVIVAL OF ENDOMETRIAL CANCER PATIENTS

By: SUMEDHA CHAWLA

The objective of my practicum at Gynecologic Oncology department of MD Anderson Cancer Center is to determine if surgical staging parameters affect long-term survival in women with endometrial cancer.

A group of patients with endometrial cancer operated at various hospitals in Texas Medical Center were selected on the basis of exclusion criteria from year 2000 to 2010.

My responsibilities involved collecting data prospectively and retrospectively of the patients with endometrial carcinoma at MD Anderson.

Further I shall be creating a report on the basis of data collected on the required variables.

Public Health Significance

MD Anderson is known to fight against cancer so as to bring better life to people, everyday.

Considering the objective of my practicum project, we are working to increase survival chances and period of the patients with endometrial cancer. This research project will help us to better understand the surgical interventions, which can be taken to bring life to the cancer patients.

The result of this research will not just help the patients at MD Anderson but also in other parts of the world, for the results will be published.

Lessons Learned

[OR] Advice for Future Students

- Practicum is a great way to try our hand on something we think we like just to know how much we will practically enjoy it. Therefore, choosing a right practicum is the first right step.
Childhood cancer remains a burden as the leading cause of death by disease for children under 20 years of age. Within Texas, cancer accounts for approximately 200 deaths and 1,200 newly diagnosed cases each year. The Texas Cancer Registry (TCR) has been charged with collecting information on all cancer cases in Texas. Annual reports are published compiling all cancer data for the state of Texas, which includes childhood and adolescent cancer information. An in-depth investigation of health problems and health hazards in Texas. TCR data is also critical for monitoring cancer by measuring cancer incidence and mortality in Texas. In addition, TCR provides data to researchers, supporting their efforts in identifying trends, risk factors, and prevention methods.

**Public Health Significance**
Childhood cancer remains a burden as the leading cause of death by disease for children under 20 years of age. Within Texas, cancer accounts for approximately 200 deaths and 1,200 newly diagnosed cases each year.

The Texas Cancer Registry (TCR) has been charged with collecting information on all cancer cases in Texas. By collecting data from 254 counties in 11 service regions, the TCR is able to investigate the different types of cancers that occur in adults and children throughout the state thus contributing to the identification and surveillance of health problems and health hazards in Texas. TCR data is also critical for monitoring cancer by measuring cancer incidence and mortality in Texas. In addition, TCR provides data to researchers, supporting their efforts in identifying trends, risk factors, and prevention methods.

**Childhood and Adolescent Cancer in Texas, 1995-2010**

By: Valentina Cisneros

I completed my practicum at the Cancer Epidemiology and Surveillance Branch/Texas Cancer Registry (TCR) under the Texas Department of State Health Services where I worked on the Childhood and Adolescent Cancer Report. The TCR, an active and passive surveillance system, collects, maintains, and disseminates data. Annual reports are published compiling all cancer data for the state of Texas, which includes childhood and adolescent cancer information. An in-depth investigation of health problems and health hazards in Texas. TCR data is also critical for monitoring cancer by measuring cancer incidence and mortality in Texas. In addition, TCR provides data to researchers, supporting their efforts in identifying trends, risk factors, and prevention methods.

**Lessons Learned**

- Don't be too intimidated to ask questions: It is simple to make mistakes working on a large dataset. When working with a team, asking questions can save time and clear up potential mistakes.
- Prepare ahead of time: If required, obtain IRB approval in advance to access the full dataset for your analysis. Also, make time to learn and practice using statistical analysis programs you will be using at the practicum site.

**Top five cancer sites among children 0-19 years, by age group - Texas, 1995-2010**

*Most common childhood cancers such as lymphoid leukemia decline as children get older. Other cancers are age specific such as gonadal germ cell tumors and renal tumors.*
Clostridium difficile

Practicum Highlights

- Hospital-based practicum
- Opportunity to work on different studies including clinical trials
- Opportunity to work with experts in infectious diseases

Advice for Future Practicum Students

- Keep your eyes open. There is a lot to learn.

Clostridium difficile Pathogenesis

By: Swapnil Khose

This is a hospital-based practicum. It’s a great opportunity to work under the guidance of Dr. DuPont. I worked on different projects. One of our studies, called ‘Pathogenesis study’, is aimed to study the biological factors that cause / is associated with the recurrence of C. difficile in some people. I had the opportunity to enroll patients for the study, which I feel is a plus point of this practicum. My other duties were lab collection, following up with patients, data collection, etc. Overall it’s a great opportunity to practice on basic epidemiologic skills.

Recently we have started fecal microbial transplant (FMT) for patients suffering from recurrent C. difficile infection. This is an exciting step as this will provide the poor patients one of the best treatment options.

Public Health Significance

Clostridium difficile diarrhea is one of the most common hospital acquired infections. It is an emerging public health issue which has significant morbidity and mortality. It causes a huge economic burden on healthcare system. With further research and improvement in treatment as well as the preventive approaches we can definitely control it.
Workplace Injury and Reporting

An assessment of ergonomic risk factors and musculoskeletal injury in a manufacturing setting.
By: Amanda Marshall

My practicum involved working with the Health and Environmental Safety director of a manufacturing facility in Houston, Texas. In essence, the director came on board at the plant and noted a variety of ergonomic issues on the plant floor that were in need of addressing.

In order to fully characterize the issue, a formal evaluation of the job duties as well as administration of a risk factor/symptom survey were necessary. My job was to design and implement the survey, perform on site observations, synthesize and analyze the data, and present the findings to the stakeholders.

In order to create a useful data collection instrument, epidemiological methods were used to incorporate a validated tool as well as design relevant non-biased questions that fit the needs of the organization. Findings included risk factors and reporting behaviors and recommendations for process improvements at the plant.

HIGHLIGHTS
- Design and administration of a data collection instrument for a real world assessment was a challenge!
- Presentation of data to stakeholders involved being able to succinctly communicate findings without drowning them in statistics.

Public Health Significance
Ergonomic and musculoskeletal injuries are highly prevalent in a multitude of workplace scenarios. Starting in the 1990’s and moving into the 2000’s, the Occupational Safety and Health Administration tried to put forth new standards to address and mitigate risk factors for musculoskeletal injury in the workplace. Unfortunately, the regulations were not able to pass in the political environment under which they were presented. In the end, the standards were relegated to falling under the General Duty Clause which states that an employer is required to provide a workplace free from known hazards.

Since that time, much attention has been paid by some states and occupational epidemiologists to the issues of ergonomic health, but the sense of workers that musculoskeletal aches, pains, and eventual injury are just a part of the job persists. In my assessment, this was the number one reason for not reporting symptoms and injuries.

Identifying patterns in illness and injury, as well as underlying behavioral and occupational risk factors mirrors the essential public health services of monitoring, diagnosing, and investigating public health problems. In disseminating the data along with recommendations for process changes, we were able to develop policies and plans that address public health issues.

Advice for Future Practicum Students
Finding a practicum can be tough. Start asking early and do not hesitate to go out and create one on your own, as often times this will end up serving your educational and career needs better than just doing anything to get it done.
During the fall of 2013, I worked for my practicum in the Department of Hematopathology at MD Anderson Cancer Center, Houston under the seminal guidance of Dr. Tariq Muzzafar (MD). For the database, I looked closely at the data comprises of demographics, survival, laboratory results, molecular studies, cytogenetic data, treatment histories at the initial presentation of the patient at MD Anderson. I retrospectively collected data from MD Anderson database for Leukemia patients from 2005 to 2013 and in the process of analyzing the final results. Conclusively, from this project, we are trying to analyze bone marrow pattern and immune-phenotypic score at diagnosis of Leukemia (CMML) and to determine the interconnection with cytogenetic and molecular findings with the clinical stage of the disease and immuno-phenotypic score.

Public Health Significance

This Practicum addresses service essential no 3 & 10 that is, inform, educate and empower people about prevalent health issues and to provide insights and novel ideas for the disease for better diagnostics and improved survival. It is hematologic malignancy characterized by vast heterogeneity at the time of clinical presentation and during the course of the treatment. It belongs to subtype of Myeloid neoplasms and characterized by myelodysplastic and myeloproliferative features. Although, many scoring system had been proposed, but due to the advent of next generation sequencing International prognostic scoring system in its revised version necessitated inclusion of peripheral blood counts, bone marrow blast count and cytogenetic abnormalities in prognostication. Therefore, defining prognostic parameters potentiating patients division in groups with good a bad prognostic factors will definitely help in the assessment of early treatment, improved clinical outcomes and potentiate modified treatment for patients with CMML.

Advice for Future Practicum Students

Please find your practicum ahead of the time and it should match your area of interest.

Cancer is a scary thing, you have to deal with it seriously.

Kareem Abdul-Jabbar

Infection Control and Isolation Protocols in a Hospital Setting

By: Disha Sampat
During Fall 2013, I did my practicum with the infection control and employee health department at Kindred Hospital, Houston – Northwest.

My duties included (but were not limited to) doing hand hygiene surveillance throughout the hospital and monitoring if the staff was adhering to CDC isolation protocols when interacting with patients who presented with multi-drug resistant organisms (MDROs), such as MRSA and C-diff infections.

Furthermore, I was able to participate in weekly meetings where the infection control department was especially focused on patients who were at high risk of contracting MDROs (such as those patients that required Foley catheters).

Thus, upon discovering patients who presented with CRE, I was assigned the task of creating an informative newsletter that was distributed throughout the hospital to increase awareness of the organism. The newsletter also addressed the importance of following CDC isolation protocols when interacting with patients.

Public Health Significance
Hospital-acquired infections (HAIs) are an important and difficult public health problem to resolve.

Resistance to antibiotics has brought about MDROs such as CRE that have a high mortality rate. In order to best manage HAIs, many Essential Public Health Services come to mind. First, it is important to monitor not only the patients in the hospital, but also monitor prevalence of specific HAIs. Also, it is important to diagnose and investigate the origin of an acquired disease and its possible causes.

Furthermore, informing, educating, and empowering patients and health care professionals, about the diseases and their risk factors, is vital to ensure compliance to isolation protocols. These protocols limit the transmission rates of potentially lethal organisms.

Finally, enforcing regulations among health care professionals is crucial. This teaches compliance to appropriate CDC regulations and ultimately protects health and ensures safety.

Practicum Highlights
- I was able to present Foley catheter, Central Line insertion, and MDRO isolation information on each patient, at the weekly meeting.
- I was also able to do infection control rounds with the infectious disease physician. Rounding allowed me to learn the risk factors for common HAIs and gain clinical insight into MDROs.

Lessons Learned:
- Infection control in a health care setting requires the collaboration of all health care professionals at the facility.
- Prevention and health education should be strongly emphasized.
- Hand hygiene and isolation protocols are crucial to prevent transmission of diseases, yet they require constant monitoring in order to maintain a high level of adherence.

Advice for future students:
- Be sure to ask questions.
- Make the most of your time by taking on responsibilities that make you more comfortable in your setting.
- If you enjoy a certain aspect of your practicum, speak up and ask for duties that line up with your interests.
Using a tablet based battery of psychophysical tests for early diagnosis of mild Traumatic Brain Injury/Concussions.  
By: Manu Sharma

The psychophysics literature has already established the promise of detecting mild Traumatic Brain Injury (mTBI) with tests of attention, perception, and visuomotor skills. My job at the Eagleman Lab, Baylor College of medicine was to intensively search the literature and choose a set of psychophysical tests that have shown to have the highest sensitivity for detecting mTBI. After the initial selection of the tasks we programmed the tasks onto an android tablet. I was also responsible for designing and carrying out the study that would help us validate the battery of psychophysical tests as a diagnostic tool. The study is ongoing and we should be getting the initial results over the next 6 months.

The Battery of Psychophysical Tests (Flanker, Stroop, Digit Symbol Substitution and Trail Making Test)

Public Health Significance

Over 1.7 million cases of traumatic brain injury (TBI) are reported every year in America, of which 75% are classified as mild TBI (mTBI) (CDC - National Center for Injury Prevention and Control, 2003). TBI is now recognized widely as a challenging public health problem. A large proportion of these cases result from military warzones and team sports such as football, basketball, and soccer (Gilchrist, 2011). Despite the prevalence of mTBI, early diagnosis of the condition remains a diagnostic challenge because symptoms of mTBI can be often confused with symptoms of post-traumatic stress disorder, depression and headache syndromes. Clinicians still strongly rely on patient self-report along with physical examination for diagnosis of mTBI. Sometimes it may take days or weeks for the symptoms to manifest or be recognized making it easy to miss the diagnosis of mTBI (CDC-National Center for Injury Prevention and Control, 2003). The majority of patients with mTBI do not have brain changes that can be picked up by traditional structural neuroimaging techniques (Pulsipher, 2011). Therefore, while moderate and severe TBI tend to be more easily diagnosed, mild TBI can escape notice. By developing a new diagnostic tool that would help in early diagnosis of mTBI we aim to reduce the morbidity associated with mTBI and help coaches make return to play decisions.

Special events/duties/highlights during your practicum

- I shared my lab space with a Harvard law graduate, an engineer from MIT and a New York Times best-selling Author. Working with them was a fascinating experience
- I also got the wonderful opportunity of gaining insight into procedures involved getting funding from the Department of Defense

Lessons Learned [OR] Advice for Future Practicum Students

- Always have an open mind and do not limit yourself to the tasks assigned to you. Explore every possible available opportunity.

The CDC Heads Up Initiative - Free tools for preventing, recognizing and responding to a concussion. (http://www.cdc.gov/concussion/headsup)
Obesity induced Fatty Liver Disease

The association between fatty liver and hyperinsulinemia.

By: Yi-Ting Serena Shen

I worked with a liver doctor and endocrinologist at Houston Methodist hospital internal medicine. Many overweight and obese patients are having non-alcoholic fatty liver disease (NAFLD), and NAFLD often develop non-alcoholic steatohepatitis (NASH) without having diabetes. Clinicians always tell patients to lose weight. I spent most time collecting data on non-invasive liver markers and metabolic parameters. We were trying to find association between liver markers and metabolic parameters. I also did data analysis to measure the association between lab results. I met with physicians to discuss results. I’ve just finished and submitted an abstract to a liver conference. The results confirmed the association between fatty liver and insulin resistance without diabetes.

Public Health Significance

Obesity is a fast growing health problem in the US, and obesity complications have increased the burden of US healthcare. The clinicians first diagnose a disease and then investigate what caused the disease in order to form the treatment plan for the patients. Also, hospital researchers are investigating the causes and associations of diseases.

The research institute of Houston Methodist hospital builds research teams between specialties such as clinicians and basic science researcher and innovates health care technologies to improve health. The NAFLD/hyperinsulinemia project further forms the hypothesis that hyperinsulinemia will decrease with therapies that improve steatosis. Therefore, the hospital will be more aggressive on weight reduction in NAFLD patients with hyperinsulinemia to prevent obesity complications in the overweight population.
Gastrostomy-Related Morbidity in Children

Reducing Gastrostomy-Related Morbidity with the Use of Formal Education at Discharge

By: Irving J. Zamora

During my practicum experience at Texas Children’s Hospital I had the opportunity to work with a multidisciplinary team of physicians, nurses, nutritionists, and research coordinators with a common goal of providing evidence-based care to our patients. In particular, we focused our efforts on reducing gastrostomy-related morbidity since gastrostomy placement is associated with a high rate of ER return visits and extra clinic visits. Most of these concerns are non-urgent and could be managed at home. Therefore, we hypothesized that a formalized instruction process describing basic gastrostomy tube care would decrease unnecessary hospital visits and ultimately allow for a greater number of acute patients to receive necessary care.

Public Health Significance

The 3 most important Public Health Essential Services (PHES) provided by my practicum experience were to: 1) diagnose and investigate, 2) inform, educate, and empower 3) research.

We aimed to implement an education process for patients discharged with new gastrostomy tubes or buttons to decrease the ER return and extra clinic visit rates with the purpose of decreasing hospital costs and improving patient and caregiver quality of life. Relieving the burden that gastrostomy-related morbidity places on the system can result in a redistribution of essential and already limited healthcare resources in an institution that fulfills an important public health role in our community. The final product of this practicum experience was the development of a Gastrostomy Tube Caregiver Education Guide to be provided at the time of hospital discharge. We then designed a 3-month post-intervention follow-up study to assess the efficacy of the formalized instruction and to examine whether these interventions achieved the goal of decreasing gastrostomy-related morbidity.

Images from the Gastrostomy Tube Care Guide we developed.
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/