Public Health Practice

Stories from the Field
The University of Texas School of Public Health
Student Practicum Experiences
Spring 2015 – 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 sixteenth-edition e-magazine showcases student practicum experiences throughout the Spring 2015 semester. (Prior semesters may be accessed through the e-book, a collection of student abstracts and e-magazines describing their experiences.)
**Practicum Topics**

Number of Students: 13

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### Epidemiology

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Sequential Tyrosine Kinase Inhibitors in Chronic Myelogenous Leukemia Patients

By: Mary Akosile

My practicum was done at MD Anderson Cancer Center, department of Leukemia which started in February 2015. I had the privilege to work with Dr. Cortes, a professor of Leukemia with a focus in Chronic Myelogenous Leukemia. The ongoing project has a public health importance because the main objective of the project is to use a hospital-based study to investigate the most effective treatment for patients, using different types of tyrosine kinase inhibitors. I had the opportunity to abstract data from medical records of patients, taking into account of all treatments used by patients, single treatment, multiple treatments (protocol or off protocol, treatments) and also work on further data analysis and manuscript of the project.

Public Health Significance

MD Anderson Cancer Center is greatly known for their mission which is to eliminate cancer in Texas, the nation and the world. They are outstanding for research and prevention measures that help improve health of patients that seek medical care from all over the world. The department of Leukemia gives graduate and medical students the opportunity to participate in clinical research that would promote health issues by focusing on a collection of factors that could contribute to health issues such as age, race, residential area, occupation etc. The ongoing project that I participated with for my practicum is essential to public health because it focuses on research for new insights and innovative solutions to health problems.

Special events/ duties/ highlights during your practicum

- Working at MD Anderson Cancer Center was indeed amazing because the health professionals that participate and help support the notion against cancer especially at my department, work very hard and are consistent with their duties.

Lessons Learned [OR] Advice for Future Practicum Students

- One of the lessons I learned at MD Anderson Cancer Center is to be honest about your research findings even if you get an opposite outcome because there’s always something new to discover in scientific findings.
Public Health Significance

This project addressed several Essential Services of Public Health. We diagnosed obesity in patients and then educated and empowered the patients to make lifestyle changes. We also researched evidence for insights and new solutions to address this growing epidemic. We combined personalized counseling sessions and considered weight loss medication as deemed appropriate based on assessments.

Weight Loss Workshop Algorithm

Created by Nadya Alibhai

Patient Profile

- Participating patients had a BMI >40
- Each patient participated in 30-minute weekly weight loss counseling visits with the physician for one month and then biweekly for two months

Lesson learned from personal time spent with patients during counseling sessions:

Obesity is a complex disease and the result of multiple factors that warrant address. A patient’s lifestyle is often developed from childhood and modifying activity and nutrition is a modification of a patient’s lifetime of habits. I am beginning to understand the depth and profound nature of embarking on such a change with patients and addressing each patient’s unique challenges.

www.diagnosticclinic.com
Efficacy of raltegravir

Efficacy of raltegravir among HIV positive minority women in Houston.

By: Oluwatomiwa Babade

The first major work in this practicum was writing an extensive literature review on the Efficacy and safety of raltegravir (an HIV integrase inhibitor). This part of the project took a few weeks but provided to be very rewarding as I had never written a literature review before. My preceptor kept challenging me on improving on what I had written to make it up to a publishable standard. The next part was on using Harris Health System’s Electronic Medical Records for data collection on HIV+ minority women in Harris County who had received raltegravir in 2013. The main outcomes of interest were the CD4 counts, viral loads and their lipid profiles. This data collection process lasted till the last day of December 2014. The data collection was done remotely.

Public Health Significance

Minority populations have been disproportionately affected negatively by HIV/AIDS in the United States. There are also not enough studies on drug efficacy in women. This study seeks to bridge this gap in knowledge by investigating into the drug efficacy in minority women.

The Principal Investigator of this project is an infectious disease fellow at the UT Medical School in Houston at the Texas Medical Centre.

The Public Health Essential Services that is carried out at the Infectious Disease unit in the medical school is mainly research for new insights and innovative solutions to health problems and monitoring health status to identify and solve community health problems.

Other researches are currently going at the infectious disease unit.

Lessons Learned

- Keep looking in the area of your interest for the practicum that you desire.

Special events/ duties during practicum

- Systematic literature search and literature review
- Data abstraction
- Data entry
Leukemia Treatment and Ethnicity.

Ethnic Differences in Treatment Outcomes among Patients with Leukemia.

By: Aditya Deshpande.

I worked in the Hematology-Oncology section of Pediatrics Department at Baylor College of Medicine and Texas Children’s Hospital (TCH).

My major role was of Data Mining and Management for a project that focused on investigating ethnic differences in treatment outcomes (viz. treatment delays, treatment toxicities, etc.) among Leukemia Patients treated at TCH over past 3 years.

The end product of my endeavor was an Xcel sheet with 63 data fields for 33 variables from 108 patients.

The next step on this line of inquiry would be to correlate the treatment outcome differences with genetic and molecular data that is being generate on these patients at TCH.

Public Health Significance

Leukemia is the most common type of cancer in children. Even though advances are made in treatment of leukemia, research is needed to make these treatments more efficient and less toxic.

The field of Genetic Epidemiology is playing an important role in answering such research questions. Investigation on genetic level in different ethnic groups will help design treatment protocols that could be effective for a particular population sharing common genetic make-up.

This study can also help explaining the epidemiology of Leukemia. It may help elucidate why certain ethnicities are at greater risk of developing leukemia than others.

Finally, TCH is a non-profit organization serving children of the community and has pioneered many of the now standard protocols for treating and curing pediatric cancer and blood disorders.

Advice for Future Students

• Time management is the key to a great practicum.
• Start the search for a suitable practicum early.
• Keep track of time while doing the practicum.
• Learn new things and make the most of it!
Create Healthy Communities

By: ZHENGLIN GUO

I did my practicum at Baylor St. Luke’s Medical Center this semester, working on the Community Health Needs Assessment project, to create healthy communities and prevent chronic diseases. My task in this project is to analyze the disease prevalence from hospital inpatient and outpatient data, comparing it with state disease prevalence. Find out the top prevalent disease among the communities served by BSLMC, and give recommendations about which communities need additional health programs. The final product of my practicum is the tables of the diseases data in communities and hospital.

Currently, BSLMC has implemented several programs to communities, such as Stroke Program, Prostate Cancer Screening Program, RED Program and etc. They are so amazing to make the communities healthier and let healthcare resources accessible to more people.

For example, I have analyzed and compared disease admissions rate of Harris County, Brazoria County, Fort Bend County and Galveston County, which are served by the 6 hospitals of BSLMC. Gave recommendations about offering health programs to each county according to the data.

The stroke program carried out by BSLMC offers classes about healthy diet, instructions of taking medicines and early detection, works pretty well reducing the readmission rate of stroke.

Public Health Significance

The data I analyzed of hospital and communities help me to investigate and diagnose health problems in communities.

Following are PHES most related to my practicum:

- Diagnose and investigate health problems and health hazards in the community.
- Mobilize community partnerships and action to identify and solve health problems.
Acute Cholangitis in Cancer Patients.

Cholangitis as a cause of readmissions in cancer patients

By: Apurva Jain.

My practicum was in the Gastrointestinal Medical Oncology department at MD Anderson Cancer Center, under the mentorship of Dr. Milind Javle. The project I was involved in, focused on acute cholangitis in patients with pancreatic and biliary cancers. In order to participate in the research, I had to take few appropriate trainings and that was a great learning experience.

My duties at the practicum involved extensive literature review, data abstraction, data entry and data management. I assisted in writing and submitting an IRB proposal.

I had the opportunity to interact with other physicians, which improved my communication skills and has made me a more confident individual.

Public Health Significance

My practicum focused on some of the Essential Public Health Services principles like 1) monitor health status to identify and solve community health problems and 2) diagnose and investigate health problems and health hazards in the community.

As observed by Dr. Javle during his clinics, acute cholangitis results in increased morbidity and mortality in patients suffering from pancreatic and biliary cancers. The exact risk factors associated with increased incidence of acute cholangitis in this patient population are unknown. A better understanding of the risk factors and how they can be prevented can lead to an improvement not only in the duration of survival of these individuals, but also lead to an improvement in their quality of life.

Liver mass that can cause obstruction and lead to cholangitis.

Source: http://liveratlas.org/case/26/
Effect of Imidazoline compounds in Oral Cancer

Practicum Highlights

- This practicum has given me an insight into how dental research works - the use of different equipment and the understanding of different processes like cell culture, counting of the cells, the Alamar Blue Assay and use of a fluorescence reader.

- It has also helped me grow as an individual. It gave me the opportunity to take responsibility and work independently on a project I am passionate about, which wouldn’t have been possible without the guidance of Dr. Edwards.

Advice for Future Practicum Students

- When it comes to research, the results are not always instantaneous. Be patient, learn from your mistakes and persevere. Believe in yourself and know that your work can save lives.

  “Negative results are just what I want. They’re just as valuable to me as positive results. I can never find the thing that does the job best until I find the ones that don’t”

  -Thomas A. Edison

Assessing the antiproliferative action of the Imidazoline compound S43126 in the treatment of Oral Cancer

By: RADHIKA NARAYAN

I had the opportunity to do my Practicum under the expertise of Dr. Lincoln P. Edwards at the University of Texas School Of Dentistry.

The project I was involved with was the assessment of the anti-cancer properties of the Imidazoline compound S43126 in OSC-2 cells. Based on the evidence of previous literature published by Dr. Edwards on the antiproliferative effect of S43126 in various cell types, we hope to see similar results in oral cancer cells.

I had various duties like cell culture of the OSC-2 cell line, counting the cells, formation of different doses of the drug for the study protocol and studying the results. I have learnt how rapidly oral cancer cells grow and how robust they are, which is why this area of research needs to be explored more extensively.

I will write a final report with the study protocol and the results seen, which will provide further insight into the subject and form the basis for future studies.

Public Health Significance

The research conducted at the UT School of Dentistry aims to contribute to the essential services of Public Health. The Department of Diagnostic and Biomedical Sciences, which is affiliated with the School of Dentistry, performs wide-ranging research not only in the field of Dentistry but various other subjects. They work towards diagnosing health problems and finding innovative solutions for these problems.

Oral Cancer is a rapidly progressive and ambiguous disease, which needs to be studied more comprehensively. My practicum, which looks into the action of S43126, can potentially help in the treatment of oral cancer, due to it’s antiproliferative effects. We hope to find positive results for the same, so that this can be replicated and be a benchmark for advanced research in the subject.
Use of Ischemic Conditioning to Modulate Altered Physiology in Patients with Ventricular Assist Devices - IMPULSE Trial. By: Deep Pujara

Till date, more than 16000 patients with terminal heart failure have had mechanical assist devices implanted. These patients are at very high (~10% annual) risk of stroke, with impaired blood pressure control due to altered physiology leading to hypertension one of the major causes. We aimed to reduce the blood pressure in these individuals with use of remote ischemic conditioning, in which blood flow to a part of the body (arm in our study) is stopped for a brief period followed by reversal of blood flow. This results in release of various chemicals in blood from the ischemic tissues which imparts changes in different part of the body resulting reduction in blood pressure as well as preparing the body tissues for future risk of ischemia.

As it is a pilot trial, we aim to identify potential technical as well as compliance issues with the procedure and its impact on reducing blood pressure. I was tasked with enrollment of the patients as well as processing of the samples and data collection. The trial is still ongoing and we plan to analyze and publish the findings once the trial is concluded.

Public Health Significance

Texas Heart Institute has been at the forefronts of the research in the field of mechanical assist devices. With more than 30 years in the field, Texas Heart Institute is one of the most experienced centers in the world to use mechanical circulatory support, both for research and patient care.

Stroke in patients with mechanical assist devices is one of the most feared complications and is associated with very high morbidity and mortality.

‘Research for new insights and innovative solutions to health problems’ is one of the 10 essential public health services identified by the public health steering committee. In this pilot study, we are trying to identify a novel solution to reduce stroke risk in patients with mechanical assist devices.

Highlights

- Opportunity to work with leaders of the field of mechanical circulatory support in a clinical trial examining a novel physiological phenomenon.

Pearls of Wisdom

- Reach out to the leaders in the field of your interest. They may show you how to get things done.
- Keep an open mind. Grab every opportunity to attempt something new.
- Don’t forget to have fun and make new friends.

Most commonly used ventricular assist devices:
A. Heartmate – II , B. Heartware HVAD

Use of microelectrode recording in deep brain stimulation

Does intraoperative microelectrode recording (MER) influence the final location of lead implant in deep brain stimulation in Parkinson’s disease patients By: SUJAN REDDY

We carried out a retrospective chart review to determine if the use of microelectrode recording influences final location of lead implants of deep brain stimulation electrodes, which is used to treat Parkinson’s disease patients.

I was responsible for collecting relevant data from medical records of patients, ensuring complete confidentiality of patient data, data cleaning and analysis. The results were then written up as an abstract that was submitted to the 67th American Academy of Neurology (AAN) conference. The results were presented in the form of a poster at the conference held in Washington D.C on April 20th, 2015.

The findings suggest that the final location of lead implant was significantly influenced by the use of MER.

Public Health Significance

MER is an already established procedure in the field of Neurosurgery. However, lately many neurosurgeons are deviating away from using MER during DBS surgeries saying that it offers no additional benefit and may even add to complications. Since we evaluated a pre-existing health service, my practicum experience most closely co-relates with the essential public health service of ‘Evaluating effectiveness, accessibility, and quality of personal and population-based health services’.

The department of Neurology at the University of Texas Health Science Center-Houston has been contributing to public health in a major way. They are not only giving exceptional care to neurology patients, but are also providing novel treatment options through their ground-breaking research in the field of Neurology, particularly stroke and multiple sclerosis.
Craniofacial Birth Defects

Molecular Mechanism of Craniofacial Birth Defects: A Literature Review By: DHRUVEE SANGANI

I worked on evaluating scientific literature to understand the molecular mechanism of craniofacial birth defects. Along with my preceptor, I wrote a review article by studying all the current literature on the topic. Due to an increased prevalence of craniofacial birth defects like cleft lip and cleft palate, it is important to address this issue. However, very little is known about the molecular mechanism of these defects. The purpose of the review was to collect all the literature and write a review article to understand what is currently known and what needs to be known.

The final product was a review article. We gathered a number of genes and signaling pathways and their mechanisms associated with craniofacial birth defects.

Public Health Significance

Craniofacial birth defects present at birth and each year about 4400 infants in the US are born with a cleft lip with or without a cleft palate and 2700 infants are born with a cleft palate alone. This practicum related to the Essential Services of Public Health as it involved research for new insights and innovative solutions to these disorders. Understanding the molecular mechanism will help target therapies to provide effective treatments to this condition.

Seek what you wish to learn!
Select a practicum that interests you and take initiatives to meet your preceptor and understand your project.

Mice are used for research to understand the molecular mechanism of craniofacial birth defects.
Source: http://www.timeshighereducation.co.uk/Pictures/web/u/x/y/scientist_viewing_mice_in_petri_dis_450.jpg
ASD IN NEUROFIBROMATOSIS-1 AND HIPPOCAMPAL MALFORMATION

ASD (Autism Spectrum Disorder) child with his classical staring look and absent affect
SunnyCoastKids.com.au

Special events:
• I also learned some special radiologic analysis like ABTI (Advanced Brain Tumor Imaging) and submitted 1 abstract and 1 educational exhibit to the RSNA (Radiology Society of North America). This method is very useful in detecting tumor progression and treatment effects
• I also learned special contrast MR imaging and could apply my knowledge of epidemiology and biostatistics in analysis of data.

ASD in Neurofibromatosis-1 and MR Imaging evaluation of Hippocampus for developmental malformations
- RUTVIJ SHAH

This project was about the MR analysis of the Hippocampus in the patients of the NF-1. The concept of studying Hippocampus in NF-1 patients is based on the observation that the NF-1 patients have high prevalence of ASD (Plasschaert E et al., 2014) and Hippocampus is the potential part of brain responsible for Autistic behavior.

Interesting thing is nothing has been published about the hippocampus anomalies in NF-1 patients. Based on the experience of my community preceptor (Dr. T Linda Chi), the hippocampus shows generalized FLAIR hyperintensities that is highly uncommon in normal individuals but the prevalence of having them is very less and can be easily ignored. So, our aim was to learn the volume and shape differences in the cases of NF-1 and compare them with age and sex matched controls.

My duty in this project were reviewing literature, learn various MRI imaging and analyze FLAIR images of the NF-1 patients to find any visible hyperintensities and make a database of those patients with their clinical status and medical history. After that, we are planning to analyze these patients in a detailed and systematic way.

Public Health significance:
• Monitor health status to identify and solve community health problems in NF-1 patients by knowing the pattern of hippocampal malformations in NF-1 patients
• Diagnose and investigate health problems and health hazards in the NF-1 patients by analyzing radiologic features of hippocampus with ASD symptoms in NF-1 patients
• Diagnose and investigate health problems and health hazards in the NF-1 patients to learn the potential mechanism behind the high prevalence of ASD in NF-1 patients

Advise for future student:
• We cannot learn epidemiology in class, practical experience is the best teacher.
• Find the best work site with best preceptor to polish your concepts of epidemiology

Coronal FLAIR MR image with right hippocampal hyperintensities.
http://health.ucsd.edu/

Spring 2015, RUTVIJ SHAH, Diagnostic Radiology- The MD Anderson Cancer Center, Hippocampus in Neurofibromatosis-1
Improving Pregnant Women and their Babies' Health

By: Unnati Shah

The Healthy Eating and Active Living (HEAL) program specifically targets pregnant women or women with infants to potentially reduce childhood – and consequently adult – obesity. Through this project, we conduct 6 weekly sessions for these pregnant women, give them recipe demonstrations, engage them in physical activity, provide day care service for their kids, distribute up to 30 pounds of fresh produce to every participant and give them incentives for attending the sessions.

In this practicum, my main duties include data entry and assisting the CHW and RD at the weekly sessions. I am also contributing in the writing of a conceptual paper based on our project. We are collectively working towards promoting healthy birth outcomes and preventing maternal and childhood obesity.

Public Health Significance

Low-income women are more likely to enter pregnancy with unmanaged chronic health conditions that increase their pregnancy risks. Even those who become eligible for Medicaid, upon conception face significant delays in obtaining early prenatal care. Also, more than a third of normal-weight women and more than half of overweight and obese women gain more weight than is recommended during pregnancy. The target population of HEAL program is of public health significance because of the large potential effects on the health of the child from having the health intervention at the beginning of the child’s life, and the woman’s life stage as a parent, rather than wait for the child and parent to develop a lifestyle that may potentially negatively affect the child’s health. We intend to control risk factors associated with poor birth outcomes, reduce preterm and low birth weight births, and decrease costs of medical care in the first year of life.

Why I loved my practicum?

• I got a firsthand experience in understanding the process and efforts that go into designing and implementing an intervention project.
• I also enjoyed volunteering for the group sessions, cooking meals for the participants, doing yoga and exercises with them.

Want A Healthy Baby?
Take care of yourself! Keep your baby healthy

• Exercise daily
• Consume fresh fruits and vegetables

Source: www.pinterest.com

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Source: www.pinterest.com
Public Health Significance

The department of pediatrics at Baylor College of Medicine has been involved in several projects of public health significance, which have been instrumental in providing services essential to public health.

The Genetic Overlap Between Anomalies and Cancer in Kids (GOBACK) study is one such project that has been addressing the issue of incidence and prevalence of birth defects and cancer in children. The department is involved in assessing all the possible genetic variants and environmental effects leading to cancer and educating the community about certain health hazards that lead to birth defects and cancer.

My practicum project is a new approach in understanding the association between the genetics of Down Syndrome and cancer that will help in devising screening and diagnostic procedures to identify the risk for cancer in children with birth defects.

SNPs associated with Acute Lymphoblastic Leukemia in children with Down Syndrome

By Aparna Subramaniam

My practicum was at the Baylor College of Medicine in the department of pediatric hematology and oncology. I worked under the guidance of Dr. Philip Lupo.

My main focus in the practicum was to assist in genotype calling and quality control of single nucleotide polymorphisms (SNPs) on chromosome 21 among children with Down Syndrome who do and do not develop acute lymphoblastic leukemia. I also helped with association analyses for the same. I will prepare a report with the findings, which will help in further research and analysis.

The department has tried to address the issue of childhood cancer and its association with birth defects. One approach is to understand the genetic overlap between the two and identifying significant genetic variants for these cancers.

I had the opportunity to learn to use the Affymetrix genotyping console.

I learnt the basics of using the statistical software R to run algorithms for genetic data.

Be willing to learn new things and adapt yourself to the work environment of your practicum. You may not always do something related to your subject of interest throughout your practicum but it is a very good opportunity to learn something that you wouldn’t have learnt in a classroom.
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/