



Summer 2007

Fourth Annual CIDER Summer Undergraduate Scholarship Program

Dear UC Berkeley Staff and Students,

The Center for Infectious Disease Preparedness (CIDP) hosted its Fourth Annual Core Infectious Disease Emergency Readiness (CIDER) Summer Epidemiology Program in August 2007. The three-week interdisciplinary program covered the core knowledge, skills, and abilities necessary for public health professionals to detect, investigate, and respond to public health emergencies.

As part of our CIDER program, we offered four scholarships to undergraduate public health students at UC Berkeley. The purpose of the scholarship program is to encourage undergraduates to take a closer look at the field of public health with a focus on applied public health and public health preparedness. Scholarship recipients had the opportunity to participate in the Program and received a stipend of \$1,000 each. We would like to congratulate the recipients of this year's scholarship recipients:

Genna Bettie
Simon Chu
Winnie Hung
Erica Wilhelmsen

This year's recipients excelled in each of their respective classes and challenged their peers regarding Field Epidemiology, Disaster Epidemiology, and Public Health Preparedness. The following articles are written by the scholarship recipients detailing their experiences at the CIDER Summer Intensive Program. We wish them well in their future endeavors.

Sincerely,
Wayne Enanoria, PhD, MPH
Epidemiology Preparedness & Informatics Program Director
Center for Infectious Disease Preparedness
UC Berkeley School of Public Health



**Article for the Infectious Disease Outbreak
Investigations Course
By Genna Beattie**

Participating in this summer's infectious disease outbreak investigations program has been an invaluable and eye opening experience. As a recent recipient of my Bachelors degree from UC Berkeley's School of Public Health, I found that while considering myself as possessing a wealth of knowledge from my previous studies, I felt completely unprepared for a job in the public health field due to my lack of "real world" experience.

"...the outbreak investigations course renewed my excitement in public health..."

When I discovered the CIPD three week summer intensive, providing instruction into infectious disease outbreak investigations, disaster epidemiology, and training in computer based analysis and database construction, it seemed as if a window had been flung open in front of me. I saw participation in the program as a catalyst to transform the conceptual theories accumulated from previous texts and lectures into an applicable skill set I could carry into my work in public health.

In my statement of interest for the undergraduate scholarship program, I wrote that I felt the intensive would provide me with an environment focused on teaching the fundamentals of epidemiological investigation and action. At the same time it would provide a

glimpse into the multiple layers and elements required to effectively and efficiently, assemble and execute a public health plan of action. In addition, I hoped the intensive would offer a chance to become familiar with epidemiological field work, and how to utilize computer databases and outbreak modules to effectively analyze and interpret data. Not only do I feel that these expectations were met, but that the program far exceeded them.

A fundamental aspect of the program was its ability to integrate concepts learned during my undergraduate coursework into a cohesive and realistic picture of their functional application. Principles of topics ranging from basic biology, epidemiology, statistics, database and data table construction, ethics, and politics were transformed into dynamic tools necessary for effective involvement, whether it be in an infectious disease outbreak investigation, a rapid needs assessment in a disaster setting, or any other public health setting. I felt that the information gathered in pieces from past classes was molded during this course into a skill set that I could bring and utilize in any work environment. I now have at my finger tips, a body of information that will enable me to actually function in a "real world" professional environment, in regards to but not limited to, infectious disease outbreak investigation, prevention and control.

Moreover, the program emphasized just how interdisciplinary public health action is; that people from all types of professional and educational backgrounds are essential. It



repeatedly proved that only through cooperation and communication of multiple parties can any action plan be effectively designed, constructed, and implemented. This was achieved not only through the material presented, but by the open and cooperative manner in which the class was conducted; a conversation in which each person's contribution was welcomed, and working together was the rule, not the exception.

In addition, to providing me with an integrated skill set, the infectious disease outbreak investigations course renewed my excitement in public health that had become slightly tarnished during my hunt for a job, post graduation. I looked forward each morning to attending, and felt and continue to feel energized to be involved in a challenging ever changing field; one that weaves together so many disciplines and information sources in order to positively impact population level well-being and truly help people.



Reflection on the 2007 CIDP Summer Program By Winnie Hung

My previous volunteer experience in Uganda left me with many questions about public health preparedness and how control measures can be effectively implemented in the event of a crisis. When I applied to the CIDP Summer Program, I hoped to learn more about how measures can be effectively developed both from the field and at the management level. The scope of the class offered a great survey of outbreak investigations from both sides and gave me a better understanding of the interdisciplinary nature of emergency preparedness. The program offered insight into the systematic approach to public health, in which I learned skills to better manage and carry out operations and, more importantly, through the structure and composition of the class, to value the experience of working with a diverse team.

"...gave me a better understanding of the interdisciplinary nature of emergency preparedness..."

While the course covered a lot of ground, from the seven steps of an outbreak investigation to methods of rapid needs assessment, the class integrated these steps and emphasized their interconnectedness in contributing to a thorough investigation and response. Although the sight of the course binder on the first day was shocking,



the material turned out to be manageable over the course of the three weeks; the team work and the insights of each student and instructor contributed greatly to my experience and showed me how exciting it can be to work on public health issues with a community of very enthusiastic students and professionals.

Furthermore, the course provided an opportunity for me to see how the analytic skills taught in the undergraduate major can be applied and expanded to outbreak scenarios, bringing the reality of resource and time constraints into the picture. Creating mock investigation teams and examining the Oswego gastrointestinal illness was a great way for the members of the class to apply their different skills, both theoretical and practical, to brainstorm and evaluate the case from various angles. The exercise modules were a great way to interact with one another and learn how to combine and communicate our various ideas.

"...develop a stronger sense of the methods of public health investigation..."

In addition to the lecture and discussion material, the computer labs allowed us to participate more thoroughly in the process of conducting an investigation. Our involvement in building an analysis up from a foundational level expanded my understanding of the possibilities as well as the limitations of the data collection and analytical methods, as they are subject to the effects of chance, bias, and confounders inevitable in any investigation. Ultimately, the lab portion of the course provided a venue for us to

work with multiple layers of an outbreak investigation, from formulating case definitions to developing control measures to analyzing and disseminating findings.

The class helped me develop a stronger sense of the methods of public health investigation using a logical, systematic process. Additionally, it gave me an opportunity to explore a team-oriented approach to problem solving that can be applied to tackle any problem and that can open the doors for innovative planning in the development of future public health measures.



By: Erica Wilhelmsen

They say that those that can't do, teach. My retort to that in terms of the CIDP Undergraduate Scholarship Program is that those who can do and have done extensively, teach. You put your full confidence in your professors because they have been there! Nothing in the undergraduate curriculum can prepare you for the real-world, hands-on approach of the



Epidemiology of Outbreaks course. It was exciting as someone with no experience to speak of to be debriefed on actual outbreaks, and then get posed with logistical questions health professionals faced in dealing with them. And these are hardly questions with simple answers; they are invaluable in introducing the complexity of outbreak situations. The classroom left the confines of theory and entered the world of frontline applicability.

The program's greatest gift is this: it hands you the tools of what you need to combat an outbreak. It is then up to you to assess the problem and decide what subsequent action needs to be taken. We were given the cheat sheet for "Conducting an outbreak investigation in 7 steps (or less)," as well as the steps taken for Rapid Needs Assessment. All the information is there in front of you! The mystery is dispelled, and what is left are concepts you can actually use. The finer part arose through classroom discussion, where professors guided us in thinking critically about approaching an outbreak. Over the two weeks we wrapped our minds around tough cases like a food-borne outbreak at a hotel, an anthrax scare, and devising a questionnaire following an earthquake.

"...it hands you the tools of what you need to combat an outbreak..."

Also given as part of our epidemiologic toolbox were the computer programs R and EpiTools. Prior to the course I had no cognizance of them. Now I realize how indispensable they are

in manipulating data to prepare for a final report or in devising a questionnaire. Knowing how to approach an outbreak is one thing, but if you don't have the right tools to accomplish what you want, your efforts are fruitless.

What I enjoyed so much about this program is that we were treated as if we were already health professionals out in the field (which several people were, who brought great insight). The fact that we were equal partners in a hypothetical health department fostered teamwork skills that can be used in a real outbreak. The program imparts a trust in students that they will one day apply the skills it so graciously lays out. For this, I could not be more thankful.



**CIDP Summer Intensive Program 2007 –
PH N257 – Experience Paper
By Simon Chu**

I think that the first time I became really interested in infectious diseases was when I read a book by Richard Preston called *The Hot Zone* for a seventh grade book report. While most other students chose books on the popular fiction of the time, I initially picked up the book at the library out of luck and curiosity for more unique reading. Seeing that the synopsis was about an outbreak of viruses in Africa, I was very interested in the idea of tiny microorganisms infecting people and how doctors would go about fighting viruses that were invisible yet deadly. Looking back, I find it quite funny and interesting that a book I read when I was younger would actually influence my career goals today.

"...the summer intensive program class...has been thoroughly one of the best classes I have taken at Berkeley..."

The summer intensive program class offered by the Center for Infectious Disease Preparedness at UC Berkeley has been thoroughly one of the best classes I have taken at Berkeley. As many of my peers in the program would probably agree, very few courses such as PH N257 exist for undergraduates interested in various areas of public health – especially in infectious diseases preparedness. Seeing that the undergraduate major is relatively new and somewhat not yet completely recognized in the

field, I feel that it is very important that public health undergraduates take coursework that will allow them to present a set of skills to their future employers. The summer intensive program was to me an actual training course in real-world infectious disease outbreak investigations as well as in disaster preparedness situations. I have always heard about earthquake preparedness in California and how the government must prepare for outbreaks of pandemic flu, but I never really got to know how one goes about investigating such scenarios and what one should do in case such an emergency arises. Reading *The Hot Zone* was almost like an imaging a fast paced action thriller in my head. I had always imaged investigators and doctors flying in helicopters and running tests in dark labs, but this class actually gave me the knowledge, skill set, and competence to understand how outbreaks are actually investigated. The course challenged me to grasp such a wide range of knowledge concerning an infectious disease outbreak – from how diseases are transmitted to host-agent-environment interactions to understanding control measures and the types of surveillance systems we use to monitor the health of the general population. Not only did I learn concepts about infectious diseases and how outbreaks should be correctly investigated, I was also given the opportunity to learn statistical programs such as R and EpiData that I could actually use in the event of an outbreak to conduct data analysis. I thought that this part of the program was so important because it is one thing to learn the theory behind public



health decisions and another to conduct findings and generate data to support hypotheses, control for confounding, and use solid evidence to back up those decisions. The various simulations and actual outbreak investigations conducted in class where by far the most fun in the course as it brought out a lot of creativity and thinking from me and the rest of the students as we pretended to be public health officials involved in an outbreak. The discussions in the class were never like I have experienced in other public health courses I have taken and I really enjoyed talking about such serious issues in public health such as the concept of quarantine. The course was intellectually stimulating and exciting for me as a public health undergraduate because I learned so much in a few short weeks about material that I was truly interested and fascinated in.

summer through the program that I recommended it to my roommate who is currently taking a version of the class this Fall. I hope to take more classes from the Center in my last two years at Berkeley and I look forward to broadening my knowledge about infectious diseases preparedness and issues in public health.



I would like to thank the program coordinators Tomas Aragon and Wayne Enanoria for their wonderful teaching ability and the time they spent putting together and teaching this course. I was so impressed with how I spent my

