

# Engineering World Health NEWS

Educating the Nation's Brightest to Meet the Healthcare Technology Needs of the World's Poorest | Volume 4, No.2

## CUREs Partners with Business School Student Teams Collaborate to Build Social Enterprises

Duke-Engineering World Health's newest program, the CUREs nonprofit business plan competition, has partnered with CASE, the Center for the Advancement of Social Entrepreneurship at the Fuqua School of Business, to provide CUREs students with an additional resource to develop their business plans. Beth Anderson, Managing Director of CASE, has introduced a new course, 'Achieving Impact in Social-Purpose Organizations,' which focuses on the effective application of business strategies and marketing concepts to nonprofit organizations. Students from Anderson's course are working with teams from the CUREs competition on consulting projects designed to enhance mission impact.

“The goal of this course is for students to apply what they have learned in class while also providing pro-bono advice for a nonprofit organization.”

- BETH ANDERSON

Through a competitive and collaborative business plan competition, CUREs works to educate and increase the pool of leaders who can start and grow technology-based social ventures (*businesses that focus on helping others*). The competition gives students the opportunity to work together to turn innovative ideas into real-world business solutions that increase access to quality medical care in developing communities.

“CASE's **Achieving Impact in Social-Purpose Organizations**

class has given me the unique opportunity to synthesize the business tools I have learned here at Fuqua and apply them to the launching of a nonprofit opportunity,” says Ben Quinn, a CUREs participant (*Fuqua School of Business, 2006*) and a student in Anderson's class. Quinn is the team leader for **Remote2Way**, which is developing technology that enables efficient information exchange between medical facilities in developing nations.

“CUREs finds its mission very much in line with that of CASE where both seek wide-scale, sustainable social impact by facilitating the creation of social enterprises,” says Jessica Thomas, Director of CUREs.

“The collaboration with CASE through Beth Anderson's class provides a structured environment for the CUREs teams to analyze a specific strategic or marketing issue related to the ability of the organization to achieve mission impact, making concrete recommendations for future action,” she continues.

As the student teams prepare for the First Annual CUREs Final Competition, on April 22nd at the Fuqua School of Business, the program continues to seek other opportunities to collaborate with programs across the university as well as outside of Duke. In fact, CUREs will collaborate with the **Duke Start-up Challenge**, to co-host the final competition where CUREs students will compete for \$100,000 of funding, a year of incubation in the **Pratt School of Engineering**, and the privilege of being the founders of a new nonprofit enterprise.

Contact Jessica Thomas at [jessica.thomas@duke.edu](mailto:jessica.thomas@duke.edu) for more information about the CUREs competition.



Students Ben Quinn, Xarmina Haneef and Ruba Marshood discuss their business plans with advisor Mary Price.

**CUREs**  
Competition for  
Underserved and  
Resource-poor  
Economies

“CUREs finds its mission very much in line with that of CASE where both seek wide-scale, sustainable social impact by facilitating the creation of social enterprises.”

- JESSICA THOMAS, DIRECTOR OF CUREs

## DIRECTOR'S DESK...

ON JANUARY 24, 2006, TENS OF THOUSANDS OF PEOPLE GATHERED IN CARACAS, VENEZUELA TO PROTEST GLOBALIZATION AT THE WORLD SOCIAL FORUM:

Everything is becoming "McDonalddesque or Disneyesque" according to the Global Policy Forum, one of the organizations present at The Forum. Similar protests accompany almost every major international economic meeting, e.g., the World Trade Organization (WTO), the G7 and the International Monetary Fund. Are they right? Is standardization hurting the developing world?



Robert Malkin

In the world of healthcare technology, standardization emanates from either ISO (International Organization for Standardization) or from AAMI (The Association for the Advancement of Medical Instrumentation). Almost all medical instrument designs in the world meet one or both of these two bodies' standards.

One thing is clear, the process of setting these standards excludes the developing world. Standards are set and revised by panels of technical experts. For example, I sit on the Electrical Safety Committee of AAMI. Our committee is responsible for all standards related to medical device electrical safety in the US and by extension much of the world. AAMI has hundreds of such committees setting standards for all aspects of medical equipment. In years of attending committee meetings and reading reports and memos, I have yet to ever see developing world representation on my committee.

The actions of AAMI are not immaterial for the developing world. The US-European Mutual Recognition Agreement of 1997 and the 1994 WTO Agreement on Technical Barriers to Trade, obligates all WTO member states to use international standards as the basis of their product regulations.

So, let's assume that the standards are not created with developing world input, and let's assume that they are being forced to follow them, is this really a problem? Surely if a device is safe in the US, it is safe in the developing world as well!

Maybe. For example, defibrillators are covered by the standard ANSI/AAMI-DF2. Among hundreds of other things, this standard dictates that defibrillator batteries must retain full capacity at zero degrees centigrade, being able to provide three discharges in three minutes (standard DF2-4.3.7). Not surprisingly, batteries that can meet this standard are expensive: \$200-\$300. As a consequence, many of the defibrillators EWH volunteers see in the developing world are nonfunctional. It might be possible to design a \$2 battery option for the defibrillator, but then the defibrillator would not meet the standard (perhaps it would only work at room temperature or would only be able to deliver one shock per minute). If such an option existed, the defibrillator wouldn't meet the standard, but at least there might be a working defibrillator in the emergency room!

In the end, I think "globalization" or "international standardization" is neither universally good nor universally bad. Rather, in some cases standardization helps, and in others it hurts. Nevertheless, a blanket statement, such as that made by the WTO that all member states should adopt international standards as their product standards, can do immense harm to the people of the developing world. I would urge ISO and AAMI to consider creating multilevel standards, where the standards are based on environmental conditions, including the economic environment, not just the temperature. I would like to urge the WTO to consider the harm that can come from standards so stringent as to prevent any care from being delivered in the developing world. In short, we must recognize that the developing world is a unique environment, requiring respect and understanding at every level of interaction.

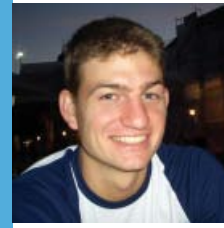
## Fellowships Named

### Roddis, CUREs and Volunteer Fellows to join Duke-EWH

This year Duke-EWH awarded more fellowships than ever before. Lidet Abbey was named the Roddis Fellow. Roddis Fellows are selected as among the strongest applications to the Duke-EWH Summer program. The accompanying financial aid package, generously sponsored by The Hamilton Roddis Foundation, ensures that such students can participate in our unique program.

This year, the Engineering Aid position was replaced by two new fellowships.

Michelle Garst was named to the new Duke-EWH Volunteer Engineer position. This position allows the selected participant to extend their international experience over the entire year. The Engineering Volunteer position includes funding for the first summer, when the volunteer joins the rest of the students in the program. This new program also includes several trips over the following year, and the opportunity to participate in a second summer program the following summer. For the second summer, the Engineering Volunteer will help teach the laboratory portion of the course.



TOP TO BOTTOM:  
Lidet Abbey,  
Glen Rabito,  
and Michelle Garst

This year Duke-EWH CUREs introduced a new and exciting fellowship: The Duke-CUREs Master of Engineering Management Fellowship. This year Glen Rabito was named to this new fellowship. As the CUREs fellow, Glen Rabito will focus on developing a new nonprofit corporation to meet the needs of the developing world. He will participate in the summer program, and, at the end of his one-year fellowship taking courses at Duke, earn a Master's Degree in Engineering Management. In addition, the CUREs fellow is automatically accepted as a contestant in the CUREs program.

"This new MEM fellowship is a great opportunity for anyone interested in social entrepreneurship," said Robert Malkin, the Director of Duke-EWH.

# chapterNEWS



The **University of Houston** EWH Chapter has blossomed from a couple of interested students to a group of close-knit friends who love to volunteer and take part in social activities. The UH chapter focuses on repairing equipment at Medical Bridges, a local nonprofit that sends the repaired equipment to the developing world. "What we do is a really fulfilling experience," said Naveen Kallarackal, EWH-UH Chapter President (*Biomedical Engineering 2006*). "We have the chance to impact those that really need [it] ... by taking a few hours of our lives and committing to this program," he continued. The chapter has also volunteered at the Texas Children's Hospital. The chapter has plans to expand their social atmosphere, increase their community services, and ultimately send qualified members on the Duke-EWH Summer program.

**"We have the chance to impact those who really need [it]..."** - Naveen Kallarackal

## New CUREs Director

### Duke-EWH Welcomes Jessica Thomas to the staff

Duke University-Engineering World Health is glad to welcome Jessica Thomas as the Director of the CUREs nonprofit business plan competition. Jessica grew up in Nigeria and Senegal and has spent most of her adult life in the U.S. She is fluent in English and

French and is working hard to develop her Spanish skills. Jessica joined Duke-EWH in December after serving as a Program Manager for CFED (*formerly Corporation for Enterprise Development*), a national economic development nonprofit. Prior to CFED, Jessica founded and



Jessica Thomas

ran High Tide Consulting, a social entrepreneurship, community development and sustainability consulting business in California and North Carolina. Jessica has also worked as a product development consultant to early stage educational toy companies. Jessica sits on the Board of Directors of SJF Advisory Services and serves as the Professional Development Chair for the Triangle Professional Chapter of Net Impact. Jessica holds a BS in Engineering from Stanford University and an MBA from Duke University's Fuqua School of Business. Please join us in welcoming Jessica to the Duke-EWH team.

## Scouting out Tanzania

### Michael Scott Visits New Hospitals

Michael Scott, the Engineering Aid for Duke-EWH visited Tanzania during December of 2005. He reported the people friendly, and the hospitals largely desperate!

It was a busy trip for Scott. The two primary goals were to locate and visit four potential language schools for the Duke-EWH Summer program and to conduct visits to nine possible hospital sites for students in the program.

Scott reported that from a cultural perspective, the Tanzanian people are very friendly and welcoming. The country is a peaceful place with low crime and many world-renowned tourist destinations like the Serengeti and Mount Kilimanjaro.

The Same (pronounced Sah-May) District Hospital is an example of how desperate the hospitals were. The hospital is in a remote area of Tanzania (pictured below). The Same District Hospital serves the small town of Same in the desert region east of Moshi, Tanzania. Moshi is about 600 km from Dar Es Salaam, the capital, and about 200 km from the border with Kenya. The small Same hospital has several departments. Yet, it has only old, broken pieces of medical equipment. Without internet access or regular electricity, The Same District Hospital is typical of those seen by EWH.

Despite their desperate conditions, the hospital welcomes Duke-EWH students. There is a small Roman Catholic hostel near the hospital where the students could live and eat. The rooms are small and students must share a bathroom, but the people are wonderful and grateful for the outreach.

Scott summarized his trip by saying "This is an exciting opportunity for the student volunteers! The students should have a great experience working in Tanzania."



Mike enjoyed a warm welcome at the Machame Lutheran Hospital in Northern Tanzania.



**JENNIFER DOLAN**, a biomedical engineering student from Western New England College, spent the summer of 2005 not vacationing in Hawaii or conducting research or even working a desk job for 40 hours per week. Instead, Dolan reported that her summer was “by far the greatest experience of my life.” She spent the summer on the Duke-EWH Summer Institute working at the Hospital Nacional Zacamil in San Salvador, El Salvador. When asked about her experience over the summer, she says that she always relates one specific experience that she faced in the hospital.

In her last week of work at the hospital, Dolan was called into the neonatal intensive care unit to help with an incubator that was no longer functioning. The problem was a dead battery. In disbelief, she asked about a replacement battery. However, she was told that there was no money for a replacement. “The



*Jennifer repairs an ultrasonic transducer (left) and completes a technology needs assessment (right) – a series of interviews to help shape future EWH efforts.*

reality of the situation was that a premature infant might just as well have been as dead as the battery,” she said. Fortunately, that baby survived without the battery in the incubator.

This experience has not left Dolan. She is currently working on a bilirubin device as part of the EWH Projects That Matter program. Projects That Matter is a program whereby senior engineering majors across the US can get college credit for designing equipment for the developing world. Bilirubin lights are one critical component of some infant incubators and warmers, but it is very difficult to know when to replace the light bulbs, as the therapeutic light they emit is invisible. Dolan’s project will allow technicians to determine when the light bulb is reaching the end of its useful life.

“The summer experience has enlightened me to the societal obligations that I have ... as a biomedical engineer,” summarized Dolan.



**While the rest of Central America follows each penalty kick and soccer goal with intense passion, the Nicaraguans could not care less. Their passion is baseball!** However, **Tracy Lipps** (*Duke University Medical School, 2009*) discovered that the medical technicians at her host hospital, Velez Paiz, in Managua, Nicaragua could not even afford a baseball, let alone a bat or a glove. Upon her return to Durham, she decided to help out. Tracy contacted the head coach of the Duke Baseball team and convinced him to donate their used baseball equipment to the hospital. Imagine Engineering Aid **Mike Scott’s** surprise on a recent inspection visit to Tracy’s host hospital, when he discovered the entire maintenance staff bedecked in his alma mater’s colors.

**What is Engineering World Health (EWH)?** EWH is an extraordinary fusion of engineers, scientists, physicians and other volunteers who donate their time and talents to positively impact the quality of healthcare in disadvantaged areas around the world. Our vision is embodied in the “Cycle of Caring,” which begins with donated medical equipment and parts and relies on professional expertise to recycle and restore the technology for reuse. We then deliver and install the refurbished machinery for a community in need. Our commitment does not end there. Unlike any other organization in the world, volunteer engineers and students return to the installation sites to ensure that the equipment remains in good working order. Our ultimate goal is to train engineers and technicians at those sites to maintain their own equipment. The **Duke-EWH Summer Institute** is a unique study abroad program that offers students an opportunity to apply their technical skills hands-on in a foreign country.

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