

feature.

Improving Health through Technology

by Susan Houston Klaus

For citizens across the state, Nebraska's network of clinical health laboratories provides a crucial service. In the event of a public health emergency or bioterrorism event, they would be the front lines in ensuring potentially harmful substances are identified, analyzed and quarantined quickly.

Now, with a new computer application developed by faculty and students at UNO, labs in small and rural communities are finding it easier than ever to communicate findings and consult with the flagship Nebraska Public Health Laboratory (NPHL) at the University of Nebraska Medical Center in Omaha. The STATPack™ – short for Secure Telecommunication Application Terminal Package – is a telemedicine laboratory diagnostic and consultation system created in the UNO College of Information Science and Technology at The Peter Kiewit Institute (PKI). Research and development for the system was initiated by Ann Fruhling, assistant professor of information systems.

"I grew up near Kearney, and I know how important it is for people to have access to health care and information," she says. "My interest was to help rural communities sustain and improve their quality of life."

With public health threats like the West Nile virus and bioterrorism top of mind in recent years, Dr. Fruhling also was intrigued with finding a way to provide an immediate consultation link between the community labs and the NPHL.

Supported by funding from the Nebraska Research Initiative, she collaborated with NPHL Director Dr. Steven Hinrichs and his colleagues. The group discussed suitable communication methods for labs in the network and the state lab, and Dr. Fruhling enlisted the help of her students to research a solution.

The STATPack concept involves taking a macroscopic and microscopic digital image of culture samples and sending it electronically to or from the lab in Omaha, as well as devising a pager alert system that would notify contacts immediately if a suspicious sample was found.

The PKI team researched software engineering solutions that would address a way to create an easy-to-use telehealth system that could be implemented in a variety of IT environments and designed biosecure components that would keep captured organisms away from human contact.

The group's invention is a client/server system that uses Web-based technology. The hardware features a computer and special keyboard that can be sanitized, with a sealed plexiglas box and remote-controlled digital camera mounted on top.

Lab technicians at NPHL can electronically zoom in on a suspicious organism, download the image in seconds, respond to the originating lab and, if necessary, send an immediate alert to every lab in the network.

The PKI team rolled out the system and its accompanying hardware in 2003. Since then, seven hospital laboratories across the state have come on line, as well as three additional diagnostic labs in Nebraska. Ten more labs are planned for implementation.

Jolene Smith, microbiology supervisor for Faith Regional Health Services in Norfolk, says that using the STATPack "has opened up the lines of communication" between labs. "It's brought a cohesiveness between the NPHL and the labs like ours in outlying areas.

"I feel more secure having the technology," she adds. "If something were to occur, communication with the NPHL would be immediate."

There's economic potential in providing the STATPack to other health-related facilities in Nebraska and beyond. Dr. Fruhling says eventually the team would like to offer the application commercially to physician offices and clinics across the state and health laboratories throughout the nation.

"Ideally, we want to make this system available and affordable for small-size physician's offices and clinics," she



The STATPack team assembled at UNMC's Nebraska Public Health Laboratory (left to right): UNO student Matt Puumala, Dr. Steven Hinrichs of UNMC, UNO's Ann Fruhling, Rhonda Noel of UNMC and UNO student Faisal Ahmed. photo by Tim Fitzgerald

says, "so they're prepared whether they have an emergency or just need a second opinion."

Dr. Hinrichs, NPHL director, agrees: "This system has the potential to contribute to improving the overall level of medical care in every community in Nebraska where it's put in place. It's a great example of how the Internet and the telehealth network will continue to improve health for all Nebraskans, including those in rural areas."

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