


smaller community and succeed – because we don't have the 50 people in our IT department you might find in a large system. The scope of everything is just different. So if they were really interested in getting into this size market, they needed to understand it."

The integrated, networked EMR system has meant more efficient medical care, both in terms of timeliness and productivity. "The big difference for our healthcare providers is that they have all the information right there in front of them; you do not have to wait for pieces of paper to float through anymore," says Schultz. "This is very important from the standpoint of it not mattering anymore where a patient has been before, as all the relevant information is right at the provider's fingertips."

With built-in educational materials and patient-generated diaries, Winona Health has tools to help patients manage chronic conditions. "If we can help patients manage their conditions more aggressively at home, we can help them decrease the amount of hospitalization they have to have," Schultz points out.

And this system's impact will only grow over the years. "We're looking now at how to mine the community information to learn how many people have diabetes, how many are suffering from depression, how many are on high blood pressure medication, and so on," says Schultz. "Then we can look at how we might be able to do things outside of our walls that can support these people."

Universal broadband access was what drew Cerner to Winona. But how important is high-speed Internet to an application that is largely data-oriented? "The speed of connectivity is critical," answers McGarvey. "Capturing the attention of patients and consumers is something that has to be simple, has to be fast, and has to be convenient.... [It] would undoubtedly turn people off from using the system if the connectivity were too slow." 

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# NEW TELEMEDICINE APPLICATION PROMISES TO REPLACE MANY SKIN BIOPSIES

*by Jay Eastman, Ph.D.,  
Chairman and CEO, Lucid Inc.*

**I**nstead of relying on routine surgical biopsies, dermatologists may soon be sharing, reviewing and diagnosing non-invasive digital images of skin cells via the Internet, using Lucid Inc.'s VivaNet telemedicine server and its VivaScope confocal imagers.

Rochester-based Lucid ([www.lucid-tech.com](http://www.lucid-tech.com)) has developed innovative cellular imaging technology and is now leveraging the Internet to securely deliver accurate, real-time cellular resolution images to medical professionals.

## Anytime, Anywhere Collaboration

The company's VivaScope confocal microscopes can image living tissue with cellular resolution and – importantly for patients – without the need to excise tissue. The VivaNet server is intended to provide fast, accurate and secure stor-

age, retrieval and transfer of the images across the Internet. The technology is expected to facilitate anytime, anywhere professional collaboration and consultation among medical practitioners and pathologists in forming a clinical judgment for a variety of skin conditions, including skin cancer and other dermatologic conditions.

Just as MRI and CT scans have largely eliminated the need for routine exploratory surgery, in-vivo reflectance confocal microscopy may one day eliminate the need for routine invasive skin biopsy.

A typical VivaScope imaging session produces two types of images of the patient's skin: dermatoscopic-quality, full-color macroscopic pictures and microscopic, cellular resolution images. Once all of the images for a session are completed, the images and pa-





tient-related data are transferred for storage to the secure VivaNet server, where they are immediately available for retrieval by and transfer to other authorized practitioners for their review and collaboration.

VivaNet is an Internet-based application that enables the transfer of VivaScope digital images between practitioners and pathologists for rapid review of confocal images. It conforms to DICOM (Digital Imaging and Communications in Medicine), an internationally accepted standard for the secure storage, retrieval and transfer of medical images, and it complies with federal HIPAA requirements for privacy and integrity of medical data.

### Answers in Minutes, Not Days

The plan at Lucid is for VivaNet to ultimately make VivaScope images available for review by other dermatologists and pathologists in minutes, not days – thus enabling rapid, real-time professional collaboration. The ultimate goal is that practitioners will rapidly receive a pathologic interpretation of confocal images from a VivaScope session, potentially assisting the practitioner in arriving at a clinical judgment while the patient is still in the doctor's office.

Lucid received a \$1.9 million, 3-year grant from the National Institute of Health's National Cancer


Institute to perform a large clinical study to evaluate the efficacy of its VivaScope in-vivo confocal microscopy technology for the diagnosis of pigmented lesions. The

*With Lucid's Internet-based technology, now in clinical trials, patients may avoid invasive biopsies and still get a diagnosis before leaving the doctor's office.*

study, which is being conducted at five sites, will involve approximately 600 patients with suspicious pigmented lesions.

An earlier pilot study of the accuracy of confocal imaging for diagnosis lesions suspected to be melanoma showed improved diagnostic accuracy for melanocytic lesions that are difficult to diagnose. This improvement could translate into lives saved. The American Cancer Society estimated that in 2007, 59,940 new cases of invasive melanoma will be diagnosed in the United States, and that 8,110 deaths will occur due to the disease. According to Cancer Facts and Figures 2007, if melanoma is diagnosed and removed while the tumor is localized, the 5-year survival rate is 99 percent; however,

if the lesion has metastasized to a regional site, the five-year survival rate drops to 65 percent, and if it has metastasized to a distant site, the rate drops to 15 percent.

With the introduction of VivaNet to the dermatology community, Lucid believes that the combination of its patented VivaScope and VivaNet technologies will ultimately enter routine clinical use. 

*About the Author: Jay M. Eastman, Ph.D. is the president and Chief Executive Officer of Lucid, Inc., a privately held manufacturer of confocal diagnostic medical imaging systems, which he founded in 1991. His previous positions included serving as Sr. Vice President of Strategic Planning of PSC, president of Optel Systems, Inc., and Director of the University of Rochester's Laboratory for Laser Energetics. He currently serves on the Boards of Directors of a number of other companies, both public and private. Dr. Eastman holds a BS in Optical Engineering and a Ph.D. in Optics from the Institute of Optics at the University of Rochester, Rochester, New York. He is a fellow of the Optical Society of America (OSA) and the Society of Photo-optical Instrumentation Engineers (SPIE). He is the inventor or co-inventor in 37 patents.*

For more information, visit Lucid online at [www.lucid-tech.com](http://www.lucid-tech.com)