

Technology can improve care while lowering costs



Tech Talk

By Rich Noffsinger

Internet will be foundation to removing barriers between physicians

It's not at all unlikely that some day in the not-too-distant future, the old joke about bad handwriting being a prerequisite for becoming a doctor will have to be explained to first-year medical students around the world.

Why? In a word, technology.

Instead of hurriedly scratching notes onto medical charts and orders for prescriptions, doctors will transmit patient information instantly to pharmacies, dietitians, and insurance companies, using a dazzling array of hand-held, interconnected devices that put the power of technology, quite literally, at their fingertips.

In many cases, a new model of the doctor-patient-provider relationship is already in place. As doctors communicate more at all points in the health-care spectrum and spend less time taking notes, the questionable quality of their handwriting will fade to a footnote.

There's no doubt that technology is changing the way we live, work, and communicate in a way that is nothing short of revolutionary. And there are few places where this revolution is making a bigger mark than healthcare.

Healthcare affects all of us at one time or another. Consider the numbers. In 1999, 13.7% of the U.S. gross domestic product went to healthcare. In terms of dollars, Americans shelled out between \$844 billion and \$1 trillion.

We currently invest \$36 billion per year in technology in the health-care field alone. While that investment is yielding some obvious dividends, the field still faces major challenges.

The health-care arena—the woven tapestry of patients, doctors, providers, HMOs, hospitals, clinics and clinicians, technicians, and emerging treatments—is extremely complex. For each of these areas to interact and improve patient well-being requires an awesome level of system interoperability.

The heavy regulation of the health-care field and the tendency to continue to rely on legacy technology only add to the complexity of the challenge. Sadly, healthcare underutilizes current technology.

All of that is about to change.

Microsoft's vision of empowering people through great software any time, any place, and on any device is usher-

**Used effectively,
technology offers
a more hassle-
free experience.**

ing in a brand new way of approaching technology. We call it the PC-Plus Era.

Using the power of the Internet as the foundation, important information—e-mail, voice mail, patient records, lab results, and on-line medical encyclopedias—is instantly available to the professionals who need it. This is achieved by using not only the traditional PC, but devices such as hand-held computers, general-purpose tablet PCs, Web TV, and even cellular telephones.

The era of browsing the Internet wasn't all bad. It was simple, easy to understand, and offered a sense of global connectivity. But it required a keyboard, created too many islands of information, and gave the user very little control.

Taking the Internet beyond the era of browsing puts us on the brink of a computing revolution. By providing a natural interface for interaction among everyone on the health-care continuum, the Internet is erasing previous barriers between the user and the device.

While this erasing of barriers is far from complete, there is already compelling evidence of the impact it will have on our approach to healthcare.

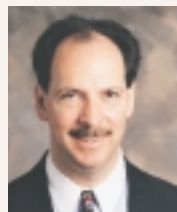
In South Dakota, for example, housebound patients are visited by traveling clinicians, who use hand-held devices to transmit the patients' data instantly back to the office. This dovetailing of healthcare and technology saves paper and the time it takes to fill out forms as well as cutting back considerably on travel time, meaning more clinicians can visit more patients at less expense.

And in Southern California, one medical group set out to streamline its administrative tasks and workflow without short-changing the quality of

SEE TECHNOLOGY ON PAGE 9

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TECHNOLOGY New model emerging

CONTINUED FROM PAGE 8

care for its more than 10,000 patients, half of whom are geriatric. Automating the workflow by providing Web-based access for anyone with authorization to view a patient's chart has certainly simplified the medical group's paperwork processes. It's also saved the practice \$45,000 per year—or 23%—in administrative costs.

The move toward paperless practices also dramatically increases the quality of care that doctors can provide.

Physicians can use wireless connectivity—a general-purpose tablet PC, for example—to communicate with one another about a specific patient or ailment, drawing on one another's areas of expertise to offer the patient an unprecedented level of care.

As technologies continue to emerge,

physicians will be able to spend more time collaborating with each other and seeing patients. Rather than exchanging e-mails and voice mail messages, physicians will conduct on-line discussions. Rather than sending for a patient's medical file, the patient's entire medical history will be accessed on the screen with one simple click. A patient's chest radiograph, for example, will be viewed and discussed in real time by several physicians, all of whom will have access to links and references, such as medical encyclopedias or the findings of studies completed just the previous week.

Natural interfaces are a big factor in the new Internet user experience. A keyboard and a terminal used to be at the heart of the very notion of computers. Now, technologies read, interpret, and deliver by drawing on the very human elements of handwriting, speech, and vision.

Imagine combining the telephone and medical expertise from around the world. The concept of telemedicine will

grant patients access to some of the world's best physicians by fully utilizing the power of the Internet, using e-mail, streaming media, and multiple point-of-care devices, which specialists will use to offer live advice—and real care.

Using emerging technologies, doctors will be able to perform such previously unimaginable tasks as reading and programming a pacemaker or other implanted devices from a remote location. Put in the most basic terms, that means

a heart patient in Cheyenne can visit a doctor associated with Harvard Medical School without ever leaving Wyoming.

The applications of technology in healthcare already show great promise. Used effectively, technology offers the patient and the physician a more seamless and hassle-free experience. It has also demonstrated its muscle in the difficult task of cutting costs, which will ultimately make more care available to more people. ♣

ETHAMBUTOL Be aware of toxicity

CONTINUED FROM PAGE 7

excreted by the kidney. Isoniazid (especially in combination with ethambutol) has also been reported to cause a toxic optic neuropathy, and isoniazid toxicity should be suspected as the etiology in cases of persistent visual loss despite discontinuation of ethambutol.

The ophthalmologist should be aware that ethambutol (even at “safe doses”) can have ocular toxicity. The drug should be stopped and the ophthalmologist should contact the internist or pulmonary specialist at the first sign of visual loss (optic atrophy may not be present initially). Clinicians should be aware of the features of ethambutol toxicity.

Early recognition and discontinuation of the medication may reverse the visual loss. ♣

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Antioxidants in beer may affect eye health

FROM STAFF REPORTS

LONDON, ONTARIO—Researchers in Canada are exploring whether the antioxidants in beer can prevent cataracts, especially in diabetics who are prone to developing them.

Rat and cow lenses are damaged when exposed to high glucose levels, but appear to be protected by the type of antioxidants found in beer, the Canadian researchers say.

“The question is, after someone takes a drink, how much of the antioxidants actually get into the blood

stream and to the lens of the eye?” said John Trevithick, who is leading the research at the University of Western Ontario, London, Canada.

Dean C. Brick, MD, an ophthalmologist at the University of Arizona School of Medicine, Tucson, called the study interesting, but said “we've known that antioxidants in dark wines have a protective effect, but alcohol has deleterious effects. Alcoholics develop cataracts, too.”

The researchers say that the benefits are greatest when beer is consumed in small quantities. ♣