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Digital diagnosis

UVic research helps the health care sector cut down on paperwork

Kushniruk, video taping a doctor-patient-computer interaction.

by Melanie Tromp

Emergency rooms and doctors' offices are among the few places in North America where computers are still hard to spot. This may not be the case for long. Patient records are going digital, and University of Victoria-based research is helping to ease the transition.

"Record-keeping in health care is one of the most complex areas in which to introduce new technology," says UVic health information science professor Dr. Andre Kushniruk, who has spent 15 years studying how we interact with information systems.

"Once you add a computer to a job it changes a lot of things," he says. " If I'm a doctor using the system, it could have a fundamental effect on how I interact with the patient, the questions I ask, and even how I make my diagnosis."

Many hospitals and medical offices currently use a hybrid system of paper and computers, giving doctors access to records that have often been documented twice and may not always match up. This is known as "double-charting" and can lead to inefficiencies and duplicated information.

The technological shift to electronic health records (EHRs) involves the online documentation of each medical and laboratory visit, including symptoms, diagnoses, prescriptions, referrals and allergies. EHRs will streamline the industry, offer easier access to health information for doctors, and increase patient safety.

Kushniruk heads up a team of interdisciplinary researchers who are easing the transition toward digital records in two ways: educating medical and nursing students about the new technology; and pre-testing the different systems available by measuring doctor and patient experiences with the new technology.

The Canadian government has spent billions of dollars promoting these new technologies, notes Kushniruk. However, with the plethora of incompatible programs available, "there are some really good [systems] and some bad ones."

Before new information systems are released publicly, Kushniruk observes and videotapes interactions between the doctor and patient, while the doctor uses the system, to assess the areas where safety is improved.

"Once you have this basic information, you can layer other functions into the program, such as surveillance systems that will help doctors on the front line determine if there is an epidemic and alert others in the health care system," he says.

Automated technology will also alert doctors to patient allergies and allow them to access medical histories.

"The possibilities for improving health care using EHRs are considerable," notes Kushniruk. "These include improving access to vital patient information when and wherever it is needed, streamlining health care work, avoiding duplication of information, and improving patient safety."

Through their research, Kushniruk and his colleagues have identified the need for more education on the benefits and pitfalls of technology. The team has received funding from the BC Ministry of Health to start up the Electronic Health Record Educational Portal, a remotely accessible server that gives students real-life examples of patient cases in electronic format.

"The earlier medical students get exposure to the systems and the different types available, the sooner they'll have a better understanding of how it can work in their practice," he says.

In early 2008, this portal—using a record system designed and donated by UVic graduate student Dr. Ron Joe and his colleague Dr. Tony Otto—will be linked to each of the medical and nursing programs on Vancouver Island.

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Health information science studies how health data are collected, stored and communicated. UVic houses the only school dedicated to health information science in Canada. The school includes experts in nursing, computer science, medicine, business and law who are focused primarily on health informatics. Visit hinf.uvic.ca.

Less than 20 per cent of Canadian doctor's offices have adopted computer-based record systems. Usage is closer to 90 per cent in Denmark, although this doesn't mean complete automation and the country faces some of the same challenges in terms of usability.

Patients will potentially have access to portions of their own medical records from home, says Kushniruk. "Patients who have chronic diseases will be able to check their lab results. Then, when they see their doctor, they will be more informed about their own illness."

Kushniruk is working on a project with the University of Pittsburgh to expand his research to the dentistry sector.

UVic researchers were awarded more than $71 million in outside research grants and contracts in 2006/07, for a total of $308 million over the last five years, doubling the research support of the previous five-year period.

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