

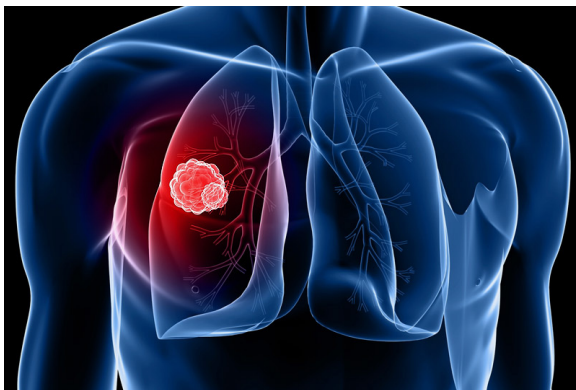
Epic alert to steer high-risk patients to CT screening

New Tool against Deadliest Cancer

By Todd Neff

Lung cancer screening is about to take off at University of Colorado Hospital.

Or maybe not. It all depends on how physicians across the hospital – and, soon, University of Colorado Health North and South – react to the digital nudge that began appearing on their computer screens July 6.



Lung cancer screening at UCHHealth may have gotten a boost on July 6.

That nudge comes in the form of a simple “best practice alert” in the Epic electronic health record. The alert, which pops up for patients of certain ages with specific smoking histories and health statuses, is simple. Creating it was quite the opposite, involving technologies and processes to integrate and partially automate what could be a high-demand health screening.

Three CU School of Medicine/University of Colorado Hospital physicians teamed up to make it happen: pulmonologist and lung cancer expert [Stephen Malkoski](#), MD, PhD; internist [Brandon Combs](#), MD; and [Peter Sachs](#), MD, the CU Department of Radiology’s chief of thoracic imaging.

They didn’t have to create the UCH Lung Cancer Screening Clinic, which launched last November. What this trio and others have done is harness Epic to increase the odds that patients at high risk of lung

cancer get referrals for screenings that could save their lives. But the change could present a significant operational challenge.

Winding road. The American Lung Association estimates that 158,000 Americans will die from lung cancer this year, which is more than a quarter of all cancer deaths and 40,000 more than breast, prostate, and colorectal cancer combined. Screening of the top 20 percent of high-risk patients can spot cancer at an early stage in one in 150 patients, Malkoski said.

Yet lung cancer screening has been a long time coming. The definitive argument for it came via the [National Lung Screening Trial](#), which from August 2002 to April 2004 enrolled 53,454 people without symptoms but at increased risk of lung cancer at 33 U.S. medical centers. Half underwent screening chest X-rays; the other half low-dose CT screens. At the end of 2009, the researchers tallied up the lung cancer cases and deaths and found that low-dose CT scans reduced the risk of lung cancer death by 20 percent (from 1.7 percent to 1.3 percent) compared to X-rays. (A later study showed those who were X-rayed did no better than those who weren’t screened at all.)

That was solid enough evidence to spur the U.S. Preventive Services Task Force (USPSTF) to publish [lung cancer screening recommendations](#) in 2013. The USPSTF recommended annual low-dose CT screening for adults ages 55 to 80 with a 30 pack-year smoking history who either still smoke or quit within the last 15 years. (A person amasses one pack-year by smoking a pack a day for a year; a two-pack-a day smoker over 15 years piles on 30 pack-years.)

Private insurers started covering lung cancer screening following the USPSTF report; it took another two years for the Centers for Medicare and Medicaid Services (CMS) to [announce coverage of](#) Medicare patients in February 2015.

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Fire it up. By that point, Malkoski, Sachs, and Combs were well into the effort to bring notification of the screening services to UCHealth providers using the Epic electronic health record. Their system works roughly as follows.

First, the Epic best practice alert related to lung cancer screening will appear for patients 55 to 77 years old with a long smoking history. This data should be in the system for all patients. Recording smoking-related information is a CMS requirement anyway, said Sachs, as is discussing smoking cessation.

Second, the primary care (or other) physician working with the patient will decide if a lung cancer screen makes sense for the patient. For example, patients too sick to survive lung cancer treatment won't benefit from a screen. Providers can refer patients who would benefit to the Lung Cancer Screening Clinic or order the CT on the spot. Having the primary care provider (PCP) assess candidates for screening and share decisions with patients about whether to be screened at all is ideal, Combs said, because the PCP knows the patient best.

The PCP has some help in this process, in the form of a free decision-support tool, shouldiscreen.com. The tool, developed at the University of Michigan, incorporates age, smoking history, years since having quit (if the patient has), education level, family lung cancer history, body mass index, and other factors. It is based on research [published](#) in the *New England Journal of Medicine* in 2013. In addition to calculating the risk of dying of lung cancer in the next six years (this is based on National Lung Cancer Screening Trial results), the shouldiscreen.com decision support system explains both the benefits and harms of doing lung-cancer screening.

Patients judged to have a 1.5 percent-or-greater chance of developing lung cancer in the next six years are then referred for low-dose CT screening. Statistically speaking, it generally takes decades of pack-a-day or more smoking to rise to such a risk level.

At the Lung Cancer Screening Clinic, Kristen Petrelli, FNP, a patient navigator with the Lung Cancer Multidisciplinary Clinic, also can take patients through the shouldiscreen.com and refer those at high risk to radiology for screening.

Scanners ready. For patients, the actual screening is a matter of getting a low-dose CT scan. But there's a lot more going on. Radiology updated its image-management system to incorporate

smoking-related information straight from Epic, Sachs said. In addition, Radiologist [Toshi Clark](#), MD, and a vendor teamed up to build what Sachs described as "a really sophisticated computerized recording template" into the radiology workflow. With it, he said, radiologists plug lung-nodule sizes straight into the system, which then automatically generates [LungRADS scores](#) for grading suspicious lesions.

"The important thing is that we've taken some of the potential for human error out of the scoring calculations," Sachs said.

The radiology database generates reminders for Petrelli, who in turn can send off such things as letters to patients regarding their next scan. The system also sends data automatically to an American College of Radiology lung cancer registry, which is a CMS requirement, Sachs said. UCHealth North and South will begin using the same system after a planned upgrade to their PACS (picture archiving and communication) and workflow management systems, he added.

Patients with suspicious lesions schedule appointments at UCH's [Nodule Clinic](#), which Malkoski co-directs with [Derek Linderman](#), MD.

The screening alert system, Malkoski said, is a first step toward a future in which screening is done on a truly risk-adjusted basis, but it is far from perfect. "If you screen 100 people worth screening, you'll probably find one-half to one cancer, but you'll find 25 nodules," he said. For now, the CMS guidelines the new alerts are based on have holes that those at high risk can easily fall through: heavy smokers younger than 55 or those who quit more than 15 years ago being two examples, he added.

That's better than no guidelines at all, but an additional question for Malkoski, Sachs and Combs is how much screening demand the new alert will trigger.

"We have no idea," Malkoski said, "which is a little bit anxiety-provoking because it could be an avalanche."

For more information on lung cancer screening at UCH, call 855-586-4824 or 720-557-7171.