BAPTIST HEALTH SOUTH FLORIDA
Resource
SUMMER 2010

Minimizing the risk of radiation

Increased use of computed tomography (CT) scans for diagnosing serious injuries or illnesses has raised concern that radiation exposure may lead to an increased risk of cancer. At Baptist Health, care is taken to always use the lowest effective dose of radiation, according to Jack Ziffer, M.D., Ph.D., chief of radiology at Baptist Hospital.

Chase Taylor, 13, and his mom Cheryl Taylor, meet with pediatric radiologist Jonathan Fields, M.D. Radiology specialists such as Dr. Fields help ensure that the lowest dose of radiation is used.

"You can't look at risk without looking at the tremendous benefits that come from CT scans," Dr. Ziffer said. "Think about how many unnecessary surgeries were avoided, or cancers found early enough to be treated or lives saved from diagnosing heart disease or stroke.

"It's also important to consider the strides made in radiation dose reduction to protect patients from unnecessary exposure," added Dr. Ziffer, who is president of the international Society of Cardiovascular Computed Tomography.

The CT scan is a diagnostic tool used to evaluate trauma, belly pain, bleeding in the brain and other ailments. The fast, noninvasive scanner offers a painless way to get three-dimensional images of the body's interior. Use of CTs has jumped from about 3 million in 1980 to 70 million in 2007. CT scanners account for nearly half of all medical radiation exposures and deliver higher doses of radiation than traditional X-rays. Tests that use no radiation such as ultrasound and MRI don't give the same information that a CT scan does.

Two recent studies reported in the Archives of Internal Medicine have fueled concerns. One found that CT radiation doses were higher and varied more widely among four California hospitals than previously thought. The other study estimated that 29,000 future cancers will occur as a result of CT scans done in the United States during 2007. The Food and Drug Administration (FDA) recently held hearings to consider steps to protect patients from exposure to medical imaging radiation.

"We assume that there is a small risk, so we reduce the radiation dose to as low a level as possible, using only what's needed to get a quality image," said Dr. Ziffer, who testified at the FDA hearings. "We minimize the risk and maximize the benefits."

An effective radiation dose is measured in millisieverts (mSv). An average person gets a dose of about 3 mSv a year from naturally occurring radiation. In general, a CT scan of the abdomen delivers a dose of about 10 mSV; a chest CT, 8 mSv. At Baptist Health, the average dosage level is significantly lower, with some CT scans under 1 mSv.

Forty percent of the population will be diagnosed with cancer in his or her lifetime; one in about five will die from cancer, according to the National Cancer Institute. The additional lifetime risk of dying from cancer as a result of medical radiation is estimated to be about 0.00062 per mSv.

Baptist Health has more than 30 CT scanners in its hospitals, outpatient diagnostic centers and emergency rooms in Miami-Dade, Broward and Monroe Counties. An ongoing quality and patient safety program does everything possible to reduce radiation dosages without compromising diagnostic accuracy. This includes evaluating the appropriateness of the test; determining the effective dosage needed for each patient; use of imaging techniques such as limiting the CT to specific areas; frequent checks of the equipment; and using the most advanced equipment available. All imaging studies are stored digitally and shared throughout Baptist Health, helping avoid unnecessary repeat studies.

Starting this summer, Baptist Health will be among the first to use new technology to upgrade its CT scanners, further reducing radiation dosage by about 40 percent.

The FDA recommends that patients talk to their doctors about whether some other imaging study can be used in place of a CT scan. If not, the risk of not having the CT scan is greater than the small risk from radiation. *—Anne Streeter*