WHAT IS CT VIRTUAL COLONOSCOPY?

CT Virtual Colonoscopy is a CT scan done in a special way that allows a radiologist to look at the large bowel (colon) to detect polyps and cancers. Polyps are small growths in the colon. They include benign lesions, some of which may become cancerous if not removed. CT Virtual Colonoscopy is a technique that uses a CT scanner and computer virtual reality software to look inside the body without having to use sedation and without having to insert a long tube (Conventional Colonoscopy) into the colon or without having to fill the colon with liquid barium (Barium Enema). At The University of Chicago, we have been doing research on virtual colonoscopy since 1996. We believe that CT Virtual Colonoscopy is safer, more comfortable, less expensive and faster than conventional colonoscopy. We know that it's not as accurate a test as conventional colonoscopy, but data now show that it is a very good screening test for colon cancer.

WHY IS IT IMPORTANT?

Colorectal cancer (CRC) is a leading cause of cancer-related death in the United States. In 2007 an estimated 112,340 new cases of colon cancer will be diagnosed in the United States, and 52,180 patients are expected to die of the disease. Colorectal cancer is the third most common cancer in men and women (and second most common when combining data for men and women). It is the most common cause of cancer deaths in non-smokers. Research suggests that the incidence is declining due to increased screening and polyp removal, which prevents the progression of polyps into invasive cancers. Colon cancer can be prevented if polyps are discovered and removed early. Tumors, masses of abnormal cells, take years to develop. Initially, a cell from the colon starts to multiply abnormally and forms a benign (non-cancerous) polyp, which can remain harmless for a long time before becoming an aggressive cancer. Polyps, when detected early can often be removed during colonoscopy. Nevertheless, individuals at greatest risk of developing colorectal cancer remain largely under screened. This is due, in part, to poor public awareness and acceptance of current screening techniques.

Risk Factors: A personal or family history of colorectal cancer or polyps, and inflammatory bowel disease have been associated with increased colorectal cancer risk. Other possible risk factors include physical inactivity, high-fat and/or low-fiber diet, as well as inadequate intake of fruits and vegetables. Recent studies have suggested that estrogen replacement therapy and non-steroidal anti-inflammatory drugs as aspirin may reduce colorectal cancer risk. The risk for colon cancer increases with age and screening is recommended for anyone 50 years or older.
Early Detection: The American Cancer Society (http://www.cancer.org/docroot/CRI/CRI_2_1x.asp?dt=10) recommends screening beginning at age 50 for both men and women. The ACS recommends one of the following; a fecal occult blood test (FOBT) and flexible sigmoidoscopy (if normal, repeat FOBT annually, and flexible sigmoidoscopy every 5 years), or colonoscopy (if normal, repeat every 10 years). A digital rectal examination should be done at the same time as sigmoidoscopy, colonoscopy, or double-contrast barium enema. These tests offer the best opportunity to detect colorectal cancer at an early stage when successful treatment is likely, and to prevent some cancers by detection and removal of polyps.

People should begin colorectal cancer screening earlier and/or undergo screening more often if they have a personal history of colorectal cancer or adenomatous polyps, a strong family history of colorectal cancer or polyps, a personal history of chronic inflammatory bowel disease, or if they are a member of a family of a hereditary colorectal cancer syndromes.

WHY SCREEN WITH VIRTUAL COLONOSCOPY?

Although the Barium Enema and conventional colonoscopy are exams of the entire colon, the sensitivity of barium enema varies greatly with the experience of the radiologist and is uncomfortable. Conventional Colonoscopy is the most accurate test for detection of polyps, but is associated with increased risk of complications and expense. About 2-5% of the time conventional colonoscopy can not see the entire colon. It may also cause an injury to the colon (tear or perforation) in one out of 1500 patients. Conventional Colonoscopy requires medication be given into the vein to make you sleepy and make the exam tolerable, therefore an hour or so of rest is needed after the exam and you should not drive yourself home.

Virtual colonoscopy is considered safe, non-invasive and a good screening test. It is well accepted by patients. They like the fact that the test takes 15 minutes and the computer does the rest. You can get up and drive home afterwards. This why we have vigorously perused research on virtual colonoscopy and offer it to patients for colorectal cancer screening. We still recommend conventional colonoscopy for patients with a high risk of colon cancer. High risk individuals who can not undergo conventional colonoscopy or whose physician recommends virtual colonoscopy for some reason, may also be screened with CT virtual colonoscopy. High risk patients include those with a personal history of colon cancer, a close relative who had colorectal cancer before age 60, a history of pre-malignant adenomatous polyps in the colon, a history of ulcerative colitis and certain family syndromes.

HOW IS VIRTUAL COLONOSCOPY DONE?

Virtual Colonoscopy uses a standard helical (or spiral) computed tomography (CT or CAT scan) of the abdomen, which allows a radiologist (special physicians with training in x-ray imaging) to
create pictures on the computer that look similar to those seen by conventional colonoscopy. Patients need a cleansing preparation of their bowel prior to the test and several mild preparation choices are available. The day of the test, they come to the radiology department for a CT scan. The actual virtual colonoscopy procedure will begin by having a small, thin, flexible plastic tube placed in the rectum, so that carbon dioxide gas (or room air in some cases) can be introduced in a safe manner using a pressure controlled mechanical pump. A very low x-ray dose CAT scan is then performed while the patient lies on their back and then again on their stomach. The total time required for the study is approximately 15 minutes of which about 5-7 minutes are uncomfortable due to the filling of the colon with gas. There may be mild cramping while the colon is filled and a few patients have severe cramping which goes away immediately on completion of the exam. Because sedation is not required, patients are free to leave the CT suite immediately without the need for observation or recovery. Patients can resume normal activities after the procedure. We offer the choice of remaining in the department for about 1-2 hours while the scan is read by the radiologist. If the scan shows a large polyp or mass, we offer same day referral to conventional colonoscopy, performed by the gastroenterologist (a bowel specialist) for biopsy or removal of the polyp(s) or mass.

**IS IT PAINFUL?**

When gas or air is introduced in the colon some patients experience minimal temporary abdominal cramping or “gas pain”. We generally use carbon dioxide which is absorbed faster than air and makes you comfortable as soon as the exam is over. An intravenous injection of glucagon, a widely used medicine to relax the bowel can also be given to help reduce gas pain. We ordinarily do *not* use glucagon since the discomfort is brief and mild to moderate for most patients.

**IS IT SAFE?**

Virtual colonoscopy is a very safe procedure and is considered safer than conventional colonoscopy but has some small risks. Some patients may experience a brief feeling of sweating and feeling faint during the distention phase of the exam. This is called a “vasovagal reaction” and occurs about 1% of the time. The feeling goes away after lying down for a few minutes.

Perforation of the colon is rare (0.0046% in a large survey of experts doing virtual colonoscopy) and is usually detected by the CT scan during the exam. Some of these rare perforations give no symptoms at all and patients are merely observed overnight for their safety. Symptomatic perforations are very rare and could require surgical repair.

The radiation dose for a virtual colonoscopy is much less than for a routine CT scan. The risk of not screening for colorectal cancer is much greater than the radiation risk of a low dose CT scan. For patients 50 years of age or older the use of CT is appropriate for colorectal cancer screening.
The preparation for virtual colonoscopy includes a colon cleansing. We prefer to use a saline cathartic in the form of magnesium citrate or phosphosoda. People with impaired renal function or cardiac disease should ask about an alternate preparation with a reduced volume of polyethylene glycol instead.

**WILL MY INSURANCE PAY FOR VIRTUAL COLONOSCOPY?**

Virtual Colonoscopy for *screening* is not currently reimbursed by most insurance companies, but some do. Some companies pay for virtual colonoscopy if it is done for diagnosis (signs or symptoms) especially after an incomplete optical colonoscopy. As a result, patients calling for a screening virtual colonoscopy will have to assume the cost of the procedure themselves (unless they can determine that their insurer does cover it) - a $1,063 charge. This charge has 2 components a) the hospital charge of $750 (payable to “The University of Chicago Hospital”) and b) the radiologist charge of $313 (payable to “The University of Chicago Physicians Group”).

**WILL MY INSURANCE PAY FOR CONVENTIONAL COLONOSCOPY DONE TO EVALUATE AN ABNORMALITY FOUND ON THE VIRTUAL CT COLONOSCOPY EXAM?**

If you choose to have a same-day optical colonoscopy, we need to know some additional information beforehand. You will be given information about some additional restrictions during the colon preparation (e.g. no colored liquids) and the need to stop some medications like blood thinners. A request form will be sent (usually faxed) to your doctor to fill out. This is needed to gain information about things that might affect the colonoscopy, such as need for prophylactic antibiotics (e.g., patients with a heart valve or artificial joint) or whether you have a pacemaker or defibrillator (that affect use of devices to remove polyps). Our coordinator will give your insurance information to the gastroenterology clinic to help expedite pre-approval by insurance, if possible. Additional questions about insurance for conventional colonoscopy can be directed to the Gastroenterology Business Representative (773-702-2122).

You can always choose to have optical colonoscopy scheduled at a future date. That exam does involve sedation and normally you will need someone else to take you home after the exam since you may not drive or operate machinery on the same day that you have sedation. The department of gastroenterology will give you more information about that.

**Medicare patients.** Patients with Medicare will be required to sign a waiver informing you that virtual colonoscopy is a non-covered service (when done for screening), and you will accept responsibility for the payment in full. Your Medicare carrier will be initially billed and upon denial of the claim, which we expect, you will be billed directly. Medicare often *does* pay for virtual colonoscopy when done to evaluate an abnormality (such as blood in the stool or a low blood count) if performed after a failed attempted conventional colonoscopy.
WHOM DO I CALL TO SCHEDULE A VIRTUAL COLONOSCOPY AT THE UNIVERSITY OF CHICAGO?

Call Vanessa De La Rosa at 773-702-3654. She will go through a questionnaire, send you the necessary forms and answer your questions.

WHERE CAN I FIND MORE INFORMATION ON THE WEB ABOUT YOUR DEPARTMENT?

Our department web site is:
http://radiology.uchicago.edu/
Dr. Dachman runs the virtual colonoscopy program. His profile can be found at:
http://radiology.uchicago.edu/dachman.htm

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