

# 64 Slice Computerized Tomography (CT) Scanning

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The Heart is a large, hollow, muscular organ divided into left and right sides that pump at the same time. Veins collect blood from throughout the body and carry it to the right-side pump. That pump then sends blood to the lungs, where it picks up oxygen. The oxygenated (oxygen-rich) blood then flows to the left side of the heart, which pumps it through arteries to the rest of the body. Valves control the flow of blood through the heart. The left-side pump, which sends blood throughout the body, is larger and stronger than the right pump.

## Heart Disease

Over time, our arteries can develop fatty deposits which can constrict the blood flow. This condition is known as atherosclerosis. If an artery becomes sufficiently blocked, it may stop the blood flow and a heart attack can occur.

## Old Methods

A type of computed tomography (CT), commonly called a heart scan, is sometimes used to detect calcium deposits in coronary arteries. But in many patients, the amount of calcium is not a good indicator of how severely the arteries are narrowed.

One of the main techniques physicians may perform is called cardiac catheterization, in which they insert a long, flexible tube called a catheter through a large blood vessel in the groin. They push the catheter up to the beginning of the coronary arteries, then inject a special dye. The dye clearly shows the condition of the arteries as it travels through them. An image of the arteries can be recorded on an X-ray film called an angiogram.

## New Methods

MRI – Magnetic Resonance Imaging can be used to get a glimpse at heart function and the workings of the heart's arteries

Radionuclide Screening – radioisotopes are injected into the body and their progress photographed with X-ray film, doctors know there is a blockage if they do not spread to a certain area

16 Slice Computerized Tomography(CT) – produces a picture of the heart by using a revolving X-ray tube, but images produced are often blurry at best since the heart is constantly moving

64 Slice CT – takes the 16 Slice Technology one step further by producing more images at a faster speed, with the result of higher resolution and clarity, 3-dimensional models can even be produced that doctor's can reliably use to evaluate a patient.

## How 64 Sliced CT Works:

The patient lies down and is injected with a contrast

agent that helps highlight the heart's blood vessels. An X-ray tube circles the body for 5 to 8 seconds as the body is slid into the scanner. The detector array records the X-rays, creating a spiral slice of the heart composed of 64 thin slices for every loop of the X-ray tube. The scanner's computer then composes hundreds of 2-D "bread slice" images from the spiral slices, and the doctor's computer uses those images to create a 3-D model of the patient's heart.

## Advantages

The resolution is immensely improved over the older 16 slice technology, allowing for greater clarity and a better chance to locate blocked arteries and other problem areas. The doctor can actually manipulate the 3 dimensional model produced so that he can quickly and easily view every part of the heart, and the 2-D images allow him to get a "bread slice" view of the heart from top to bottom

## Disadvantages

Unfortunately, the pictures are limited to anatomical problems, they fail to allow the doctor to see if there are any problems in the actual functioning of the heart. The machine relies upon a steady heartbeat in order to get a clear picture, so patients suffering from an irregular heartbeat fail to produce a satisfactory image

Currently, the average cost of the CT scan ranges from about \$600 - \$1000. It is hoped that insurance companies will become willing to cover such operations in the future, but as of yet it is so new that they haven't yet decided to cover it. One fear is that this technology may become over-prescribed, essentially being given to patients who do not need it or for whom it would not be useful to in their diagnoses. Only a handful of hospitals, mostly located at universities medical centers, have the machine to even be able to offer it to patients. It is hoped that in the future this technology can somehow be combined with others, possibly MRI, in order to produce a single test that evaluates all of the heart's functions and anatomy.

