

## CT Calcium Scoring & CT Coronary Angiography

Over recent years a large amount of data has become available, which is clarifying the role of CT calcium scoring and CT coronary angiography (CTCA) in clinical practice. The obvious potential for these essentially noninvasive tests has become apparent because of advances in CT technology; particularly with use of **64 slice CT** scanners, such as ARG has at its Remuera branch. ARG also has radiologists who are experienced in these techniques. Dr. Helen Moore has recently returned from a Cardiac CT Masters Course in the USA.

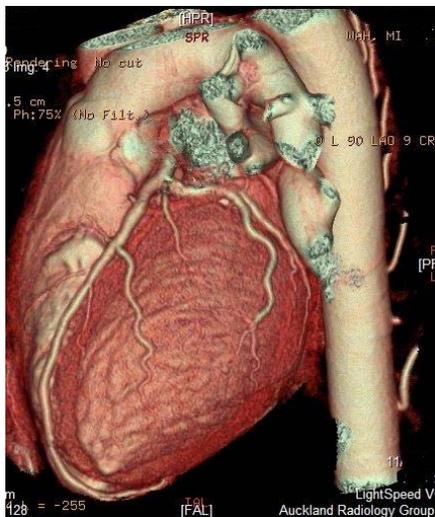
### Coronary Artery Calcium Scoring

Calcium Scoring is a very low dose CT scan that does not involve the injection of intravenous contrast medium. It has been shown that the **negative predictive value** of a zero calcium score is 97-99%. The Calcium Score has been shown to predict cardiac events independently of standard risk factors and CRP, and enhance Framingham risk stratification categories.

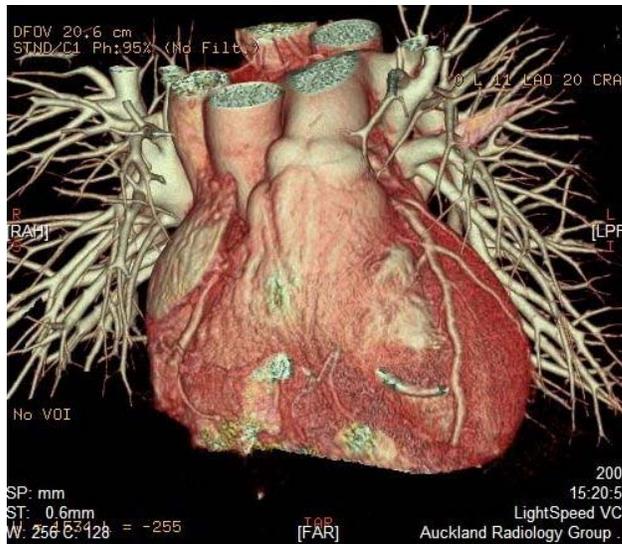
**The Calcium Score provides a more accurate rationale for determining the necessity for LDL-lowering therapy and risk factor management.**

### CT Coronary Angiography

This is a CT scan of the heart with intravenous contrast injection to visualise the coronary arteries. Unlike calcium scoring, it can demonstrate soft plaque (potentially "vulnerable" plaque) and luminal narrowing of the coronary arteries. CTCA excludes coronary artery disease with much more accuracy than stress testing. **It can demonstrate the presence of atherosclerotic plaque over a decade earlier than other tests including invasive cardiac catheterisation.** If the CT scan is significantly abnormal, invasive cardiac catheterisation may be required, to see if angioplasty, stenting or coronary bypass surgery may be indicated.



CTCA radiation dose restricts its use as a screening tool in asymptomatic individuals, especially in the younger age group (less than 50). Calcium scoring is an excellent low dose alternative in these patients. In the near future **low dose CT coronary angiography** will obviate this problem. Of note, ARG routinely uses bismuth breast shields for all women having chest CT or CTCA, which reduces dose to the breast by 40-50%.



## REFERENCES

- Prognostic Value of Multislice CTCA in patients with known or suspected coronary artery disease. Pundziute et al, *JAmCollCardiol* 2007 49:62-70.
- ACCF/AHA 2007 Clinical Expert Consensus Document on Coronary Artery Calcium Scoring by Computed Tomography in Global Cardiovascular Risk Assessment and in Evaluation of Patients With Chest Pain. *Circulation*, Jan 2007; 115: 402-426.
- Plaque Imaging, Pixel to Molecular Level. Jasjit Suri, 2005
- Comparison of Diagnostic Accuracy of 64-slice Computed Tomography Coronary Angiography in Patients with Low, Intermediate, and High Cardiovascular Risk. Husmann et al, *Acad Radiol*. 2008 Apr 15(4):452-61.

## INSURANCE COVER FOR CARDIAC CT

In general, for screening purposes CTCA is not covered, whether the test is recommended by a GP, radiologist, or cardiologist. This includes patients with risk factors.

For some specific indications CTCA will be covered by insurance when the test is recommended after consultation with a cardiologist. For example, Southern Cross lists the following indications:

The following will be regarded as establishing medical necessity:

1. Atypical symptoms of coronary artery disease
2. Symptoms in patients who have had a previous CABG or PCI
3. Patients undergoing cardiac surgery or PCI who need the CTA for planning purposes
4. Patients undergoing major non-cardiac surgery with symptoms or signs of CAD or high risk factors for CAD who are unable to exercise
5. ECHO evidence or suspicion of cardiomyopathy, cardiac mass (tumour) or cardiac dysfunction
6. Syncope
7. Patients with known or suspected disease of the aortic arch or pericardium

**Helen Moore**