

## **PCL/17/04 - Combined magnetic resonance coronary angiography and positron emission tomography in patients with coronary artery disease**

Coronary heart disease is the commonest cause of death worldwide. It is therefore essential that we develop imaging techniques that can identify coronary heart disease and patients who are at risk of having a heart attack. The build-up of "plaque" in the wall of a blood vessel can put people at risk of having a heart attack. A magnetic resonance imaging (MRI) scanner uses magnets to generate images of the inside of the body. A positron emission tomography (PET) scanner uses a tracer labelled with a radioisotope that is injected into a vein in the arm. The images from a PET scanner tell us where in the body the tracer is distributed and we can use this to tell us more about the processes that cause plaques to develop. With a new type of scanner, a PET/MRI scanner, we can combine these images to obtain detailed information about the characteristics of plaques in the blood vessels around the heart. Healthy volunteers and patients with coronary heart disease will be invited to undergo PET-MRI imaging. We will optimise this imaging technique and then compare the images from the blood vessels of patients with different types of coronary heart disease. This will provide us with detailed information of the imaging features of plaques and help us to identify patients that are at risk of having a heart attack.