

Appendix 1 – Glossary of cardiac interventions in the paper

Angiography / Cardiac Catheterisation

Angiography, otherwise known as cardiac catheterisation is a way of looking to see if there are narrowings in the blood vessels on the outside of the heart. It is these narrowing that cause angina (heart pains) and ultimately heart attacks. As blood vessels don't show up clearly on a normal X-ray, a special dye is injected directly into the arteries around the heart via a tube (catheter) inserted into the artery in the wrist or the groin.

This procedure is performed in the Peterborough cath lab.

Angioplasty / PCI

A coronary angioplasty is a procedure used to widen blocked or narrowed coronary arteries (the main blood vessels supplying the heart). The term "angioplasty" means using a balloon to stretch open a narrowed or blocked artery. The balloon is inflated over a thin wire in the coronary artery, squashing fatty deposits against the artery wall so blood can flow through it more freely when the deflated balloon is removed.

Percutaneous coronary intervention (PCI) involves simple angioplasty and also putting stents, essentially a scaffold which stay in place and keep the blood vessel open after it has been stretched. Like angiography, this procedure is undertaken via a thin flexible tube inserted into the artery in the wrist or the groin. The cath lab set up at both Peterborough and Papworth is very similar, however this procedure is only undertaken at Papworth.

Implantable cardiac devices and complex pacing

A pacemaker is a small electrical device, fitted in the chest that is used to treat some abnormal, usually slow, heart rhythms.

Patients at Peterborough have pacemakers implanted in the Peterborough cath lab under local anaesthetic. A 'generator' is usually placed under the skin near the collarbone on the left side of the chest, then attached to one or two pacing wire(s) that are guided through a blood vessel to the heart.

Complex pacing devices consist of cardiac resynchronisation therapy (CRT) and implantable cardioverter defibrillators (ICD), either alone or in combination.

An implantable cardioverter defibrillator (ICD) is a device similar to a pacemaker. It sends an electrical shock to the heart to treat life threatening fast heart rhythms..

A cardiac resynchronisation therapy (CRT) device (also known as biventricular pacemaker) is a particular type of pacemaker that is designed to treat heart failure due to reduced heart pumping strength. The device aims to re-coordinate the heart's electromechanical contraction. This subsequently improves the heart's ability to pump blood and reduces patient symptoms.

ICD and CRT are both established treatments for selected patients with heart failure and who are at increased risk of sudden cardiac death. They have been shown to reduce morbidity and mortality.

Myocardial Infarction (MI)

A myocardial infarction is the medical term for a heart attack and is when the blood supply to the heart itself is disrupted. There are two main types of MI, recognised by the trace from an ECG (electrocardiograph), in particular the ST wave. Both types of heart attack are considered acute coronary syndromes, a term that describes any blockage of blood supply to the heart muscle. As a result, NSTEMI and STEMI can lead to damage of the heart tissue.

STEMI

ST Elevated Myocardial Infarction is the most serious type of heart attack, requiring immediate lifesaving medical intervention. It occurs when there has been complete blockage of the coronary artery depriving the heart muscle of oxygen, leading to damage. Patients in Peterborough who have STEMI are taken immediately by ambulance to Papworth for Primary PCI, normally within one hour.

NSTEMI

Non-ST Elevated Myocardial Infarction is a significant but less serious type of heart attack than STEMI, but still requires urgent medical intervention. It occurs when there has been partial blockage of the coronary artery which can lead to damage to the heart muscle if not treated within a timely fashion (< 72hrs). Patients in Peterborough who have NSTEMI are normally seen in A&E, and referred to the cardiologists before being admitted to the cardiac ward. From there, they will have further diagnostic tests which may include further ECGs, blood tests, and tests in the cath lab described above. A high proportion benefit from PCI, and following acceptance of a referral by Papworth, they stay in Peterborough awaiting a bed at Papworth.

Percutaneous coronary intervention

PCI is one form of treatment used when a patient has a myocardial infarction (MI). Percutaneous Coronary Intervention (PCI, formerly known as angioplasty with stent) is a non-surgical procedure that uses a catheter (a thin flexible tube) to place a small structure called a stent to open up blood vessels in the heart that have been narrowed by plaque build-up, a condition known as atherosclerosis.

Conditions requiring PCI are normally diagnosed through ECG and a blood test for creatine kinase-myocardial band (CK-MB), troponin I, and troponin T. These markers are evidence of possible damage to the heart cells, and are typically mild compared with STEMI.

Trans Aortal Valve Insertion (TAVI)

TAVI is the insertion of a heart valve which replaces the standard open heart surgery technique minimising the recovery period. Typically a catheter is used to insert the valve from the top of the leg, although in a small number of cases this is done through a direct incision in the chest.