



## Coronary Artery Disease – Therapeutics

Standard therapeutics for CAD include coronary artery bypass graft (CABG), percutaneous coronary intervention (PCI), medication, and life style changes. Recent advances in CAD therapy include stents, transmyocardial revascularization, enhanced external counterpulsation (EECP), and angiogenic growth factors.

### Coronary Artery Stents

PCI, also known as percutaneous transluminal angioplasty (PCTA), involves placement of a catheter through a skin incision into an artery (*usually the femoral artery*) and maneuvering the catheter through the arterial system to the coronary artery. Stents are expandable coils, tubes, or mesh that are permanently implanted in the coronary artery during PCI. Restenosis risk has always been a problem after any PCI procedure. Stent placement reduces this risk, but continues to have a problematic restenosis rate. In order to reduce restenosis rates, intra-vascular radiation may be given during the procedure – which is called brachytherapy. Drug-eluting stents (*containing drugs such as rapamycin/Sirolimus or paclitaxel/Taxol*) are also available and have a lesser restenosis rate than ordinary stents.

### Transmyocardial Revascularization

This is a surgical procedure that involves puncturing the heart muscle with multiple holes using a laser. This is thought to allow channels for blood from the left ventricle to the ventricular muscle. The outer surface seals within minutes.

### Enhanced External Counterpulsation (EECP)

Some patients continue to suffer from angina despite maximal medical and surgical intervention. EECP is a non-invasive procedure that can reduce anginal symptoms, presumably by increasing blood flow to the coronary arteries. Symptom relief seems to last long after the end (*which may last more than a month at one hour per day*) of the therapeutic sessions. A series of compression cuffs are placed along the legs and sequentially inflated, timed with the ECG cycle.

### Angiogenic Growth Factors

Chemical stimulants, known as angiogenic growth factors, are currently under study as a potential treatment for patients with coronary artery disease (CAD) that cannot be helped by the standard forms of therapy. Such factors seem to stimulate the growth of new blood vessels within the heart muscle.

Individual consideration in underwriting will be given to any applicant receiving the last three forms of treatment for CAD. An offer for individual life insurance is unlikely. For cardiac stents, including brachytherapy and drug-eluting stents, please refer to *Rx for Success #8 PCTA* to get an idea of how an applicant would be viewed in underwriting.

Advances in medicine have led to new therapeutic devices for coronary artery disease. Except for the last device listed, these devices are used to remove blockage from within the coronary artery and are used in conjunction with PTCA (*percutaneous transluminal angioplasty*). PTCA is a procedure that involves placing a flexible tube (*catheter*) percutaneously (*through a skin incision*) into an artery (*usually the femoral artery*) and maneuvering the catheter transluminally (*guided through the arterial system by means of xray*) to the coronary artery.

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### **Directional Coronary Atherectomy**

Directional coronary atherectomy uses a low pressure positioning balloon and a cutter which spins at 2,500 rpm to remove fragments of the atheroma (*coronary artery blockage*) and stores them in the catheter tip. It was developed in 1984 and FDA approved in 1990. By 1992, 33,000 procedures had been done (*10% of all non-surgical coronary revascularization*). A 1993 study compared PTCA with atherectomy and found a better success rate with the atherectomy but a higher early complication rate and higher cost with no long term advantage.

### **Rotational Atherectomy**

Rotational atherectomy uses a Rotablator with a burr at the tip which is coated with diamond chips and spins at 150,000-190,000 rpm. The atheromatous plaque is broken down into millions of microparticles (*smaller than a red blood cell*). Early reported success rate is 84% (*95% if also done in conjunction with a PTCA*). Restenosis (*reblockage*) occurs in 41%.

### **Coronary Artery Stents**

Stents are expandable coils, tubes, or mesh made of stainless steel or tantalum which are permanently implanted in the coronary artery and used to try to prevent vessel closure or restenosis. Early studies show that after a follow-up of 6 months, 24% of the stents are completely occluded, and 32% had significant restenosis. A new study showed the restenosis rate reduced when PTCA was done with a stent. There has been an increase in the use of stents in the last 3 years. The devices are thrombogenic (*clot inducing*) and long term anticoagulation (*blood thinners*) is required (*at least for 3 months*).

### **Lasers**

Laser delivers pulsed ultraviolet energy through a flexible catheter containing hundreds of optical fibers. The laser vaporizes the atheromatous plaque. It is more effective if combined with PTCA.

### **Perfusion Balloon Catheter**

This balloon catheter allows blood to pass through the catheter while the balloon is inflated. It maintains blood flow to the heart muscle during a prolonged inflation. It is useful in treating acute coronary artery dissections (*tears in the artery wall*) caused by PTCA.

### **Transmyocardial Revascularization**

This is a new surgical procedure in a clinical study; long term results are unavailable. It is a 1-2 hour procedure involving puncturing the heart muscle with multiple holes using a laser. This is thought to allow channels for blood from the left ventricle to the ventricular muscle. The outer surface seals within minutes.

To get an idea of how a client with a history of CAD treated with one of these procedures would be viewed in the underwriting process, feel free to use the "Ask "Rx" pert underwriter" on the attached page for an informal quote.

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Rx046 IFS-A068711 Ed. 07/03 Exp. 07/05

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## CAD - New Therapeutic Devices - Ask "Rx" pert underwriter (ask our experts)

Producer \_\_\_\_\_ Phone \_\_\_\_\_ FAX \_\_\_\_\_  
Client \_\_\_\_\_ Age/DOB \_\_\_\_\_ Sex \_\_\_\_\_

If your client had had a coronary angioplasty, atherectomy, or coronary artery stent placed, please answer the following:

- ① Please list date(s) and type of the coronary revascularization procedure:  
\_\_\_\_\_
- ② Has your client had any of the following?  
 heart attack \_\_\_\_\_ (date)  
 bypass surgery \_\_\_\_\_ (date)
- ③ Is your client on any medications?  
 yes, please give details \_\_\_\_\_  
 no
- ④ Has a follow-up stress (exercise) ECG been completed since the revascularization procedure?  
 yes - normal \_\_\_\_\_ (date)  
 yes - abnormal \_\_\_\_\_ (date)  
 no
- ⑤ Has your client had any chest discomfort since the revascularization procedure?  
 yes, please give details \_\_\_\_\_  
 no
- ⑥ Please check if your client has had any of the following:  
 elevated cholesterol  diabetes  
 overweight  family history of heart disease  
 high blood pressure
- ⑦ Has your client smoked cigarettes in the last 12 months?  
 yes, please give details \_\_\_\_\_  
 no
- ⑧ Does your client have any other major health problems (ex: cancer, etc.)?  
 yes, please give details \_\_\_\_\_  
 no

Please submit a copy of the angiogram report and any recent stress tests.

After reading the *Rx for Success* on CAD-New Therapeutic Devices, please feel free to use this Ask "Rx" pert underwriter for an informal quote.

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