

## **FINAL CORONARY ARTERY DISEASE PROTOCOL**

This protocol has been inserted the SA-CATS-MR

### **CORONARY ARTERY DISEASE PROTOCOL**

#### **GENERAL**

- 1.1 Aviation medical standards as laid down in annex 1 of the convention on international Civil Aviation by the International Civil Aviation organization to which South Africa is a contracting State, have identified broad medical conditions that, on the basis of expected risk of incapacitation, disqualify aviation personnel from flying.
- 1.2 South Africa is one of the countries that previously applied strict standards to initial applicants with a history of coronary heart disease who applied for a medical certificate. This previous protocol was also applied to aviation personnel regarding whom the risk of sudden incapacitation was reduced as a result of risk factor modification or rehabilitation, including therapeutic interventions.
- 1.3 The SACAA has since reviewed this protocol, and is now making provision for aviation personnel with a history of Coronary Artery Disease. Initial and experienced applicants may be considered for any class of medical certificate. This consideration will be based on the individual medical condition of the applicant and risk factor involved.
- 1.4 This protocol applies to all applicants (initial and experienced) presenting with coronary artery disease (such as Myocardial Infarction, Angina Pectoris or asymptomatic coronary artery disease detected on investigation following assessment of risk factors). The protocol is applicable to isolated coronary artery disease and its risk factors only.
- 1.5 The presence of ischaemia / inducible ischaemia remains an exclusion factor.

## 2. **APPLICABILITY**

Operational Restrictions

### **CLASS I**

ATP Multicrew – As / or with a co-pilot

### **Commercial Pilots**

- (a) Instructor- Student must have completed first solo flying
- (b) Game Capturing-applicant can fly solo only if there are no passengers.
- (c) Crop Spraying- applicant can fly solo if there are no passengers.

**CLASS II** – no restriction

**CLASS III** – no restriction

**CLASS IV** – no restriction

## 3. **GENERAL MEDICAL REQUIREMENTS APPLICABLE TO ALL APPLICANTS.**

- 3.1 Applicants will be temporarily taken off flying or controlling duties for a duration of not less than six months following the index event.
- 3.2 Applicants must be asymptomatic for at least six months following adequate intervention; the medical certificate will be withdrawn during this period.
- 3.3 Applicants on medication will be considered only if the medication is approved by the Medicine Control Council of South Africa and is compatible with flying.
- 3.4 All initial medical reports must be submitted to a panel of specialists for consideration, and should include the following:
  - (a) Hospital admission summary(History and Physical)
  - (b) If catheterization and/or angiography have been performed, all reports and actual films/CDs must be submitted for review. A cardiothoracic report, in cases of CABG/PTCI, detailing the cardiac event and procedures must be submitted.

- (c) Applicants presenting with more than two stenosis, of more than 30% within a vascular tree, shall be assessed as unfit.
- (d) An Angiogram shall not reveal stenosis of greater than 50% in any major untreated vessel, in any vein/artery graft or at the site of an angioplasty/stent, except in a vessel supplying the infarct.
- (e) The medical certificate of applicants presenting with any major vessel stenosis of 50% will be withdrawn, until appropriate intervention is undertaken.

#### **4.     CARDIOVASCULAR EVALUATION**

- 4.1 General physical and clinical cardiology assessment.
- 4.2 Family and medical history.
- 4.3 Functional capacity using New York Heart Association Functional Classification or Canadian Cardiovascular Score.
- 4.4 Prognosis of incapacitation.
- 4.5 Treatment.
- 4.6 Blood chemistry (fasting Lipid Profile, Urea, Urate and Creatinine and Fasting Blood Glucose).

#### **5.     RISK FACTORS FOR ISCHAEMIC HEART DISEASE**

- 5.1 The following are major modifiable risk factor for ischaemic heart disease and should be under control:

##### **5.1.1 Smoking**

An applicant with known ischaemic heart disease who continues to smoke should be assessed as “medically unfit”.

### **5.1.2 Weight Reduction**

Weight reduction in obese and overweight patients should be encouraged. Applicants are theoretically encouraged to set a goal to Achieve a body mass index (BMI) <25kg/m or a waist circumference <102cm in men and 88cm in woman.

### **5.1.3 Abnormal Lipid Profile**

Applicants are encouraged to be aware of their serum cholesterol levels and to maintain a normal level. Statins are recommended early for all applicants with a history of Non-ST elevation acute coronary syndrome- (NSTEMI-ACS) in the absence of contraindications, irrespective of cholesterol levels, with the aim of achieving Low Density Lipoprotein (LDL) levels <2.6mmol/L.

### **5.1.4 Blood Pressure Control**

Applicants are required to have a blood pressure control of <140/90, and <130/80 mmHg for those suffering from diabetes mellitus or renal dysfunction.

### **5.1.5 Maximal Stress ECG**

- (a) Applicants are required to be symptom-free and must complete a minimum of Bruce Stage 3 or 8.5 metabolic equivalents (METs).
- (b) A minimum of 85% of the required target rate must be achieved
- (c) The applicant must be free from inducible myocardial ischaemia or significant rhythm disturbances during the study. A 24-hour Holter ECG tracing is necessary to assess any significant rhythm disturbances.
- (d) A stress Echocardiogram/Stress MRI/MIBI Scan or Coronary CT Scan will be required six months after the incident.

- (e) If any of the above-mentioned tests show any significant abnormality, a Coronary Angiogram will be required; it must be within previously described limits.
- (f) The left ventricular ejection fraction as a measure of left ventricular function using echocardiogram or gated radionuclide scintigraphy should be 50% or more at rest, and should not show a decrease of more than 5% with satisfactory exertion (85% predicted maximum heart rate or >8 METS)
- (g) A threshold ejection fraction of 45% applies with the use of single proton emission computerized tomography (SPECT).
- (h) In applicants with an ejection fraction between 40% and 50%, restricted medical certification may be considered after review of a 24 hour Holter. This should reveal no more than 30 Ventricular ectopic beats per hour in the absence of antiarrhythmic medication, with no more than 3 consecutive beats and a cycle length that is not less than 500msec.
- (i) A Myocardial Perfusion Scan shall be required at least six months after Angioplasty/Stenting, but not necessarily after other events (Myocardial Infarction or Coronary Artery Bypass Grafting), unless there is doubt about the diagnosis Myocardial Infarction or adequacy of Bypass Grafting.

## **6. THERAPEUTIC CONSIDERATIONS**

Only medication that is compatible with flying will be allowed.

## **7. FOLLOW-UP CERTIFICATION**

### **7.1 ANNUAL CARDIOLOGIST'S REPORT, INCLUDING-**

- (a) Resting and Maximal Stress ECG 12 lead ECG, symptom limited, with no evidence of myocardial ischaemia or ischaemia equivalent. (Some applicants will continue to have an "abnormal" stress test --- A cardiologist's opinion should be sought for these cases and if necessary, MIBI or stress ECHO may be required);
- (b) A normal 24 Hour Holter ECG will be required.

### **7.2 BLOOD CHEMISTRY SHALL INCLUDE –**

- (a) Urea & Creatinine
- (b) Fasting Lipid Profile
- (c) Fasting Blood Glucose
- (d) Haemoglobin & Platelets

7.3 An angiogram will be required to if there is any cardiac abnormality detected including symptom relapse.

7.4 Chest pain, regardless of whether typical or atypical for ischaemic heart disease, precludes medical certification insofar as it indicates an elevated probability of significant coronary artery disease and an increased risk of an incapacitating cardiac event.

7.5 An applicant may be considered fit if diagnostic testing indicates that the chest pain is not due to myocardial ischaemia. The initial assessment, including a review of the symptom history, must be without the effect of anti-ischaemic medication that could possibly mark adverse findings. If coronary arteriography reveals normal coronary arteries, coronary vasospasm should be excluded.

## **8. FOUR-YEARLY**

8.1 A stress cardiolute/MIBI Scan/Stress MRI/Stress Echo or coronary Scan will be required, if any of the test show any abnormality a repeat Angiogram will be required.