

## Coronary Heart Disease

For the purpose of airman certification coronary heart disease (CHD) is divided into 4 broad categories, with or without myocardial infarction (MI):

--**Open revascularization of any coronary artery(s) and left main coronary artery stenting** (with or without MI). Open revascularization includes coronary artery bypass grafting (CABG; on- or off-pump), minimally invasive procedures by incision, and robot operations. Left main coronary artery stenting carries the same risk of future cardiac events as CABG, thus it is treated the same for certification or qualification purposes

--**Percutaneous intervention** (with or without MI). This includes angioplasty (PTCA) and bare metal or drug-eluting stents

--**MI without any open or percutaneous intervention**

--**MI from non-coronary artery disease causes**. Examples include epinephrine injection, cardiac trauma, complications of catheterization, Factor V Leiden, etc.

**Recovery time** before consideration and required tests will vary by the airman medical certificate applied for and the categories above.

A. Required recovery times for all classes:

a 6 months: Open revascularization of any coronary artery(s) or left main coronary artery stenting

b 3 months:

- Percutaneous intervention **excluding** left main coronary artery interventions
- Myocardial infarction (MI), uncomplicated, without any open or percutaneous intervention procedures
- MI from non-coronary artery disease

B. Required documentation for all pilots with MI due to non-coronary artery disease:

a Current status report from the treating physician

b Copies of all medical records (inpatient and outpatient) pertaining to the event, including all labs, tests, or study results and reports.

C. Required documentation for all pilots with any of the remaining conditions above:

a The required documentation, including GXT and cardiac catheterization, must be accomplished no sooner than either 6 months or 3 months post-event, depending on the underlying condition as listed in Paragraph A. above

b Copies of all medical records (inpatient and outpatient) pertaining to the event, including all labs, tests, or study results and reports.

c Current status report from the treating cardiologist (cardiovascular evaluation (CVE)) including:

Personal and family medical history assessment; clinical cardiac and general physical examination; assessment and statement regarding the applicant's functional capacity and prognosis for incapacitation

Documentation of counselling on modifiable cardiovascular risk factors

All medications and side-effects, if any

Labs (lipids, blood glucose)

d Current Bruce Protocol Stress Test (GXT):

Third-class airmen - maximal plain GXT

First and unlimited second-class airmen require maximal radionuclide GXT.

For specific GXT requirements see [Guidelines for GXT](#)

D Additional required documentation for first and unlimited\* second - class airmen

a For conditions requiring 6-month recovery:

6-month post event cardiac catheterization

6-month post event maximal radionuclide GXT (see above)

b For conditions requiring 3-month recovery:

3-month post event cardiac catheterization

3-month post event maximal radionuclide GXT (see above)

c The applicant should indicate if a lower class medical certificate is acceptable (if they are found ineligible for the class sought)

E Additional required documentation for percutaneous coronary intervention: The applicant must provide the operative or post procedure report. If a STENT was placed, the report must include make of STENT, implant location(s), and the length and diameter of each STENT.

A **SPECT** myocardial perfusion exercise stress test using technetium agents and/or thallium may be required for consideration for any class if clinically indicated or if the exercise stress test is abnormal by any of the usual parameters. The interpretive report and all **SPECT** images, preferably in black and white, must be submitted.

Note: If cardiac catheterization and/or coronary angiography have been performed, all reports and actual films (if films are requested) must be submitted for review. Copies should be made of all films to safeguard against loss. Films should be labeled with the applicant's name and return address.

\* Limited second-class medical certificate refers to a second-class certificate with a functional limitation such as "Not Valid for Carrying Passengers for Compensation or Hire," "Not Valid for Pilot in Command, Valid Only When Serving as a Pilot Member of a Fully Qualified Two-Pilot Crew," etc.

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## Graded Exercise Stress Test Requirements

- If a plain GXT is required and is uninterpretable for any reason, a radionuclide GXT will then be required before further consideration
- GXT requirements:
  - 100% of predicted maximal heart rate unless medically contraindicated or prevented either by symptoms or medications
  - Complete Stage 3 (equivalent to at least 9 minutes)
  - Studies of less than 85% of maximum predicted heart rate and less than 9 minutes of exercise (6 minutes for age 70 or greater) may serve a basis for denial
  - Beta blockers and calcium channel blockers (specifically diltiazem and verapamil), or digitalis preparations should be discontinued for 24-48 hours prior to testing (if not contraindicated and only with the consent of the treating physician) in order to obtain maximum heart rate
  - If the GXT is done on beta blockers, calcium blockers, or digitalis drugs, the applicant must provide explanation from the treating cardiologist as to why the medication(s) cannot be held.
- The worksheet with blood pressure/pulse recordings at various stages, interpretive report, and actual ECG tracings\* must be submitted
  - Tracings must include a rhythm strip, a full 12-lead ECG recorded at rest (supine and standing) and during hyperventilation while standing, one or more times during each stage of exercise, at the end of each stage, at peak exercise, and every minute during recovery for at least 5 minutes or until the tracings return to baseline level.\*Computer generated, sample-cycle ECG tracings are unacceptable in lieu of the standard tracings. If submitted alone, this may result in deferment until this requirement is met.

In patients with bundle branch blocks, LVH, or diffuse ST/T wave changes at rest, it will be necessary to provide a stress echo or nuclear stress test.

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## Cardiovascular Evaluation

A current cardiovascular evaluation must include:

1. A personal and family medical history assessment
2. Clinical cardiac and general physical examination
3. An assessment and statement regarding the applicant's medications, functional capacity, and modifiable cardiovascular risk factors
4. Prognosis for incapacitation
5. Blood chemistries (fasting blood sugar, current blood lipid profile to include total cholesterol, HDL, LDL, and triglycerides) performed within the last 90 days

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**Reasons for not renewing an AASI for cardiac problem:**

1. The applicant is unable to achieve at least 85% of maximal heart rate on stress testing or less than 9 minutes (6 minutes if age 70 or greater);
2. The applicant develops 1 mm or greater ST segment depression at any time during stress testing, unless the applicant has additional medical evidence such as a nuclear imaging study or a stress echocardiogram showing the absence of reversible ischemia or wall motion abnormalities reviewed and reported by a qualified cardiologist;
3. The nuclear stress testing shows evidence of reversible ischemia, a stress echocardiogram shows exercised induced wall motion abnormalities, or either study demonstrates a negative change from the prior study of the same type;
4. The ejection fraction on a nuclear stress test or stress echocardiogram is 40% or less; or a 10% decrease from a prior study; or
5. The applicant reports any other disqualifying medical condition or undergoes therapy not previously reported.

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PACEMAKER PROTOCOL WORKSHEET

Please take the following form to your cardiologist and have them enter the requested information in the space provided.

- 1. Date Pacer Data below was obtained \_\_\_\_\_
- 2. Pacer Manufacturer and Model \_\_\_\_\_ :
- 3. Date Pacer (or generator) implanted \_\_\_\_\_
- 4. Does the Pacer have a Defib circuit that is ENABLED? Yes No  
(Circle one)
- 5. Estimated battery longevity (years:months) \_\_\_\_\_ :
- 6. Pacer Mode (DDDR, VVIR, etc) \_\_\_\_\_
- 7. Current atrial output (pacer impulse - volts) \_\_\_\_\_
- 8. Current ventricular output (pacer impulse - volts) RV \_\_\_\_\_ LV \_\_\_\_\_
- 9. Current atrial impedance (in Ohms) \_\_\_\_\_
- 10. Previous atrial impedance (in Ohms) \_\_\_\_\_
- 11. Current ventricular impedance (in Ohms) RV \_\_\_\_\_ LV \_\_\_\_\_
- 12. Previous ventricular impedance (in Ohms) RV \_\_\_\_\_ LV \_\_\_\_\_
- 13. Is the airman pacer dependent (Class 1 and 2)? Yes No  
**Annual:** Obtain 3 min strip, sitting, pacer reset to 30:  
**Dependent:** If remains paced, becomes symptomatic or blood pressure drops  
(Circle one)
- 14. In the past 6 months has the pacemaker functioned normally with no significant abnormality in cardiac response? IF LEADS OR GENERATOR REPLACED - CIRCLE NO Yes No  
(Circle one)
- 15. To your knowledge, have there been any lead or generator recalls? Yes No  
(Circle one)

\_\_\_\_\_  
Cardiologist Signature

\_\_\_\_\_  
Date

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