Certifying Cardiac Conditions

- Coronary artery disease:
  - Coronary stents (bare metal or drug-eluting)
  - Percutaneous transluminal coronary angioplasty (PTCA)
- Coronary artery disease requiring coronary artery bypass surgery
- Myocardial infarctions (with or without PCI)
- Medical management of ischemia unacceptable
Certifying Cardiac Conditions

- Valve replacements (aortic, mitral)
- Valve repair
- Pacemakers
  - single chamber
  - dual chamber
  - bi-ventricular (without ICD)
- Hypertrophic cardiomyopathy
  - (HCM)
- Atrial fibrillation
- Bundle branch blocks/PVC’s
- Aortic root enlargement
Coronary Artery Disease
Initial Certification: Stents/Balloons

• Three months recovery time
• Hospital records to include
  • Admission H&P
  • Discharge summary
  • Consultation reports (All)
  • Procedure reports
  • CD of the interventional procedure
Initial Certification: Stents/Balloons

- Current laboratory including fasting serum glucose, HgbA1C (DM) and Lipid panel
- Current cardiovascular status report (CVE)
- Exercise treadmill stress testing
  - 1st and 2nd class will require a nuclear study and a post-event cardiac catheterization
  - 3rd class will require a routine exercise stress test and no catheterization is required
- Cardiology Panel review for 1st and 2nd class
Initial Certification: Left Main Stents

- Six months recovery period
- Cardiovascular evaluation
- Lab: fasting serum glucose, lipid panel and HgbA1C
- Nuclear treadmill stress test and cath for 1st and 2nd class
- Exercise treadmill stress test for 3rd class
Certifying Coronary Artery Disease

Caveats for treadmill stress testing

- LBBB or false positive EKG requires a pharmacologic stress test for initial certification.

- Recertification may require a pharmacologic stress test alternating with a routine exercise treadmill stress test on a 12 month basis.
Certifying Coronary Artery Disease

- OK to continue beta-blockers or calcium channel blockers prior to treadmill stress testing.
Recertifying Coronary Disease

- Annual requirement
- (For all classes, unless otherwise specified)
- A current cardiovascular status report (CVE)
- Lab: 12 hour fasting glucose, HgbA1C if diabetic, lipids
- Exercise treadmill stress test per policy
  - Routine exercise treadmill stress test using the Bruce protocol
  - Walk for a minimum of 9 minutes under the age of 70, 6 minutes 70 and older
  - 90-95% predicted maximal heart rate
Cardiology Evaluation Report

Lack of symptoms
Exercise tolerance
Medication side effects
Any bleeding history on anticoagulants
Risk factor modification
Antianginal medications not acceptable-NTG
Certifying Coronary Artery Disease

Antiplatelet therapy

- Current ACC guidelines for stents recommend dual anti-platelet therapy with Aspirin plus Plavix, Brilinta or Effient
- A minimum of one year for drug-eluting stents
- A minimum of thirty days for bare metal stents
Initial Certification: Coronary Artery Bypass Surgery

- 6 months recovery time
- Hospital records to include
  - Admission H&P
  - Discharge summary
  - Consultation reports (All)
  - Operative reports
Initial Certification: Coronary Artery Bypass Surgery

• A current status report (CVE)
• Current laboratory data to include a fasting serum glucose, 12 hour fasting lipid panel and HgbA1C (DM)
• Airmen requesting 1st and 2nd class medical certification-nuclear treadmill stress test
• A post-event cardiac catheterization also required.
• Cardiology Panel review for 1st and 2nd class
Initial Certification: Coronary Artery Bypass Surgery

- Airmen requesting 3rd class medical certification
- Routine exercise treadmill stress test
- No post-event cardiac catheterization is required
- There is no Cardiology Panel review
- No mandated time requirement for return to flight
Initial Certification: Myocardial Infarction

- Three month recovery period
- Hospital records to include
  - Admission H&P
  - Discharge summary
  - Consultation reports (All)
  - Procedure reports (if performed)
  - CD of interventional procedure (if the procedure is performed)
Initial Certification: Myocardial Infarction

- Airmen requesting 1st and 2nd class medical certification
- Nuclear treadmill stress test
- A post-event cardiac catheterization
- Cardiology Panel review
Initial Certification: Myocardial Infarction

• Airmen requesting 3rd class medical certification

• Exercise treadmill stress test
Certifying Cardiac Conditions

VALVE REPLACEMENTS AND REPAIR
Initial Certification: Mitral Valve Repair

- Three month recovery period
- Submit all hospital records
- Current cardiovascular evaluation
- EKG
- Echocardiogram
- Holter
- Stress test
- Submit to OKC
- CACI for repair over 5 years prior
Initial Certification:

Single Valve Replacement
ALL classes

• 6 month recovery period
• Hospital records to include
  • Admission H&P
  • Discharge summary
  • Consultation reports
  • Operative reports
Initial Certification:

Single Valve Replacement

- Current cardiovascular status report (CVE)
- 2D/M-mode echocardiogram, cardiac doppler with color flow (No peri-valvular leaks)
- 24 hour holter monitor
Initial Certification:

Single Valve Replacement

- Routine exercise treadmill stress test may be required
- INR’s (80% within 2.5 to 3.5 unless St. Jude bi-leaflet valve or ONYX then allow 1.5 to 2.5) for mechanical valves
- Manufacturer’s’s recommendations
Single Valve Replacement: Recertification

Six month intervals for class 1 and 2

Annual for class 3

AASI for class 3
Initial Certification: Double Valve Replacement

All classes

- 6 month recovery period
- Hospital records to include
  - Admission H&P
  - Discharge summary
  - Consultation reports
  - Operative reports
Initial Certification: Double Valve Replacement

- Current cardiovascular status report (CVE)
- 2D/M-mode echocardiogram, cardiac doppler with color flow (No peri-valvular leaks)
- 24 hour holter monitor
Initial Certification: Double Valve Replacement

• Routine exercise treadmill stress test may be required
• INR’s (80% within 2.5 to 3.5 unless St. Jude bi-leaflet valve or ONYX then allow 1.5 to 2.5) for mechanical valves
• Manufacturer’s recommendations
Initial Certification:
Double Valve Replacement

- Path report, if available (Cystic medial necrosis is disqualifying)
- Cardiology Panel or consultant review
- The Cardiology Panel’s recommendation will be sent to FAA Washington, DC for final decision on a case by case basis
Recertification: Double Valve Replacement

All Classes

• Current status report (CVE)
• 2D/M-mode color echocardiogram
• 12 lead electrocardiogram
• Routine exercise treadmill stress test, with caveats if coronary artery disease exists.
Recertification: Double Valve Replacement

All Classes

- INR requirements are the same for mechanical valves
- 80% of the values must be between 2.5-3.5 for most valves
- Onyx valves should have 80% of the values between 1.5 – 2.5
PACEMAKERS
Initial Certification: Pacemakers

All Classes

• Single chamber
• Dual chamber
• Bi-ventricular
• Biventricular with ICD (disqualifying)
Initial Certification: Pacemakers

All Classes

Initial pacemaker implantation is 2 months

Lead replacement with or without generator replacement is 2 months

Generator replacement alone can be certified as soon as the airman has fully recovered (as little as 10 days)
Initial Certification: Pacemakers

All Classes

• All hospital records should include:
  – Admission H&P
  – Operative report
  – Consultation reports
  – Discharge summary
Initial Certification: Pacemakers

All Classes
FAA Pacemaker Protocol Worksheet

• Acute thresholds, post-implant
• Chronic thresholds 8-12 weeks post implant

A current status report by the treating cardiologist and hospital records forwarded to OKC for review
Initial Certification: Pacemakers

FAA Definition Of Pacemaker Dependency

- Pacemaker is to be set at its lowest rate (30) PPM for 3 minutes.
- Rhythm strip obtained to document the underlying rhythm.
- If the underlying rhythm remains paced rhythm and/or if the airman develops symptoms, the airman will be considered “pacemaker dependent”.

3rd class only can be issued a medical certificate if “pacemaker dependent”
Maintenance Of Certification: Pacemakers

• Pacemaker analysis will be required every 6 months with completion of pacemaker worksheet

• 6 and 12 month worksheets will be submitted with a current status report from the airman’s treating cardiologist
Maintenance Of Certification: Pacemakers

When the estimated battery life reaches 6 months, the airman will be denied. Once the generator has been replaced, the airman can apply for recertification.
HYPERTROPHIC CARDIOMYOPATHY (HCM)
HCM Risk-SCD Calculator

Age: Years
Maximum LV wall thickness: mm
Left atrial size: mm
Max LVOT gradient: mmHg

Age at evaluation
Transthoracic Echocardiographic measurement
Left atrial diameter determined by M-Mode or 2D echocardiography in the parasternal long axis plane at time of evaluation
The maximum LV outflow gradient determined at rest and with Valsalva provocation (irrespective of concurrent medical treatment) using pulsed and continuous wave Doppler from the apical three and five chamber views. Peak outflow tract gradients should be determined using the modified Bernoulli equation: Gradient= 4V^2, where V is the peak aortic outflow velocity

Family History of SCD
- No
- Yes
History of sudden cardiac death in 1 or more first degree relatives under 40 years of age or SCD in a first degree relative with confirmed HCM at any age (post or ante-mortem diagnosis).

Non-sustained VT
- No
- Yes
3 consecutive ventricular beats at a rate of 120 beats per minute and <30s in duration on Holter monitoring (minimum duration 24 hours) at or prior to evaluation.

Unexplained syncope
- No
- Yes
History of unexplained syncope at or prior to evaluation.

Risk of SCD at 5 years (%):
ESC recommendation:

Reset


HCM Risk-SCD should not be used in:
Hypertrophic Cardiomyopathy

(Initial certification for all classes)
HCM Risk-SCD Calculator

Risk factors used to determine whether or not the airman is considered high risk:

- Family history of sudden death
- Unexplained syncope
- Documented ventricular tachycardia
- Symptoms of angina
Hypertrophic Cardiomyopathy
(Initial certification for all classes)

Risk factors used to determine whether or not the airman is considered high risk:

• Congestive heart failure
• Lack of blood pressure augmentation during exercise treadmill stress testing
• Left ventricular wall thickness ≥ 30mm
Hypertrophic Cardiomyopathy

(Initial certification for all classes)

• If the airman has any of these risk factors, he/she will be considered high risk and be denied medical certification.
Hypertrophic Cardiomyopathy

(Initial certification for all classes)

• If the airman has none of the high risk factors, the airman’s medical information will be reviewed by the Cardiology Panel
Hypertrophic Cardiomyopathy

(Initial certification for all classes)

• Apical hypertrophic cardiomyopathy and hypertrophic cardiomyopathies that have undergone alcohol septal ablation or surgical myomectomy will be evaluated in the same manner following an appropriate recovery time from the procedure.
Hypertrophic Cardiomyopathy
Hypertrophic Cardiomyopathy
ATRIAL FIBRILLATION
Atrial Fibrillation
Initial Certification: Atrial Fibrillation

- Episode over 5 years ago does not necessarily require diagnostic evaluation
- Chronic or paroxysmal both require evaluation
- Cardiovascular evaluation
- Stress test (nuclear preferred)
- Holter
- Echo
- Special issuance required
- AASI after initial certification
- Consider sleep apnea
ATRIAL FIBRILLATION: ANTICOAGULATION

CHADS2 score

- Congestive heart failure (1)
- Hypertension (1)
- Age (75) (1)
- Diabetes mellitus (1)
- Stroke (2)
ATRIAL FIBRILLATION: ANTICOAGULATION

(Initial certification for all classes)

• A score of 0 requires no anticoagulation
• A score of 1, requires Aspirin (can opt to use Coumadin or newer agents)
• A score of 2 or higher requires Coumadin or one of the new oral anticoagulants (Xarelto, Eliquis or Pradaxa)
Certifying Atrial Fibrillation

24 HOUR HOLTER MONITOR

• The maximum average heart rate $\leq 120$ beats per minute.

• 3 second or greater pauses disqualifying if the airman is symptomatic or if occurring during waking hours with activity.

• Increased vagal tone during sleep is not disqualifying.
Atrial Fibrillation Recovery Time

- Cardioversion-one month
- Ablation-3 months
- Holter monitor post procedure
Initial Certification: Bundle Branch Blocks

- RBBB under age 30 no work up required
- RBBB over 30-CVE and treadmill(nuclear) stress test
- LBBB all ages-CVE and nuclear stress test
- Special issuance not required unless CAD or cardiomyopathy discovered
PVC’s

- Class 1 EKG with 2 or more PVC’s
- Nuclear stress test and Holter monitor
- One time evaluation unless abnormal
- PVC’s must be less than 20% total heart beats on Holter monitor
Aortic Enlargement

• 5 cm. aortic root disqualifying
• Annual CTA or echo required for 4 cm.
Certifying Cardiac Conditions

ANY QUESTIONS:

AME guide
Thank You