

## FMCSA Clinical Areas Cardiovascular

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## CARDIOVASCULAR RISK FACTORS

- Underlying theory of all recommendations:
  - Framingham risk score predicting a **20% CHD event risk** over the **next 10 years**.
- CHD risk equivalent is defined as presence of diabetes mellitus, peripheral vascular disease

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## Waiting Periods

- Most Cardiovascular Conditions require a waiting period before certification
- **NB:** If more than one waiting period applies (multiple cardiac conditions or comorbid diseases) the longest waiting period must pass prior to certification.

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## The CV Documents

- The Cardiovascular disease report (2002)
  - <http://www.fmcsa.dot.gov/documents/cardio.pdf>
- The summary table for all cardiovascular conditions (2009) Appendix A, 38 pages
  - <http://nrcme.fmcsa.dot.gov/documents/Cardiovascular%20Recommendation%20Tables.pdf>
- The MEP recommended updates 2013
  - <https://www.fmcsa.dot.gov/regulation-guidelines>

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## The CV Documents

- The CDME Guidebook (DRAFT 2021)
  - Accurate for diseases directly Addressed
  - References to 2013 CV Disease MEP table
- Medical Examiner Physical Qualification Standards and Clinical Guidelines for Cardiovascular Disease and Commercial Motor Vehicle Driver Safety
  - <https://www.fmcsa.dot.gov/regulations/medical/recommended-changes-cardiovascular-disease-guidelines>



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## Exercise Stress Testing

- Acceptable Exercise Tolerance Test (ETT):
  - Exceed 6 METS (beyond completion of Stage II, or 6 minutes) on a standard Bruce protocol
  - No ischemic symptoms and/or signs (e.g., characteristic angina pain or 1 mm ST depression or elevation in 2 or more leads)
  - Appropriate SBP and/or heart rate responses (e.g., maximal heart rate to meet or exceed 85% of age-predicted maximal heart rate)
  - No ventricular dysrhythmia.

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### ISCHEMIC ECG CHANGES

- FMCSA Definition:
  - The presence of new 1 mm ST-segment elevation or depression


and/or

- Marked T-wave abnormality.

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### Testing in Cardiovascular Disease



The Ejection Fraction Shall be:

# ≥40%

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### Select Diseases

- NB: Only a few of the most common diseases included in this course. The student is **strongly encouraged** to review the 2013 table to review the breadth of cardiovascular diseases

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### Aortic Stenosis


Disease/Procedure	Certification Approved if:	Not Approved if:	Recertification	Citation
Mild Aortic Stenosis (AVA > 1.5 cm <sup>2</sup> )	Asymptomatic Cleared by cardiologist	Symptomatic Does not meet certification criteria	Maximum – 1 year Echocardiography and other diagnostics should be repeated as deemed appropriate by cardiologist OR a minimum of every 3 to 5 years.	[20]
Moderate Aortic Stenosis (AVA > 1.0 - 1.5 cm <sup>2</sup> )	Asymptomatic Minimum 3 months after surgery/repair Cleared by cardiologist	Symptomatic Does not meet certification criteria Asymptomatic Minimum 3 months after surgery/repair Cleared by cardiologist Symptomatic Does not meet certification criteria Unrepaired/replaced Requires recommendation by appropriate treating specialist.	Maximum – 1 year Echocardiography and other diagnostics should be repeated as deemed appropriate by cardiologist OR a minimum of every 1 to 2 years.	[17-22]
Severe Aortic Stenosis (AVA < 1.0 cm <sup>2</sup> )	Asymptomatic Minimum 3 months after surgery/repair Cleared by cardiologist Meets monitoring guidelines for anticoagulant therapy (if applicable)	Symptomatic Does not meet certification criteria	Maximum – 1 year Echocardiography and other diagnostics should be repeated as deemed appropriate by cardiologist OR a minimum of every 1 to 2 years.	[17-21]

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### Specific Diseases


- Cardiac
  - Cardiovascular Disease
  - Myocardial Infarction
  - CABG
  - PCA
  - Angina
- Aortic Aneurysm
- DVT

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### Cardiovascular Disease

- Driver should have:
  - An LVEF greater than or equal to **40%**
  - No pulmonary hypertension
    - Pulmonary hypertension ≡ pulmonary artery pressure greater than 50% of systemic systolic blood pressure on either echo or cardiac cath.
- Remember
  - If echocardiography test results are inconclusive, some form of radionuclide imaging may be used to obtain the ejection fraction measurement.

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### Cardiovascular Testing

- Left ventricular ejection fraction (LVEF) may be assessed by echo, cath, or MUGA
- **Notes:**
  - Imaging studies have superior sensitivity and specificity compared to the standard exercise tolerance test (ETT)
  - Exercise testing with imaging is indicated for abnormal resting electrocardiogram or non-diagnostic standard ETT.

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### Myocardial Infarction

- First few months following Acute Myocardial Infarction (MI) pose greatest risk of mortality, with the majority of deaths classified as **sudden death**.
- Current opinion among clinicians states that post-MI drivers may safely return to any occupational task provided there is no exercise-induced myocardial ischemia or left ventricular dysfunction.

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### Myocardial Infarction

- **Waiting period**
  - **Minimum — 2 months**
- **Maximum certification period — 1 year**

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### Myocardial Infarction

- **Recommend to certify if:**
    - Asymptomatic.
    - Tolerates medications.
    - Satisfactory exercise tolerance test (ETT).
    - No ischemic changes on EKG
    - Resting left ventricular ejection fraction (LVEF) greater than or equal to **40%**.
- NOTE:** For initial certification following an MI, an in-hospital post-MI echocardiogram showing an LVEF greater than or equal to **40%** is sufficient

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### Myocardial Infarction

- **Recommend NOT to certify if:**
  - Angina at Rest
  - Change in angina pattern within 3 months of examination.
  - Ischemic changes on resting electrocardiogram (ECG).
  - Intolerance to cardiovascular therapy.

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### Myocardial Infarction

#### Monitoring/Testing

- The driver should obtain:
    - Clearance from a cardiovascular specialist who understands the functions & demands of commercial driving.
- ~~– Biennial ETT.~~ (Per FMCSA Update)
- NOTE:** Driver participation in a rehabilitation program should be encouraged to receive comprehensive secondary prevention therapy


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### ANGINA

- **OK to certify if:**
  - Asymptomatic
- **Do NOT certify if:**
  - Angina at Rest
  - Change in Angina Pattern w/in 3 Months of Exam
  - Abnormal ETT
  - Ischemic Changes on Rest ECG
  - Intolerance of Cardiovascular Treatment


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### ANGINA - RECERTIFICATION

- Maximum Certification: 1 Year
- ~~Biennial ETT (minimum)~~
  - ~~– If Test + or Inconclusive, Imaging Stress Test may be Indicated~~


– Cardiologist Examination and opinion recommended

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### AFTER PCI (Stent)


- **Certification**
  - **Minimum Waiting Period – 1 Week**
- **Required to Certify**
  - Approval by cardiologist
  - Tolerance to medications
  - ~~– ETT 3 to 6 months after PCI~~
- **Do NOT Certify if:**
  - Incomplete healing or complication at vascular access site
  - Rest angina
  - Ischemic ECG change

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### PCI - RECERTIFICATION


- Certification Period – 1 Year
- Recommend cardiologist examination
- ~~Biennial ETT at minimum~~
  - If test positive or inconclusive, imaging stress test may be indicated

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### POST CABG


- **Minimum Waiting Period**
  - 3 Months [Sternum must be healed (test resisted abduction and flexion of arms)]
- **Required to Certify**
  - LVEF Greater than or equal **40%** post CABG
  - Approval by Cardiologist
  - Asymptomatic
  - Tolerance to Medications

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### CABG - RECERTIFICATION


- Recertification Period: Annual
- Ongoing cardiologist evaluation and compliance with cardiologist-recommended testing
- ~~Annual ETT once 5 years post CABG~~
  - If ETT non-negative then Imaging Stress Test is Indicated

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### ACUTE DVT - Risk

- The CMV driver is at an increased DVT risk due to long hours of sitting while driving.
- DVT can be the source of pulmonary emboli that can cause gradual or sudden incapacitation or death.
- Adequate treatment with anticoagulants decreases the risk of recurrent thrombosis by approximately 80%.


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### DVT

Certification/Recertification


- **Waiting period**
  - **No recommended time frame**
  - You should **not certify** the driver until:
    - Etiology is confirmed
    - Treatment is adequate/effective, safe, and stable
- **Decision**
  - **Maximum certification period — 1 year**
  - **Recommend to certify if:**
    - The driver has no residuals following acute DVT.
  - **Recommend not to certify if:**
    - The driver has current DVT

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### Deep Venous Thrombosis


- **Monitoring/Testing**
  - If treatment includes anticoagulant therapy, the driver should meet anticoagulant monitoring guidelines.
- **Follow-up**
  - **Annual** medical certification
  - Venous Disease Recommendation Table (PDF) on FMCSA website

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### Aortic Aneurysm - Abdominal


- **Monitoring/Testing:** Ultrasound to monitor diameter
- **Certification Period – 1 year**
- **Certification Decision**
  - Diameter < 40mm (to stay with our theme)
    - Certify if asymptomatic
  - Diameter 4 to <5.4cm
    - **Vascular Specialist Recommends Against Surgery**
    - Ultrasound frequency per vascular surgeon
    - Certify if asymptomatic **AND** no surgery recommended
- **Do Not Certify**
  - Men: Diameter ≥ 5.5 cm      Women: Diameter > 5.0 cm
  - OR if Vascular Surgeon recommends surgery

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### Aortic Aneurysm - Thoracic

- **Certification – Annual**
- **Diameter < 5 cm**
  - MUST have eval with Vasc Surgeon
  - Certify if asymptomatic AND no surgery recommended
- **Diameter > 5 cm**
  - Do NOT certify


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### Aortic Aneurysm (All)

#### Post-Surgical (Thoracic or Abdominal)

- **Waiting Period**
  - **3 Months following surgery**
  - **Must be cleared by cardiovascular specialist**
- **Certification Period – Annual**

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### Atrial Fibrillation

- Consider CHADS2 Score to **assess risk**
- Use ACC/AHA/European Society of Cardiology (ESC) guidelines for appropriate antithrombotic treatment of individuals with atrial fibrillation to **assess adequacy of treatment** (ASA vs Warfarin vs others) based on risk
- **Certification Period – Annual**

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### Hypertrophic Cardiomyopathy

OK to Certify if:

- No history of cardiac arrest
- No spontaneous sustained VT
- Normal exercise BP (e.g., no decrease at maximal exercise)
- No non-sustained VT
- No family history of premature sudden death
- No syncope
- Left ventricular (LV) septum thickness <30mm
- OK Per treating (Cardiologist)

- **Certification Period – Annual**

Failure – Provokable/Resting peak gradient 50 or higher

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### Key Points – CV Disease

- Review and learn the 2009 table (& updates)
- EF must be  $\geq 40\%$
- No Ischemic changes on Exercise Testing
- No Angina at Rest
- **Follow Cardiologist Recs on testing/clearance**
- All CV procedures have waiting periods
- All CV diseases require **annual** recertification

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**Cardiovascular  
Questions?**

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