

# C1: Medical Standards for Safety Critical Workers with Cardiovascular Disorders



## GENERAL ISSUES REGARDING MEDICAL FITNESS-FOR-DUTY

1. These medical standards apply to Union Pacific Railroad (UPRR) employees in safety critical positions, and are consistent with the UPRR Medical Rules that require employees to be medically fit-for-duty when at work. UPRR Health and Medical Services (HMS) has the responsibility for conducting medical fitness-for-duty evaluations to determine if an employee's health status or treatment poses unacceptable safety risks for work and requires work restrictions. Employees are required to participate in the fitness-for-duty process.
2. These medical standards apply to safety critical workers at UPRR with a history of suspected or diagnosed cardiovascular conditions or who have other factors that impair safe performance of physical work.
3. These medical standards use diagnostic criteria and definitions of terms for cardiovascular conditions found in current clinical practice guidelines (unless otherwise noted).
4. In applying these medical standards to safety critical workers, HMS will make the final diagnostic classification of the employee's health conditions (based on available information), which will be used by HMS to make the fitness-for-duty determination and specify work restrictions.
5. HMS may rely on opinions of specialist consultants when appropriate to assist in fitness-for-duty evaluations.
6. If the employee has more than one condition covered by these medical standards, then the recommended work restrictions will apply that are the most restrictive and/or of the longest duration (i.e., longest minimum waiting period).

## REQUIREMENTS FOR THOROUGH CARDIOLOGIST EVALUATION

1. Thorough Cardiologist Evaluation is defined in these medical standards to include all the following:
  - a. A comprehensive evaluation by a cardiologist, including medical history and physical exam;
  - b. Measurement of resting heart rate, blood pressure (with orthostatic BP readings if syncope is suspected), and measured height and weight (without shoes or outerwear);
  - c. Resting electrocardiogram (ECG);
  - d. Echocardiogram;
  - e. Maximal exercise tolerance test (ETT) on a treadmill using standard Bruce Protocol (this treadmill stress test is needed to screen for cardiovascular disease and assess aerobic capacity for work);
  - f. Other diagnostic tests if appropriate based on history, exam or test findings; and
  - g. Any additional tests required by HMS, based on the specific requirements in these medical standards and/or recommendations of HMS medical specialist consultants.
2. Based on an evaluation of an employee's health status, HMS may determine that additional evaluations or diagnostic tests are required, or that certain elements of medical evaluations required by these medical standards may be omitted.
3. It is the responsibility of the employee to obtain medical evaluations or diagnostic tests required by HMS, and to provide HMS with reports of these evaluations, along with other relevant medical records HMS has requested.
4. In stating the requirements for a Thorough Cardiologist Evaluation in this medical standard, HMS is not directing medical care, but is specifying information needed for HMS to make an informed fitness-for-duty determination in the interest of safety of the worker and others.

# C2: Medical Standards for Safety Critical Workers with Coronary Heart Disease



## DEFINITIONS

- Coronary Heart Disease (CHD)** – also referred to as coronary artery disease, is a disease where a buildup of atherosclerotic plaques in arteries of the heart, and/or other factors, can limit blood flow to heart muscle causing cardiac ischemia (insufficient oxygen) and possible infarction (tissue death) to heart muscle.
- Cardiac ischemia** – insufficient delivery of oxygen to heart muscle, which may cause pain (angina) or other symptoms, or may be asymptomatic. Angina is symptomatic cardiac ischemia, typically with pain or discomfort in chest, neck, or arm. Cardiac ischemia may occur at rest or with exercise.
- Myocardial infarction (MI)** – tissue death of heart muscle due to prolonged ischemia. MI may be the result of occlusion of a coronary artery from a ruptured plaque or due to other causes. The diagnosis of MI may be confirmed by electrocardiogram (ECG), blood tests, or tests that assess myocardial wall motion or perfusion.

## WORK RESTRICTIONS FOR SUDDEN INCAPACITATION (SI) RISK

MEDICAL CONDITION / DIAGNOSIS	DURATION
<b>Suspected cardiac ischemia – not confirmed or ruled out</b> Defined as symptoms or ECG findings of possible ischemia; requires testing with maximal Exercise Tolerance Test (ETT)	<b>Ongoing work restrictions</b> – until Thorough Cardiologist Evaluation shows cardiac ischemia is ruled out or confirmed (and adequately treated)
<b>Confirmed cardiac ischemia with no MI – treated with medication</b> (but not treated with angioplasty or CABG); person requires a Thorough Cardiologist Evaluation with maximal ETT, and with myocardial perfusion exercise study if indicated (e.g., if ETT shows possible ischemia)	<b>Individually evaluated</b> – may remove work restrictions if tests show no ischemia at maximal exercise, adequate cardiac function, and adequate aerobic capacity for job
<b>Confirmed cardiac ischemia with no MI – treated with angioplasty/stent</b> at 1 month after angioplasty/stent, person requires a Thorough Cardiologist Evaluation with maximal ETT, and myocardial perfusion exercise study if indicated (e.g., if ETT shows possible ischemia)	<b>1-month waiting period after angioplasty/stent</b> – may remove work restrictions if tests show no ischemia at maximal exercise, adequate cardiac function, and aerobic capacity adequate for job
<b>Confirmed myocardial infarction (MI)</b> at 1 month after MI, person requires a Thorough Cardiovascular Evaluation with echocardiogram, maximal ETT, and myocardial perfusion exercise study if indicated (e.g., if ETT shows possible ischemia)	<b>2-month waiting period after MI</b> – may remove work restrictions if tests show no ischemia at maximal exercise, adequate cardiac function, and aerobic capacity adequate for job
<b>Coronary artery bypass graft surgery (CABG)</b> at 2 months after CABG, person requires a Thorough Cardiologist Evaluation with echocardiogram, maximal ETT, and myocardial perfusion exercise study if indicated (e.g., if ETT shows possible ischemia)	<b>3-month waiting period after surgery</b> – may remove work restrictions if tests show no ischemia at maximal exercise, adequate cardiac function, and aerobic capacity adequate for job
<b>CHD that poses an unacceptable safety risk for work</b> If HMS concludes that, based on available information, person has unacceptable risk for sudden incapacitation or acute cardiac event	<b>Ongoing work restrictions</b> – reassess if HMS receives evidence of change in health status
<b>CHD with incomplete clinical evaluation</b> If HMS concludes Thorough Cardiovascular Evaluation is incomplete	<b>Ongoing work restrictions</b> – until adequate evaluation is complete

## WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

### UPRR work restrictions for sudden incapacitation risk:

- UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation includes loss of consciousness, or sudden impairment in mental or physical functioning that poses a safety risk for work.
- Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
- Work restrictions for sudden incapacitation may include a “minimum waiting period” (after the health event of concern) before the person can be considered for return to safety critical work.

### To remove work restrictions for sudden incapacitation risk, the following conditions must be met:

- Employee must complete the minimum waiting period and have had no new health events that pose safety concerns.
- Employee must have a recent Thorough Cardiologist Evaluation (as defined in these medical standards)
- If after reviewing available information, and HMS determines the employee currently has an acceptable level of risk for sudden incapacitation, HMS may remove the employee's work restrictions for sudden incapacitation risk. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee's existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

### If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. This requires employee to have a Thorough Cardiologist Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must also inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.

# C3: Medical Standards for Safety Critical Workers with Cardiomyopathy and Heart Failure



## DEFINITIONS

- Cardiomyopathy** – is a disease of the heart muscle, mainly the left ventricle, which becomes weakened, thickened or stiffened, impairing the heart's ability to pump blood.
- Dilated cardiomyopathy** – is a disease where the cavity of the heart is dilated (enlarged) and heart muscle walls are stretched, weakening the heart's ability to pump blood, and often causing heart failure. The condition may be related to ischemic heart disease, may be non-ischemic (e.g., due to viral infection, cardiac toxicity, or an inherited condition), or be of unknown cause. Disturbances of cardiac rhythm and electrical conduction in the heart may occur. Damage to heart muscle may persist even if cardiac function improves.
- Hypertrophic cardiomyopathy** – is characterized by thickening of the walls of ventricles of the heart, which may obstruct blood flow out of the left ventricle.
- Restrictive cardiomyopathy** – is a disease where heart muscle walls become stiff, decreasing return of venous blood to the heart, causing impaired diastolic function and heart relaxation, and decreased cardiac output.
- Heart failure** – a condition where the heart does not pump enough blood to adequately perfuse body organs, due to weakness of the heart muscle or other factors. Heart failure may be caused by heart attacks, valve disease, viral infection, or other causes. Severity of heart failure is graded based on symptoms, often using the New York Heart Association (NYHA) classification system, and measures of cardiac function.

## WORK RESTRICTIONS FOR SUDDEN INCAPACITATION (SI) RISK

MEDICAL CONDITION / DIAGNOSIS	DURATION
<b>Cardiomyopathy with low cardiac ejection fraction (EF)</b> Diagnosed cardiomyopathy with low EF (generally EF<50%), but with no history of sustained ventricular dysrhythmia or implanted cardioverter defibrillator (ICD)	<b>Ongoing work restrictions</b> – reassess if cardiac status improves, EF >50%, and/or Thorough Cardiologist Evaluation shows acceptable risk
<b>Hypertrophic cardiomyopathy</b> If symptomatic with exertion, EF <50%, insufficient aerobic capacity for job, and/or Thorough Cardiologist Evaluation finds unacceptable risk	<b>Ongoing work restrictions</b> – reassess if cardiac status improves, EF >50%, and/or Thorough Cardiologist Evaluation shows acceptable risk
<b>Restrictive cardiomyopathy</b> If this diagnosis and functional impairment is confirmed by a Thorough Cardiologist Evaluation	<b>Ongoing work restrictions</b> – reassess if cardiac status improves
<b>Cardiomyopathy with history of sustained ventricular dysrhythmia and/or an implanted cardioverter defibrillator (ICD)</b>	<b>Permanent work restrictions</b> – also requires EMF (electromagnetic field) exposure restrictions
<b>Mild heart failure – NYHA class I or II</b> Requires a Thorough Cardiologist Evaluation including echocardiogram and maximal ETT	<b>Individually evaluated</b> – remove restrictions if tests show cardiac function and aerobic capacity are adequate for job acceptable cardiac risk; may need work activity restrictions based on job
<b>Moderate or severe heart failure – NYHA class III or IV</b> If a Thorough Cardiologist Evaluation finds moderated/severe symptoms, inadequate aerobic capacity for job, or unacceptable cardiac risk	<b>Ongoing work restrictions</b>
<b>Suspected cardiomyopathy or heart failure – evaluation incomplete</b> If HMS concludes these conditions may be present, but a current Thorough Cardiologist Evaluation (including of aerobic capacity) is incomplete	<b>Ongoing work restrictions</b> – until adequate evaluation is complete ; then re-classify

## WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

### UPRR work restrictions for sudden incapacitation risk:

- UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation includes loss of consciousness, or sudden impairment in mental or physical functioning that poses a safety risk for work.
- Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
- Work restrictions for sudden incapacitation may include a “minimum waiting period” (after the health event of concern) before the person can be considered for return to safety critical work.

### To remove work restrictions for sudden incapacitation risk, the following conditions must be met:

- Employee must complete the minimum waiting period and have had no new health events that pose safety concerns.
- Employee must have a recent Thorough Cardiologist Evaluation (as defined in these medical standards)
- If after reviewing available information, and HMS determines the employee currently has an acceptable level of risk for sudden incapacitation, HMS may remove the employee's work restrictions for sudden incapacitation risk. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee's existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

### If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. This requires employee to have a Thorough Cardiologist Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must also inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.

# C4: Medical Standards for Safety Critical Workers with Cardiac Rhythm and Conduction Disorders



## DEFINITIONS

- Supraventricular tachycardia (SVT)** – is a cardiac rhythm disorder (dysrhythmia) with an abnormally rapid heart rate originating in atria of the heart. SVTs may be intermittent or persistent, and may decrease cardiac output or blood pressure causing lightheadedness, shortness of breath, chest pain, or syncope.
- Atrial fibrillation (AF)** – is the most common SVT and is characterized by a rapid irregular heartbeat. Some persons with AF are at increased risk for stroke and require anticoagulation.
- Sinus node dysfunction** – when the sinus node in atria of the heart does not reliably generate electrical impulses that stimulate contraction of the heart (i.e., normal heart rhythm).
- Cardiac conduction disorder** – involves abnormal conduction of electrical impulses in heart. May cause impaired cardiac function and/or risk for acute cardiac events; treatment may include ablation or a pacemaker.
- Ventricular dysrhythmia** – abnormal heart rhythm originating in the ventricles. A history of sustained ventricular tachycardia may pose a significant risk for sudden cardiac death, and be an indication for an implanted cardioverter defibrillator (ICD). Medication treatment is focused on prevention of dysrhythmias.
- Cardiac pacemaker** – electronic device implanted in the chest to electrically stimulate a regular heart rhythm.
- Implanted cardioverter defibrillator (ICD)** – electronic device implanted in the chest to detect life-threatening ventricular dysrhythmias and provide electrical shocks to restore a normal heart rhythm.
- Electric and magnetic field (EMF) exposures** – are found near all operating electrical devices. EMF exposures above certain levels may impair function of implanted electronic cardiac devices (i.e., pacemakers and ICDs). UPRR has measured EMF exposures for many jobs and restricts employees with pacemakers or ICDs from working within specified distances of certain electrical equipment or wiring to prevent harmful EMF exposures.

## WORK RESTRICTIONS FOR SUDDEN INCAPACITATION (SI) RISK

MEDICAL CONDITION / DIAGNOSIS	DURATION
<b>Atrial fibrillation with increased risk for stroke</b> Based on generally accepted medical criteria	<b>Ongoing work restrictions</b> – until anticoagulation and rate/rhythm control are adequate
<b>Sinus node dysfunction, complete heart block, and/or requirement for cardiac pacemaker to maintain heart rhythm</b> Based on generally accepted medical criteria	<b>Permanent work restrictions</b> – also requires work restrictions for EMF exposure if person has a cardiac pacemaker
<b>Implanted cardiac pacemaker – if not needed to maintain heart rhythm</b>	<b>Individually evaluated</b> – also requires work restrictions for EMF exposure
<b>Other SVTs, bradycardias, or cardiac conduction disorders</b>	<b>Individually evaluated</b>
<b>History of ventricular tachycardia / dysrhythmia</b>	<b>Individually evaluated</b>
<b>Implanted cardioverter defibrillator (ICD)</b>	<b>Permanent work restrictions</b> – also requires work restrictions for EMF exposure

## WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

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- Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
- Work restrictions for sudden incapacitation may include a “minimum waiting period” (after the health event of concern) before the person can be considered for return to safety critical work.

### To remove work restrictions for sudden incapacitation risk, the following conditions must be met:

- Employee must complete the minimum waiting period and have had no new health events that pose safety concerns.
- Employee must have a recent Thorough Cardiologist Evaluation (as defined in these medical standards)
- If after reviewing available information, and HMS determines the employee currently has an acceptable level of risk for sudden incapacitation, HMS may remove the employee's work restrictions for sudden incapacitation risk. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee's existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

### If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. This requires employee to have a Thorough Cardiologist Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must also inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.

# C5: Medical Standards for Safety Critical Workers with Heart Valve Disease and Aortic Aneurysm



## DEFINITIONS

- Aortic valve** – is the heart valve between the left ventricle and the aorta.
- Aortic stenosis** – is a disease where the aortic valve opening becomes progressively narrower, which impairs outflow of blood from the heart to the aorta. Symptoms progress from decreased exercise tolerance and shortness of breath, to coronary ischemia (angina), syncope, and heart failure. Severe cases are treated with a prosthetic heart valve. Disease severity is graded based on size of the aortic valve opening as below:
  - Mild aortic stenosis is defined as - aortic valve area > 1.5 cm<sup>2</sup>;
  - Moderate aortic stenosis is defined as - aortic valve area 1.0 to 1.5 cm<sup>2</sup>; and
  - Severe aortic stenosis is defined as - aortic valve area < 1.0 cm<sup>2</sup>.
- Aortic aneurysm** – is an enlargement of the aorta, which weakens the wall of the aorta and poses a risk for rupture with massive bleeding that is fatal if not immediately treated. Aortic aneurysms can occur in the thoracic aorta (in the chest cavity) or the abdomen. Aortic aneurysms sometimes cause back or abdominal pain, but often a person has no symptoms unless rupture occurs. Clinical guidelines specify when aortic aneurysms should be surgically repaired. Uncontrolled hypertension is a risk factor for rupture.

## WORK RESTRICTIONS FOR SUDDEN INCAPACITATION (SI) RISK

MEDICAL CONDITION / DIAGNOSIS	DURATION
<b>Asymptomatic mild or moderate aortic stenosis</b>	<b>No work restrictions</b> – but require annual medical monitoring
<b>Symptomatic mild or moderate aortic stenosis</b> With symptoms of atrial fibrillation, angina, syncope, heart failure, or thromboembolism, or an ejection fraction (EF) < 50%	<b>Ongoing work restrictions</b> – until adequately treated and Thorough Cardiologist Evaluation shows acceptable risk
<b>Severe aortic stenosis – not treated with surgery</b>	<b>Ongoing work restrictions</b>
<b>Other heart valve disorders</b>	<b>Individually evaluated</b>
<b>After heart valve replacement and/or other heart valve surgery</b>	<b>3-month waiting period after surgery</b> – and a Thorough Cardiologist Evaluation shows acceptable risk
<b>Asymptomatic abdominal aortic aneurysm with diameter &lt;5.5 cm for males, or &lt;5.0 cm for females</b>	<b>No work restrictions</b> – but require annual medical monitoring
<b>Abdominal aortic aneurysm if: (a) symptomatic, (b) diameter &gt;5.5 cm for males or &gt;5.0 for females, (c) size increases &gt;0.5 cm/year, or (d) if surgery is recommended</b>	<b>Ongoing work restrictions</b> – to be reassessed if surgery is done
<b>Thoracic aortic aneurysm if: (a) symptomatic, (b) diameter &gt;5.0, (c) size increases &gt;0.5 cm/year, or (d) if surgery is recommended</b>	<b>Ongoing work restrictions</b> – to be reassessed if surgery is done
<b>After surgery for abdominal or thoracic aortic aneurysm</b>	<b>3-month waiting period after surgery</b> – and a Thorough Cardiologist Evaluation shows acceptable risk

## WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

### UPRR work restrictions for sudden incapacitation risk:

- UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation includes loss of consciousness, or sudden impairment in mental or physical functioning that poses a safety risk for work.
- Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
- Work restrictions for sudden incapacitation may include a “minimum waiting period” (after the health event of concern) before the person can be considered for return to safety critical work.

### To remove work restrictions for sudden incapacitation risk, the following conditions must be met:

- Employee must complete the minimum waiting period and have had no new health events that pose safety concerns.
- Employee must have a recent Thorough Cardiologist Evaluation (as defined in these medical standards)
- If after reviewing available information, and HMS determines the employee currently has an acceptable level of risk for sudden incapacitation, HMS may remove the employee's work restrictions for sudden incapacitation risk. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee's existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

### If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. This requires employee to have a Thorough Cardiologist Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must also inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.



# C6: Medical Standards for Safety Critical Workers with Syncope



## DEFINITIONS

- Syncope** – is a condition where a person has loss of consciousness (LOC) caused by a sudden drop in perfusion of blood to the brain. The specific types and causes of syncope include: (1) syncope due to orthostatic hypotension (i.e., rapid drop in blood pressure when going from supine or seated to standing), (2) cardiac syncope, or (3) reflex syncope (due to combined neurological and cardiovascular effects).
- Orthostatic syncope due to a transient and reversible cause** – such as blood volume depletion (from dehydration or blood loss) and/or recent use of a medication known to cause hypotension. History and clinical findings that suggest orthostatic syncope include orthostatic blood pressure changes after a syncopal event, lab tests consistent with volume depletion, and/or use of medications known to cause hypotension.
- Orthostatic syncope due to autonomic dysfunction** – a permanent nervous system dysfunction with impaired vasoconstriction when a person goes from supine to standing posture, causing blood to pool in the lower extremities and gut with a rapid drop in blood pressure and syncope. May be due to diabetic peripheral neuropathy or other cause. There are no treatments that reliably prevent recurrent syncope for this condition.
- Cardiac syncope** – is caused by a sudden drop in cardiac output due to a heart condition including abnormally slow or fast heart rates (bradycardia or tachycardia), sinus node dysfunction, cardiac conduction abnormality, dysrhythmia, or other cardiac disorders. Treatment may include medication, ablation, or a pacemaker. For certain types of cardiac syncope there are no treatments that will reliably prevent recurrent syncope.
- Reflex syncope** – (previously called neurocardiogenic syncope) is a rapid drop in perfusion of blood to the brain due to abnormal nervous system activity that paradoxically block peripheral vasoconstriction and inhibit cardiac function, causing blood pressure to drop. Vasovagal syncope is a type of reflex syncope. For a person with recurrent reflex syncope there is no treatment that will reliably prevent future syncopal episodes.
- Syncope of unknown cause** – is diagnosed if a person has a LOC event determined to be probable syncope based on a thorough medical evaluation (i.e., with relevant cardiology, neurology, and internal medicine evaluations), and a probable cause for the syncopal event has not been identified.

## WORK RESTRICTIONS FOR SUDDEN INCAPACITATION (SI) RISK

MEDICAL CONDITION / DIAGNOSIS	DURATION
<b>Orthostatic syncope – due to transient/reversible cause (confirmed)</b> Requires objective evidence of orthostatic blood pressure changes, volume depletion, or use of medication known to cause hypotension, and a Thorough Cardiologist Evaluation must be completed.	<b>6-month minimum waiting period</b> – then work restrictions may be removed if the factors that caused syncope are removed and unlikely to recur
<b>Orthostatic syncope – due to autonomic dysfunction (confirmed)</b>	<b>Permanent work restrictions</b>
<b>Cardiac syncope (confirmed)</b> depending on the underlying condition causing cardiac syncope, there may or may not be an effective treatment (individually assessed)	<b>Ongoing (possibly permanent) work restrictions</b> – reassess if due to a treatable cause
<b>Single syncope episode (in prior 5 years) - diagnosed as either reflex syncope (confirmed) or syncope of unknown cause</b> – provided a Thorough Cardiologist Evaluation has been done	<b>1-year minimum waiting period</b> – may remove work restrictions if a Thorough Cardiologist Evaluation at one year shows acceptable risk
<b>Recurrent reflex syncope (confirmed) (2 or more episodes in 5 years)</b>	<b>Permanent work restrictions</b>
<b>Syncope of unknown cause (1 or more episodes) or suspected syncope with incomplete medical evaluation</b> (as determined by HMS)	<b>Ongoing work restrictions</b> – reassess if new relevant medical information is provided

## WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

### UPRR work restrictions for sudden incapacitation risk:

- UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation includes loss of consciousness, or sudden impairment in mental or physical functioning that poses a safety risk for work.
- Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
- Work restrictions for sudden incapacitation may include a “minimum waiting period” (after the health event of concern) before the person can be considered for return to safety critical work.

### To remove work restrictions for sudden incapacitation risk, the following conditions must be met:

- Employee must complete the minimum waiting period and have had no new health events that pose safety concerns.
- Employee must have a recent Thorough Cardiologist Evaluation (as defined in these medical standards)
- If after reviewing available information, and HMS determines the employee currently has an acceptable level of risk for sudden incapacitation, HMS may remove the employee's work restrictions for sudden incapacitation risk. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee's existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

### If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. This requires employee to have a Thorough Cardiologist Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must also inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.

# C7: Medical Standards for Safety Critical Workers with Hypertension and Other Cardiovascular Conditions



## DEFINITIONS

1. **Hypertension** – a disease characterized by chronic or recurrent abnormally high blood pressure. Both acute and chronic hypertension may pose risks for myocardial infarction, stroke, and damage to multiple other body organs. Typically treated with medications that may have side effects of hypotension and syncope. The current system for grading severity of hypertension is below:
  - a. Hypertension Stage 1: Blood pressure >140/90
  - b. Hypertensive Urgency: Blood pressure >180/120 (with no symptoms or evidence of organ damage)
  - c. Hypertensive Emergency: Blood pressure >180/120 (with symptoms or evidence of organ damage) A condition with extremely high blood pressure elevations that poses immediate risk for stroke, myocardial infarction, or other serious health event. A medical emergency requiring immediate medical treatment.

## WORK RESTRICTIONS FOR SUDDEN INCAPACITATION (SI) RISK

MEDICAL CONDITION / DIAGNOSIS	DURATION
<b>Hypertension</b>	
<b>Hypertension – treated or untreated with medication – with no history of severe hypotension or hypertensive emergency in past 2 years</b>	<b>Individually evaluated</b> – typically will not require work restriction
<b>Hypertension treated with medication - with 1 or more episodes of severe hypotension (pre syncopal) in the past 2 years</b> – defined episodes of frequent light-headedness or near syncope, but where syncope (with loss of consciousness) has not occurred	<b>Individually evaluated</b> – refer to medical standards for syncope if loss of consciousness and collapse occurred
<b>Hypertension with a hypertensive emergency in past 2 years</b> including emergency medical care or hospitalization for hypertensive emergency	<b>Individually evaluated</b> – also assess any adverse health effects related to these conditions
<b>Other Cardiovascular Conditions</b>	
<b>Any other suspected or confirmed cardiovascular condition</b> if the condition may pose substantial risk for safety critical work and is not already addressed by the UPRR medical standards; a Thorough Cardiologist Evaluation and other medical evaluations may be required by HMS	<b>Individually evaluated</b> – based on an individualized evaluation of the person’s health conditions, and essential job functions

## WORK RESTRICTIONS AND CRITERIA FOR RETURN TO WORK

### UPRR work restrictions for sudden incapacitation risk:

1. UPRR considers health conditions with a risk for sudden incapacitation greater than a 1% per year occurrence rate to pose an unacceptable risk for safety critical work, requiring work restrictions. Sudden incapacitation includes loss of consciousness, or sudden impairment in mental or physical functioning that poses a safety risk for work.
2. Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).
3. Work restrictions for sudden incapacitation may include a “minimum waiting period” (after the health event of concern) before the person can be considered for return to safety critical work.

### To remove work restrictions for sudden incapacitation risk, the following conditions must be met:

1. Employee must complete the minimum waiting period and have had no new health events that pose safety concerns.
2. Employee must have a recent Thorough Cardiologist Evaluation (as defined in these medical standards)
3. If after reviewing available information, and HMS determines the employee currently has an acceptable level of risk for sudden incapacitation, HMS may remove the employee’s work restrictions for sudden incapacitation risk. However, HMS may apply other work restrictions due to safety concerns.
4. If all the conditions above are not met, then HMS will continue the employee’s existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

### If the employee returns to safety critical work:

1. Medical monitoring by HMS is required after return to work. This requires employee to have a Thorough Cardiologist Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
2. The employee must also inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.

# C8: Medical Standards for Safety Critical Workers with Low Aerobic Capacity



## DEFINITIONS

- Aerobic capacity** – is a measure of the person’s ability to perform physical work (e.g., cardiorespiratory fitness or stamina). Aerobic capacity can be measured in METS, with 1.0 MET (Metabolic Equivalent Task) being equivalent to a person’s metabolic energy expenditure at rest.
- Exercise Tolerance Test (ETT)** – is medical test used to screen a person for cardiovascular conditions, and to assess a person’s level of aerobic capacity. A Thorough Cardiologist Evaluation, as defined by these medical standards, required a maximal exercise tolerance test using a standard Bruce Protocol that is supervised and interpreted by a cardiologist.  
For this test the subject walks or jogs on a treadmill, while connected to electrocardiogram leads, and blood pressure is monitored. For a maximal ETT the person exercises until a near maximal heart rate is attained, and this allows measurement of the persons aerobic capacity. The ETT can also screen for cardiovascular conditions such as ischemia related to coronary heart disease.

## WORK RESTRICTIONS FOR LOW AEROBIC CAPACITY

MEDICAL CONDITION / DIAGNOSIS	DURATION
<b>Low aerobic capacity of &lt;8 METS* – and if maximal ETT is otherwise normal</b> – for persons with or without known cardiovascular disease	<b>Ongoing work restrictions</b> – no more than light physical work – and no work in extreme heat or cold (no sudden incapacitation restrictions are needed unless required for another condition)
<b>Low aerobic capacity of 8.0 to 9.9 METS* – and if maximal ETT is otherwise normal</b> – for persons with or without known cardiovascular disease	<b>Ongoing work restrictions</b> – no more than moderate physical work – and no work in extreme heat or cold (no sudden incapacitation restrictions are needed unless required for another condition)
<b>Aerobic capacity of 10.0 METS or greater* – and if maximal ETT is otherwise normal</b>	<b>Individually evaluated</b> – generally sufficient for moderate to vigorous physical work in most situations, but may require work restrictions for physical activities in some cases based on job requirements and/or other health conditions

*\*Aerobic capacity requirements apply to safety critical workers with jobs involving moderate or vigorous physical work, and/or regular work in outdoor or field settings (including all train crew). Work restrictions for sudden incapacitation risk do not apply, unless required because of another condition.*

## WORK RESTRICTIONS FOR LOW AEROBIC CAPACITY

### UPRR work restrictions for low aerobic capacity:

- UPRR places physical activity work restrictions on employees with suspected or confirmed low aerobic capacity.
- Additional work restrictions for sudden incapacitation may be needed if certain other health conditions are present.
- Work restrictions for sudden incapacitation restrict functional work activities that may affect the health and safety of the worker or others (e.g., operating vehicles or equipment).

### To remove work restrictions for low aerobic capacity, the following conditions must be met:

- Employee must have a recent Thorough Cardiologist Evaluation (including a new maximal ETT) and have had no new health events that pose safety concerns.
- If after reviewing available information, and HMS determines the employee currently has an acceptable level of aerobic capacity, HMS may remove the employee’s work restrictions. However, HMS may apply other work restrictions due to safety concerns.
- If all the conditions above are not met, then HMS will continue the employee’s existing work restrictions and will initiate a new medical fitness-for-duty evaluation.

### If the employee returns to safety critical work:

- Medical monitoring by HMS is required after return to work. This requires employee to have a Thorough Cardiologist Evaluation at least annually, with records sent to HMS. The employee is responsible for this evaluation. HMS may also require more frequent monitoring and/or specific evaluations or tests.
- The employee must also inform HMS of any Reportable Health Event (i.e., a change in health status that may affect safety at work) as stated in the UPRR Medical Rules.