## Section E. Cardiovascular System Conditions

#### Overview

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| In this Section | This section contains the following topics: |

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| [21](#Topic21) | Residuals of Cold Injuries | 4-E-13 |

#### 20. Heart Conditions and Hypertensive Vascular Disease

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| Introduction | This topic contains information about heart conditions, including   * [definitions of ***hypertension*** and ***isolated systolic hypertension***](#_a._Definitions:_Hypertension) * [blood pressure readings required for service connection](#_b._Blood_Pressure) * [the multiple readings confirmation requirement](#_c.__The) * [considering a diagnosis of pre-hypertension](#_d.__Considering) * [considering predominant blood pressure in evaluations of hypertensive vascular disease](#_e._Considering_Predominant) * [considering the long term effects of hypertensive vascular disease](#_f.__Considering) * [definition of the term ***arteriosclerotic heart disease***](#_g.__Definition:) * [granting service connection for arteriosclerotic manifestations due to hypertensive vascular disease](#_h.__Granting) * [manifestations of advanced arteriosclerotic disease in service](#_i.__Granting) * [separately evaluating hypertensive vascular disease](#_j.__RatingSeperately) * [effects of rheumatic heart disease](#_k.__Effects) * [rheumatic heart disease coexisting with hypertensive or arteriosclerotic heart disease](#_l.__Rheumatic) * [considering conditions subsequent to amputation](#_m.__Considering), and * [definition of the term ***congenital heart defect***](#_n.__Definition:)*.* |

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| Change Date | September 22, 2014 |

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| a. Definitions: Hypertension and Isolated Systolic Hypertension | Two types of hypertensive vascular disease are defined in [38 CFR 4.104](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookc/part4/s4_104.doc), Diagnostic Code (DC) 7101, Note 1.  ***Hypertension*** means elevated diastolic blood pressure is predominantly 90mm or greater.  ***Isolated systolic hypertension*** means that systolic blood pressure is predominantly 160mm or greater with a diastolic blood pressure of less than 90mm.  ***Note***: Use of the term “hypertension” in reports or in VA guidance will most often be used as a synonym for any type of hypertensive vascular disease. |

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| b. Blood Pressure Readings Required for Service Connection | With the exception below, do not grant service connection for hypertensive vascular disease if current blood pressure readings (during the claim period) do not meet the regulatory definition of either:   * ***hypertension*** or * ***isolated systolic hypertension***.   ***Exception***: Current readings meeting the regulatory standards for the definitions above *are not required* if   * the competent evidence shows one of the diagnoses above, currently controlled by (or asymptomatic with) medication, *and* * a past competent diagnosis was made * in service * based on manifestation of blood pressure readings to a compensable degree within the presumptive period as provided in [38 CFR 3.307](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/s3_307.doc) and [38 CFR 3.309(a)](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/s3_309.doc), or * secondary to a service-connected (SC) disability.   ***Note***: Where service connection is established under the exception above (where current readings do not meet the regulatory definitions), the disability percentage will be either 0 percent or 10 percent, depending on whether or not the predominant diastolic pressure was 100 or more before symptoms were controlled with medication as provided in [38 CFR 4.104](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookc/part4/s4_104.doc), DC 7101.  ***References***: For more information on   * the concept of competent evidence and policies on evaluating the competency of evidence, see [M21-1MR Part III, Subpart iv, 5](imi-internal:M21-1MRIII.iv.5). * the multiple readings confirmation requirement see, [M21-1MR Part III, Subpart iv, 4.E.20.c](imi-internal:M21-1MRIII.iv.4.E.20.c) * assessments of pre-hypertension, see [M21-1MR Part III, Subpart iv, 4.E.20.d](imi-internal:M21-1MRIII.iv.4.E.20.d), and * predominant blood pressure readings in evaluation issues, see [M21-1MR Part III, Subpart iv, 4.E.20.e](imi-internal:M21-1MRIII.iv.4.E.20.e). |

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| c. The Multiple Readings Confirmation Requirement | In addition to the definitional requirements for a diagnosis of hypertension or isolated systolic hypertension [38 CFR 4.104](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookc/part4/s4_104.doc), DC 7101, Note 1 provides a second criterion that must be met for a diagnosis to be acceptable.  Subject to the exceptions below, a diagnosis of hypertension (or isolated systolic hypertension) must be ***confirmed by readings taken two or more times on at least three different days***.  The rulemaking for the regulation stated that the purpose of this requirement, was to “assure that the existence of hypertension is not conceded based solely on readings taken on a single, perhaps unrepresentative, day.”  ***Exceptions***:   * In a claim for reevaluation of SC hypertension, readings on multiple days are not required. The policy, reflected in the *Hypertension* Disability Benefits Questionnaire (DBQ), is that where hypertension has been previously diagnosed, the examiner is only required to take three blood pressure readings on the day of examination. * Similarly, multiple confirmatory readings are not required when there is a past diagnosis with hypertensive vascular disease currently controlled on medication as provided in [M21-1MR, Part III, Subpart iv, 4.E.20.b](imi-internal:M21-1MRIII.iv.4.E.20.b). * Note 1 in the regulation *does not require* that a diagnosis of either type of hypertensive vascular disease *in service treatment records* (STRs) have been confirmed by readings taken two or more times on each of three different days. * A disability first clearly diagnosed after service can be SC under [38 CFR 3.303(d)](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKB/PART3/S3_303.DOC) when all the evidence, including that pertinent to service, establishes that the disease was incurred in service. * A lesser showing in service may also be sufficient to *indicate* a nexus to service in a claim for direct service connection for the purpose of determining whether a VA examination is required.   ***Important***: The decision maker is responsible for critically evaluating the evidence. Notwithstanding the first exception above, in cases where hypertension under current control with medication is currently diagnosed, be appropriately critical of whether the existence of chronic hypertension is adequately proven where a diagnosis in service is based on isolated or limited blood pressure readings. Medical clarification may be appropriate in such cases. |

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| d. Considering a Diagnosis of Pre-Hypertension | ***Pre-hypertension***, is generally defined as systolic pressure between 120mm and 139mm and diastolic pressure from 80mm to 89mm.  Pre-hypertension is not a disability for VA purposes.  If the VA examination (or evidence used in lieu of a VA examination) contains only a diagnosis of pre-hypertension based on readings that do not meet the definition of hypertension or isolated systolic hypertension, do *not*   * seek clarification, or * grant service connection for hypertension based on the diagnosis.   ***Exception***: Clarification *may* be required if a current diagnosis of “pre-hypertension” is made where readings exist in the record that meet the regulatory definition of hypertension. This may indicate   * conflicting evidence, and/or * equivocation by the medical professional on diagnosis or chronicity (particularly if, for example, the facts show a predominance of readings not meeting the regulatory definition of hypertension).   ***Reference***: For more information on the definitions of hypertension and isolated systolic hypertension, see [M21-1MR, Part III, Subpart iv, 4.E.20.a](imi-internal:M21-1MRIII.iv.4.E.20.a) |

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| e. Considering Predominant Blood Pressure in Evaluations of Hypertensive Vascular Disease | Every level of evaluation specified under [38 CFR 4.104](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookc/part4/s4_104.doc), DC 7101 requires consideration of the ***predominant*** (most common or prevailing) blood pressure. Blood pressure may fluctuate depending on a number of variables and disability evaluations must be based on valid evidence demonstrating representative disability.  Generally the regulation requires analysis of predominant *current* readings (readings during the period during which an effective date can be assigned –generally from the date of claim forward for assignment of an initial evaluation or from a year prior to the date of claim in a claim for increase).  However predominant *past* blood pressure must be analyzed to determine if a 10 percent evaluation can be assigned when current predominant blood pressure readings are noncompensable. A 10 percent evaluation may be assigned if:   * continuous medication is required for blood pressure control, and. * past diastolic pressure (before medication was prescribed) was predominantly 100 of greater.   ***Important***: Do not assign a 10 percent evaluation based upon a showing of one of the two conjunctive criteria above by invoking the benefit of the doubt rule ([38 CFR 3.102](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/S3_102.doc) and [4.3](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKC/PART4/S4_3.doc)) or [38 CFR 4.7](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKC/PART4/S4_3.doc). When either criterion is simply not shown (for example, the claimant is using prescribed anti-hypertensive medication but diastolic pressure has never been predominantly 100 or greater) the evidence is not in relative equipoise on whether a 10 percent evaluation is appropriate and the disability picture does not more nearly approximate the 10 percent criteria.  However, [38 CFR 3.102](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/S3_102.doc), [4.3](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKC/PART4/S4_3.doc), and [4.7](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKC/PART4/S4_3.doc) may be applicable to whether the evidence supports each criterion, namely:   * whether diastolic readings before were predominantly 100 or higher or * whether continuous medication is required for control of blood pressure.   Use the table below to assist in analyzing predominant blood pressure |

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| determining which diastolic or systolic pressure range is predominant | * make note of the competent and credible evidence of diastolic and systolic readings (see [M21-1MR Part III, Subpart iv, 5](imi-internal:M21-1MRIII.iv.5)) * determine which readings correspond with the various levels of evaluation specified in the diagnostic criteria (for example diastolic readings “100 or more” or “110 or more”), and * subject to the notes below, conclude that the range with the most qualifying readings is the predominant blood pressure.   ***Notes***:   * If there is a relative balance of readings supporting two levels of evaluation for the same time frame, apply [38 CFR 3.102](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/S3_102.doc), [4.3](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKC/PART4/S4_3.doc) and [4.7](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKC/PART4/S4_3.doc). ***Example***: If there are six diastolic measurements from one doctor in the 100 to 109 range (108, 106, 108, 104, 106, 100) in June, and six diastolic readings from another doctor in the 110 to 119 (110, 110, 114, 110, 112, 110) the same month, give the benefit of the doubt and assign the higher 20 percent evaluation. * If during the evaluation period more than one blood pressure range is supported for at least a month stage the evaluation in accordance with the facts. ***Example***: Use the readings above but assume second doctor’s readings were taken in November. Assign a 10 percent evaluation based on the June results from the date of claim or date entitlement arose, whichever is the later; stage to 20 percent as of the date of the first readings from November. |

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| considering predominant blood pressure before control with medication | * start with the more current of * the readings taken as part of the diagnostic workup period leading to the diagnosis of hypertension if medication was prescribed at that time, or * the readings taken as part of a subsequent diagnostic workup period leading to the prescription of medication.   ***Explanation***: These are the readings pertinent to whether hypertensive readings were predominantly in the compensable range before was brought under control with medication.   * Do not consider * normal blood pressure readings taken long before the diagnosis of hypertensive vascular disease was made, or * minimally hypertensive readings long before the workup leading to the prescription of medication.   ***Explanation***: These are not pertinent and will impermissibly skew the analysis of the predominant blood pressure. |

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and Hypertensive Vascular Disease, Continued

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| f. Considering Long Term Effects of Hypertension | Hypertension may   * exist for years without causing symptoms * so increase the cardiac load as to result in hypertrophy of the cardiac muscle or cardiac dilation and decompensation, if sufficiently severe, and * cause arteriosclerosis of uneven distribution that often involves the vessels of one organ to a greater degree than those of the rest of the body, in cases where hypertension is long-standing.   If the hypertension is of sufficient degree to cause significant impairment of circulation to the organ, symptoms will manifest in accordance with the   * organ involved, and * degree of impairment. |

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| g. Definition: Arteriosclerotic Heart Disease | ***Arteriosclerotic heart disease***, also diagnosed as ischemic heart disease and coronary heart disease, is a disease of the heart caused by the diminution of blood supply to the heart muscle due to narrowing of the cavity of one or both coronary arteries due to the accumulation of fatty material on the inner lining of the arterial wall. |

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| h. Granting Service Connection for Arteriosclerotic Manifestations Due to Hypertension | If in evaluating a claim for a cardiovascular disorder any of the following arteriosclerotic manifestations are diagnosed in a Veteran with SC hypertension, grant service connection through the relationship to hypertension:   * symptoms and signs in the brain that warrant a diagnosis of cerebral arteriosclerosis or thrombosis with hemiplegia * nephrosclerosis of the kidneys with impairment of renal function, or * myocardial damage or coronary occlusion of the heart.   ***Notes***:   * Do not address service connection for the above-listed cardiovascular conditions through the relationship to the hypertension when a sympathetic reading of the claims does not show a claim for service connection for a heart condition. * Arteriosclerosis occurs with advancing age without preexisting hypertension, and may occur in some younger individuals who are predisposed to arterial changes. * The existence of arteriosclerosis does not imply/indicate prior hypertension. |

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| i. Manifestations of Advanced Arteriosclerotic Disease in Service | When service connection for a cardiovascular condition is claimed:   * The mere identification of arteriosclerotic disease upon routine examination early in service is *not* a basis for service connection. Manifestation of lesions or symptoms of chronic disease from date of enlistment, or so close to enlistment that chronic disease could not have originated during service will establish pre-service existence under [38 CFR 3.303(c)](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKB/PART3/S3_303.DOC). * However depending on the precise facts of the case, an analysis of the presumption of soundness under [38 CFR 3.304](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKB/PART3/S3_304.DOC) and the provisions on aggravation under [38 CFR 3.306](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKB/PART3/S3_306.DOC) may be required. * grant service connection for any sudden development during service of coronary occlusion or thrombosis whether or not these are manifestations of advanced long standing arteriosclerotic disease.   ***Note***: Under [38 CFR 3.6(a)](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/S3_6.doc), inactive duty for training qualifies as active service if an individual becomes disabled or dies from an acute myocardial infarction, a cardiac arrest, or a cerebrovascular accident occurring during such training. |

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| j. Seperately evaluating Hypertension | Evaluate hypertension separately from hypertensive heart disease and other types of heart disease.  Evaluate hypertension due to aortic insufficiency or hyperthyroidism, which is usually the isolated systolic type, or the elevation of systolic or diastolic blood pressure due to nephritis, as part of the condition causing it rather than by a separate evaluation.  However, a separate evaluation for hypertension may be awarded when the sole renal disability is the absence of a kidney, or the requirement of regular dialysis.  ***Notes***:   * The cause of hypertension is unknown in the vast majority of cases. * Do not establish service connection for hypertension if the evidence does not contain readings specified in [38 CFR 4.104](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookc/part4/s4_104.doc), DC 7101, Note 1.   ***Reference***: For more information on hypertension and nephritis, see [38 CFR 4.115](http://www.benefits.va.gov/warms/docs/regs/38CFR/BOOKC/PART4/S4_115.doc). |

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| k. Effects of Rheumatic Heart Disease | Chronic rheumatic heart disease results from single or repeated attacks of rheumatic fever that produce valvular disease, manifested by   * rigidity and deformity of the cusps * fusion of the commissures, or * shortening and fusion of the chordae tendineae.   The earliest evidence of organic valvular disease is   * a significant murmur, and * hemodynamically significant valvular lesions found on x-ray, fluoroscopy, and electrocardiogram (ECG) study, since these reveal the earliest stages of specific chamber enlargement.   ***Note***: Grant service connection for an aortic valve insufficiency that manifests without other cause after an in-service case of rheumatic fever. |

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and Hypertensive Vascular Disease, Continued

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| l. Rheumatic Heart Disease Coexisting With Hypertensive or Arteriosclerotic Heart Disease | Accepted medical principles do not concede an etiological relationship between rheumatic heart disease and either hypertensive or arteriosclerotic heart disease.  If a Veteran who is SC for rheumatic heart disease develops hypertensive or arteriosclerotic heart disease after the applicable presumptive period following military discharge, request a medical opinion to determine which condition is causing the current signs and symptoms.  ***Notes***:   * If the examiner is unable to separate the effects of one type of heart disease from another, the effects must be rated together. * Do not extend service connection to systemic manifestations or arteriosclerosis in areas remote from the heart, since medically there is no recognized etiological relationship between rheumatic heart disease and later developing hypertensive or arteriosclerotic changes. |

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| m. Considering Conditions Subsequent to Amputation | Grant service connection on a secondary basis for the following conditions that develop subsequent to the SC amputation of one lower extremity at or above the knee, or SC amputations of both lower extremities at or above the ankles:   * ischemic heart disease, or * other cardiovascular disease, including hypertension.   ***Reference***: For more information on proximate results or secondary conditions, see [38 CFR 3.310(b)](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/s3_310.doc). |

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| n. Definition: Congenital Heart Defect | ***Congenital heart defects*** include common heart conditions due to prenatal influences, such as   * patent foramen ovale * patent ductus arteriosus * coarctation of the aorta, and * intraventricular septal defect. |

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#### 21. Residuals of Cold Injuries

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| Introduction | This topic contains information about residuals of cold injury, including   * [general effects of injury due to cold](#_a.__General) * [long-term effects of exposure to cold](#_b.__Long-Term) * [chronic effects of exposure to cold](#_c.__Chronic) * [granting service connection for residuals of cold injuries](#_d.__Granting) * [considering cold injuries incurred during the Chosin Reservoir Campaign](#_e.__Considering), and * [granting service connection for cold injuries incurred during the Chosin Reservoir Campaign](#_f.__Granting). |

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| Change Date | December 29, 2007 |

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| a. General Effects of Injury Due to Cold | Injury due to exposure to extremely cold temperatures causes structural and functional disturbances of   * small blood vessels * cells * nerves * skin, and * bone.   The physical effects of exposure may be acute or chronic, with immediate or latent manifestations.  ***Examples***: Exposure to   * damp cold temperatures (around freezing) cause frostnip and immersion or trench foot. * dry cold, or temperatures well below freezing, causefrostbite with, in severe cases, loss of body parts, such as fingers, toes, earlobes, or the tip of the nose. |

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| b. Long-Term Effects of Exposure to Cold | The fact that the immediate effects of cold injury may have been characterized as “*acute”* or “*healed”* does not preclude development of disability at the original site of injury many years later. |

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21. Residuals of Cold Injuries, Continued

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| c. Chronic Effects of Exposure to Cold | Veterans with a history of cold injury may experience the following signs and symptoms at the site of the original injury:   * chronic fungal infection of the feet * disturbances of nail growth * hyperhidrosis * chronic pain of the causalgia type * abnormal skin color or thickness * cold sensitization * joint pain or stiffness * Raynaud’s phenomenon * weakness of hands or feet * night pain * weak or fallen arches * edema * numbness * paresthesias * breakdown or ulceration of cold injury scars * vascular insufficiency, indicated by edema, shiny, atrophic skin, or hair loss, and * increased risk of developing conditions, such as * peripheral neuropathy * squamous cell carcinoma of the skin, at the site of the scar from a cold injury, or * arthritis or other bone abnormalities, such as osteoporosis, or subarticular punched-out lesions. |

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21. Residuals of Cold Injuries, Continued

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| d. Granting Service Connection for Residuals of Cold Injuries | Grant service connection for the residuals of cold injury if   * the cold injury was incurred during military service, and * an intercurrent nonservice-connected (NSC) cause cannot be determined.   ***Notes***:   * The fact that an NSC systemic disease that could produce similar findings is present, or that other areas of the body not affected by cold injury have similar findings, does not necessarily preclude service connection for residual conditions in the cold-injured areas. * When considering the possibility of intercurrent cause, always resolve reasonable doubt in the Veteran’s favor.   ***Reference***: For more information on reasonable doubt, see [38 CFR 3.102](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/S3_102.doc). |

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| e. Considering Cold Injuries Incurred During the Chosin Reservoir Campaign | The Chosin Reservoir Campaign was conducted during the Korean War, October 1950 through December 1950, in temperatures of –20ºF or lower. Many participants in this campaign suffered from frostbite for which they received no treatment and, as a result, there may be no service treatment records (STRs) to directly support their claims for frostbite.  If the Veteran’s participation in the Chosin Reservoir Campaign is confirmed, concede exposure to extreme cold under the provisions of [38 U.S.C. 1154(a)](http://www.law.cornell.edu/uscode/text/38/1154). |

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| f. Granting Service Connection for Cold Injuries Incurred During the Chosin Reservoir Campaign | Grant service connection under the provisions of [38 CFR 3.303(a)](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/S3_303.doc) and [38 CFR 3.304(d)](http://www.benefits.va.gov/WARMS/docs/regs/38cfr/bookb/part3/S3_304.doc) if   * the Veteran has a disability which is diagnosed as a residual of cold injury, and * there are no other circumstances to which this disability may be attributed. |