



Clinical Policy Title: Full-body hyperbaric oxygen therapy

Clinical Policy Number: CCP.1039

Effective Date: December 1, 2013
Initial Review Date: June 19, 2013
Most Recent Review Date: June 4, 2019
Next Review Date: May 2020

Related policies:

None.

Policy contains:

- Decompression illness.
- Diabetic foot wounds.
- Hyperbaric oxygen therapy.
- Multiplace chamber.
- Topical hyperbaric.

ABOUT THIS POLICY: AmeriHealth Caritas has developed clinical policies to assist with making coverage determinations. AmeriHealth Caritas' clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of "medically necessary," and the specific facts of the particular situation are considered by AmeriHealth Caritas when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. AmeriHealth Caritas' clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. AmeriHealth Caritas' clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, AmeriHealth Caritas will update its clinical policies as necessary. AmeriHealth Caritas' clinical policies are not guarantees of payment.

Coverage policy

AmeriHealth Caritas considers the use of full-body hyperbaric oxygen therapy to be clinically proven and, therefore, medically necessary when the following criteria are met (Matthieu, 2017; Undersea & Hyperbaric Medical Society, 2011; Weaver, 2014):

Technical criteria (all of which must be met):

- A full-body monoplace or multiplace chamber is used for all treatments.
- The chamber used for treatment is capable of reaching a pressurization equal to or greater than 1.4 air pressure absolute (ATA) (20.5 pounds per square inch [psi]) to the full body.
- The individual is supplied with systemic 100 percent oxygen during the hyperbaric oxygen therapy .
- The entire treatment process is conducted with the direct supervision, continuous onsite presence, and immediate availability of a qualified physician to assist and direct. This physician must be appropriately educated in hyperbaric medicine and board-certified in undersea and hyperbaric medicine by any of these organizations:
 - American Board of Emergency Medicine.

- American Board of Preventive Medicine.
- American Board of Medical Specialties.
- Usually, hyperbaric oxygen therapy is anticipated to take place in a hospital-affiliated location given the potential need for advanced levels of care in the event of any complications during treatments.

Medically necessary indications for hyperbaric oxygen therapy:

- Air or gas embolism.
- Decompression illness.
- Acute carbon monoxide intoxication.
- Acute peripheral arterial insufficiency.
- Acute peripheral ischemia related to trauma (e.g., crush injuries, compartment syndrome, and suturing of severed limbs):
 - When loss of function, limb, or life is threatened.
 - hyperbaric oxygen therapy is used in conjunction with conventional therapies.
- Actinomycosis, only when the disease process is refractory to conventional treatment with antibiotics and surgery.
- As adjunct therapy to conventional therapy(ies) for late radiation tissue injury (LRTI) (e.g., osteoradionecrosis [ORN], soft tissue radionecrosis).
- Chronic refractory osteomyelitis unresponsive to conventional medical and surgical treatment.
- Clostridial myositis and myonecrosis (e.g., gas gangrene).
- Cyanide poisoning.
- Diabetic wounds of the lower extremities, when all of the following criteria are met:
 - The individual has type 1 or type 2 diabetes and a lower-extremity wound due to diabetes.
 - The wound is classified as Wagner grade 3 or higher.
 - The wound has failed to respond to negative-pressure wound therapy, a vacuum dressing to promote healing in acute or chronic wounds, and enhance healing of 2nd/3rd degree burns
 - The wound has failed to respond to an adequate course of standard wound therapy:
 - Failure is defined by no measurable signs of healing for at least 30 days of treatment with standard wound therapy that has been used in addition to standard diabetic wound care.
 - After a 30-day period of treatment with full-body hyperbaric oxygen therapy and standard diabetic wound care, when there are measurable signs of healing, treatment with full-body hyperbaric oxygen therapy may be continued.

Note: Continued treatment with hyperbaric oxygen therapy is not medically necessary, and not covered, if measurable signs of healing have not been demonstrated within any 30-day period of treatment.

- Necrotizing fasciitis (progressive infections).
- Preparation and preservation of compromised skin grafts (not for primary management of wounds).
- Prophylactic pre- and post-treatment for individuals undergoing dental surgery of a radiated jaw.

Limitations:

All other uses of full-body hyperbaric oxygen therapy are not medically necessary.

Absolute contraindications to systemic hyperbaric oxygen therapy include:

- Untreated pneumothorax.
- Concurrent administration of doxorubicin, cisplatin, or disulfiram.
- Premature infants (birth prior to 37 weeks' gestation).
- Untreated claustrophobia.

The following conditions are considered relative contraindications to hyperbaric oxygen therapy due to the increased risk of oxygen toxicity or barotrauma:

- Severe lung disease.
- Previous ear surgery or trauma.
- Significant upper respiratory infections.
- Pre-existing cataracts.
- Optic neuritis.
- History of idiopathic seizure disorders.
- Chest surgery.
- Treated pneumothorax.
- Altered sensorium.
- Pregnancy.

Alternative covered services:

- Antibiotic therapy.
- Intensive wound therapy.

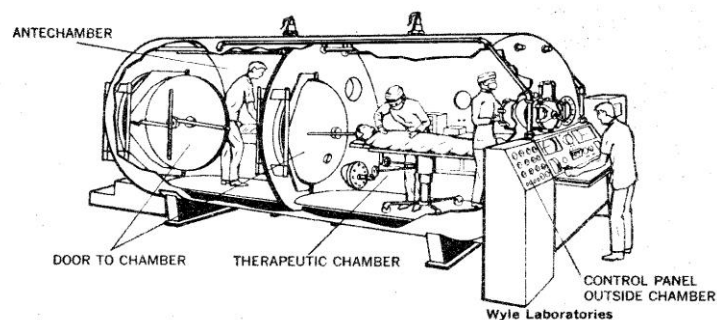
Background

Hyperbaric oxygen therapy was originally developed to deal with ailments associated with diving and decompression. In an hyperbaric oxygen therapy chamber, the air pressure is increased to three times normal air pressure. Under these conditions, the blood can become hyper-oxygenated by saturating hemoglobin and increasing the amount of dissolved oxygen in plasma and, ultimately, oxygen delivery to tissues. Medical conditions caused or exacerbated by inadequate tissue oxygenation may benefit from hyperbaric oxygen therapy to restore normal levels of blood oxygen, promote healing, and reverse some oxygen-dependent reparative processes (e.g., angiogenesis, bacterial defense, collagen synthesis, and cell proliferation). There are no universally accepted treatment schedules, but an initial treatment plan with hyperbaric oxygen therapy may involve multiple sessions with ongoing assessment to consider further treatments.

Multiplace chambers are used to treat multiple individuals at the same time. Usually, a nurse or other health care worker remains inside the chamber, monitors the individuals receiving the treatments and the equipment, and tends to any emergent needs (Figure 1). The air-tight chamber is pressurized to 1.4 to 3.0 ATA. Individuals within the chamber inhale 100 percent oxygen with a face mask or close-fitting hood.

Monoplace chambers accommodate one person at a time. Air compression usually takes place with the individual in a reclining, resting position while health care workers tend to the needs of the individual from outside of the chamber. Both types of chambers are used to deliver systemic or full-body hyperbaric oxygen therapy (Johns Hopkins Medicine, 2017).

Figure 1. Hyperbaric oxygen chamber



hyperbaric oxygen therapy is generally a safe procedure; however, it does carry some risk. The most common risks include (Undersea & Hyperbaric Medical Society, 2016):

- Temporary nearsightedness (myopia) caused by temporary eye lens changes.
- Sinus pain.
- Auditory barotrauma.
- Pulmonary barotrauma.
- Air embolism.
- Oxygen toxicity-induced seizures.
- Fire, due to the oxygen-rich environment of the treatment chamber.

Searches

AmeriHealth Caritas searched PubMed and the databases of:

- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality and other evidence-based practice centers.
- The Centers for Medicare & Medicaid Services.

We conducted searches on April 29, 2019. Search terms were: "hyperbaric oxygenation" (MeSH).

We included:

- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.
- **Guidelines based on systematic reviews.**
- **Economic analyses**, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.

Findings

The Undersea & Hyperbaric Medical Society has produced a guideline (2011) listing the conditions for which hyperbaric oxygen therapy is indicated, followed by an extensive list of references (Weaver, 2014) supporting the guideline. There have been other guidelines on hyperbaric oxygen therapy use, but most are focused on a single condition, for example, the guideline addressing treatment of diabetic foot ulcers (Huang, 2015).

The European Consensus Conference on Hyperbaric Medicine had its most recent meeting in April 2016, in which it divided indications into types (by strength of evidence), along with recommendations for which hyperbaric oxygen therapy is not to be used, based on strong evidence (Mathieu, 2017).

A total of 21 systematic reviews/meta-analyses of the efficacy of hyperbaric oxygen therapy treatment are cited in this policy. Of these, 11 are Cochrane reviews. These studies focused on a variety of conditions, with wounds and necrosis being the most common ones. Most reviews documented effectiveness for hyperbaric oxygen therapy treatment, but often with comments of methodological limits, and the suggestion that further randomized controlled trials be conducted in the future. A few find no improvements in patient outcome after hyperbaric oxygen therapy, or that results are inconclusive.

Early evidence to support the use of hyperbaric oxygen therapy included retrospective studies of large

cohorts of treated patients rather than randomized controlled trials. Evidence using randomized controlled trials is sparse, and the optimal dose, frequency, and duration of hyperbaric oxygen therapy are uncertain. Less evidence is known regarding the sub-populations most likely to benefit from the use of hyperbaric oxygen therapy . For most clinical indications, the current body of evidence in professional literature remains insufficient to form a definitive answer for the effectiveness of hyperbaric oxygen therapy in relation to the number of its proposed indications. More high-quality studies are needed to further substantiate the effectiveness and efficacy of hyperbaric oxygen therapy in current and future clinical practice.

Most experts in the field recommended hyperbaric oxygen therapy based on decades of clinical experience. For some indications with a large body of documented clinical experience and many previously treated patients, trials were considered unethical. There is consensus that hyperbaric oxygen therapy may be beneficial for the following clinical indications:

- **Air or gas embolism and decompression illness** may occur when air bubbles form in blood vessels and body tissues. Clinically, the decision to use hyperbaric oxygen therapy should be made early, as delays have demonstrated a reduction in the efficacy of treatment.
- **Acute carbon monoxide intoxication (CO poisoning)**. Hyperbaric oxygen therapy is believed to displace CO from hemoglobin and prevent the delayed neurologic sequelae associated with CO poisoning. Clinical guidelines support the use of hyperbaric oxygen therapy for individuals with CO poisoning during the first 24 hours to avoid cognitive complications, though the exact dosing and frequency of treatments remain unknown (Hampson, 2012). Multiple published trials have reached various conclusions regarding the effectiveness of hyperbaric oxygen therapy for CO poisoning (Buckley, 2011).
- **Acute peripheral arterial insufficiency**. Main causes such as trauma and crushing injuries may reduce blood circulation and oxygen to muscles and other body tissues. Although surgical intervention may be a primary treatment, hyperbaric oxygen therapy may be used to provide oxygen to these damaged and/or compromised tissues.
- **Chronic refractory osteomyelitis**. Studies have reported significantly lower infection relapse rates with hyperbaric oxygen therapy versus controls in persons who are unresponsive to conventional medical and surgical treatments.
- **Nonhealing diabetic wounds**. Hyperbaric oxygen therapy may increase tissue oxygenation and promote wound healing . For wounds that respond well, hyperbaric oxygen therapy may be performed until the wound has completely closed or until the wound itself is ready for surgical intervention. The Infectious Diseases Society of America found moderate to strong evidence supporting hyperbaric oxygen therapy for treatment of selected diabetic foot wounds that are slow to heal, as in these persons no adjunctive therapy has been proven to improve resolution of infection (Lipsky, 2012). Infected diabetic wounds are typically classified as Wagner grades 3 to 5.
- **Progressive infections of necrotizing fasciitis**. The professional literature suggests the use of hyperbaric oxygen therapy as an adjunct therapy to surgery and antibiotics for necrotizing

- fasciitis based on numerous case reports and citations.
- **Wound therapy using flaps and skin grafts.** A meta-analysis of three trials with 140 subjects found hyperbaric oxygen therapy improved the rate of ulcer healing (risk ratio 5.20; 95 percent confidence interval 1.25 to 21.66; $P = 0.02$) with hyperbaric oxygen therapy at six weeks, although this benefit was not evident at longer-term follow-up at one year (Kranke, 2012).
 - **Radionecrosis, including osteoradionecrosis, soft tissue radionecrosis, and mandibular osteoradionecrosis.** Although conclusive studies are needed, the use of hyperbaric oxygen therapy for osteoradionecrosis of the jaw is considered a standard of care by many dentists and hyperbaric physicians.

Policy updates:

We added four guidelines/other and eight peer-reviewed references to the policy in 2017.

In 2018, we added one peer-reviewed reference to the policy.

In 2019, we added two peer-reviewed publications to the reference list. The policy ID changed from 18.02.01 to CCP.1039.

References

Professional society guidelines/other:

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Centers for Medicare & Medicaid Services National Coverage Determinations:

20.29: Hyperbaric Oxygen Therapy.

Local Coverage Determinations:

L35021 Hyperbaric Oxygen (HBO) Therapy.

L36504 Hyperbaric Oxygen (HBO) Therapy.

Commonly submitted codes

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and

bill accordingly.

CPT Code	Description	Comment
99183	Physician or other qualified health care professional attendance and supervision of hyperbaric oxygen therapy. Per session.	

ICD-10 Code	Description	Comment
A42.0	Pulmonary actinomycosis	
A42.1	Abdominal actinomycosis	
A42.2	Cervicofacial actinomycosis	
A42.89	Other forms of actinomycosis	
A42.9	Actinomycosis, unspecified	
A43.0	Pulmonary nocardiosis	
A43.1	Cutaneous nocardiosis	
A43.8	Other forms of nocardiosis	
A48.0	Gas gangrene	
B47.1	Actinomycetoma	
B47.9	Mycetoma, unspecified	
E10.51	Type 1 diabetes mellitus with diabetic peripheral angiopathy without gangrene	
E10.52	Type 1 diabetes mellitus with diabetic peripheral angiopathy with gangrene	
E10.618	Type 1 diabetes mellitus with other diabetic arthropathy	
E10.620	Type 1 diabetes mellitus with diabetic dermatitis	
E10.621	Type 1 diabetes mellitus with foot ulcer	Dual dx
E10.622	Type 1 diabetes mellitus with other skin ulcer	Dual dx
E10.628	Type 1 diabetes mellitus with other skin complications	Dual dx
E10.65	E10.65 Type 1 diabetes mellitus with hyperglycemia	Dual dx
E10.69	E10.69 Type 1 diabetes mellitus with other specified complication	Dual dx
E11.51	Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene	Dual dx
E11.52	Type 2 diabetes mellitus with diabetic peripheral angiopathy with gangrene	Dual dx
E11.618	Type 2 diabetes mellitus with other diabetic arthropathy	Dual dx
E11.621	Type 2 diabetes mellitus with foot ulcer	Dual dx
E11.622	Type 2 diabetes mellitus with other skin ulcer	Dual dx
E13.52	Other specified diabetes mellitus with diabetic peripheral angiopathy with gangrene	Dual dx
E13.621	Other specified diabetes mellitus with foot ulcer	Dual dx
E13.622	Other specified diabetes mellitus with other skin ulcer	Dual dx
E13.628	Other specified diabetes mellitus with other skin complications	Dual dx
I70.231	Atherosclerosis of native arteries of right leg with ulceration of thigh	Dual dx

ICD-10 Code	Description	Comment
170.232	Atherosclerosis of native arteries of right leg with ulceration of calf	
170.233	Atherosclerosis of native arteries of right leg with ulceration of ankle	Dual dx
170.234	Atherosclerosis of native arteries of right leg with ulceration of heel and midfoot	Dual dx
170.235	Atherosclerosis of native arteries of right leg with ulceration of other part of foot	Dual dx
170.238	Atherosclerosis of native arteries of right leg with ulceration of other part of lower right leg	Dual dx
170.241	Atherosclerosis of native arteries of left leg with ulceration of thigh	Dual dx
170.242	Atherosclerosis of native arteries of left leg with ulceration of calf	Dual dx
170.243	Atherosclerosis of native arteries of left leg with ulceration of ankle	Dual dx
170.244	Atherosclerosis of native arteries of left leg with ulceration of heel and midfoot	Dual dx
170.245	Atherosclerosis of native arteries of left leg with ulceration of other part of foot	Dual dx
170.248	Atherosclerosis of native arteries of left leg with ulceration of other part of lower left leg	Dual dx
170.25	Atherosclerosis of native arteries of other extremities with ulceration	Dual dx
170.331	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of thigh	Dual dx
170.332	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of calf	Dual dx
170.333	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of ankle	Dual dx
170.334	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of heel and midfoot	Dual dx
170.335	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of other part of foot	Dual dx
170.338	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of other part of lower leg	Dual dx
170.341	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of thigh	Dual dx
170.342	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of calf	Dual dx
170.343	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of ankle	Dual dx
170.344	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of heel and midfoot	Dual dx
170.345	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of other part of foot	Dual dx
170.348	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of other part of lower leg	Dual dx
170.431	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of thigh	Dual dx
170.432	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration	Dual dx

ICD-10 Code	Description	Comment
	of calf	
170.433	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of ankle	Dual dx
170.434	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of heel and midfoot	Dual dx
170.435	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of other part of foot	Dual dx
170.438	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of other part of lower leg	Dual dx
170.441	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of thigh	Dual dx
170.442	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of calf	Dual dx
170.443	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of ankle	Dual dx
170.444	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of heel and midfoot	Dual dx
170.445	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of other part of foot	Dual dx
170.448	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of other part of lower leg	Dual dx
170.531	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of thigh	Dual dx
170.532	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of calf	Dual dx
170.533	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of ankle	Dual dx
170.534	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of heel and midfoot	Dual dx
170.535	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of other part of foot	Dual dx
170.538	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of other part of lower leg	Dual dx
170.541	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of thigh	Dual dx
170.542	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with	Dual dx

ICD-10 Code	Description	Comment
	ulceration of calf	
I70.543	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of ankle	Dual dx
I70.544	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of heel and midfoot	Dual dx
I70.545	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of other part of foot	Dual dx
I70.548	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of other part of lower leg	Dual dx
I70.631	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of thigh	Dual dx
I70.632	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of calf	Dual dx
I70.633	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of ankle	Dual dx
I70.634	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of heel and midfoot	Dual dx
I70.635	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of other part of foot	Dual dx
I70.638	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of other part of lower leg	Dual dx
I70.641	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of thigh	Dual dx
I70.642	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of calf	Dual dx
I70.643	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of ankle	Dual dx
I70.644	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of heel and midfoot	Dual dx
I70.645	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of other part of foot	Dual dx
I70.648	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of other part of lower leg	Dual dx
I70.731	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of thigh	Dual dx
I70.732	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of	Dual dx

ICD-10 Code	Description	Comment
	calf	
I70.733	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of ankle	Dual dx
I70.734	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of heel and midfoot	Dual dx
I70.735	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of other part of foot	Dual dx
I70.738	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of other part of lower leg	Dual dx
I70.741	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of thigh	Dual dx
I70.742	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of calf	Dual dx
I70.743	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of ankle	Dual dx
I70.744	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of heel and midfoot	Dual dx
I70.745	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of other part of foot	Dual dx
I70.748	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of other part of lower leg	Dual dx
L97.111	Non-pressure chronic ulcer of right thigh limited to breakdown of skin	Dual dx
L97.112	Non-pressure chronic ulcer of right thigh with fat layer exposed	Dual dx
L97.113	Non-pressure chronic ulcer of right thigh with necrosis of muscle	Dual dx
L97.114	Non-pressure chronic ulcer of right thigh with necrosis of bone	Dual dx
L97.115	Non-pressure chronic ulcer of right thigh with muscle involvement without evidence of necrosis	Dual dx
L97.116	Non-pressure chronic ulcer of right thigh with bone involvement without evidence of necrosis	Dual dx
L97.118	Non-pressure chronic ulcer of right thigh with other specified severity	Dual dx
L97.121	Non-pressure chronic ulcer of left thigh limited to breakdown of skin	Dual dx
L97.122	Non-pressure chronic ulcer of left thigh with fat layer exposed	Dual dx
L97.123	Non-pressure chronic ulcer of left thigh with necrosis of muscle	Dual dx

ICD-10 Code	Description	Comment
L97.124	Non-pressure chronic ulcer of left thigh with necrosis of bone	Dual dx
L97.125	Non-pressure chronic ulcer of left thigh with muscle involvement without evidence of necrosis	Dual dx
L97.126	Non-pressure chronic ulcer of left thigh with bone involvement without evidence of necrosis	Dual dx
L97.128	Non-pressure chronic ulcer of left thigh with other specified severity	Dual dx
L97.211	Non-pressure chronic ulcer of right calf limited to breakdown of skin	Dual dx
L97.212	Non-pressure chronic ulcer of right calf with fat layer exposed	Dual dx
L97.213	Non-pressure chronic ulcer of right calf with necrosis of muscle	Dual dx
L97.214	Non-pressure chronic ulcer of right calf with necrosis of bone	Dual dx
L97.215	Non-pressure chronic ulcer of right calf with muscle involvement without evidence of necrosis	Dual dx
L97.216	Non-pressure chronic ulcer of right calf with bone involvement without evidence of necrosis	Dual dx
L97.218	Non-pressure chronic ulcer of right calf with other specified severity	Dual dx
L97.221	Non-pressure chronic ulcer of left calf limited to breakdown of skin	Dual dx
L97.221	Non-pressure chronic ulcer of left calf with fat layer exposed	Dual dx
L97.223	Non-pressure chronic ulcer of left calf with necrosis of muscle	Dual dx
L97.224	Non-pressure chronic ulcer of left calf with necrosis of bone	Dual dx
L97.225	Non-pressure chronic ulcer of left calf with muscle involvement without evidence of necrosis	Dual dx
L97.226	Non-pressure chronic ulcer of left calf with bone involvement without evidence of necrosis	Dual dx
L97.228	Non-pressure chronic ulcer of left calf with other specified severity	Dual dx
L97.311	Non-pressure chronic ulcer of right ankle limited to breakdown of skin	Dual dx
L97.312	Non-pressure chronic ulcer of right ankle with fat layer exposed	Dual dx
L97.313	Non-pressure chronic ulcer of right ankle with necrosis of muscle	Dual dx
L97.314	Non-pressure chronic ulcer of right ankle with necrosis of bone	Dual dx
L97.315	Non-pressure chronic ulcer of right ankle with muscle involvement without evidence of necrosis	Dual dx
L97.316	Non-pressure chronic ulcer of right ankle with bone involvement without	Dual dx

ICD-10 Code	Description	Comment
	evidence of necrosis	
L97.318	Non-pressure chronic ulcer of right ankle with other specified severity	Dual dx
L97.321	Non-pressure chronic ulcer of left ankle limited to breakdown of skin	Dual dx
L97.322	Non-pressure chronic ulcer of left ankle with fat layer exposed	Dual dx
L97.323	Non-pressure chronic ulcer of left ankle with necrosis of muscle	Dual dx
L97.324	Non-pressure chronic ulcer of left ankle with necrosis of bone	Dual dx
L97.325	Non-pressure chronic ulcer of left ankle with muscle involvement without evidence of necrosis	Dual dx
L97.326	Non-pressure chronic ulcer of left ankle with bone involvement without evidence of necrosis	Dual dx
L97.328	Non-pressure chronic ulcer of left ankle with other specified severity	Dual dx
L97.411	Non-pressure chronic ulcer of right heel and midfoot limited to breakdown of skin	Dual dx
L97.412	Non-pressure chronic ulcer of right heel and midfoot with fat layer exposed	Dual dx
L97.413	Non-pressure chronic ulcer of right heel and midfoot with necrosis of muscle	Dual dx
L97.414	Non-pressure chronic ulcer of right heel and midfoot with necrosis of bone	Dual dx
L97.415	Non-pressure chronic ulcer of right heel and midfoot with muscle involvement without evidence of necrosis	Dual dx
L97.416	Non-pressure chronic ulcer of right heel and midfoot with bone involvement without evidence of necrosis	Dual dx
L97.418	Non-pressure chronic ulcer of right heel and midfoot with other specified severity	Dual dx
L97.421	Non-pressure chronic ulcer of left heel and midfoot limited to breakdown of skin	Dual dx
L97.422	Non-pressure chronic ulcer of left heel and midfoot with fat layer exposed	Dual dx
L97.423	Non-pressure chronic ulcer of left heel and midfoot with necrosis of muscle	Dual dx
L97.424	Non-pressure chronic ulcer of left heel and midfoot with necrosis of bone	Dual dx
L97.425	Non-pressure chronic ulcer of left heel and midfoot with muscle involvement without evidence of necrosis	Dual dx
L97.426	Non-pressure chronic ulcer of left heel and midfoot with bone involvement without evidence of necrosis	Dual dx
L97.428	Non-pressure chronic ulcer of left heel and midfoot with other specified severity	Dual dx
L97.511	Non-pressure chronic ulcer of other part of right foot limited to breakdown of skin	Dual dx

ICD-10 Code	Description	Comment
L97.512	Non-pressure chronic ulcer of other part of right foot with fat layer exposed	Dual dx
L97.513	Non-pressure chronic ulcer of other part of right foot with necrosis of muscle	Dual dx
L97.514	Non-pressure chronic ulcer of other part of right foot with necrosis of bone	Dual dx
L97.515	Non-pressure chronic ulcer of other part of right foot with muscle involvement without evidence of necrosis	Dual dx
L97.516	Non-pressure chronic ulcer of other part of right foot with bone involvement without evidence of necrosis	Dual dx
L97.518	Non-pressure chronic ulcer of other part of right foot with other specified severity	Dual dx
L97.521	Non-pressure chronic ulcer of other part of left foot limited to breakdown of skin	Dual dx
L97.522	Non-pressure chronic ulcer of other part of left foot with fat layer exposed	Dual dx
L97.523	Non-pressure chronic ulcer of other part of left foot with necrosis of muscle	Dual dx
L97.524	Non-pressure chronic ulcer of other part of left foot with necrosis of bone	Dual dx
L97.525	Non-pressure chronic ulcer of other part of left foot with muscle involvement without evidence of necrosis	Dual dx
L97.526	Non-pressure chronic ulcer of other part of left foot with bone involvement without evidence of necrosis	Dual dx
L97.528	Non-pressure chronic ulcer of other part of left foot with other specified severity	Dual dx
L97.811	Non-pressure chronic ulcer of other part of right lower leg limited to breakdown of skin	Dual dx
L97.812	Non-pressure chronic ulcer of other part of right lower leg with fat layer exposed	Dual dx
L97.813	Non-pressure chronic ulcer of other part of right lower leg with necrosis of muscle	Dual dx
L97.814	Non-pressure chronic ulcer of other part of right lower leg with necrosis of bone	Dual dx
L97.815	Non-pressure chronic ulcer of other part of right lower leg with muscle involvement without evidence of necrosis	Dual dx
L97.816	Non-pressure chronic ulcer of other part of right lower leg with bone involvement without evidence of necrosis	Dual dx
L97.818	Non-pressure chronic ulcer of other part of right lower leg with other specified severity	Dual dx
L97.821	Non-pressure chronic ulcer of other part of left lower leg limited to breakdown of skin	Dual dx
L97.822	Non-pressure chronic ulcer of other part of left lower leg with fat layer exposed	Dual dx

ICD-10 Code	Description	Comment
L97.823	Non-pressure chronic ulcer of other part of left lower leg with necrosis of muscle	Dual dx
L97.824	Non-pressure chronic ulcer of other part of left lower leg with necrosis of bone	Dual dx
L97.825	Non-pressure chronic ulcer of other part of left lower leg with muscle involvement without evidence of necrosis	Dual dx
L97.826	Non-pressure chronic ulcer of other part of left lower leg with bone involvement without evidence of necrosis	Dual dx
L97.828	Non-pressure chronic ulcer of other part of left lower leg with other specified severity	Dual dx
M72.6	Necrotizing fasciitis	
M86.311	Chronic multifocal osteomyelitis, right shoulder	
M86.312	Chronic multifocal osteomyelitis, left shoulder	
M86.321	Chronic multifocal osteomyelitis, right humerus	
M86.322	Chronic multifocal osteomyelitis, left humerus	
M86.331	Chronic multifocal osteomyelitis, right radius and ulna	
M86.332	Chronic multifocal osteomyelitis, left radius and ulna	
M86.341	Chronic multifocal osteomyelitis, right hand	
M86.342	Chronic multifocal osteomyelitis, left hand	
M86.351	Chronic multifocal osteomyelitis, right femur	
M86.352	Chronic multifocal osteomyelitis, left femur	
M86.361	Chronic multifocal osteomyelitis, right tibia and fibula	
M86.362	Chronic multifocal osteomyelitis, left tibia and fibula	
M86.371	Chronic multifocal osteomyelitis, right ankle and foot	
M86.372	Chronic multifocal osteomyelitis, left ankle and foot	
M86.38	Chronic multifocal osteomyelitis, other site	
M86.39	Chronic multifocal osteomyelitis, multiple sites	
M86.411	Chronic osteomyelitis with draining sinus, right shoulder	
M86.412	Chronic osteomyelitis with draining sinus, left shoulder	
M86.421	Chronic osteomyelitis with draining sinus, right humerus	
M86.422	Chronic osteomyelitis with draining sinus, left humerus	
M86.431	Chronic osteomyelitis with draining sinus, right radius and ulna	
M86.432	Chronic osteomyelitis with draining sinus, left radius and ulna	
M86.441	Chronic osteomyelitis with draining sinus, right hand	
M86.442	Chronic osteomyelitis with draining sinus, left hand	
M86.451	Chronic osteomyelitis with draining sinus, right femur	
M86.452	Chronic osteomyelitis with draining sinus, left femur	
M86.461	Chronic osteomyelitis with draining sinus, right tibia and fibula	
M86.462	Chronic osteomyelitis with draining sinus, left tibia and fibula	
M86.471	Chronic osteomyelitis with draining sinus, right ankle and foot	
M86.472	Chronic osteomyelitis with draining sinus, left ankle and foot	
M86.48	Chronic osteomyelitis with draining sinus, other site	
M86.49	Chronic osteomyelitis with draining sinus, multiple sites	
M86.50	Other chronic hematogenous osteomyelitis, unspecified site	
M86.511	Other chronic hematogenous osteomyelitis, right shoulder	
M86.512	Other chronic hematogenous osteomyelitis, left shoulder	
M86.521	Other chronic hematogenous osteomyelitis, right humerus	
M86.522	Other chronic hematogenous osteomyelitis, left humerus	
M86.531	Other chronic hematogenous osteomyelitis, right radius and ulna	
M86.532	Other chronic hematogenous osteomyelitis, left radius and ulna	

ICD-10 Code	Description	Comment
M86.541	Other chronic hematogenous osteomyelitis, right hand	
M86.542	Other chronic hematogenous osteomyelitis, left hand	
M86.551	Other chronic hematogenous osteomyelitis, right femur	
M86.552	Other chronic hematogenous osteomyelitis, left femur	
M86.561	Other chronic hematogenous osteomyelitis, right tibia and fibula	
M86.562	Other chronic hematogenous osteomyelitis, left tibia and fibula	
M86.571	Other chronic hematogenous osteomyelitis, right ankle and foot	
M86.572	Other chronic hematogenous osteomyelitis, left ankle and foot	
M86.58	Other chronic hematogenous osteomyelitis, other site	
M86.59	Other chronic hematogenous osteomyelitis, multiple sites	
M86.60	Other chronic osteomyelitis, unspecified site	
M86.611	Other chronic osteomyelitis, right shoulder	
M86.612	Other chronic osteomyelitis, left shoulder	
M86.621	Other chronic osteomyelitis, right humerus	
M86.622	Other chronic osteomyelitis, left humerus	
M86.631	Other chronic osteomyelitis, right radius and ulna	
M86.632	Other chronic osteomyelitis, left radius and ulna	
M86.641	Other chronic osteomyelitis, right hand	
M86.642	Other chronic osteomyelitis, left hand	
M86.651	Other chronic osteomyelitis, right thigh	
M86.652	Other chronic osteomyelitis, left thigh	
M86.661	Other chronic osteomyelitis, right tibia and fibula	
M86.662	Other chronic osteomyelitis, left tibia and fibula	
M86.671	Other chronic osteomyelitis, right ankle and foot	
M86.672	Other chronic osteomyelitis, left ankle and foot	
M86.68	Other chronic osteomyelitis, other site	
M86.69	Other chronic osteomyelitis, multiple sites	
M86.8X0	Other osteomyelitis, multiple sites	
M86.8X1	Other osteomyelitis, shoulder	
M86.8X2	Other osteomyelitis, upper arm	
M86.8X3	Other osteomyelitis, forearm	
M86.8X4	Other osteomyelitis, hand	
M86.8X5	Other osteomyelitis, thigh	
M86.8X6	Other osteomyelitis, lower leg	
M86.8X7	Other osteomyelitis, ankle and foot	
M86.8X8	Other osteomyelitis, other site	
N30.40	Irradiation cystitis without hematuria	
N30.41	Irradiation cystitis with hematuria	
S47.1XXA	Crushing injury of right shoulder and upper arm, initial encounter	
S47.2XXA	Crushing injury of left shoulder and upper arm, initial encounter	
S47.9XXA	Crushing injury of shoulder and upper arm, unspecified arm, initial encounter	
S57.00XA	Crushing injury of unspecified elbow, initial encounter	
S57.01XA	Crushing injury of right elbow, initial encounter	
S57.02XA	Crushing injury of left elbow, initial encounter	
S57.80XA	Crushing injury of unspecified forearm, initial encounter	
S57.81XA	Crushing injury of right forearm, initial encounter	
S57.82XA	Crushing injury of left forearm, initial encounter	
S67.20XA	Crushing injury of unspecified hand, initial encounter	
S67.21XA	Crushing injury of right hand, initial encounter	
S67.22XA	Crushing injury of left hand, initial encounter	
S67.30XA	Crushing injury of unspecified wrist, initial encounter	
S67.31XA	Crushing injury of right wrist, initial encounter	
S67.32XA	Crushing injury of left wrist, initial encounter	

ICD-10 Code	Description	Comment
S67.40XA	Crushing injury of unspecified wrist and hand, initial encounter	
S67.41XA	Crushing injury of right wrist and hand, initial encounter	
S67.42XA	Crushing injury of left wrist and hand, initial encounter	
S67.90XA	Crushing injury of unspecified part(s) of unspecified wrist, hand and fingers, initial encounter	
S67.91XA	Crushing injury of unspecified part(s) of right wrist, hand and fingers, initial encounter	
S67.92XA	Crushing injury of unspecified part(s) of left wrist, hand and fingers, initial encounter	
S77.00XA	Crushing injury of unspecified hip, initial encounter	
S77.01XA	Crushing injury of right hip, initial encounter	
S77.02XA	Crushing injury of left hip, initial encounter	
S77.10XA	Crushing injury of unspecified thigh, initial encounter	
S77.10XA	Crushing injury of unspecified thigh, initial encounter	
S77.11XA	Crushing injury of right thigh, initial encounter	
S77.11XA	Crushing injury of right thigh, initial encounter	
S77.12XA	Crushing injury of left thigh, initial encounter	
S77.12XA	Crushing injury of left thigh, initial encounter	
S77.21XA	Crushing injury of right hip with thigh, initial encounter	
S77.22XA	Crushing injury of left hip with thigh, initial encounter	
S87.01XA	Crushing injury of right knee, initial encounter	
S87.01XA	Crushing injury of right knee, initial encounter	
S87.02XA	Crushing injury of left knee, initial encounter	
S87.81XA	Crushing injury of right lower leg, initial encounter	
S87.82XA	Crushing injury of left lower leg, initial encounter	
S97.01XA	Crushing injury of right ankle, initial encounter	
S97.02XA	Crushing injury of left ankle, initial encounter	
S97.111A	Crushing injury of right great toe, initial encounter	
S97.112A	Crushing injury of left great toe, initial encounter	
S97.121A	Crushing injury of right lesser toe(s), initial encounter	
S97.122A	Crushing injury of left lesser toe(s), initial encounter	
S97.81XA	Crushing injury of right foot, initial encounter	
S97.82XA	Crushing injury of left foot, initial encounter	
T57.3X1A	Toxic effect of hydrogen cyanide, accidental (unintentional), initial encounter	
T57.3X2A	Toxic effect of hydrogen cyanide, intentional self-harm, initial encounter	
T57.3X3A	Toxic effect of hydrogen cyanide, assault, initial encounter	
T57.3X4A	Toxic effect of hydrogen cyanide, undetermined, initial encounter	
T57.3X4S	Toxic effect of hydrogen cyanide, undetermined, sequela	
T58.01XA	Toxic effect of carbon monoxide from motor vehicle exhaust, accidental (unintentional), initial encounter	
T58.02XA	Toxic effect of carbon monoxide from motor vehicle exhaust, intentional self-harm, initial encounter	
T58.03XA	Toxic effect of carbon monoxide from motor vehicle exhaust, assault, initial encounter	
T58.04XA	Toxic effect of carbon monoxide from motor vehicle exhaust, undetermined, initial encounter	
T58.11XA	Toxic effect of carbon monoxide from utility gas, accidental (unintentional), initial encounter	
T58.12XA	Toxic effect of carbon monoxide from utility gas, intentional self-harm, initial	

ICD-10 Code	Description	Comment
	encounter	
T58.13XA	Toxic effect of carbon monoxide from utility gas, assault, initial encounter	
T58.14XA	Toxic effect of carbon monoxide from utility gas, undetermined, initial encounter	
T58.2X1A	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, accidental (unintentional), initial encounter	
T58.2X2A	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, intentional self-harm, initial encounter	
T58.2X3A	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, assault, initial encounter	
T58.2X4A	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, undetermined, initial encounter	
T58.8X1A	Toxic effect of carbon monoxide from other source, accidental (unintentional), initial encounter	
T58.8X2A	Toxic effect of carbon monoxide from other source, intentional self-harm, initial encounter	
T58.8X3A	Toxic effect of carbon monoxide from other source, assault, initial encounter	
T58.8X4A	Toxic effect of carbon monoxide from other source, undetermined, initial encounter	
T58.91XA	Toxic effect of carbon monoxide from unspecified source, accidental (unintentional), initial encounter	
T58.92XA	Toxic effect of carbon monoxide from unspecified source, intentional self-harm, initial encounter	
T58.93XA	Toxic effect of carbon monoxide from unspecified source, assault, initial encounter	
T58.94XA	Toxic effect of carbon monoxide from unspecified source, undetermined, initial encounter	
T65.0X1A	Toxic effect of cyanides, accidental (unintentional), initial encounter	
T65.0X1D	Toxic effect of cyanides, accidental (unintentional), subsequent encounter	
T65.0X1S	Toxic effect of cyanides, accidental (unintentional), sequela	
T65.0X2A	Toxic effect of cyanides, intentional self-harm, initial encounter	
T65.0X2D	Toxic effect of cyanides, intentional self-harm, subsequent encounter	
T65.0X2S	Toxic effect of cyanides, intentional self-harm, sequela	
T65.0X3A	Toxic effect of cyanides, assault, initial encounter	
T65.0X3D	Toxic effect of cyanides, assault, subsequent encounter	
T65.0X3S	Toxic effect of cyanides, assault, sequela	
T65.0X4A	Toxic effect of cyanides, undetermined, initial encounter	
T65.0X4D	Toxic effect of cyanides, undetermined, subsequent encounter	
T65.0X4S	Toxic effect of cyanides, undetermined, sequela	
T66.XXXA	Radiation sickness, unspecified, initial encounter	
T66.XXXS	Radiation sickness, unspecified, sequela	
T70.20XA	Unspecified effects of high altitude, initial encounter	
T70.29XA	Other effects of high altitude, initial encounter	
T70.3XXA	Caisson disease [decompression sickness], initial encounter	
T70.3XXD	Caisson disease [decompression sickness], subsequent encounter	
T70.3XXS	Caisson disease [decompression sickness], sequela	
T79.0XXA	Air embolism (traumatic), initial encounter	
T79.0XXD	Air embolism (traumatic), subsequent encounter	
T79.0XXS	Air embolism (traumatic), sequela	
T79.A0XA	Compartment syndrome, unspecified, initial encounter	
T79.A0XD	Compartment syndrome, unspecified, subsequent encounter	
T79.A0XS	Compartment syndrome, unspecified, sequela	
T79.A11A	Traumatic compartment syndrome of right upper extremity, initial encounter	
T79.A11D	Traumatic compartment syndrome of right upper extremity, subsequent	

ICD-10 Code	Description	Comment
	encounter	
T79.A11S	Traumatic compartment syndrome of right upper extremity, sequela	
T79.A12A	Traumatic compartment syndrome of left upper extremity, initial encounter	
T79.A12D	Traumatic compartment syndrome of left upper extremity, subsequent encounter	
T79.A12S	Traumatic compartment syndrome of left upper extremity, sequela	
T79.A19A	Traumatic compartment syndrome of unspecified upper extremity, initial encounter	
T79.A19D	Traumatic compartment syndrome of unspecified upper extremity, subsequent encounter	
T79.A19S	Traumatic compartment syndrome of unspecified upper extremity, sequela	
T79.A21A	Traumatic compartment syndrome of right lower extremity, initial encounter	
T79.A21D	Traumatic compartment syndrome of right lower extremity, subsequent encounter	
T79.A21S	Traumatic compartment syndrome of right lower extremity, sequela	
T79.A22A	Traumatic compartment syndrome of left lower extremity, initial encounter	
T79.A22D	Traumatic compartment syndrome of left lower extremity, subsequent encounter	
T79.A22S	Traumatic compartment syndrome of left lower extremity, sequela	
T79.A29A	Traumatic compartment syndrome of unspecified lower extremity, initial encounter	
T79.A29D	Traumatic compartment syndrome of unspecified lower extremity, subsequent encounter	
T79.A29S	Traumatic compartment syndrome of unspecified lower extremity, sequela	
T79.A3XA	Traumatic compartment syndrome of abdomen, initial encounter	
T79.A3XD	Traumatic compartment syndrome of abdomen, subsequent encounter	
T79.A3XS	Traumatic compartment syndrome of abdomen, sequela	
T79.A9XA	Traumatic compartment syndrome of other sites, initial encounter	
T79.A9XD	Traumatic compartment syndrome of other sites, subsequent encounter	
T79.A9XS	Traumatic compartment syndrome of other sites, sequela	
T80.0XXA	Air embolism following infusion, transfusion and therapeutic injection, initial encounter	
T86.820	Skin graft (allograft) rejection	
T86.821	Skin graft (allograft) (autograft) failure	
T86.822	Skin graft (allograft) (autograft) infection	
T86.828	Other complications of skin graft (allograft) (autograft)	
T86.829	Unspecified complication of skin graft (allograft) (autograft)	
T87.0X1	Complications of reattached (part of) right upper extremity	
T87.0X2	Complications of reattached (part of) left upper extremity	
T87.0X9	Complications of reattached (part of) unspecified upper extremity	
T87.1X1	Complications of reattached (part of) right lower extremity	
T87.1X2	Complications of reattached (part of) left lower extremity	
T87.1X9	Complications of reattached (part of) unspecified lower extremity	
T87.2	Complications of other reattached body part	

HCPCS Level II Code	Description	Comment
G0277	Hyperbaric oxygen under pressure, full body chamber, per 30 minute interval	