MASSACHUSETTS

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Medical Policy

Hyperbaric Oxygen Therapy

Table of Contents

Policy Number: 653

BCBSA Reference Number: 2.01.04
NCD/LCD: National Coverage Determination (NCD) for Hyperbaric Oxygen Therapy (20.29)

Related Policies

None

Policy

Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity

Topical hyperbaric oxygen therapy is **INVESTIGATIONAL**.

Systemic hyperbaric oxygen pressurization may be **MEDICALLY NECESSARY** in the treatment of the following conditions:

- Non-healing diabetic wounds of the lower extremities in patients who meet the following 3 criteria:
  a. Patient has type I or type II diabetes and has a lower extremity wound that is due to diabetes, AND
  b. Patient has a wound classified as Wagner grade 3* or higher, AND
  c. Patient has no measurable signs of healing after 30 days of an adequate course of standard wound therapy;
- Acute traumatic ischemia e.g. crush injuries, reperfusion injury, compartment syndrome,
- Decompression sickness,
- Gas embolism, acute,
- Cyanide poisoning, acute,
- Acute carbon monoxide poisoning,
- Soft-tissue radiation necrosis (e.g., radiation enteritis, cystitis, proctitis) and osteoradionecrosis;
- Pre- and post-treatment for patients undergoing dental surgery (non-implant-related) of an irradiated jaw,
- Gas gangrene (i.e., clostridial myonecrosis),
- Profound anemia with exceptional blood loss: only when blood transfusion is impossible or must be delayed, and
- Chronic refractory osteomyelitis.

*The Wagner classification system of wounds is defined as:

- Grade 0: no open lesion;
- Grade 1: superficial ulcer without penetration to deeper layers;
- Grade 2: ulcer penetrates to tendon, bone, or joint;
- Grade 3: lesion has penetrated deeper than grade 2 and there is abscess, osteomyelitis, pyarthrosis, plantar space abscess, or infection of the tendon and tendon sheaths;
- Grade 4: wet or dry gangrene in the toes or forefoot;
- Grade 5: gangrene involves the whole foot or such a percentage that no local procedures are possible and amputation (at least at the below the knee level) is indicated.

Hyperbaric oxygen pressurization is **INVESTIGATIONAL** in the treatment of the following conditions:

- Compromised skin grafts or flaps,
- Acute osteomyelitis,
- Necrotizing soft-tissue infections,
- Bisphosphonate-related osteonecrosis of the jaw
- Acute thermal burns,
- Acute surgical and traumatic wounds,
- Chronic wounds, other than those in patients with diabetes who meet the criteria specified in the medically necessary statement,
- Spinal cord injury,
- Traumatic brain injury,
- Inflammatory bowel disease (Crohn disease or ulcerative colitis)
- Brown recluse spider bites,
- Bone grafts,
- Carbon tetrachloride poisoning, acute,
- Cerebrovascular disease, acute (thrombotic or embolic) or chronic,
- Fracture healing,
- Hydrogen sulfide poisoning,
- Intra-abdominal and intracranial abscesses,
- Lepromatous leprosy,
- Meningitis,
- Pseudomembranous colitis (antimicrobial agent-induced colitis),
- Radiation myelitis,
- Sickle cell crisis and/or hematuria,
- Demyelinating diseases, e.g., multiple sclerosis, amyotrophic lateral sclerosis,
- Retinal artery insufficiency, acute,
- Retinopathy, adjunct to scleral buckling procedures in patients with sickle cell peripheral retinopathy and retinal detachment,
- Pyoderma gangrenosum,
- Acute arterial peripheral insufficiency,
- Acute coronary syndromes and as an adjunct to coronary interventions, including but not limited to, percutaneous coronary interventions and cardiopulmonary bypass,
- Idiopathic sudden sensorineural hearing loss,
- Refractory mycoses: mucormycosis, actinomycosis, canidiobolus coronato,
- Cerebral edema, acute,
- Migraine,
- In vitro fertilization,
- Cerebral palsy,
- Tumor sensitization for cancer treatments, including but not limited to, radiotherapy or chemotherapy,
- Delayed onset muscle soreness,
- Idiopathic femoral neck necrosis,
- Chronic arm lymphedema following radiotherapy for cancer,
- Radiation-induced injury in the head and neck, except as noted earlier in the medically necessary statement,

- Early treatment (beginning at completion of radiation therapy) to reduce adverse effects of radiation therapy,
- Autism spectrum disorders,
- Acute ischemic stroke,
- Bell's palsy,
- Acute ischemic stroke,
- Motor dysfunction associated with stroke,
- Herpes zoster,
- Vascular dementia,
- Fibromyalgia; and
- Mental illness (ie, posttraumatic stress disorder, generalized anxiety disorder or depression).

Medicare HMO Blue[SM] and Medicare PPO Blue[SM] Members

Medical necessity criteria and coding guidance can be found through the link below.

National Coverage Determinations (NCDs)

National Coverage Determination (NCD) for Hyperbaric Oxygen Therapy (20.29)

Note: To review the specific NCD, please remember to click "accept" on the CMS licensing agreement at the bottom of the CMS webpage.

Prior Authorization Information

Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed **inpatient**.

Outpatient

- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed **outpatient**.

	Outpatient
Commercial Managed Care (HMO and POS)	Prior authorization is **required**.
Commercial PPO and Indemnity	Prior authorization is **not required**.
Medicare HMO Blue[SM]	Prior authorization is **required**.
Medicare PPO Blue[SM]	Prior authorization is **not required**.

CPT Codes / HCPCS Codes / ICD Codes

Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.
Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

The following codes are included below for informational purposes only; this is not an all-inclusive list.

The above medical necessity criteria MUST be met for the following codes to be covered for Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity:

CPT Codes

CPT codes:	Code Description
99183	Physician attendance and supervision of hyperbaric oxygen therapy, per session

HCPCS Codes

HCPCS codes:	Code Description
G0277	Hyperbaric oxygen under pressure, full body chamber, per 30 minute interval

ICD-10-PCS Diagnosis Coding

ICD-10-PCS diagnosis codes:	Code Description
5A05121	Extracorporeal Hyperbaric Oxygenation, Intermittent
5A05221	Extracorporeal Hyperbaric Oxygenation, Continuous

The following ICD Diagnosis Codes are considered medically necessary when submitted with the CPT, HCPCS and/or ICD Procedure codes above if medical necessity criteria are met:

ICD-10-CM Diagnosis Coding

ICD-10-CM diagnosis codes:	Code Description
A48.0	Gas gangrene
D62	Acute posthemorrhagic anemia
E08.52	Diabetes mellitus due to underlying condition with diabetic peripheral angiopathy with gangrene
E09.52	Drug or chemical induced diabetes mellitus with diabetic peripheral angiopathy with gangrene
E10.51	Type 1 diabetes mellitus with diabetic peripheral angiopathy without gangrene
E10.51	Type 1 diabetes mellitus with diabetic peripheral angiopathy without gangrene
E10.52	Type 1 diabetes mellitus with diabetic peripheral angiopathy with gangrene
E10.52	Type 1 diabetes mellitus with diabetic peripheral angiopathy with gangrene
E10.59	Type 1 diabetes mellitus with other circulatory complications
E10.621	Type 1 diabetes mellitus with foot ulcer
E10.622	Type 1 diabetes mellitus with other skin ulcer
E10.628	Type 1 diabetes mellitus with other skin complications
E11.51	Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene
E11.51	Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene
E11.52	Type 2 diabetes mellitus with diabetic peripheral angiopathy with gangrene
E11.52	Type 2 diabetes mellitus with diabetic peripheral angiopathy with gangrene
E11.59	Type 2 diabetes mellitus with other circulatory complications
E11.621	Type 2 diabetes mellitus with foot ulcer
E11.622	Type 2 diabetes mellitus with other skin ulcer
E11.628	Type 2 diabetes mellitus with other skin complications
E13.51	Other specified diabetes mellitus with diabetic peripheral angiopathy without gangrene
E13.52	Other specified diabetes mellitus with diabetic peripheral angiopathy with gangrene
E13.52	Other specified diabetes mellitus with diabetic peripheral angiopathy with gangrene
E13.59	Other specified diabetes mellitus with other circulatory complications
E13.621	Other specified diabetes mellitus with foot ulcer
E13.622	Other specified diabetes mellitus with other skin ulcer
E13.628	Other specified diabetes mellitus with other skin complications
I70.231	Atherosclerosis of native arteries of right leg with ulceration of thigh
I70.232	Atherosclerosis of native arteries of right leg with ulceration of calf

I70.233	Atherosclerosis of native arteries of right leg with ulceration of ankle
I70.234	Atherosclerosis of native arteries of right leg with ulceration of heel and midfoot
I70.235	Atherosclerosis of native arteries of right leg with ulceration of other part of foot
I70.238	Atherosclerosis of native arteries of right leg with ulceration of other part of lower right leg
I70.239	Atherosclerosis of native arteries of right leg with ulceration of unspecified site
I70.241	Atherosclerosis of native arteries of left leg with ulceration of thigh
I70.242	Atherosclerosis of native arteries of left leg with ulceration of calf
I70.243	Atherosclerosis of native arteries of left leg with ulceration of ankle
I70.244	Atherosclerosis of native arteries of left leg with ulceration of heel and midfoot
I70.245	Atherosclerosis of native arteries of left leg with ulceration of other part of foot
I70.248	Atherosclerosis of native arteries of left leg with ulceration of other part of lower left leg
I70.249	Atherosclerosis of native arteries of left leg with ulceration of unspecified site
I70.331	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of thigh
I70.332	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of calf
I70.333	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of ankle
I70.334	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of heel and midfoot
I70.335	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of other part of foot
I70.338	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of other part of lower leg
I70.339	Atherosclerosis of unspecified type of bypass graft(s) of the right leg with ulceration of unspecified site
I70.341	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of thigh
I70.342	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of calf
I70.343	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of ankle
I70.344	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of heel and midfoot
I70.345	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of other part of foot
I70.348	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of other part of lower leg
I70.349	Atherosclerosis of unspecified type of bypass graft(s) of the left leg with ulceration of unspecified site
I70.361	Atherosclerosis of unspecified type of bypass graft(s) of the extremities with gangrene, right leg
I70.362	Atherosclerosis of unspecified type of bypass graft(s) of the extremities with gangrene, left leg
I70.363	Atherosclerosis of unspecified type of bypass graft(s) of the extremities with gangrene, bilateral legs
I70.368	Atherosclerosis of unspecified type of bypass graft(s) of the extremities with gangrene, other extremity
I70.369	Atherosclerosis of unspecified type of bypass graft(s) of the extremities with gangrene, unspecified extremity
I70.431	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of thigh

I70.432	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of calf
I70.433	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of ankle
I70.434	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of heel and midfoot
I70.435	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of other part of foot
I70.438	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of other part of lower leg
I70.439	Atherosclerosis of autologous vein bypass graft(s) of the right leg with ulceration of unspecified site
I70.441	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of thigh
I70.442	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of calf
I70.443	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of ankle
I70.444	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of heel and midfoot
I70.445	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of other part of foot
I70.448	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of other part of lower leg
I70.449	Atherosclerosis of autologous vein bypass graft(s) of the left leg with ulceration of unspecified site
I70.461	Atherosclerosis of autologous vein bypass graft(s) of the extremities with gangrene, right leg
I70.462	Atherosclerosis of autologous vein bypass graft(s) of the extremities with gangrene, left leg
I70.463	Atherosclerosis of autologous vein bypass graft(s) of the extremities with gangrene, bilateral legs
I70.468	Atherosclerosis of autologous vein bypass graft(s) of the extremities with gangrene, other extremity
I70.469	Atherosclerosis of autologous vein bypass graft(s) of the extremities with gangrene, unspecified extremity
I70.531	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of thigh
I70.532	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of calf
I70.533	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of ankle
I70.534	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of heel and midfoot
I70.535	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of other part of foot
I70.538	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of other part of lower leg
I70.539	Atherosclerosis of nonautologous biological bypass graft(s) of the right leg with ulceration of unspecified site
I70.541	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of thigh
I70.542	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of calf

I70.543	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of ankle
I70.544	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of heel and midfoot
I70.545	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of other part of foot
I70.548	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of other part of lower leg
I70.549	Atherosclerosis of nonautologous biological bypass graft(s) of the left leg with ulceration of unspecified site
I70.561	Atherosclerosis of nonautologous biological bypass graft(s) of the extremities with gangrene, right leg
I70.562	Atherosclerosis of nonautologous biological bypass graft(s) of the extremities with gangrene, left leg
I70.563	Atherosclerosis of nonautologous biological bypass graft(s) of the extremities with gangrene, bilateral legs
I70.568	Atherosclerosis of nonautologous biological bypass graft(s) of the extremities with gangrene, other extremity
I70.569	Atherosclerosis of nonautologous biological bypass graft(s) of the extremities with gangrene, unspecified extremity
I70.631	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of thigh
I70.632	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of calf
I70.633	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of ankle
I70.634	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of heel and midfoot
I70.635	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of other part of foot
I70.638	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of other part of lower leg
I70.639	Atherosclerosis of nonbiological bypass graft(s) of the right leg with ulceration of unspecified site
I70.641	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of thigh
I70.642	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of calf
I70.643	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of ankle
I70.644	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of heel and midfoot
I70.645	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of other part of foot
I70.648	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of other part of lower leg
I70.649	Atherosclerosis of nonbiological bypass graft(s) of the left leg with ulceration of unspecified site
I70.661	Atherosclerosis of nonbiological bypass graft(s) of the extremities with gangrene, right leg
I70.662	Atherosclerosis of nonbiological bypass graft(s) of the extremities with gangrene, left leg
I70.663	Atherosclerosis of nonbiological bypass graft(s) of the extremities with gangrene, bilateral legs
I70.668	Atherosclerosis of nonbiological bypass graft(s) of the extremities with gangrene, other extremity
I70.669	Atherosclerosis of nonbiological bypass graft(s) of the extremities with gangrene, unspecified extremity

I70.731	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of thigh
I70.732	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of calf
I70.733	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of ankle
I70.734	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of heel and midfoot
I70.735	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of other part of foot
I70.738	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of other part of lower leg
I70.739	Atherosclerosis of other type of bypass graft(s) of the right leg with ulceration of unspecified site
I70.741	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of thigh
I70.742	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of calf
I70.743	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of ankle
I70.744	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of heel and midfoot
I70.745	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of other part of foot
I70.748	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of other part of lower leg
I70.749	Atherosclerosis of other type of bypass graft(s) of the left leg with ulceration of unspecified site
I70.761	Atherosclerosis of other type of bypass graft(s) of the extremities with gangrene, right leg
I70.762	Atherosclerosis of other type of bypass graft(s) of the extremities with gangrene, left leg
I70.763	Atherosclerosis of other type of bypass graft(s) of the extremities with gangrene, bilateral legs
I70.768	Atherosclerosis of other type of bypass graft(s) of the extremities with gangrene, other extremity
I70.769	Atherosclerosis of other type of bypass graft(s) of the extremities with gangrene, unspecified extremity
I73.01	Raynaud's syndrome with gangrene
I96	Gangrene, not elsewhere classified
K62.7	Radiation proctitis
L59.8	Other specified disorders of the skin and subcutaneous tissue related to radiation
L59.9	Disorder of the skin and subcutaneous tissue related to radiation, unspecified
L97.101	Non-pressure chronic ulcer of unspecified thigh limited to breakdown of skin
L97.102	Non-pressure chronic ulcer of unspecified thigh with fat layer exposed
L97.103	Non-pressure chronic ulcer of unspecified thigh with necrosis of muscle
L97.104	Non-pressure chronic ulcer of unspecified thigh with necrosis of bone
L97.105	Non-pressure chronic ulcer of unspecified thigh with muscle involvement without evidence of necrosis
L97.106	Non-pressure chronic ulcer of unspecified thigh with bone involvement without evidence of necrosis
L97.108	Non-pressure chronic ulcer of unspecified thigh with other specified severity
L97.109	Non-pressure chronic ulcer of unspecified thigh with unspecified severity
L97.111	Non-pressure chronic ulcer of right thigh limited to breakdown of skin
L97.112	Non-pressure chronic ulcer of right thigh with fat layer exposed
L97.113	Non-pressure chronic ulcer of right thigh with necrosis of muscle
L97.114	Non-pressure chronic ulcer of right thigh with necrosis of bone

L97.115	Non-pressure chronic ulcer of right thigh with muscle involvement without evidence of necrosis
L97.116	Non-pressure chronic ulcer of right thigh with bone involvement without evidence of necrosis
L97.118	Non-pressure chronic ulcer of right thigh with other specified severity
L97.119	Non-pressure chronic ulcer of right thigh with unspecified severity
L97.121	Non-pressure chronic ulcer of left thigh limited to breakdown of skin
L97.122	Non-pressure chronic ulcer of left thigh with fat layer exposed
L97.123	Non-pressure chronic ulcer of left thigh with necrosis of muscle
L97.124	Non-pressure chronic ulcer of left thigh with necrosis of bone
L97.125	Non-pressure chronic ulcer of left thigh with muscle involvement without evidence of necrosis
L97.126	Non-pressure chronic ulcer of left thigh with bone involvement without evidence of necrosis
L97.128	Non-pressure chronic ulcer of left thigh with other specified severity
L97.129	Non-pressure chronic ulcer of left thigh with unspecified severity
L97.201	Non-pressure chronic ulcer of unspecified calf limited to breakdown of skin
L97.202	Non-pressure chronic ulcer of unspecified calf with fat layer exposed
L97.203	Non-pressure chronic ulcer of unspecified calf with necrosis of muscle
L97.204	Non-pressure chronic ulcer of unspecified calf with necrosis of bone
L97.205	Non-pressure chronic ulcer of unspecified calf with muscle involvement without evidence of necrosis
L97.206	Non-pressure chronic ulcer of unspecified calf with bone involvement without evidence of necrosis
L97.208	Non-pressure chronic ulcer of unspecified calf with other specified severity
L97.209	Non-pressure chronic ulcer of unspecified calf with unspecified severity
L97.211	Non-pressure chronic ulcer of right calf limited to breakdown of skin
L97.212	Non-pressure chronic ulcer of right calf with fat layer exposed
L97.213	Non-pressure chronic ulcer of right calf with necrosis of muscle
L97.214	Non-pressure chronic ulcer of right calf with necrosis of bone
L97.215	Non-pressure chronic ulcer of right calf with muscle involvement without evidence of necrosis
L97.216	Non-pressure chronic ulcer of right calf with bone involvement without evidence of necrosis
L97.218	Non-pressure chronic ulcer of right calf with other specified severity
L97.219	Non-pressure chronic ulcer of right calf with unspecified severity
L97.221	Non-pressure chronic ulcer of left calf limited to breakdown of skin
L97.222	Non-pressure chronic ulcer of left calf with fat layer exposed
L97.223	Non-pressure chronic ulcer of left calf with necrosis of muscle
L97.224	Non-pressure chronic ulcer of left calf with necrosis of bone
L97.225	Non-pressure chronic ulcer of left calf with muscle involvement without evidence of necrosis
L97.226	Non-pressure chronic ulcer of left calf with bone involvement without evidence of necrosis
L97.228	Non-pressure chronic ulcer of left calf with other specified severity
L97.229	Non-pressure chronic ulcer of left calf with unspecified severity
L97.301	Non-pressure chronic ulcer of unspecified ankle limited to breakdown of skin
L97.302	Non-pressure chronic ulcer of unspecified ankle with fat layer exposed
L97.303	Non-pressure chronic ulcer of unspecified ankle with necrosis of muscle
L97.304	Non-pressure chronic ulcer of unspecified ankle with necrosis of bone
L97.305	Non-pressure chronic ulcer of unspecified ankle with muscle involvement without evidence of necrosis

L97.306	Non-pressure chronic ulcer of unspecified ankle with bone involvement without evidence of necrosis
L97.308	Non-pressure chronic ulcer of unspecified ankle with other specified severity
L97.309	Non-pressure chronic ulcer of unspecified ankle with unspecified severity
L97.311	Non-pressure chronic ulcer of right ankle limited to breakdown of skin
L97.312	Non-pressure chronic ulcer of right ankle with fat layer exposed
L97.313	Non-pressure chronic ulcer of right ankle with necrosis of muscle
L97.314	Non-pressure chronic ulcer of right ankle with necrosis of bone
L97.315	Non-pressure chronic ulcer of right ankle with muscle involvement without evidence of necrosis
L97.316	Non-pressure chronic ulcer of right ankle with bone involvement without evidence of necrosis
L97.318	Non-pressure chronic ulcer of right ankle with other specified severity
L97.319	Non-pressure chronic ulcer of right ankle with unspecified severity
L97.321	Non-pressure chronic ulcer of left ankle limited to breakdown of skin
L97.322	Non-pressure chronic ulcer of left ankle with fat layer exposed
L97.323	Non-pressure chronic ulcer of left ankle with necrosis of muscle
L97.324	Non-pressure chronic ulcer of left ankle with necrosis of bone
L97.325	Non-pressure chronic ulcer of left ankle with muscle involvement without evidence of necrosis
L97.326	Non-pressure chronic ulcer of left ankle with bone involvement without evidence of necrosis
L97.328	Non-pressure chronic ulcer of left ankle with other specified severity
L97.329	Non-pressure chronic ulcer of left ankle with unspecified severity
L97.401	Non-pressure chronic ulcer of unspecified heel and midfoot limited to breakdown of skin
L97.402	Non-pressure chronic ulcer of unspecified heel and midfoot with fat layer exposed
L97.403	Non-pressure chronic ulcer of unspecified heel and midfoot with necrosis of muscle
L97.404	Non-pressure chronic ulcer of unspecified heel and midfoot with necrosis of bone
L97.405	Non-pressure chronic ulcer of unspecified heel and midfoot with muscle involvement without evidence of necrosis
L97.406	Non-pressure chronic ulcer of unspecified heel and midfoot with bone involvement without evidence of necrosis
L97.408	Non-pressure chronic ulcer of unspecified heel and midfoot with other specified severity
L97.409	Non-pressure chronic ulcer of unspecified heel and midfoot with unspecified severity
L97.411	Non-pressure chronic ulcer of right heel and midfoot limited to breakdown of skin
L97.412	Non-pressure chronic ulcer of right heel and midfoot with fat layer exposed
L97.413	Non-pressure chronic ulcer of right heel and midfoot with necrosis of muscle
L97.414	Non-pressure chronic ulcer of right heel and midfoot with necrosis of bone
L97.415	Non-pressure chronic ulcer of right heel and midfoot with muscle involvement without evidence of necrosis
L97.416	Non-pressure chronic ulcer of right heel and midfoot with bone involvement without evidence of necrosis
L97.418	Non-pressure chronic ulcer of right heel and midfoot with other specified severity
L97.419	Non-pressure chronic ulcer of right heel and midfoot with unspecified severity
L97.421	Non-pressure chronic ulcer of left heel and midfoot limited to breakdown of skin
L97.422	Non-pressure chronic ulcer of left heel and midfoot with fat layer exposed
L97.423	Non-pressure chronic ulcer of left heel and midfoot with necrosis of muscle
L97.424	Non-pressure chronic ulcer of left heel and midfoot with necrosis of bone
L97.425	Non-pressure chronic ulcer of left heel and midfoot with muscle involvement without evidence of necrosis

L97.426	Non-pressure chronic ulcer of left heel and midfoot with bone involvement without evidence of necrosis
L97.428	Non-pressure chronic ulcer of left heel and midfoot with other specified severity
L97.429	Non-pressure chronic ulcer of left heel and midfoot with unspecified severity
L97.501	Non-pressure chronic ulcer of other part of unspecified foot limited to breakdown of skin
L97.502	Non-pressure chronic ulcer of other part of unspecified foot with fat layer exposed
L97.503	Non-pressure chronic ulcer of other part of unspecified foot with necrosis of muscle
L97.504	Non-pressure chronic ulcer of other part of unspecified foot with necrosis of bone
L97.505	Non-pressure chronic ulcer of other part of unspecified foot with muscle involvement without evidence of necrosis
L97.506	Non-pressure chronic ulcer of other part of unspecified foot with bone involvement without evidence of necrosis
L97.508	Non-pressure chronic ulcer of other part of unspecified foot with other specified severity
L97.509	Non-pressure chronic ulcer of other part of unspecified foot with unspecified severity
L97.511	Non-pressure chronic ulcer of other part of right foot limited to breakdown of skin
L97.512	Non-pressure chronic ulcer of other part of right foot with fat layer exposed
L97.513	Non-pressure chronic ulcer of other part of right foot with necrosis of muscle
L97.514	Non-pressure chronic ulcer of other part of right foot with necrosis of bone
L97.515	Non-pressure chronic ulcer of other part of right foot with muscle involvement without evidence of necrosis
L97.516	Non-pressure chronic ulcer of other part of right foot with bone involvement without evidence of necrosis
L97.518	Non-pressure chronic ulcer of other part of right foot with other specified severity
L97.519	Non-pressure chronic ulcer of other part of right foot with unspecified severity
L97.521	Non-pressure chronic ulcer of other part of left foot limited to breakdown of skin
L97.522	Non-pressure chronic ulcer of other part of left foot with fat layer exposed
L97.523	Non-pressure chronic ulcer of other part of left foot with necrosis of muscle
L97.524	Non-pressure chronic ulcer of other part of left foot with necrosis of bone
L97.525	Non-pressure chronic ulcer of other part of left foot with muscle involvement without evidence of necrosis
L97.526	Non-pressure chronic ulcer of other part of left foot with bone involvement without evidence of necrosis
L97.528	Non-pressure chronic ulcer of other part of left foot with other specified severity
L97.529	Non-pressure chronic ulcer of other part of left foot with unspecified severity
L97.801	Non-pressure chronic ulcer of other part of unspecified lower leg limited to breakdown of skin
L97.802	Non-pressure chronic ulcer of other part of unspecified lower leg with fat layer exposed
L97.803	Non-pressure chronic ulcer of other part of unspecified lower leg with necrosis of muscle
L97.804	Non-pressure chronic ulcer of other part of unspecified lower leg with necrosis of bone
L97.805	Non-pressure chronic ulcer of other part of unspecified lower leg with muscle involvement without evidence of necrosis
L97.806	Non-pressure chronic ulcer of other part of unspecified lower leg with bone involvement without evidence of necrosis
L97.808	Non-pressure chronic ulcer of other part of unspecified lower leg with other specified severity
L97.809	Non-pressure chronic ulcer of other part of unspecified lower leg with unspecified severity

L97.811	Non-pressure chronic ulcer of other part of right lower leg limited to breakdown of skin
L97.812	Non-pressure chronic ulcer of other part of right lower leg with fat layer exposed
L97.813	Non-pressure chronic ulcer of other part of right lower leg with necrosis of muscle
L97.814	Non-pressure chronic ulcer of other part of right lower leg with necrosis of bone
L97.815	Non-pressure chronic ulcer of other part of right lower leg with muscle involvement without evidence of necrosis
L97.816	Non-pressure chronic ulcer of other part of right lower leg with bone involvement without evidence of necrosis
L97.818	Non-pressure chronic ulcer of other part of right lower leg with other specified severity
L97.819	Non-pressure chronic ulcer of other part of right lower leg with unspecified severity
L97.821	Non-pressure chronic ulcer of other part of left lower leg limited to breakdown of skin
L97.822	Non-pressure chronic ulcer of other part of left lower leg with fat layer exposed
L97.823	Non-pressure chronic ulcer of other part of left lower leg with necrosis of muscle
L97.824	Non-pressure chronic ulcer of other part of left lower leg with necrosis of bone
L97.825	Non-pressure chronic ulcer of other part of left lower leg with muscle involvement without evidence of necrosis
L97.826	Non-pressure chronic ulcer of other part of left lower leg with bone involvement without evidence of necrosis
L97.828	Non-pressure chronic ulcer of other part of left lower leg with other specified severity
L97.829	Non-pressure chronic ulcer of other part of left lower leg with unspecified severity
L97.901	Non-pressure chronic ulcer of unspecified part of unspecified lower leg limited to breakdown of skin
L97.902	Non-pressure chronic ulcer of unspecified part of unspecified lower leg with fat layer exposed
L97.903	Non-pressure chronic ulcer of unspecified part of unspecified lower leg with necrosis of muscle
L97.904	Non-pressure chronic ulcer of unspecified part of unspecified lower leg with necrosis of bone
L97.905	Non-pressure chronic ulcer of unspecified part of unspecified lower leg with muscle involvement without evidence of necrosis
L97.906	Non-pressure chronic ulcer of unspecified part of unspecified lower leg with bone involvement without evidence of necrosis
L97.908	Non-pressure chronic ulcer of unspecified part of unspecified lower leg with other specified severity
L97.909	Non-pressure chronic ulcer of unspecified part of unspecified lower leg with unspecified severity
L97.911	Non-pressure chronic ulcer of unspecified part of right lower leg limited to breakdown of skin
L97.912	Non-pressure chronic ulcer of unspecified part of right lower leg with fat layer exposed
L97.913	Non-pressure chronic ulcer of unspecified part of right lower leg with necrosis of muscle
L97.914	Non-pressure chronic ulcer of unspecified part of right lower leg with necrosis of bone
L97.915	Non-pressure chronic ulcer of unspecified part of right lower leg with muscle involvement without evidence of necrosis
L97.916	Non-pressure chronic ulcer of unspecified part of right lower leg with bone involvement without evidence of necrosis
L97.918	Non-pressure chronic ulcer of unspecified part of right lower leg with other specified severity
L97.919	Non-pressure chronic ulcer of unspecified part of right lower leg with unspecified severity

L97.921	Non-pressure chronic ulcer of unspecified part of left lower leg limited to breakdown of skin
L97.922	Non-pressure chronic ulcer of unspecified part of left lower leg with fat layer exposed
L97.923	Non-pressure chronic ulcer of unspecified part of left lower leg with necrosis of muscle
L97.924	Non-pressure chronic ulcer of unspecified part of left lower leg with necrosis of bone
L97.925	Non-pressure chronic ulcer of unspecified part of left lower leg with muscle involvement without evidence of necrosis
L97.926	Non-pressure chronic ulcer of unspecified part of left lower leg with bone involvement without evidence of necrosis
L97.928	Non-pressure chronic ulcer of unspecified part of left lower leg with other specified severity
L97.929	Non-pressure chronic ulcer of unspecified part of left lower leg with unspecified severity
M27.2	Inflammatory conditions of jaws
M27.8	Other specified diseases of jaws
M86.30	Chronic multifocal osteomyelitis, unspecified site
M86.311	Chronic multifocal osteomyelitis, right shoulder
M86.312	Chronic multifocal osteomyelitis, left shoulder
M86.319	Chronic multifocal osteomyelitis, unspecified shoulder
M86.321	Chronic multifocal osteomyelitis, right humerus
M86.322	Chronic multifocal osteomyelitis, left humerus
M86.329	Chronic multifocal osteomyelitis, unspecified humerus
M86.331	Chronic multifocal osteomyelitis, right radius and ulna
M86.332	Chronic multifocal osteomyelitis, left radius and ulna
M86.339	Chronic multifocal osteomyelitis, unspecified radius and ulna
M86.341	Chronic multifocal osteomyelitis, right hand
M86.342	Chronic multifocal osteomyelitis, left hand
M86.349	Chronic multifocal osteomyelitis, unspecified hand
M86.351	Chronic multifocal osteomyelitis, right femur
M86.352	Chronic multifocal osteomyelitis, left femur
M86.359	Chronic multifocal osteomyelitis, unspecified femur
M86.361	Chronic multifocal osteomyelitis, right tibia and fibula
M86.362	Chronic multifocal osteomyelitis, left tibia and fibula
M86.369	Chronic multifocal osteomyelitis, unspecified tibia and fibula
M86.371	Chronic multifocal osteomyelitis, right ankle and foot
M86.372	Chronic multifocal osteomyelitis, left ankle and foot
M86.379	Chronic multifocal osteomyelitis, unspecified ankle and foot
M86.38	Chronic multifocal osteomyelitis, other site
M86.39	Chronic multifocal osteomyelitis, multiple sites
M86.40	Chronic osteomyelitis with draining sinus, unspecified site
M86.411	Chronic osteomyelitis with draining sinus, right shoulder
M86.412	Chronic osteomyelitis with draining sinus, left shoulder
M86.419	Chronic osteomyelitis with draining sinus, unspecified shoulder
M86.421	Chronic osteomyelitis with draining sinus, right humerus
M86.422	Chronic osteomyelitis with draining sinus, left humerus
M86.429	Chronic osteomyelitis with draining sinus, unspecified humerus
M86.431	Chronic osteomyelitis with draining sinus, right radius and ulna
M86.432	Chronic osteomyelitis with draining sinus, left radius and ulna
M86.439	Chronic osteomyelitis with draining sinus, unspecified radius and ulna
M86.441	Chronic osteomyelitis with draining sinus, right hand
M86.442	Chronic osteomyelitis with draining sinus, left hand

M86.449	Chronic osteomyelitis with draining sinus, unspecified hand
M86.451	Chronic osteomyelitis with draining sinus, right femur
M86.452	Chronic osteomyelitis with draining sinus, left femur
M86.459	Chronic osteomyelitis with draining sinus, unspecified femur
M86.461	Chronic osteomyelitis with draining sinus, right tibia and fibula
M86.462	Chronic osteomyelitis with draining sinus, left tibia and fibula
M86.469	Chronic osteomyelitis with draining sinus, unspecified 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
M86.479	Chronic osteomyelitis with draining sinus, unspecified 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
M86.519	Other chronic hematogenous osteomyelitis, unspecified shoulder
M86.521	Other chronic hematogenous osteomyelitis, right humerus
M86.522	Other chronic hematogenous osteomyelitis, left humerus
M86.529	Other chronic hematogenous osteomyelitis, unspecified humerus
M86.531	Other chronic hematogenous osteomyelitis, right radius and ulna
M86.532	Other chronic hematogenous osteomyelitis, left radius and ulna
M86.539	Other chronic hematogenous osteomyelitis, unspecified radius and ulna
M86.541	Other chronic hematogenous osteomyelitis, right hand
M86.542	Other chronic hematogenous osteomyelitis, left hand
M86.549	Other chronic hematogenous osteomyelitis, unspecified hand
M86.551	Other chronic hematogenous osteomyelitis, right femur
M86.552	Other chronic hematogenous osteomyelitis, left femur
M86.559	Other chronic hematogenous osteomyelitis, unspecified femur
M86.561	Other chronic hematogenous osteomyelitis, right tibia and fibula
M86.562	Other chronic hematogenous osteomyelitis, left tibia and fibula
M86.569	Other chronic hematogenous osteomyelitis, unspecified tibia and fibula
M86.571	Other chronic hematogenous osteomyelitis, right ankle and foot
M86.572	Other chronic hematogenous osteomyelitis, left ankle and foot
M86.579	Other chronic hematogenous osteomyelitis, unspecified 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
M86.619	Other chronic osteomyelitis, unspecified shoulder
M86.621	Other chronic osteomyelitis, right humerus
M86.622	Other chronic osteomyelitis, left humerus
M86.629	Other chronic osteomyelitis, unspecified humerus
M86.631	Other chronic osteomyelitis, right radius and ulna
M86.632	Other chronic osteomyelitis, left radius and ulna
M86.639	Other chronic osteomyelitis, unspecified radius and ulna
M86.641	Other chronic osteomyelitis, right hand
M86.642	Other chronic osteomyelitis, left hand
M86.649	Other chronic osteomyelitis, unspecified hand
M86.651	Other chronic osteomyelitis, right thigh
M86.652	Other chronic osteomyelitis, left thigh

M86.659	Other chronic osteomyelitis, unspecified thigh
M86.661	Other chronic osteomyelitis, right tibia and fibula
M86.662	Other chronic osteomyelitis, left tibia and fibula
M86.669	Other chronic osteomyelitis, unspecified tibia and fibula
M86.671	Other chronic osteomyelitis, right ankle and foot
M86.672	Other chronic osteomyelitis, left ankle and foot
M86.679	Other chronic osteomyelitis, unspecified 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
M86.8x9	Other osteomyelitis, unspecified sites
N30.40	Irradiation cystitis without hematuria
N30.41	Irradiation cystitis with hematuria
S07.0xxA	Crushing injury of face, initial encounter
S07.0xxS	Crushing injury of face, sequela
S07.1xxA	Crushing injury of skull, initial encounter
S07.1xxD	Crushing injury of skull, subsequent encounter
S07.1xxS	Crushing injury of skull, sequela
S07.8xxA	Crushing injury of other parts of head, initial encounter
S07.8xxD	Crushing injury of other parts of head, subsequent encounter
S07.8xxS	Crushing injury of other parts of head, sequela
S07.9xxA	Crushing injury of head, part unspecified, initial encounter
S07.9xxD	Crushing injury of head, part unspecified, subsequent encounter
S07.9xxS	Crushing injury of head, part unspecified, sequela
S17.0xxA	Crushing injury of larynx and trachea, initial encounter
S17.0xxD	Crushing injury of larynx and trachea, subsequent encounter
S17.0xxS	Crushing injury of larynx and trachea, sequela
S17.8xxA	Crushing injury of other specified parts of neck, initial encounter
S17.8xxD	Crushing injury of other specified parts of neck, subsequent encounter
S17.8xxS	Crushing injury of other specified parts of neck, sequela
S17.9xxA	Crushing injury of neck, part unspecified, initial encounter
S17.9xxD	Crushing injury of neck, part unspecified, subsequent encounter
S17.9xxS	Crushing injury of neck, part unspecified, sequela
S28.0xxA	Crushed chest, initial encounter
S28.0xxA	Crushed chest, initial encounter
S28.0xxA	Crushed chest, initial encounter
S28.0xxD	Crushed chest, subsequent encounter
S28.0xxS	Crushed chest, sequela
S38.001A	Crushing injury of unspecified external genital organs, male, initial encounter
S38.001D	Crushing injury of unspecified external genital organs, male, subsequent encounter
S38.001S	Crushing injury of unspecified external genital organs, male, sequela
S38.002A	Crushing injury of unspecified external genital organs, female, initial encounter
S38.002D	Crushing injury of unspecified external genital organs, female, subsequent encounter

S38.002S	Crushing injury of unspecified external genital organs, female, sequela
S38.01xA	Crushing injury of penis, initial encounter
S38.01xD	Crushing injury of penis, subsequent encounter
S38.01xS	Crushing injury of penis, sequela
S38.02xA	Crushing injury of scrotum and testis, initial encounter
S38.02xD	Crushing injury of scrotum and testis, subsequent encounter
S38.02xS	Crushing injury of scrotum and testis, sequela
S38.03	Crushing injury of vulva
S38.03xA	Crushing injury of vulva, initial encounter
S38.03xD	Crushing injury of vulva, subsequent encounter
S38.03xS	Crushing injury of vulva, sequela
S38.1xxA	Crushing injury of abdomen, lower back, and pelvis, initial encounter
S38.1xxA	Crushing injury of abdomen, lower back, and pelvis, initial encounter
S38.1xxD	Crushing injury of abdomen, lower back, and pelvis, subsequent encounter
S38.1xxS	Crushing injury of abdomen, lower back, and pelvis, sequela
S47.1xxA	Crushing injury of right shoulder and upper arm, initial encounter
S47.1xxA	Crushing injury of right shoulder and upper arm, initial encounter
S47.1xxA	Crushing injury of right shoulder and upper arm, initial encounter
S47.1xxA	Crushing injury of right shoulder and upper arm, initial encounter
S47.1xxA	Crushing injury of right shoulder and upper arm, initial encounter
S47.1xxA	Crushing injury of right shoulder and upper arm, initial encounter
S47.1xxD	Crushing injury of right shoulder and upper arm, subsequent encounter
S47.1xxS	Crushing injury of right shoulder and upper arm, sequela
S47.2xxA	Crushing injury of left shoulder and upper arm, initial encounter
S47.2xxA	Crushing injury of left shoulder and upper arm, initial encounter
S47.2xxA	Crushing injury of left shoulder and upper arm, initial encounter
S47.2xxA	Crushing injury of left shoulder and upper arm, initial encounter
S47.2xxA	Crushing injury of left shoulder and upper arm, initial encounter
S47.2xxA	Crushing injury of left shoulder and upper arm, initial encounter
S47.2xxD	Crushing injury of left shoulder and upper arm, subsequent encounter
S47.2xxS	Crushing injury of left shoulder and upper arm, sequela
S47.9xxA	Crushing injury of shoulder and upper arm, unspecified arm, initial encounter
S47.9xxA	Crushing injury of shoulder and upper arm, unspecified arm, initial encounter
S47.9xxA	Crushing injury of shoulder and upper arm, unspecified arm, initial encounter
S47.9xxA	Crushing injury of shoulder and upper arm, unspecified arm, initial encounter
S47.9xxA	Crushing injury of shoulder and upper arm, unspecified arm, initial encounter
S47.9xxA	Crushing injury of shoulder and upper arm, unspecified arm, initial encounter
S47.9xxA	Crushing injury of shoulder and upper arm, unspecified arm, initial encounter
S47.9xxD	Crushing injury of shoulder and upper arm, unspecified arm, subsequent encounter
S47.9xxS	Crushing injury of shoulder and upper arm, unspecified arm, sequela
S57.00xA	Crushing injury of unspecified elbow, initial encounter
S57.00xD	Crushing injury of unspecified elbow, subsequent encounter
S57.00xS	Crushing injury of unspecified elbow, sequela
S57.01xA	Crushing injury of right elbow, initial encounter
S57.01xD	Crushing injury of right elbow, subsequent encounter
S57.01xS	Crushing injury of right elbow, sequela
S57.02xA	Crushing injury of left elbow, initial encounter
S57.02xD	Crushing injury of left elbow, subsequent encounter
S57.02xS	Crushing injury of left elbow, sequela
S57.80xA	Crushing injury of unspecified forearm, initial encounter
S57.80xD	Crushing injury of unspecified forearm, subsequent encounter

S57.80xS	Crushing injury of unspecified forearm, sequela
S57.81xA	Crushing injury of right forearm, initial encounter
S57.81xD	Crushing injury of right forearm, subsequent encounter
S57.81xS	Crushing injury of right forearm, sequela
S57.82xA	Crushing injury of left forearm, initial encounter
S57.82xD	Crushing injury of left forearm, subsequent encounter
S57.82xS	Crushing injury of left forearm, sequela
S67.00xA	Crushing injury of unspecified thumb, initial encounter
S67.00xD	Crushing injury of unspecified thumb, subsequent encounter
S67.00xS	Crushing injury of unspecified thumb, sequela
S67.01xA	Crushing injury of right thumb, initial encounter
S67.01xD	Crushing injury of right thumb, subsequent encounter
S67.01xS	Crushing injury of right thumb, sequela
S67.02xA	Crushing injury of left thumb, initial encounter
S67.02xD	Crushing injury of left thumb, subsequent encounter
S67.02xS	Crushing injury of left thumb, sequela
S67.10xA	Crushing injury of unspecified finger(s), initial encounter
S67.10xD	Crushing injury of unspecified finger(s), subsequent encounter
S67.10xS	Crushing injury of unspecified finger(s), sequela
S67.190A	Crushing injury of right index finger, initial encounter
S67.190D	Crushing injury of right index finger, subsequent encounter
S67.190S	Crushing injury of right index finger, sequela
S67.191A	Crushing injury of left index finger, initial encounter
S67.191D	Crushing injury of left index finger, subsequent encounter
S67.191S	Crushing injury of left index finger, sequela
S67.192A	Crushing injury of right middle finger, initial encounter
S67.192D	Crushing injury of right middle finger, subsequent encounter
S67.192S	Crushing injury of right middle finger, sequela
S67.193A	Crushing injury of left middle finger, initial encounter
S67.193D	Crushing injury of left middle finger, subsequent encounter
S67.193S	Crushing injury of left middle finger, sequela
S67.194A	Crushing injury of right ring finger, initial encounter
S67.194D	Crushing injury of right ring finger, subsequent encounter
S67.194S	Crushing injury of right ring finger, sequela
S67.195A	Crushing injury of left ring finger, initial encounter
S67.195D	Crushing injury of left ring finger, subsequent encounter
S67.195S	Crushing injury of left ring finger, sequela
S67.196A	Crushing injury of right little finger, initial encounter
S67.196D	Crushing injury of right little finger, subsequent encounter
S67.196S	Crushing injury of right little finger, sequela
S67.197A	Crushing injury of left little finger, initial encounter
S67.197D	Crushing injury of left little finger, subsequent encounter
S67.197S	Crushing injury of left little finger, sequela
S67.198A	Crushing injury of other finger, initial encounter
S67.198D	Crushing injury of other finger, subsequent encounter
S67.198S	Crushing injury of other finger, sequela
S67.20xA	Crushing injury of unspecified hand, initial encounter
S67.20xD	Crushing injury of unspecified hand, subsequent encounter
S67.20xS	Crushing injury of unspecified hand, sequela
S67.21xA	Crushing injury of right hand, initial encounter
S67.21xD	Crushing injury of right hand, subsequent encounter

S67.21xS	Crushing injury of right hand, sequela
S67.22xA	Crushing injury of left hand, initial encounter
S67.22xD	Crushing injury of left hand, subsequent encounter
S67.22xS	Crushing injury of left hand, sequela
S67.30xA	Crushing injury of unspecified wrist, initial encounter
S67.30xD	Crushing injury of unspecified wrist, subsequent encounter
S67.30xS	Crushing injury of unspecified wrist, sequela
S67.31xA	Crushing injury of right wrist, initial encounter
S67.31xD	Crushing injury of right wrist, subsequent encounter
S67.31xS	Crushing injury of right wrist, sequela
S67.32xA	Crushing injury of left wrist, initial encounter
S67.32xD	Crushing injury of left wrist, subsequent encounter
S67.32xS	Crushing injury of left wrist, sequela
S67.40xA	Crushing injury of unspecified wrist and hand, initial encounter
S67.40xD	Crushing injury of unspecified wrist and hand, subsequent encounter
S67.40xS	Crushing injury of unspecified wrist and hand, sequela
S67.41xA	Crushing injury of right wrist and hand, initial encounter
S67.41xD	Crushing injury of right wrist and hand, subsequent encounter
S67.41xS	Crushing injury of right wrist and hand, sequela
S67.42xA	Crushing injury of left wrist and hand, initial encounter
S67.42xD	Crushing injury of left wrist and hand, subsequent encounter
S67.42xS	Crushing injury of left wrist and hand, sequela
S67.90xA	Crushing injury of unspecified part(s) of unspecified wrist, hand and fingers, initial encounter
S67.90xD	Crushing injury of unspecified part(s) of unspecified wrist, hand and fingers, subsequent encounter
S67.90xS	Crushing injury of unspecified part(s) of unspecified wrist, hand and fingers, sequela
S67.91xA	Crushing injury of unspecified part(s) of right wrist, hand and fingers, initial encounter
S67.91xD	Crushing injury of unspecified part(s) of right wrist, hand and fingers, subsequent encounter
S67.91xS	Crushing injury of unspecified part(s) of right wrist, hand and fingers, sequela
S67.92xA	Crushing injury of unspecified part(s) of left wrist, hand and fingers, initial encounter
S67.92xD	Crushing injury of unspecified part(s) of left wrist, hand and fingers, subsequent encounter
S67.92xS	Crushing injury of unspecified part(s) of left wrist, hand and fingers, sequela
S77.00xA	Crushing injury of unspecified hip, initial encounter
S77.00xD	Crushing injury of unspecified hip, subsequent encounter
S77.00xS	Crushing injury of unspecified hip, sequela
S77.01xA	Crushing injury of right hip, initial encounter
S77.01xD	Crushing injury of right hip, subsequent encounter
S77.01xS	Crushing injury of right hip, sequela
S77.02xA	Crushing injury of left hip, initial encounter
S77.02xD	Crushing injury of left hip, subsequent encounter
S77.02xS	Crushing injury of left hip, sequela
S77.10xA	Crushing injury of unspecified thigh, initial encounter
S77.10xD	Crushing injury of unspecified thigh, subsequent encounter
S77.10xS	Crushing injury of unspecified thigh, sequela
S77.11xA	Crushing injury of right thigh, initial encounter
S77.11xD	Crushing injury of right thigh, subsequent encounter
S77.11xS	Crushing injury of right thigh, sequela
S77.12xA	Crushing injury of left thigh, initial encounter

S77.12xD	Crushing injury of left thigh, subsequent encounter
S77.12xS	Crushing injury of left thigh, sequela
S77.20xA	Crushing injury of unspecified hip with thigh, initial encounter
S77.20xA	Crushing injury of unspecified hip with thigh, initial encounter
S77.20xA	Crushing injury of unspecified hip with thigh, initial encounter
S77.20xA	Crushing injury of unspecified hip with thigh, initial encounter
S77.20xD	Crushing injury of unspecified hip with thigh, subsequent encounter
S77.20xS	Crushing injury of unspecified hip with thigh, sequela
S77.21xA	Crushing injury of right hip with thigh, initial encounter
S77.21xD	Crushing injury of right hip with thigh, subsequent encounter
S77.21xS	Crushing injury of right hip with thigh, sequela
S77.22xA	Crushing injury of left hip with thigh, initial encounter
S77.22xD	Crushing injury of left hip with thigh, subsequent encounter
S77.22xS	Crushing injury of left hip with thigh, sequela
S87.00xA	Crushing injury of unspecified knee, initial encounter
S87.00xD	Crushing injury of unspecified knee, subsequent encounter
S87.00xS	Crushing injury of unspecified knee, sequela
S87.01xA	Crushing injury of right knee, initial encounter
S87.01xD	Crushing injury of right knee, subsequent encounter
S87.01xS	Crushing injury of right knee, sequela
S87.02xA	Crushing injury of left knee, initial encounter
S87.02xD	Crushing injury of left knee, subsequent encounter
S87.02xS	Crushing injury of left knee, sequela
S87.80xA	Crushing injury of unspecified lower leg, initial encounter
S87.80xD	Crushing injury of unspecified lower leg, subsequent encounter
S87.80xS	Crushing injury of unspecified lower leg, sequela
S87.81xA	Crushing injury of right lower leg, initial encounter
S87.81xD	Crushing injury of right lower leg, subsequent encounter
S87.81xS	Crushing injury of right lower leg, sequela
S87.82xA	Crushing injury of left lower leg, initial encounter
S87.82xD	Crushing injury of left lower leg, subsequent encounter
S87.82xS	Crushing injury of left lower leg, sequela
S97.00xA	Crushing injury of unspecified ankle, initial encounter
S97.00xD	Crushing injury of unspecified ankle, subsequent encounter
S97.00xS	Crushing injury of unspecified ankle, sequela
S97.01xA	Crushing injury of right ankle, initial encounter
S97.01xD	Crushing injury of right ankle, subsequent encounter
S97.01xS	Crushing injury of right ankle, sequela
S97.02xA	Crushing injury of left ankle, initial encounter
S97.02xD	Crushing injury of left ankle, subsequent encounter
S97.02xS	Crushing injury of left ankle, sequela
S97.80xA	Crushing injury of unspecified foot, initial encounter
S97.80xD	Crushing injury of unspecified foot, subsequent encounter
S97.80xS	Crushing injury of unspecified foot, sequela
S97.81xA	Crushing injury of right foot, initial encounter
S97.81xD	Crushing injury of right foot, subsequent encounter
S97.81xS	Crushing injury of right foot, sequela
S97.82xA	Crushing injury of left foot, initial encounter
S97.82xD	Crushing injury of left foot, subsequent encounter
S97.82xS	Crushing injury of left foot, sequela

T58.01xA	Toxic effect of carbon monoxide from motor vehicle exhaust, accidental (unintentional), initial encounter
T58.01xD	Toxic effect of carbon monoxide from motor vehicle exhaust, accidental (unintentional), subsequent encounter
T58.01xS	Toxic effect of carbon monoxide from motor vehicle exhaust, accidental (unintentional), sequela
T58.02xA	Toxic effect of carbon monoxide from motor vehicle exhaust, intentional self-harm, initial encounter
T58.02xD	Toxic effect of carbon monoxide from motor vehicle exhaust, intentional self-harm, subsequent encounter
T58.02xS	Toxic effect of carbon monoxide from motor vehicle exhaust, intentional self-harm, sequela
T58.03xA	Toxic effect of carbon monoxide from motor vehicle exhaust, assault, initial encounter
T58.03xD	Toxic effect of carbon monoxide from motor vehicle exhaust, assault, subsequent encounter
T58.03xS	Toxic effect of carbon monoxide from motor vehicle exhaust, assault, sequela
T58.04xA	Toxic effect of carbon monoxide from motor vehicle exhaust, undetermined, initial encounter
T58.04xD	Toxic effect of carbon monoxide from motor vehicle exhaust, undetermined, subsequent encounter
T58.04xS	Toxic effect of carbon monoxide from motor vehicle exhaust, undetermined, sequela
T58.11xA	Toxic effect of carbon monoxide from utility gas, accidental (unintentional), initial encounter
T58.11xD	Toxic effect of carbon monoxide from utility gas, accidental (unintentional), subsequent encounter
T58.11xS	Toxic effect of carbon monoxide from utility gas, accidental (unintentional), sequela
T58.12xA	Toxic effect of carbon monoxide from utility gas, intentional self-harm, initial encounter
T58.12xD	Toxic effect of carbon monoxide from utility gas, intentional self-harm, subsequent encounter
T58.12xS	Toxic effect of carbon monoxide from utility gas, intentional self-harm, sequela
T58.13xA	Toxic effect of carbon monoxide from utility gas, assault, initial encounter
T58.13xD	Toxic effect of carbon monoxide from utility gas, assault, subsequent encounter
T58.13xS	Toxic effect of carbon monoxide from utility gas, assault, sequela
T58.14xA	Toxic effect of carbon monoxide from utility gas, undetermined, initial encounter
T58.14xD	Toxic effect of carbon monoxide from utility gas, undetermined, subsequent encounter
T58.14xS	Toxic effect of carbon monoxide from utility gas, undetermined, sequela
T58.2x1A	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, accidental (unintentional), initial encounter
T58.2x1D	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, accidental (unintentional), subsequent encounter
T58.2x1S	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, accidental (unintentional), sequela
T58.2x2A	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, intentional self-harm, initial encounter
T58.2x2D	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, intentional self-harm, subsequent encounter
T58.2x2S	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, intentional self-harm, sequela
T58.2x3A	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, assault, initial encounter

T58.2x3D	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, assault, subsequent encounter
T58.2x3S	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, assault, sequela
T58.2x4A	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, undetermined, initial encounter
T58.2x4D	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, undetermined, subsequent encounter
T58.2x4S	Toxic effect of carbon monoxide from incomplete combustion of other domestic fuels, undetermined, sequela
T58.8x1A	Toxic effect of carbon monoxide from other source, accidental (unintentional), initial encounter
T58.8x1D	Toxic effect of carbon monoxide from other source, accidental (unintentional), subsequent encounter
T58.8x1S	Toxic effect of carbon monoxide from other source, accidental (unintentional), sequela
T58.8x2A	Toxic effect of carbon monoxide from other source, intentional self-harm, initial encounter
T58.8x2D	Toxic effect of carbon monoxide from other source, intentional self-harm, subsequent encounter
T58.8x2S	Toxic effect of carbon monoxide from other source, intentional self-harm, sequela
T58.8x3	Toxic effect of carbon monoxide from other source, assault
T58.8x3A	Toxic effect of carbon monoxide from other source, assault, initial encounter
T58.8x3D	Toxic effect of carbon monoxide from other source, assault, subsequent encounter
T58.8x3S	Toxic effect of carbon monoxide from other source, assault, sequela
T58.8x4A	Toxic effect of carbon monoxide from other source, undetermined, initial encounter
T58.8x4D	Toxic effect of carbon monoxide from other source, undetermined, subsequent encounter
T58.8x4S	Toxic effect of carbon monoxide from other source, undetermined, sequela
T58.91xA	Toxic effect of carbon monoxide from unspecified source, accidental (unintentional), initial encounter
T58.91xD	Toxic effect of carbon monoxide from unspecified source, accidental (unintentional), subsequent encounter
T58.91xS	Toxic effect of carbon monoxide from unspecified source, accidental (unintentional), sequela
T58.92xA	Toxic effect of carbon monoxide from unspecified source, intentional self-harm, initial encounter
T58.92xD	Toxic effect of carbon monoxide from unspecified source, intentional self-harm, subsequent encounter
T58.92xS	Toxic effect of carbon monoxide from unspecified source, intentional self-harm, sequela
T58.93xA	Toxic effect of carbon monoxide from unspecified source, assault, initial encounter
T58.93xD	Toxic effect of carbon monoxide from unspecified source, assault, subsequent encounter
T58.93xS	Toxic effect of carbon monoxide from unspecified source, assault, sequela
T58.94xA	Toxic effect of carbon monoxide from unspecified source, undetermined, initial encounter
T58.94xD	Toxic effect of carbon monoxide from unspecified source, undetermined, subsequent encounter
T58.94xS	Toxic effect of carbon monoxide from unspecified source, undetermined, sequela
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
T70.20xA	Unspecified effects of high altitude, initial encounter
T70.20xD	Unspecified effects of high altitude, subsequent encounter
T70.20xS	Unspecified effects of high altitude, sequela
T70.29xA	Other effects of high altitude, initial encounter
T70.29xD	Other effects of high altitude, subsequent encounter
T70.29xS	Other effects of high altitude, sequela
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
T79.8xxA	Other early complications of trauma, initial encounter
T79.8xxD	Other early complications of trauma, subsequent encounter
T79.8xxS	Other early complications of trauma, sequela
T79.9xxA	Unspecified early complication of trauma, initial encounter
T79.9xxD	Unspecified early complication of trauma, subsequent encounter
T79.9xxS	Unspecified early complication of trauma, sequela
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
T87.0x9	Complications of reattached (part of) unspecified upper extremity
T87.0x9	Complications of reattached (part of) unspecified upper extremity
T87.0x9	Complications of reattached (part of) unspecified 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
T87.1x9	Complications of reattached (part of) unspecified lower extremity
T87.1x9	Complications of reattached (part of) unspecified lower extremity
T87.1x9	Complications of reattached (part of) unspecified lower extremity
T87.2	Complications of other reattached body part

Description

Hyperbaric Oxygen Therapy

HBOT is a technique for delivering higher pressures of oxygen to tissue. Two methods of administration are available: systemic and topical.

Systemic HBOT

In systemic or large hyperbaric oxygen chambers, the patient is entirely enclosed in a pressure chamber and breathes oxygen at a pressure greater than 1 atmosphere (the pressure of oxygen at sea level). Thus, this technique relies on systemic circulation to deliver highly oxygenated blood to the target site,

typically a wound. Systemic HBOT can be used to treat systemic illness, such as air or gas embolism, carbon monoxide poisoning, or clostridial gas gangrene. Treatment may be carried out either in a monoplace chamber pressurized with pure oxygen or in a larger, multiplace chamber pressurized with compressed air, in which case the patient receives pure oxygen by mask, head tent, or endotracheal tube.

Topical HBOT
Topical hyperbaric therapy is a technique of delivering 100% oxygen directly to an open, moist wound at a pressure slightly higher than atmospheric pressure. It is hypothesized that the high concentrations of oxygen diffuse directly into the wound to increase the local cellular oxygen tension, which in turn promotes wound healing. Devices consist of an appliance to enclose the wound area (frequently an extremity) and a source of oxygen; conventional oxygen tanks may be used. The appliances may be disposable and may be used without supervision in the home by well-trained patients. Topical hyperbaric therapy has been investigated as a treatment of skin ulcerations resulting from diabetes, venous stasis, postsurgical infection, gangrenous lesion, decubitus ulcers, amputations, skin graft, burns, or frostbite.

Adverse Events
HBOT is a generally safe therapy, with an estimated adverse side effect rate of 0.4%.[1] Adverse events may occur either from pressure effects or the oxygen. The pressure effect (barotrauma) may affect any closed air-filled cavity such as ears, sinus, teeth, and lungs. Pain and/or swelling may occur at these sites as pressure increases during the procedure and decreases as the procedure is ending. Oxygen toxicity may affect the pulmonary, neurologic, or ophthalmologic systems. Pulmonary symptoms include a mild cough, substernal burning, and dyspnea. Neurologic effects include tunnel vision, tinnitus, nausea, and dizziness. Ophthalmologic effects include retinopathy in neonates, cataract formation, and transient myopic vision changes.

Note that this evidence review does not address topical oxygen therapy in the absence of pressurization.

Summary
Hyperbaric oxygen therapy (HBOT) involves breathing 100% oxygen at pressures between 1.5 and 3.0 atmospheres. It is generally applied systemically with the patient inside a hyperbaric chamber. HBOT can also be applied topically; ie, the body part to be treated is isolated (eg, in an inflatable bag and exposed to pure oxygen). HBOT has been investigated for various conditions that have potential to respond to increased oxygen delivery to tissue.

For individuals with wounds, burns or infections who receive topical HBOT, the evidence includes a systematic review, case series, and an RCT. Relevant outcome are overall survival (OS), symptoms, change in disease status, and functional outcomes. The systematic review identified 3 RCTs including patients with sacral pressure ulcers, ischial pressure ulcers, and refractory venous ulcers. All trials reported that healing improved significantly after HBOT than after standard of care. Pooling of results was not possible due to heterogeneity in patient populations and treatment regimens. The single small RCT (n=28) was not included in the review and the uncontrolled studies do not provide sufficient data that topical HBOT is efficacious. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with chronic diabetic ulcers who receive systemic HBOT, the evidence includes RCTs and systematic reviews. Relevant outcomes are symptoms and change in disease status. Meta-analyses of RCTs found significantly higher diabetic ulcer healing rates with HBOT than with control conditions. One of the 2 meta-analyses found that HBOT was associated with a significantly lower rate of major amputation. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals with carbon monoxide poisoning who receive systemic HBOT, the evidence includes RCTs and a systematic review. Relevant outcomes are OS and symptoms. A meta-analysis in a Cochrane review of low-quality RCT data did not find HBOT to be associated with a significantly lower risk

of neurologic deficits after carbon monoxide poisoning. The evidence is insufficient to determine the effects of the technology on health outcomes.

However, clinical input obtained in 2010 and guidelines from the Undersea and Hyperbaric Medical Society and the 10th European Consensus Conference on Hyperbaric Medicine support HBOT for the treatment of acute carbon monoxide poisoning. Thus, based on clinical input and guideline support, this indication may be considered medically necessary.

For individuals with radionecrosis, osteoradionecrosis, or treatment of irradiated jaw who receive systemic HBOT, the evidence includes RCTs and a systematic review. Relevant outcomes are symptoms and change in disease status. A meta-analysis in a Cochrane review of RCTs found evidence that HBOT improved radionecrosis and osteoradionecrosis outcomes and resulted in better outcomes before tooth extraction in an irradiated jaw. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals with chronic refractory osteomyelitis who receive systemic HBOT, the evidence includes case series. Relevant outcomes are symptoms and change in disease status. The case series reported high rates of successful outcomes (no drainage, pain, tenderness, or cellulitis) in patients with chronic refractory osteomyelitis treated with HBOT. However, controlled studies are needed to determine conclusively the impact of HBOT on health outcomes compared with other interventions. The evidence is insufficient to determine the effects of the technology on health outcomes.

However, clinical input obtained in 2010 and Undersea and Hyperbaric Medical Society guidelines support HBOT for the treatment of chronic refractory osteomyelitis. Thus, based on clinical input and guideline support, this indication may be considered medically necessary.

For individuals with acute thermal burns who receive systemic HBOT, the evidence includes a systematic review of 2 RCTs. Relevant outcomes are OS, symptoms, and change in disease status. Only 2 RCTs were identified, and both were judged to have poor methodologic quality. Evidence from well-conducted controlled trials is needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with acute surgical and traumatic wounds who receive systemic HBOT, the evidence includes RCTs, controlled nonrandomized studies, and systematic reviews. Relevant outcomes are OS, symptoms, change in disease status, and functional outcomes. There was considerable heterogeneity across the 4 RCTs identified (eg, patient population, comparison group, treatment regimen, outcomes). This heterogeneity prevented pooling of trial findings and limits the ability to conclude the impact of HBOT on health outcomes for patients with acute surgical and traumatic wounds. Additional evidence from high-quality RCTs is needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with bisphosphonate-related osteonecrosis of the jaw who receive systemic HBOT, the evidence includes an RCT. Relevant outcome are symptoms and change in disease status. The RCT was unblinded and reported initial benefits at 3-month follow-up; however, there were no significant benefits of HBOT for most health outcomes compared with standard care in the long-term (6 months to 2 years). The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with necrotizing soft tissue infections who receive systemic HBOT, the evidence includes systematic reviews and a retrospective cohort study. Relevant outcomes are OS, symptoms, and change in disease status. A Cochrane review did not identify any RCTs. Another systematic review identified a retrospective cohort study, which did not find better outcomes after HBOT than after standard care without HBOT in patients with necrotizing soft tissue infections. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with acute coronary syndrome who receive systemic HBOT, the evidence includes RCTs and a systematic review. Relevant outcomes are OS, symptoms, change in disease status, and functional

outcomes. A Cochrane review identified 6 RCTs. There were 2 pooled analyses, one found significantly lower rates of death with HBOT and the other reported inconsistent results in left ventricular function. Additional RCT data are needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with acute ischemic stroke who receive systemic HBOT, the evidence includes RCTs and a systematic review. Relevant outcomes are OS, symptoms, change in disease status, and functional outcomes. Cochrane reviewers could only pool data for a single outcome (mortality at 3-6 months), and for that outcome, there was no significant difference between active and sham HBOT treatments. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with motor dysfunction associated with stroke who receive systemic HBOT, the evidence includes an RCT. Relevant outcome are symptoms and functional outcomes. The RCT, which used a crossover design, found better outcomes with HBOT at 2 months than with delayed treatment. However, the trial had a number of methodologic limitations (eg, lack of patient blinding, heterogeneous population, high dropout rate) that make it difficult to evaluate the efficacy of HBOT. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with Bell palsy who receive systemic HBOT, the evidence includes a systematic review. Relevant outcomes are symptoms, change in disease status, and functional outcomes. A Cochrane review did not identify any RCTs meeting selection criteria; the single RCT found did not have a blinded outcome assessment. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with traumatic brain injury who receive systemic HBOT, the evidence includes RCTs and systematic reviews. Relevant outcomes are OS, symptoms, change in disease status, and functional outcomes. RCTs were heterogenous regarding intervention protocols, patient populations, and outcomes reported. Multiple RCTs of US military service members showed no statistical difference in outcomes between HBOT groups and those that received sham treatment. Systematic reviews conducted pooled analyses only on a minority of the published RCTs, and these findings were inconsistent. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with inflammatory bowel disease who receive systemic HBOT, the evidence includes an RCT, observational studies, and a systematic review. Relevant outcomes are symptoms, change in disease status and functional outcomes. One small RCT has been published, and this trial did not find a significant improvement in health outcomes when HBOT was added to standard medical therapy. A systematic review including the RCT and observational studies found a high rate of bias in the literature due to attrition and reporting bias. The evidence is insufficient to determine the effects of the technology on health outcomes.

A Cochrane review of RCTs had mixed findings from studies that included individuals with tinnitus. Some outcomes (ie, improvement in hearing of all frequencies, >25% return of hearing) were better with HBOT than with a control intervention, but more than 50% return of hearing did not differ significantly between groups. There was important variability in the patients enrolled in the studies. A subsequent systematic review had similarly limited conclusions due to the inclusion of non-randomized studies. One RCT included in this review included patients with idiopathic sudden sensorineural hearing loss and found no differences in HBOT treatment compared with steroid injections in mean hearing thresholds at 0.25, 0.5, 1, and 4 kHz; however, a significant difference was detected at the 2-kHz level. Nonrandomized studies of HBOT used as adjunctive therapy did not support incremental value, although 1 systematic review evaluated HBOT along with steroid therapy and found benefit specifically for those with severe-to-profound idiopathic sudden sensorineural hearing loss. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with delayed-onset muscle soreness who receive systemic HBOT, the evidence includes RCTs and a systematic review. Relevant outcomes are symptoms and functional outcomes. A Cochrane review of RCTs found worse short-term pain outcomes with HBOT than with control and no difference in

longer-term pain or other outcomes (eg, swelling). The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with autism spectrum disorder who receive systemic HBOT, the evidence includes an RCT and a systematic review. Relevant outcomes are symptoms and functional outcomes. A Cochrane review identified a single RCT on HBOT for autism spectrum disorder and this trial did not find significantly better parental-assessed or clinician-assessed outcomes with HBOT compared with sham. A subsequent controlled trial reached the same conclusion. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with cerebral palsy who receive systemic HBOT, the evidence includes 2 RCTs and an observational study. Relevant outcomes are symptoms and functional outcomes. One RCT was stopped early due to futility, and the other did not find significantly better outcomes with HBOT than with a sham intervention. The observational study focused on sleep disorders in children with cerebral palsy and reported improvements with the HBOT treatment. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with vascular dementia who receive systemic HBOT, the evidence includes an RCT and a systematic review. Relevant outcomes are symptoms and functional outcomes. The Cochrane review identified only a single RCT with methodologic limitations. Well-conducted controlled trials are needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with radiotherapy adverse events who receive systemic HBOT, the evidence includes RCTs, nonrandomized comparator trials, case series, and systematic reviews. Relevant outcomes are symptoms and functional outcomes. Two systematic reviews were identified, but pooled analyses were not possible due to heterogeneity in treatment regimens and outcomes measured. One systematic review concluded that more RCTs would be needed. The 2 RCTs identified had inconsistent findings. One reported no short-term benefit with HBOT, but some benefits 12 months after radiotherapy; the other did not find a significant benefit of HBOT at 12-month follow-up. Another RCT assessed HBOT for radiation-induced cystitis and found significant benefit by some measures but not others. An observational study for dry mouth (xerostomia) caused by radiotherapy found some benefit to HBOT. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with idiopathic femoral neck necrosis who receive systemic HBOT, the evidence includes an RCT. Relevant outcome are symptoms, change in disease status, and functional outcomes. The RCT, which had a small sample, only reported short-term (ie, 6-week) outcomes. Larger well-conducted RCTs reporting longer-term outcomes are needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with a migraine who receive systemic HBOT, the evidence includes RCTs and a systematic review. Relevant outcomes are symptoms, change in disease status, and functional outcomes. The Cochrane review conducted a pooled analysis including 3 of the 11 trials. Meta-analysis of these 3 RCTs found significantly greater relief of migraine symptoms with HBOT than with a comparator intervention within 45 minutes of treatment. Longer-term data are needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with herpes zoster who receive systemic HBOT, the evidence includes an RCT. Relevant outcome are symptoms and change in disease status. The RCT was unblinded and only reported short-term (ie, 6-week) outcomes. Additional well-conducted RCTs with longer follow-up are needed. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with fibromyalgia who receive systemic HBOT, the evidence includes RCTs. Relevant outcomes are symptoms, change in disease status, and functional outcomes. Only 2 RCTs were identified, and both reported positive effects of HBOT on tender points and pain. However, the trials had relatively small samples and methodologic limitations (eg, quasi-randomization, no or uncertain sham control for a condition with subjective outcomes susceptible to a placebo effect). Moreover, the HBOT

protocols varied. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with multiple sclerosis who receive systemic HBOT, the evidence includes RCTs and a systematic review. Relevant outcomes are symptoms and functional outcomes. A Cochrane review of RCTs did not find a significant difference in Expanded Disability Status Scale scores when patients with multiple sclerosis were treated with HBOT versus a comparator intervention. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals with cancer and are undergoing chemotherapy who receive systemic HBOT, the evidence includes an RCT and a systematic review. Relevant outcomes are OS and change in disease status. While the systematic review reported improvements in tumor control in patients with head and neck cancer who received HBOT, the adverse events accompanying the treatment (eg, radiation tissue injury, seizures) were significant. The single RCT did not find a significant difference in survival for cancer patients who received HBOT before chemotherapy compared with usual care. The evidence is insufficient to determine the effects of the technology on health outcomes.

Policy History

Date	Action
3/2020	BCBSA National medical policy review. Description, summary and references updated. Policy statements unchanged.
1/2020	Coding information clarified
6/2019	Coding information clarified
4/2019	Coding information clarified
3/2019	BCBSA National medical policy review. Description, summary and references updated. Policy statements unchanged.
2/2018	New references added from BCBSA National medical policy.
2/2017	New references added from BCBSA National medical policy.
5/2016	Prior authorization table clarified.
1/2016	BCBSA National medical policy review. New investigational indications described. Effective 1/1/2016.
1/2015	Clarified coding information.
10/2014	BCBSA National medical policy review. Investigational statements clarified. Title changed from “Hyperbaric Oxygen Pressurization (HBO)” to “Hyperbaric Oxygen Therapy.” Effective 10/1/2014.
6/2014	Updated Coding section with ICD10 procedure and diagnosis codes, effective 10/2015. Coding information clarified.
2/2014	BCBSA National medical policy review. New investigational indications described. Effective 2/1/2014. Coding information clarified.
3/2013	BCBSA National medical policy review. Change to policy statement. Effective 3/1/2013.
11/2011-4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
4/2011	Reviewed - Medical Policy Group - Cardiology and Pulmonology. No changes to policy statements.
12/2010	Reviewed - Medical Policy Group - Plastic Surgery and Dermatology. No changes to policy statements.
12/2009	Reviewed - Medical Policy Group - Plastic Surgery and Dermatology. No changes to policy statements.
4/2009	BCBSA National medical policy review. No changes to policy statements.
12/2008	Reviewed - Medical Policy Group - Plastic Surgery and Dermatology. No changes to policy statements.
5/2008	BCBSA National medical policy review. Changes to policy statements.

Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:
Medical Policy Terms of Use
Managed Care Guidelines
Indemnity/PPO Guidelines
Clinical Exception Process
Medical Technology Assessment Guidelines

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