

Hyperbaric Oxygen Therapy/Topical Oxygen Therapy

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Last Review Date: 04/23/2025

Effective Date: 05/01/2025

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Developed By: Medical Necessity Criteria Committee

I. Description

Hyperbaric oxygen therapy (HBOT) is a systemic medical treatment in which high pressures of oxygen are delivered to tissues. The patient is entirely enclosed in a pressurized chamber and breathes oxygen at a pressure greater than one atmosphere (the pressure of oxygen at sea level). Alveolar oxygen pressure is increased, causing a rise in plasma oxygen content which results in enhanced tissue oxygen delivery. Treatment may be carried out either in a monoplace (one person) chamber pressurized with oxygen or in a larger multiperson (two or more person) chamber pressurized with compressed air, in which case the patient receives pure oxygen by mask, head tent, or endotracheal tube.

Topical oxygen therapy, also called topical hyperbaric oxygen therapy, involves the direct application of 100% oxygen to an open wound base. The oxygen is delivered at a pressure just above atmospheric pressure. Topical oxygen therapy is administered through special chambers that fit around a limb or by using disposable polyethylene bags. Conventional oxygen tanks may be used as an oxygen source. Topical oxygen therapy can be performed in an office or clinic or in the home by well-trained patients. The efficacy of topical HBOT has not been proven due to the lack of controlled clinical trials.

II. Criteria: CWQI HCS-0036

- A. Moda Health will cover systemic hyperbaric oxygen therapy when all standard therapies have failed for up to 30 days of treatment and/or 30 treatments total including but not limited to 1 or more of the following:
- a. Non-healing diabetic wounds of the lower extremities in patients who meet **All** of the following 3 criteria:
 - i. Patient has type I or type II diabetes and has a lower extremity wound that is due to diabetes;
 - ii. Patient has a wound classified as Wagner grade 3 or higher;
 - iii. Patient has no measurable signs of healing after 30 days of an adequate course of standard wound therapy
 - b. Acute air or gas embolism
 - c. Decompression illness ("the bends")
 - d. Acute carbon monoxide poisoning

- e. Acute peripheral arterial insufficiency (i.e. compartment syndrome) requiring emergent surgical intervention
- f. Acute traumatic peripheral ischemia (including crush injuries and suturing of severed limbs)
- g. Cyanide poisoning
- h. Gas gangrene
- i. Compromised skin grafts and flaps
- j. Chronic refractory osteomyelitis, unresponsive to conventional medical and surgical management
- k. Idiopathic sudden deafness, acoustic trauma or noise-induced hearing loss when HBOT is initiated within three months after onset.
- l. Radiation necrosis (osteoradionecrosis, myoradionecrosis, brain radionecrosis, and other soft tissue radiation necrosis) as an adjunct to conventional treatment
- m. Prophylactic pre- and post-treatment for members undergoing dental surgery of a radiated jaw
- n. Acute cerebral edema (not covered for Medicare)
- o. Intracranial Abscess (not covered for Medicare)
- p. Exceptional blood loss anemia when there is overwhelming blood loss and transfusion is not possible due to no suitable blood available or religion does not permit transfusions (not covered for Medicare).
- q. Burns of the hands, face or groin area, or deep second-degree and third degree burns that cover 20% or more of the patient's body
- r. Necrotizing soft tissue infections, including refractory mycoses such as mucormycosis, *Conidiobolus coronato* and actinomycosis, severe enough to require multiple surgical procedures
- s. Actinomycosis as adjunct to conventional therapy
- t. Central retinal artery occlusion
- u. Radiation cystitis that is resistant or has failed conservative intervention
- v. Frostbite
- w. Other indications not listed with further investigation determined appropriate.

Note: A typical treatment session includes 90 minutes of treatment, 8-15 minutes of compression and 8-15 minutes of decompression (totaling to 106-120 minutes). Therefore, Moda Health will approve **4 units per session of HBOT**.

- B. Systemic hyperbaric oxygen therapy is considered investigational and NOT covered including but not limited to **All** of the following indications:
 - a. Brown recluse spider bites
 - b. Cutaneous, decubitus, and stasis ulcers
 - c. Chronic peripheral vascular insufficiency
 - d. Crohn's Disease
 - e. Anaerobic septicemia
 - f. Skin burns (thermal)
 - g. Senility
 - h. Myocardial infarction

- i. Cardiogenic shock
 - j. Sickle cell anemia
 - k. Acute thermal and chemical pulmonary damage, (i.e. smoke inhalation with pulmonary insufficiency)
 - l. Acute or chronic cerebral vascular insufficiency
 - m. Hepatic necrosis
 - n. Aerobic septicemia
 - o. Nonvascular causes of chronic brain syndrome (Pick's disease, Alzheimer disease, Korsakoff's disease)
 - p. Tetanus
 - q. Systemic aerobic infection
 - r. Organ transplantation
 - s. Pulmonary emphysema
 - t. Exceptional blood loss anemia
 - u. Multiple sclerosis
 - v. Arthritic diseases
 - w. Acute cerebral edema
 - x. Autism Spectrum Disorders
- C. Moda Health considers systemic hyperbaric oxygen therapy experimental and investigational for patients with **All** of the following contraindications to HBO. The safety and effectiveness of HBO for persons with these contraindications have not been established:
- a. Request is **NOT** for untreated pneumothorax
 - b. Hyperbaric oxygen is **NOT** being used concurrently with the administration of doxorubicin, cisplatin, bleomycin or disulfiram
 - c. Use of hyperbaric oxygen is **NOT** for premature infants (birth prior to 37 weeks gestation)
 - d. The request is **NOT** for topical oxygen therapy, including topical HBO administered to an open wound in a small limb-encasing device, as this is considered experimental and investigational because its efficacy has not been established through controlled clinical trials.
- D. **Limitations:**
- After initial authorization of up to 30 days of treatment and/or 30 treatments total, Moda Health will request a progress report prior to authorization of additional HBO treatment. Wounds must be evaluated at least every 30 days during administration of HBOT. Continued treatment with HBO therapy is not covered if measurable signs of healing have not been demonstrated within any 30-day period of treatment.

III. Information Submitted with the Prior Authorization Request:

1. Chart notes from ordering specialist including history and physical
2. Treatment history
3. Treatment plan including number of HBO sessions anticipated
4. Progress report for continued treatment with HBO

IV. CPT or HCPC codes covered:

| Codes | Description |
|-------|--|
| G0277 | Hyperbaric oxygen under pressure, full body chamber, per 30 minute interval |
| 99183 | Physician attendance and supervision of hyperbaric oxygen therapy, per session |

V. CPT or HCPC codes NOT covered:

| Codes | Description |
|-------|--|
| A4575 | Topical hyperbaric oxygen chamber, disposable |
| E0446 | Topical oxygen delivery system, not otherwise specified, includes all supplies and accessories |
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VI. Annual Review History

| Review Date | Revisions | Effective Date |
|-------------|---|----------------|
| 01/2013 | Annual Review: Added table with review date, revisions, and effective date. Dr. Engrav's signature added instead of Dr. Mills. | 01/23/2013 |
| 12/2013 | Annual Review: No changes | 12/19/2013 |
| 03/14 | Removed the recommended number of treatments from each indication and added review after 30 days or 30 treatments total. | 04/03/14 |
| 04/2015 | Annual Review: No changes | 04/01/2015 |
| 06/2015 | Added ICD-9 codes and Medicare Guidelines | 06/24/2015 |
| 01/2016 | Deleted ICD-9 codes, Added ICD-10 codes | 01/25/2016 |
| 05/2017 | Annual Review: Updated to new template, added not covered indications. | 05/24/2016 |
| 05/2018 | Annual Review: | 05/23/2018 |
| 05/2019 | Annual Review: No changes | 06/01/2019 |
| 05/2020 | Annual Review: No content changes | 06/01/2020 |
| 05/2021 | Annual Review: No content changes | 06/01/2021 |
| 04/2022 | Annual Review: no changes | 05/01/2022 |
| 04/2023 | Annual Review: added HBT treatment for frostbite | 05/01/2023 |
| 04/2024 | Annual Review: Added a note to clarify hyperbaric oxygen therapy treatment session is typically considered to include 90 minutes of treatment, 8-15 minutes of compression and 8-15 of decompression, and thereby we would approve 4 units per session of HBOT. | 05/01/2024 |
| 04/2025 | Annual Review: No changes | 05/01/2025 |

VII. References

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2. Brown, J. Hyperbaric oxygen therapy: Its use and appropriateness. Department of Health and Human Services Office of Inspector General. October 2000. OEI 06-99-00090.
3. CMS National Coverage Determination (NCD) for Hyperbaric Oxygen therapy (20.29), Publication number 100-3, Revised 6/19/2006, accessed on 05/23/2017 at: <http://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=12&ncdver=3&CoverageSelection=Both&ArticleType=All&PolicyType=Final&s=Oregon&KeyWord=hyperbaric&KeyWordLookUp=Title&KeyWordSearchType=And&bc=gAAAABAAAAAAA%3d%3d&>
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7. Merck Manual 17th Edition. Hyperbaric oxygen therapy. Section 21, Chapter 292.
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10. Villanueva E, Bennet MH, Wasiak J, Lehm JP. Hyperbaric oxygen therapy for thermal burns. Cochrane Database Syst Rev. 2004 ;(3):CD004727.
11. Wang C, Schwaitzberg S, Berliner E, et al. Hyperbaric oxygen for treating wounds. Archives of Surgery. 2003; 138(3):272-279.
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13. Wang C, Schwaitzberg S, Berliner E, et al. Hyperbaric oxygen for treating wounds: A systematic review of the literature. Arch Surg. 2003;138(3):272-280.
14. Weaver L, Hopkins R, Chan K, et al. Hyperbaric oxygen for acute carbon monoxide poisoning. The New England Journal of Medicine. October 2002; 347(14):1057-1067.
15. Wilkinson D, Doolette D. Hyperbaric oxygen treatment and survival from necrotizing soft tissue infection. Archives of Surgery. 2004; 139(12):1339-1345.
16. Physician Advisors

Appendix 1 – Covered Diagnosis Codes

| ICD 10 code | ICD 10 Code Description |
|-----------------|--|
| A42.0-A42.9 | Actinomycosis |
| A48.0 | Gas gangrene |
| D50.0 | Iron deficiency anemia secondary to blood loss (chronic) [overwhelming and transfusion is impossible because there is no suitable blood available or religion does not permit] |
| D62 | Acute post hemorrhagic anemia |
| E10.621-E10.622 | Type I diabetes mellitus with skin ulcer |
| E11.621-E11.622 | Type 2 diabetes mellitus with skin ulcer |

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|--------------------|--|
| G93.6 | Cerebral edema |
| H83.3x1- H83.3x9 | Noise effects on inner ear [noise-induced hearing loss when HBOT is initiated within 3 months after onset] |
| H91.20 - H91.23 | Sudden idiopathic hearing loss [idiopathic when HBOT is initiated within 3 months after onset] |
| I70.201- I70.92 | Atherosclerosis of native arteries and bypass graft(s) of the extremities |
| I72.1 - I72.4 | Other aneurysm of extremities |
| I73.00 - I73.1 | Other peripheral vascular disease |
| I74.2 - I74.3 | Arterial embolism of the extremities [acute peripheral arterial insufficiency] |
| I74.5 | Arterial embolism and thrombosis of the iliac artery [acute peripheral arterial insufficiency] |
| I87.2 | Venous insufficiency (chronic) (peripheral |
| L97.101- L97.929 | Non-pressure chronic ulcer of lower limb, not elsewhere classified |
| M27.2 | Inflammatory conditions of the jaws |
| M27.8 | Other specified diseases of jaw |
| M72.6 | Necrotizing fasciitis |
| M86.30- M86.39 | Chronic multifocal osteomyelitis |
| M86.40- M86.49 | Chronic osteomyelitis with draining sinus |
| M86.50- M86.59 | Other chronic hematogenous osteomyelitis |
| M86.60- M86.69 | Other chronic osteomyelitis |
| M86.8X1- M86.8X9 | Other osteomyelitis |
| M87.08 | Idiopathic aseptic necrosis of bone, other site [jaw] |
| R65.10 | Systemic inflammatory response syndrome (SIRS) of non-infectious origin without acute organ dysfunction |
| S07.0XXS-S07.9XXS | Crushing injuries of head |
| S35.511A-S35.516S | Injury to the iliac artery or vein |
| S38.1XXA-S38.1XXS | Crushing injury of abdomen, lower back, and pelvis |
| S45.001A-S45.009S | Injury to axillary artery |
| S45.101A-S45.109S | Injury to brachial artery |
| S47.1XXA-S47.9XXS | Crushing injury of shoulder and upper arm |
| S75.001A -S75.009S | Injury of femoral artery |
| S77.00XA-S77.22XS | Crushing injury of hip and thigh |
| S85.001A -S85.009S | Injury to popliteal artery |
| T57.3X1A-T57.3X4S | Toxic effect of hydrogen cyanide [with co-existing carbon monoxide poisoning] |
| T58.01XA-T58.04XS | Toxic effect of carbon monoxide from unspecified source, undetermined, initial encounter |
| T65.0X1A-T65.0X4S | Toxic effect of cyanides [with co-existing carbon monoxide poisoning] |
| T66.XXXA-T66.XXXS | Radiation sickness, unspecified, sequela |
| T70.0XXA-T70.9XXS | Effects of air pressure and water pressure |
| T79.0XXA-T79.9XXS | Air embolism (traumatic) [acute] |
| T79.A0XA-T79.A9XS | Compartment syndrome, unspecified, sequela |
| T80.0XXA-T80.0XXS | Air embolism following infusion, transfusion and therapeutic injection |
| T81.30XA-T81.33XS | Disruption of wound, unspecified, initial encounter |

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|--------------------|---|
| T84.7XXA- T84.7XXS | Infection and inflammatory reaction due to other internal orthopedic prosthetic devices, implants and grafts, initial encounter |
| T85.81XA T85.89XS | Other specified complications of internal prosthetic devices, implants and grafts, not elsewhere classified [compromised skin grafts and flaps] |
| T86.820 - T86.829 | Complications of skin graft (allograft) (autograft) [compromised skin grafts and flaps] |
| T87.0X1-T87.0X9 | Complications of reattached (part of) upper extremity |
| T87.1X1-T87.1X9 | Complications of reattached (part of) lower extremity |
| T87.2 | Complications of other reattached body part |

Appendix 2 – Centers for Medicare and Medicaid Services (CMS)

Medicare coverage for outpatient (Part B) drugs is outlined in the Medicare Benefit Policy Manual (Pub. 100-2), Chapter 15, §50 Drugs and Biologicals. In addition, National Coverage Determination (NCD) and Local Coverage Determinations (LCDs) may exist and compliance with these policies is required where applicable. They can be found at: <http://www.cms.gov/medicare-coverage-database/search/advanced-search.aspx>. Additional indications may be covered at the discretion of the health plan.

Medicare Part B Covered Diagnosis Codes (applicable to existing NCD/LCD):

| Jurisdiction(s): 5, 8 | NCD/LCD Document (s): |
|---|-----------------------|
| National Coverage Determination (NCD) 20.29 Hyperbaric Oxygen Therapy | |
| | |

| NCD/LCD Document (s): |
|-----------------------|
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| Medicare Part B Administrative Contractor (MAC) Jurisdictions | | |
|---|--|------------------------------------|
| Jurisdiction | Applicable State/US Territory | Contractor |
| F (2 & 3) | AK, WA, OR, ID, ND, SD, MT, WY, UT, AZ | Noridian Healthcare Solutions, LLC |