



HYPERBARIC OXYGEN THERAPY FOR DERMATOLOGY

HyOx treats the following approved and covered conditions:

- **Compromised skin grafts and flaps for preparation and preservation**
 - **Referral Protocol:** Immediately, when post-surgical site (including a Mohs surgical site) shows signs of dehiscence, necrosis, blistering, erythema, and infection
- **Delayed radiation tissue injury - soft tissue radionecrosis (STRN)**
 - **Referral Protocol:**
 - Immediately, for STRN or post Mohs micrographic surgery when site shows signs of dehiscence, necrosis, blistering, erythema, and/or infection
 - Prior to surgery in a previously radiated area
- **Brown recluse spider bites**
 - **Referral Protocol:** Within two to six days in the early stage of ulceration from the bite to improve wound healing by supersaturating the body with oxygen, boost the efficacy of antibiotic treatment and promote collagen production and angiogenesis to get hyper-oxygenated blood to the affected area
- **Pyoderma gangrenosum**
 - **Referral Protocol:** Adjunctively, with antibiotics and possible surgical debridement when the ulcerating skin condition causes lesions
- **Necrotizing soft tissue infections (necrotizing fasciitis)**
 - **Referral Protocol:** Immediately, after wound culture or MRI shows necrotizing soft tissue infection - refer in tandem with wound care, debridement and antibiotic therapy
- **Gas gangrene**
 - **Referral Protocol:** Immediately, upon diagnosis to stop the rapidly progressive infection and help reduce the risk of amputation
- **Chronic, non-healing wounds or infections resulting from Mohs surgery or acute thermal burn injury**
 - **Referral Protocol:**
 - Immediately, post traumatic thermal burn injury
 - For wounds in patients with diabetes, after 30 days of traditional wound care including antibiotic regimen isn't showing signs of healing progress

Benefits of Hyperbaric Oxygen Therapy

- Reduces the complications prior to and following surgeries in a previously radiated area
- Encourages the growth of new blood vessels (angiogenesis) in oxygen-deprived tissue and inhibits vasoconstriction
- Increases the efficacy and power of certain antibiotics in the treatment of necrotizing soft tissue infections (aminoglycosides and Pseudomonas)
- Decreases the amount of hypoxic leukocyte dysfunction occurring within an area of hypoxia and infection **(1)** and blocks the white cells ability to adhere to endothelial walls in skeletal muscle protecting from vascular damage **(2)**
- Enhances epithelial proliferation and migration in the human skin equivalent **(3)**
- Purges poisonous toxins by supersaturating the body's plasma with high concentrations of oxygen
- Reduces edema, expedites healing and decreases infection rates in thermal burns (*similar pathophysiologic changes as noted in ischemia reperfusion injury*)
- Promotes tissue growth for wound healing by stimulating vascular endothelial growth factor and increased granulation tissue formation and wound closure **(4)**
- Promotes healing of pyoderma gangrenosum and permits reduction of systemic corticosteroids **(5) (6)**

REFERENCES:

(1) Hunt TK, Lensey M, Grislis G, Sonne M, Jawez E. The effect of differing ambient oxygen tensions on wound infection. *Ann Surg* 1975; 181: 35-39.

(2) Zamboni WA, Roth AC, Russell RC, Graham B, Suchy H, Kucan JO. Morphological analysis of the microcirculation during reperfusion of ischemic skeletal muscle and the effect of hyperbaric oxygen. *Plast Reconstruct Surg* 1993; 91:1110-1123.

(3) Kairuz E, Upton Z, Dawson RA, Malda J (2007) Hyperbaric oxygen stimulates epidermal reconstruction in human skin equivalents. *Wound Repair Regen* 15:266-274.

(4) Boykin JV, Baylis C. Hyperbaric oxygen therapy mediates increased nitric oxide production association with wound healing: a preliminary study. *Adv Skin Wound Care* 2007; 20(7): 382-388.

(5) Wasserteil V, Bruce S, Sessoms SL, Guntupalli KK. Pyoderma gangrenosum treated with hyperbaric oxygen therapy. *Int J Dermatol* 1992 Aug; 31(8): 594-6.

(6) Hyun Il Seo, Hyun-Ju Lee, Koon Lee Han. Hyperbaric oxygen therapy for pyoderma gangrenosum associated with ulcerative colitis. *Intest Res*, 2018 Jan; 16(1): 155-157.

