

# Clinical Indications

## Clinically Approved Indications for Hyperbaric Oxygen Treatment

### **DIABETIC FOOT ULCERS**

At any given time, approximately 1 million diabetic patients have lower limb ulcers. Studies show that impeded wound healing appears to be a major risk factor for limb loss. Studies also show that hyperbaric oxygen (HBO)-treated patients are 8 to 40 percent less likely to undergo leg amputation than non-HBO-treated patients.

### **COMPROMISED SKIN GRAFTS/FLAPS/REPLANTS**

Following ischemia or vascular repair cases in which there has been decreased microcirculation or hypoxia, HBO has been demonstrated to maximize the viability and final functional level of the compromised nerve and muscle tissue.

### **NECROTIZING SOFT TISSUE INFECTIONS**

As an adjunct to debridement and systemic antibiotics, HBO adversely affects anaerobic integrity, minimizes edema and provides the substrate necessary to maintain viability and final functional level of the compromised nerve and muscle tissue.

### **THERMAL BURNS**

Adjunctive to standard treatment in a burn center, HBO helps maintain microvascular integrity, minimizes edema and provides the substrate necessary to maintain viability and final functional level of the compromised nerve and muscle tissue.

### **RADIATION TISSUE DAMAGE**

In proper coordination with surgical treatment, HBO has totally reoriented the approach to repairing radiation necrosis. It has been shown to stimulate growth of functioning capillaries, fibroblastic proliferation and collagen synthesis in the radiated bone and soft tissue itself. Previously irradiated tissue can heal normally with the grafting of soft tissue and bone.

### **AIR OR GAS EMBOLISM**

HBO, the primary treatment of air embolism, decreases the size and increases the diffusion gradient of embolized gas. It reduces mortality and remediates the development of permanent neurological damage. There is no alternative therapy.

### **DECOMPRESSION SICKNESS**

HBO is the primary treatment, as it establishes a favorable diffusion gradient to rapidly resolve the inert gas bubbles and provides oxygenation to ischemic and hypoxic tissues. There is no alternative therapy.

### **PROBLEM WOUNDS**

In a hyperbaric environment, wound healing is stimulated by increases in fibroblast proliferation, collagen production and capillary angiogenesis. HBO can restore a favorable cellular milieu in which healing and antibacterial mechanisms are enhanced.

### **REFRACTORY OSTEOMYELITIS**

HBO is used as an adjunct to antibiotics, debridement, nutritional support and reconstructive surgery in cases of refractory osteomyelitis, particularly in the presence of localized or systemic host compromise. HBO is demonstrably effective in sternal wound infections.

### **CRUSH INJURY/OTHER ACUTE TRAUMATIC ISCHEMIAS**

HBO increases tissue oxygen tensions to levels that allow host responses to infections and ischemia to become functional. Effects include enhanced oxygenation at the tissue level, increased oxygen delivery per unit of blood flow and edema reduction.

### **CLOSTRIDIAL MYONECROSIS (GAS GANGRENE)**

Recommended treatment is a combination of HBO, surgery and antibiotics. When used early in the treatment program and before surgery, HBO saves lives – it requires less dramatic surgery, radically diminishes the need for amputations and brings the rapid cessation of alpha-toxin production, which is the lethal complication of gas gangrene.

### **CARBON MONOXIDE POISONING AND SMOKE INHALATION**

Considered mandatory for severe CO poisonings, HBO hastens carboxyhemoglobin dissociation beyond a rate achievable by breathing pure oxygen at sea level, mitigating tissue poisoning and markedly reducing permanent neurological damage. When CO is complicated by cyanide poisoning, HBO may have a direct effect in reducing toxicity.

### **EXCEPTIONAL BLOOD LOSS ANEMIA**

In exceptional cases (religious objections and certain emolytic anemias) when cross-matched transfusion is not possible, the intermittent use of HBO dissolves enough oxygen in the severely anemic patient to support basic metabolic needs until sufficient red blood cells are restored.