The role of oxygen in wound healing has long been of interest to researchers and clinicians. This interest has shifted the means of oxygen delivery from large hyperbaric chambers, to portable direct topical application using localized chambers, and more recently to handheld portable systems that continuously diffuse oxygen directly into the wound bed. As it evolves, it continues to grow. Each oxygen delivery method has distinct differences and advantages. Although oxygen therapy can be used for a variety of causes, the focus of the oxygen therapy described here involves ischemia involving either macrocirculatory or microcirculatory elements, and therefore the most common applications, namely diabetic Focuses on foot ulcers. Hyperbaric oxygen therapy (HBOT) involves pressurizing a closed chamber with 100% oxygen for 90 minutes to 2.0 to 2.4 atmospheres absolute, 5 to 7 days per week. HBOT relies on the respiratory and circulatory systems to deliver oxygen to the wound bed . The pressure is increasing tremendously Saturate the plasma. However, oxygen supply relies on local capillary structures to reach the injured tissue. A poor or absent capillary bed can impede oxygen delivery to ischemic tissue. Traditional uses a high-flow oxygen concentrator in conjunction with a chamber or bag placed directly over or around the wound. applies oxygen directly to the wound and does not rely on underlying capillary structures to diffuse oxygen directly into the wound. TOT follows an intermittent treatment regimen, similar to HBOT. Most modern devices today are portable and use electrochemical oxygen generators to continuously produce pure humidified oxygen from the surrounding air. No external oxygen source is required. Oxygen (CDO) is diffused continuously (24 hours a day, 7 days a week) directly into the wound using an oxygen diffuser or oxygen diffusion dressing. Like TOT, CDOT does not rely on the underlying capillary structure of the wound bed, but unlike the continuous delivery of oxygen resembles physiological oxygen delivery. Biomolecular evidence for the effects of oxygen on wound healing, including all delivery means, is presented. Although the delivery mechanisms differ, the effects of oxygen at the cellular level are consistent However, the availability of oxygen to injured tissues varies depending on the route of administration. For HBOT, which relies on inspired oxygen, availability depends on arterial pO2, vascular supply, local capillary structure, and the diffusion distance of oxygen from the capillaries to the cells. Both edema and necrotic deposits increase diffusion distance. If local structures are compromised or vasoconstriction is present, wound perfusion can be severely impaired, so that inhalation of oxygen results in little or no increase in wound pO2 levels . Therefore, before starting HBOT, local vascular adequacy should be determined using methods such as transcutaneous oximetry. Therapies that deliver oxygen directly to the wound, such as TOT and CDOT, also require an adequate vascular supply, but are much less dependent on the local capillary structure. Debridement is a critical step for optimal diffusion of locally applied oxygen into the wound bed, as necrotic tissue increases the diffusion distance to the wound. Debridement has been shown to provide significant benefits when used in addition to conventional moist wound therapy. The importance of locally applied oxygen debridement was recently demonstrated in a double-blind, placebo-controlled clinical trial, showing that CDOT was more effective in patients who received frequent debridement than in those who did not. demonstrated significantly higher wound closure rates and overall wound closure . Diabetic foot ulcer. Hyperbaric oxygen therapy involves breathing pure oxygen in a pressurized room or tube. It's a well-established treatment for

decompression sickness, a hazard of scuba diving. Other conditions it can be used for include serious infections, bubbles of air in your blood vessels, and wounds that won't heal as a result of diabetes or radiation injury. In a hyperbaric oxygen therapy chamber, the air pressure is increased to three times higher than normal air pressure. Under these conditions, your lungs can gather more oxygen than would be possible breathing pure oxygen at normal air pressure. Your blood carries this oxygen throughout your body. This helps fight bacteria and stimulate the release of substances called growth factors and stem cells, which promote healing. Please note, this is a medical procedure and should only be undertaken with the guidance and supervision of a healthcare professional.