

Increased Access, Increased Applications for Wound Care and Hyperbaric Oxygen Therapy at Penn Medicine

▶ Among the most comprehensive programs of its kind in the nation, the Penn Wound Care & Hyperbaric Medicine Center at Penn Medicine is now offering access to hyperbaric oxygen (HBO₂) therapy for wound care management on the Philadelphia campuses of the Hospital of the University of Pennsylvania and Penn Medicine University City, and at Chester County Hospital in West Chester, PA, and Lancaster General Health in Lancaster, PA.

The Hospital of the University of Pennsylvania site features a dedicated walk-in multi-place hyperbaric oxygen chamber (Figure 1). Available 24 hours/day, this location is the only hyperbaric chamber in the tri-state area accepting emergency conditions and critical care patients for HBO₂ therapy. The chamber can accommodate as many as eight patients at a time. A nurse or paramedic trained in hyperbaric medicine is present within the chamber during clinical operations, and an attending physician certified in hyperbaric medicine is nearby at all times and can enter the chamber within a minute.

The Chester County Hospital, Penn Medicine University City and Lancaster General Health sites offer patients access to the largest and most advanced hyperbaric monoplace (single patient) chambers available (Figure 2). Patients lie within a clear acrylic 41" diameter chamber in an angled position, and have access to a fully integrated entertainment system during treatment. A nurse or paramedic trained in hyperbaric medicine is present at all times during clinical operations, and can remove a patient from the chamber within two minutes, if necessary. A physician is available at these locations during treatment hours, as well.

About Hyperbaric Oxygen Therapy

HBO₂ therapy has been found to ameliorate the physiologic and biochemical effects of hypoxic and ischemic conditions, including necrotizing fasciitis, arterial insufficiency, radiation-induced tissue damage, reperfusion injuries, and carbon monoxide and cyanide poisoning. The therapy has also proved to have bactericidal and bacteriostatic effects on anaerobic and clostridial infection (including gas gangrene).

All treatment plans are individualized according to diagnosis. Treatment plans typically call for at least 20 two-hour daily sessions.



▶ **Figure 1:** The walk-in multi-place hyperbaric chamber at the Hospital of the University of Pennsylvania site holds as many as eight patients at a time, and operates on a 24-hour schedule.



▶ **Figure 2:** All other locations for hyperbaric medicine at Penn Medicine offer patients access to the largest and most advanced hyperbaric monoplace (single patient) chambers available.

CASE STUDY

Following a car accident, Mrs. M, a 57-year-old female, had multiple fractures to her left foot and ankle resulting in open reduction and internal fixation of the ankle at a hospital in her community. Healing of the foot wound was complicated at three months by cellulitis, treated by surgical debridement and standard oral antibiotic therapy. In the week that followed, Mrs. M developed purulent drainage from the foot wound, and evidence of deep wound infection. A culture from the wound site was positive for methicillin-resistant staphylococcus aureus (MRSA).

Subsequently, Mrs. M had a partial removal of hardware and began 6 weeks of daily IV daptomycin, a lipopeptide antibiotic used in the treatment of systemic and life-threatening infections caused by Gram-positive organisms. At the conclusion of six weeks, a second wound debridement procedure took place, followed by the initiation of a second course of IV daptomycin.

HBO₂ is known to increase oxygen access to infected bone, restoring the bone's neutrophil-killing capacity and improving the transport of antibiotics. Thus, when it became apparent that her wound drainage was becoming a chronic condition, Mrs. M was referred to Penn Wound Care and Hyperbaric Medicine Center at Chester County Hospital, where she began a series of 40 sessions of HBO₂ therapy over 6 weeks, each of 90 minutes duration. Mrs. M continued to receive daily IV daptomycin during this time.

Mrs. M's healing was much advanced by the introduction of HBO₂ therapy. Within a month of its conclusion, she had complete resolution of infection and wound closure.

FACULTY TEAM

Penn Medicine offers one of the most comprehensive hyperbaric oxygen therapy programs in the nation, and is home to one of a handful of hyperbaric training programs accredited by the Accreditation Council of Graduate Medical Education (ACGME). Penn Medicine offers hyperbaric medicine and wound care management at two locations in Philadelphia and in Chester County and Lancaster County.

► **Penn Wound Care & Hyperbaric Medicine Center**

Hospital of the University of Pennsylvania

Kevin R. Hardy, MD
Jawad Nadim Kassem, MD, MPH
Matthew P. Kelly, MD
David Lambert, MD

Penn Medicine University City

Mark D. Binkley, MD

Chester County Hospital

David W. D'Angelo, DO

Lancaster General Health

John D. Affuso, MD
Jason A. Comeau, MD
Meghan Dermody, MD
Michael S. Flood, MD, FACS
Stacey L. Mazzacco, MD, FACS
Joseph F. Voystock, MD, FACS

ACCESS

**Penn Hyperbaric Medicine
Hospital of the University of Pennsylvania**

3620 Hamilton Walk
#40 John Morgan Building
Philadelphia, PA 19104
215.615.2564

**Chester County Hospital
Fern Hill Medical Campus**

915 Old Fern Hill Road
Building B, Suite 103
West Chester, PA 19380
610.738.2590

Penn Medicine University City

3737 Market Street
Suite 1125
Philadelphia, PA
215.662.1515

Lancaster General Health

2100 Harrisburg Pike
Suburban Outpatient Pavilion
Building 2112, Suite 327
Lancaster, PA 17604
717.544.3216