



Clinical Update

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A Rare Resource for Healing:

Accredited Hyperbaric Oxygen Therapy At University Hospital

The Hospital Advantage

University Hospital has the only hospital-based Hyperbaric Oxygen Therapy Unit in Central New York. It is also the only program in New York State accredited by UHMS, a distinction accorded to only 25 other facilities in the United States. The unit is available 24 hours a day, seven days a week, to care for medical emergencies. These include gas poisonings, amputations and other severe wounds, and, increasingly, gas embolisms that can occur during surgery.

Another advantage of University Hospital's Hyperbaric Oxygen Therapy Unit is its hospital setting. In the unlikely event of a problem during treatment, the unit's physicians and nurses have the support of other skilled health professionals and access to the resources of the entire hospital.

Hyperbaric oxygen therapy has traditionally been used to treat deep-sea divers suffering from decompression sickness known as "the bends." But in the past few decades, this unique therapy has proven effective in treating a variety of medical conditions, particularly those that have failed to respond to other therapies.

According to Wendy Merritt RN, clinical manager of University Hospital's Hyperbaric Oxygen Therapy Unit, "Hyperbaric oxygen therapy delivers 100 percent oxygen throughout the entire body, by using a special chamber that increases atmospheric pressure. The increased level of oxygen enters the blood and body tissues to promote healing."

Core Conditions

Conditions treated with hyperbaric oxygen therapy at University Hospital include: carbon monoxide poisoning; decompression sickness; air or gas embolism; acute anaerobic infections; chronic non-healing wounds; skin grafts and flaps; severe crush injuries; exceptional blood loss

anemia (when religious beliefs or an inability to cross-match blood make transfusion impractical); and late-effect injuries from radiation therapy. "The majority of cases we treat are for chronic radiation damage," reports Merritt. "We have excellent outcomes."

Periodically, there are claims that hyperbaric oxygen therapy successfully treats additional medical conditions. However, there is little or no clinical evidence to support these claims. Enrico Camporesi MD, physician director of University Hospital's Hyperbaric Oxygen Therapy program, notes, "At University Hospital we adhere strictly to treating only the conditions approved by the Undersea and Hyperbaric Medical Society (UHMS). This list is reviewed every two years." UHMS, whose mission is to promote sound treatment protocols and standards of practice, is recognized worldwide as the primary source of information on hyperbaric medicine.

"Enjoyable" Experience

Chronic non-healing wounds and acute infections also account for many of the cases treated at University Hospital. Retired New



Enrico Camporesi MD, physician director of University Hospital's Hyperbaric Oxygen Therapy program

Carbon Monoxide Poisoning
Decompression Sickness
Delayed Radiation Injuries
Osteoradionecrosis
Intracranial Abscess
Acute Traumatic Ischemias
Air or Gas Embolism

Select Problem Wounds
Thermal Burns
Exceptional Blood Loss Anemia
Refractory Osteomyelitis
Gas Gangrene

Hyperbaric Medicine

Skin Grafts and Flaps
Radiation Cystitis
Necrotizing Soft Tissue Infections

York State Corrections Officer Frank Ferrarccio, 63, of Auburn, was treated in its Hyperbaric Oxygen Therapy Unit last year.

In 1999, Ferrarccio had a cancerous tumor removed from his tongue. Forty-one radiation treatments followed his surgery and destroyed his natural teeth, requiring him to wear dentures. Over time, the rubbing of the dentures against his jaw resulted in a hole in his jawbone and a virulent infection. When six weeks of aggressive antibiotic treatment – Ferrarccio injected potent antibiotic drugs into a port in his arm every eight hours – failed to eradicate the infection, he was referred by his physician to University Hospital otolaryngologist Jack Hsu, MD, and subsequently to the hyperbaric therapy unit.

Within a few days, Ferrarccio began a course of 36 hyperbaric oxygen treatments. During each one-and-a-half hour treatment – with a nurse monitoring him from just outside the chamber – Ferrarccio watched television or movies. He says he thoroughly enjoyed the daily

interaction with the unit's staff. "In only a few days I felt as if I'd known the nurses for 50 years," he says. "They made me feel right at home."

A year after completing his treatment at University Hospital, Ferrarccio reports, "I'm doing great. I've just had a checkup with Dr. Parker and Dr. Hsu, and everything looks good."

Because hyperbaric oxygen therapy is not widely available – or well understood – the physicians and nurses of University Hospital's Hyperbaric Oxygen Therapy Unit place special emphasis on communication "We provide the referring physician with frequent status reports throughout the course of a patient's treatment," says Merritt. "Our registered nurses are happy to answer questions from physicians, patients or family members prior to, during, or after treatment."

Expert Clinicians

The staff of the Hyperbaric Oxygen Therapy Unit is nationally recognized for its skill and experience. Camporesi is board-certified in the subspecialty of undersea medicine and is a past president of UHMS.

Merritt chairs the Research Committee for the Baromedical Nurses Association. In addition to many years of practice in the specialty of hyperbaric medicine, the unit's physicians and nurses have experience in emergency and critical care medicine. Staff members are also involved in hyperbaric oxygen therapy research and have published clinical evaluation data for the past 10 years. In addition, staff members frequently provide advice to other hyperbaric oxygen therapy centers and are involved in extensive community education activities on carbon monoxide poisoning.

"Our expertise in hyperbaric medicine is acknowledged by the fact that administrators of the federal Medicare and Medicaid programs consider the hyperbaric medicine program at University Hospital to be a model for other facilities in the United States," reports Merritt. "Our unit is also very highly regarded by our patients and their families and consistently scores in the top percentile in patient satisfaction surveys."



Medication Evolution

New Pharmacology Program Promotes Quality and Fiscal Responsibility at University Hospital

University Hospital is reducing both medication risks and medication costs with new systems for prescribing, transcribing, dispensing and monitoring drugs.

Rolled out in phases during the past five years, the University Hospital Pharmacology Program was recently recognized by the New York State Health Department for its positive impact on patient safety. The program was also featured at the 2004 annual meeting of the National Association of Children's Hospitals.

In addition to promoting safe drug delivery, the program is credited with reducing the hospital's drug costs (by an estimated \$3 million between 2001-2004) and with dramatically increasing the self-reporting of adverse medication incidents,

according to David Lehmann MD, PharmD, director of the program and vice chair of the Department of Medicine.

System Overhaul

The carefully orchestrated program required no additional personnel or technology, but it involved intensive effort, major changes in the drug-delivery infrastructure – and the full support of hospital administrators, physicians, nurses and pharmacists.

Lehmann says the first challenge was reaching consensus on the most cost-effective, efficient drugs, "When the program was launched, University Hospital had an open formulary. Physicians prescribed medications according to individual preference," he explains. In the interest of increased patient safety, the physicians have since relinquished some of that autonomy.



Driving University Hospital's new Pharmacology Program: Director David Lehmann MD, Pharm D, and Pharmacy Director Roy Guharoy.



“Now we have a closed formulary system that prevents duplication,” reports Lehmann.

Literature-Driven

Through exhaustive reviews of the medical literature, University Hospital’s clinical pharmacists and physicians identified high-cost and high-volume drugs – such as anticoagulants – which could be replaced with drugs that are less costly but no less effective. Additional literature reviews led to protocols developed by physicians and pharmacists.

“One of our program’s major themes is empowerment,” reports Lehmann. “A doc-does-everything system doesn’t work efficiently. When you empower nurses and clinical pharmacists, the patient receives better care. We have the data to show that.”

Under the new system, clinical pharmacists are authorized to interchange drugs within classes, according to established protocols. They also staff a consult service for University Hospital physicians, issue computer alerts about potential drug interactions and monitor therapeutic drug activity.

“The opportunity to be involved in the education and training of medical students and residents is one reason I accepted a clinical pharmacist position at Upstate,” says William Darko, assistant professor of medicine. “In addition to didactic teaching, I round daily with the inpatient cardiology team and offer opinions on evidence-based, cost-effective therapy. This role has moved the pharmacist to the doorstep of the medical and nursing staff and casts the pharmacist not only as a dispenser but also as an important part of the healthcare team.”

Nurses Empowered

Nurses are also empowered to adjust their patients’ medication doses, if indicated. “With some of these drugs, such as heparin, you’ve got to get the dose exactly right,” explains Lehmann. “Too much heparin, and the patient bleeds. Too little, and the patient clots. If laboratory tests show the dose needs adjusting, the nurse can refer to the protocol and make the adjustment, without adding the the extra layer of complexity and involving already-busy house officers.”

A cornerstone of the program is a new system for reporting adverse medication incidents. “We divorced the former punitive process of random reporting,” Lehmann explains. “Under-reporting of medication errors substantially limits our ability to analyze and address their root causes. It allows for the continuation of unsafe practices.

Culture Change

“One goal was to change the culture regarding medication error reporting,” he says. “We made the new medication event reporting system anonymous and non-punitive. As a result, self-reported medication events increased from 15 to 175 per month.”

Handwriting Reduced

The program also streamlines the process of writing prescriptions. “When humans do more than a couple of steps, they’re prone to mistakes,” notes Lehmann. “We’ve taken a process that requires 72 handwritten numerals and reduced it by more than two-thirds. Again, we have data to show that the more people are required to write, the more mistakes they make.”



CNY Children's Hospital Update

In keeping with its child-friendly theme, the Central New York Children's Hospital at University Hospital will feature a 'tree house' entrance with an 80-foot elevator. Inside the new 'hospital within a hospital,' families, patients and visitors will find a state-of-the-art pediatric care facility with such amenities as a teen lounge, performance center, cafés, family resource room and indoor park.

These are some highlights from the final design plans for University Hospital's \$99 million six-story vertical expansion, which, in addition to the two floors dedicated to the children's hospital, features patient care floors for cardiovascular, neurology and oncology services.

"The proposed design of our vertical expansion brings to Central New York a health care facility that will enhance and enrich the care of patients and provide their families with a welcoming and warm environment," said Ben Moore, vice president for hospital operations and executive director of University Hospital.

The most distinct feature of the children's hospital design is what architects call the tree house, which will serve as the entrance to the children's hospital. Patients, families and visitors will enter a ground-level

reception area on Irving Avenue and take an elevator to the 11th floor, the first floor of the children's hospital.

There they will step out to a large area featuring a café, lounges, play areas and a gift shop. The 12th or top floor of the children's hospital will feature more dining space and an indoor park.

The children's hospital will also feature 50 private patient rooms with sleeping facilities for parents who wish to spend the night in their child's room. There will also be separate family sleep quarters on the 11th floor of the children's hospital. Nursing stations will be located between each room for closer proximity to patients. A 15-bed pediatric intensive care unit will be located on the 12th floor.

Other highlights include a pediatric chapel or meditation space, breast-feeding rooms, age-appropriate play spaces, family activity rooms, a family resource center and private consult rooms to accommodate physician and family discussions.

Design discussions included input from various stakeholders, including parents and patients. According to Parent Advisory Council member Sue Navagh, who participated in numerous design meetings, "Hospital administrators and the architects



have listened carefully to the needs of the families, and the design reflects that."

The two-story children's hospital will increase the space dedicated to pediatric medicine from 18,000 square feet to 87,000 square feet. Construction on the project is expected to begin in Spring 2005, with an opening date set for December 2007.

Total cost of the project is \$99 million. University Hospital has received the authority to finance the construction through bonding. Funds for the children's hospital are also being raised through a community-wide fundraising campaign which has raised \$9.3 million of its \$15 million goal. The children's hospital campaign will pay for upgrades to the children's hospital, such as the tree house entrance, endowed research professorships and to special equipment.



Vascular Surgery Growing...Again



The arrival of endovascular surgeon Michael J. Costanza MD continues the growth of the Vascular Surgery Section at University Hospital. The section was re-established last year with the arrival of Vivian Gahtan MD as chief. At the end of 2004, a third vascular surgeon will join the staff.

Endovascular Emphasis

Costanza, who recently completed a fellowship in vascular and endovascular surgery at the University of Maryland in Baltimore, offers minimally invasive procedures such as endovascular repair of abdominal aortic aneurysm (AAA). The procedure, which is ideal for high-risk patients, employs a collapsible tube – known as an endograft, or stent – which is threaded through the blood vessels to the abdomen. Once in place, the endograft expands to seal off the aneurysm and protect it from bursting.

“The use of a graft to repair arteries has been accepted practice for about 40 years,” explains Costanza. “What’s relatively new here is threading the graft through the arteries.

This approach requires only two small leg incisions, instead of the long abdominal incision required by the open AAA repair and patients recover much more quickly.”

Costanza also performs a full range of open vascular procedures as well as renal artery balloon angioplasty and peripheral artery angioplasty.

Treatment options will further expand later this year when Kwame Amankwah MD joins the Vascular Surgery Section and division of Interventional Radiology. Amankwah is trained in endovascular surgery and interventional radiology.

