



Welcome to Memorial Hermann Life Flight's quarterly newsletter for first responders. We hope you find the information contained within this publication interesting and informative. Our goal is to provide you with helpful articles about our services, case studies relevant to clinical protocols practiced on a daily basis, information about available educational opportunities, and any other updates that you as a first responder may find useful. We value the work you do and are grateful for your partnership as we work together to serve the people of Houston and its surrounding communities. Thank you.

Memorial Hermann Life Flight's Advanced Capabilities:

- Pre-hospital blood product administration
- LVAD
- ECMO
- Intra-aortic balloon pump
- Portable blood warmers
- Ultrasound diagnostics
- Double-load capability
- Larger cabin (allows for CPR in the aircraft)
- Clot-busting agents for STEMI
- Direct access to Cath Lab for STEMI
- Direct access to CT for strokes
- ISTAT portable blood analyzer
- Video-assisted intubations
- Hemostatic agents for blood clotting
- Direct contact with physicians
- Night vision goggles for all crew members during flight to improve safety
- Twin-engine aircraft for patient and crew member safety and extra weight-loading capabilities
- Pediatric and neonatal transport services

“Life Flight: Trauma Center Houston” Offers Injury Prevention Education Nationwide

In March, the country got a first-hand look at the lifesaving work being performed every day by the Memorial Hermann-Texas Medical Center (TMC) staff and nurses, affiliated UTHealth physicians and Houston's first responders. Through “Life Flight: Trauma Center Houston,” a six-episode docudrama series that aired on the Lifetime network, viewers watched unscripted, high-stress situations as clinicians worked to save lives at the nation's busiest Level I trauma center.

Produced by Boardwalk Entertainment, who approached Memorial Hermann with the idea in 2011, “Life Flight: Trauma Center Houston” provided the hospital with the unique opportunity to offer injury prevention education beyond the Greater Houston area and showed an up-close-and-personal perspective on the skill, talents and dedication of the region's first responders. As the initial and most important point of contact for Houstonians in need of immediate care, first responders display courage, dedication and expertise every day and are Memorial Hermann's valued partners in saving lives.

The Memorial Hermann Texas Trauma Institute is focused on injury prevention programs to help improve the overall health of the community. “Life Flight: Trauma Center Houston” highlighted the care our critically injured and ill patients receive at Memorial Hermann-TMC while demonstrating how each of us can improve our own health through injury prevention education.



The original series also shared an intimate view of the Memorial Hermann Life Flight® team, highlighting the crucial initial moments of care from first responders as they hand off the ill and injured to Life Flight nurses and paramedics. In addition to watching real-life action inside Life Flight helicopters and the trauma center, those who tuned in to the show saw the personal side of physicians, and clinicians as they strive to achieve work-life balance, attain their professional goals and manage the emotions that come with providing care to trauma patients.

“I'm so proud of our organization and what we have and will accomplish as we continue to grow. The series was proof that our people make a great team and our efforts directly impact the community in which we live,” said Memorial Hermann President and CEO Dan Wolterman. “Special thanks to everyone involved with the show. The collaboration required from frontline staff, support services and administration to facilitate months of filming in one of the busiest trauma centers in the nation was no small task. To every single person who participated, we thank you.”

While the show may be over, our work to care for Houston's ill and injured and improve the overall health of our community continues.

Texas Trauma Institute and John S. Dunn Sr. Burn Center Again Receive Verification from Esteemed Accreditation Organizations

After a highly successful site visit from surveyors last fall, the Memorial Hermann Texas Trauma Institute at Memorial Hermann-Texas Medical Center and Children's Memorial Hermann Hospital both recently received re-certification as Level I trauma centers from the American College of Surgeons (ACS). The verification process is administered by the Verification, Review, and Consultation Program, which was created by the ACS in 1987 in an effort to help hospitals improve trauma care. Valid for three years, the certification shows that a facility has successfully met or exceeded specific criteria put forth by the ACS' Committee on Trauma.

According to Tom Flanagan, vice president and chief operating officer at Memorial Hermann-TMC, the latest trauma survey results are the organization's most successful to date, with the lead surveyor from ACS commenting that the Texas Trauma Institute is the top in the country. "Both the adult and children's hospitals showed zero deficiencies while being lauded for a number of strengths across a multitude of areas," said Flanagan.

Trauma injury is the leading cause of death and disability for Americans under the age of 44 and is projected to be the leading cause of death for the population as a whole, worldwide, by the year 2020. As home to one of the busiest trauma centers in the nation, the Emergency department at Memorial Hermann-TMC treats more



than 72,000 adult and pediatric patients each year. It is one of only a handful of programs in the country that has a Level I trauma center for both adult and pediatric patients, a verified burn center, and its own air ambulance service – Memorial Hermann Life Flight®. The Institute is led by trauma surgeon and retired United States Army Colonel John B. Holcomb, M.D., FACS, director of the Institute and chief of the division of Acute Care Surgery and professor of surgery at UTHealth Medical School.

Additionally, the John S. Dunn Sr. Burn Center at Memorial Hermann-TMC – Houston's only comprehensive burn treatment center – was also recently re-designated as a Verified Burn Center. Led by renowned burn specialist James M. Cross, M.D., the Center's latest verification lasts through 2018, showing the program either met or exceeded a rigorous review of standards established as a joint effort of the American Burn Association (ABA) and the American College of Surgeons (ACS). In order to qualify for verification,

a burn center must have an annual average census of 100 patients or more and meet other stringent criteria. The site visit team from the ABA and ACS checks to ensure there is a well-communicated EMS plan, an appropriate organizational structure to support burn care, a specifically qualified multidisciplinary physician and support services team in place, and comprehensive burn service coverage.

According to the ABA, earning verification is a true mark of distinction for a burn center and indicates to patients, families and accreditation organizations such as The Joint Commission that the center meets exacting standards and provides high quality care. "The John S. Dunn Sr. Burn Center is an integral part of the Texas Trauma Institute and has an incredible amount of breadth and depth in terms of facilities, equipment and personnel to care specifically for burn patients," said Toni von Wenckstern, RN, administrative director of the Institute. "It's an important service to our community, and we are really proud to provide Houston's only verified burn center."

In addition to these most recent surveys, the Memorial Hermann-TMC Campus received a visit from The Joint Commission survey team in April, and the stroke survey will occur this spring as well, said Flanagan. The Commission on Accreditation of Medical Transport Systems (CAMTS) also honored Life Flight with CAMTS accreditation following its survey earlier this year.

Memorial Hermann-Texas Medical Center Works to Improve Capacity Surge Planning

As the Memorial Hermann-Texas Medical Center Campus (TMC) continues to see increased volume, hospital-wide efforts are underway to meet the community's growing acute care needs through improved capacity surge planning. A team including clinicians, physician leadership and hospital administration meets weekly to re-tool the full-capacity protocol so the hospital can avoid 'divert' status whenever possible. 'Divert' status occurs when a hospital is at capacity, and EMS is directed to other facilities to prevent overcrowding that may impede the delivery of quality care.

Hospitals nationwide are experiencing patient flow challenges, particularly those with higher acuity, says Toni von Wenckstern, administrative director of Memorial Hermann Texas Trauma Institute. "Nationally, most hospitals have an admission rate from the emergency department lower than 20 percent," she said. "Our higher acuity puts our admission rates between

35 and 40 percent, which can make patient flow particularly challenging."

According to Samuel J. Prater, M.D., medical director of emergency services for Memorial Hermann-TMC and assistant professor of emergency medicine at UTHealth Medical School, a number of projects to address patient flow in the Emergency department (ED) have been completed or are in progress.

"We are looking closely at all input, throughput, and output processes, from how we manage the front door to how we can get lab and consult results faster," said Dr. Prater. "There is also work being done to help improve boarding times for an open bed once it is determined the patient needs to be admitted." As one of only two Level I adult trauma centers, one of only two Level I pediatric trauma centers, and home to the only comprehensive burn treatment center in Houston, Memorial Hermann-TMC experiences a larger proportion of

admissions through the Campus' ED compared to other hospitals in the medical center.

Tom Flanagan, vice president and chief operating officer at the Campus, says the goal of the hospital is to always be available to EMS and the community. According to Flanagan, there are a series of triggers are in place to ensure that the hospital's capacity is at such a level where all patients can be treated safely. While the Campus has an average trauma "divert" status less than 1 percent of the time, it is still used very judiciously. "Only the senior administrator on duty can approve 'divert' status for our Campus; it's not a decision that can be made by a nursing director or a physician," said Flanagan. "We realize how difficult it is on our valued EMS partners when we – or any hospital – goes on divert. That's why we are making patient flow a priority, so that EMS can count on us, and the ambulance gets back into service as quickly as possible for those in our community who need it."

CONTINUING EDUCATION

Memorial Hermann Life Flight® offers the following classes and more. For a schedule, visit trauma.memorialhermann.org/ems-education. For more information or to register, contact Kelly Murphy, Life Flight education coordinator, at 713.704.6151 or Kelly.Murphy@memorialhermann.org.

- Advanced Burn Life Support (ABLS)
- Advanced Cardiovascular Life Support (ACLS)
- American Heart Association Heart Codes
- Aortic Aneurysm Management
- Blood Product Administration
- Cardiopulmonary Resuscitation (CPR) License Provider
- CPR-Heartsaver Non-license
- Emergency Nursing Pediatric Course (ENPC)
- Instruction on Difficult Airways
- Landing Zone classes
- 12-Lead Interpretation Course
- Metabolic Emergencies
- Multi-System Trauma Care
- Neonatal Resuscitation Program (NRP)
- Pediatric Advanced Life Support Course (PALS)
- Pediatric Airway Management
- Respiratory Emergencies
- STEMI Protocol Instruction
- Tourniquet Use
- Trauma Nursing Core Course (TNCC)

Young Mother Receives Lifesaving Care at Memorial Hermann Heart & Vascular Institute-Texas Medical Center after Routine Case of Bronchitis Turns to Deadly Heart Disease

On Nov. 2, 2012, Monica Clem was a young, healthy working mother who was only two weeks away from her 32nd birthday. On Nov. 3, Clem was fighting for her life after she lost her heartbeat on the helipad of Memorial Hermann-Texas Medical Center (TMC). Clem had arrived at work just 24 hours earlier. She was not feeling 100 percent, but was not so sick that she felt the need to take the day off work – she was still recovering from a recent case of bronchitis and wrote it off as such. She persevered, despite co-workers’ attempts to send her home. That night, she and her husband attended a rehearsal dinner for a friend’s wedding.

“I was short of breath all day; a simple walk to the copier had me gasping,” said Clem. “I just wanted the day over with so I could go to sleep.”

Hoping the symptoms that had gradually worsened throughout the day would be better or even gone when she woke up the next day, Clem tried to go to bed. Her mother told her she thought she might be having a heart attack and asked her to go to an emergency room. “I ignored her and continued on to bed. I was 31 years old; having a heart attack was the last thing I expected to happen to me.”

After a few hours of restless sleep, Clem woke up rather suddenly with the feeling



that something was wrong. She stood up to walk to the couch, so as not to disturb her husband. When she decided that she needed to return to her room, she stood up and made her way to her bed – but she didn’t quite make it.

“The next thing I remember was my husband standing over me asking if I’m alright.”

Clem fainted not once but twice that night and, after that, her husband called 911. The ambulance took her to Memorial Hermann

Memorial City Medical Center, where she was rushed to the Cath Lab to clear what the doctors believed were most likely blocked arteries causing a heart attack. To their surprise, her arteries were clear. There was no blockage. Within minutes of this discovery, her heart went into an irregular rhythm and she was shocked.

The defibrillation put Clem’s heart back to a normal rhythm, but it was already decided she needed a higher level of care. Her physicians called Memorial Hermann

Life Flight®, requesting the crew pick her up and transfer her to Memorial Hermann Heart & Vascular Institute–TMC.

While in flight, Clem coded – several times – even again while being unloaded on the helipad. Dr. Biswajit Kar, chief and program director of the Medical division at the Center for Advanced Heart Failure at Memorial Hermann Heart & Vascular Institute-TMC and UTHealth Medical School, was immediately paged to come evaluate the patient.

Dr. Kar quickly had a TandemHeart™ percutaneous ventricular assist device (pVAD)* placed in Clem’s chest due to the fact that her heart was working at less than 50 percent capacity. At that point, her physicians had given her about a 20 percent chance of survival.

“It was very dramatic,” Dr. Kar remembered. “The sky was overcast and it was raining but thanks to the Life Flight crew, they flew her in and as soon as she reached the Cath Lab, her heart stopped. We literally had minutes to put in the TandemHeart before brain damage would have happened. We were very, very fortunate that day that we got it in time.”

After evaluation, Dr. Kar was able to diagnose Clem with acute viral myocarditis. Acute viral myocarditis is a disease marked by damage and inflammation of the heart muscles. It is one of the most challenging diagnoses in cardiology. The disease is rarely recognized and its pathophysiology incompletely understood. It remains unclear why some patients develop myocarditis, although it has been associated with various infections. Symptoms of acute myocarditis vary, often starting with flulike symptoms – like Clem’s bronchitis – either of the

upper respiratory or gastrointestinal tract, before any cardiac symptoms appear. Cardiac symptoms may follow after a delay of days to weeks, including fatigue, dyspnoea, palpitations, malaise, and atypical chest discomfort. But the clinical cardiac signs and symptoms may be vague in many patients.

The exact number of myocarditis cases is unknown, but it has been estimated at several thousand patients a year in the U.S. alone. In fact, anywhere from 5 percent to 20 percent of sudden deaths in young adults are believed to be caused by myocarditis. The prognosis is variable but chronic heart failure is one of the major long-term complications.

For two weeks, Clem was put into a medically induced coma and on a ventilator while her cardiologists worked on curing the viral infection that brought on her heart failure. Doctors believe it was her bronchitis that somehow moved all the way down into her heart and then wiped it out.

“I don’t remember much from that time,” said Clem. “I know it was for a period of about 10 days and I vaguely remember at one point during my stay I had 16 IVs in my body. It was a hard time for me and my family. My daughter, who was only 2 at the time, wasn’t able to see me, and my husband spent as much time as possible at my bedside while also taking care of her. Another vivid memory is how often I was shocked because they couldn’t

“I feel great now. I’m so grateful for each day I get to spend with my daughter and my husband and – thanks to my doctors at the Center for Advanced Heart Failure – thankful that I have many, many wonderful years still to come with them.”

MONICA CLEM

keep my heart in normal rhythm. There was an outline of the shock pads on my body.”

Although she coded several times throughout her stay, Clem pulled through and after 17 days in the hospital, her heart recovered and returned to normal function. She attended six months of cardiac rehab and, in order

to avoid any possible future situations, she had an implantable cardioverter defibrillator (ICD) placed in her chest in September 2013 which she says – knock on wood – she hasn’t needed yet.

Fast-forward to today, and Clem is back in the swing of things – leading a normal life once again. She is healthy, working, and has the time and energy to be a doting wife and mother. “I feel great now. I’m so grateful for each day I get to spend with my daughter and my husband and – thanks to my doctors at the Center for Advanced Heart Failure – thankful that I have many, many wonderful years still to come with them.”

**The TandemHeart pVAD is a continuous-flow centrifugal assist device placed outside the body. Cannulas are inserted through the femoral vein at the thigh and guided through the vein into the left atrium of the heart. The pump moves oxygenated blood from the left atrium and sends it to one or both femoral arteries through arterial cannulas. It increases the capacity of oxygenated blood that a patient’s heart can pass through his or her body.*

Memorial Hermann Employee Performs Lifesaving CPR after Neighbor Suffers Heart Attack

Two days after Christmas this past December, Rick Roberts, APRN, family nurse practitioner at Memorial Hermann Medical Group, was walking his dog in the Montrose neighborhood of Houston when he noticed a group of people huddled around in a circle. As he walked closer, he could see a woman on the ground performing CPR. Roberts tied his dog to a tree and rushed over to see how he could help.



Rick Roberts, APRN

“When I saw the man lying on the ground, he’d lost all color from his face from lack of oxygen. I knew it was not a good situation.”

Roberts quickly broke into the crowd and began assisting with the CPR, performing chest compressions while the woman provided counted breaths. He could hear

frantic phone conversations with the 911 dispatcher and sensed confusion as to which cross streets described their location. He helped them sort it out and it was less than five minutes later when the fire trucks arrived, followed immediately by the paramedics and ambulance.

The paramedics delivered advanced life support and used a defibrillator to shock the man’s heart while he was still lying on the ground; they would use it a few more times en route to the hospital. Roberts gave the woman his business card and told her to call him if she needed anything. The ambulance sped off toward Memorial Hermann Heart & Vascular Institute-Texas Medical Center. Everyone was hoping for a miracle, but it did not seem likely.

But miracles happen every day, and this turned out to be one of them – thanks to Roberts’ CPR.

The man on the ground was Ralph Moorhouse. He and his wife, Karen, had been taking a

leisurely stroll in their neighborhood when he’d collapsed suddenly. Karen performed CPR as long as she could, but Roberts’ help is credited with ultimately saving Ralph’s life.

“Later when I spoke to firefighters, they said Rick’s CPR was the best bystander CPR they’d ever seen,” Moorhouse said. “Over and over again everyone has said how important the bystander CPR was. I mean, I was gone. The fact that Karen and Rick kept my oxygen moving meant I hadn’t lost any brain function during that whole time. Without their CPR, who knows where I would be today?”

After the ambulance arrived at Memorial Hermann Heart & Vascular Institute-TMC, the cardiovascular team determined that Moorhouse had suffered an ST-segment elevation myocardial infarction (STEMI), often referred to as a “widow-maker” and recognized as the deadliest form of heart attack. A STEMI occurs when a blood clot completely blocks an artery to the heart, and there is generally a very short window



On Jan. 28, the Houston Fire Department Station No. 8 held a luncheon honoring Ralph Moorhouse and all of the bystanders and first responders who played a part in saving his life. The Fire Department explained how important it was that all five links in the Chain of Survival were present:

- Immediate recognition of cardiac arrest and activation of the emergency response system
- Early cardiopulmonary resuscitation (CPR) with an emphasis on chest compressions
- Rapid defibrillation
- Effective advanced life support
- Integrated post-cardiac arrest care

of time in which the blocked vessel must be opened in order to prevent death. The Institute's expert clinical team was able to quickly clean out his arteries and put in the necessary stents, and despite all odds, Moorhouse gradually recovered.

"People call me the miracle man," he said. "But in reality, I wouldn't be here today if it wasn't for Rick and Karen, the EMS team from Station 8 and the team at Memorial Hermann. The miracle is that they were all there, and everything happened exactly as it did."

On Jan. 9, Karen Moorhouse dug out Roberts' business card and called to tell him they were going home.

"I cannot tell you how happy I was to

hear that, and quite frankly, how shocked," Roberts recalled.

After the Moorhouses returned home, they arranged a meeting with Roberts where the two men officially met for the first time. Both filled in the gaps in each other's stories of that day and the days following.

"The fact that Ralph could tell me everything he did is a true testament to the fact that his brain function was saved, despite the severity of his heart attack and the timeframe during which he was unconscious," Roberts said. "It's incredible that CPR did that. If Ralph's story can teach anything, it's that every person should learn CPR. You truly never know when you might need it to save a life."

Dr. James H. "Red" Duke Knighted



Renowned surgeon James H. "Red" Duke, Jr., M.D., the John B. Holmes Professor of Clinical Sciences at UTHealth Medical School and founder and medical director of Memorial Hermann Life Flight®, was knighted into the Order of Saint George during a special ceremony in February at Texas A&M.

The saint symbolizes bravery and dedication to faith and decency, and the Honorable Order

of Saint George recognizes the very best tankers and cavalymen among members of the U.S. Cavalry and Armor Association.

Dr. Duke, a former Texas A&M yell leader and 1950 graduate of Texas A&M, was in the Texas National Guard from 1948 through 1950 and also served two years as an Army tank commander during the Korean War.

6th Annual Texas Fallen Heroes Memorial Ride & Cook-Off May 16, 2015

This year's 6th Annual Texas Fallen Heroes Memorial Ride & Cook-Off, benefiting the Texas Line of Duty Death Task Force, is dedicated to the memory of the Life Flight 1 crew members - Captain John Pittman, Flight Nurse Lynn Ethridge, and Flight Paramedic Charles "Mac" Atteberry, - who died in the line of duty July 17, 1999. A short memorial service will begin at 10 a.m. when friends and family members of the crew will honor first responders who have given their lives. **For more information go to www.texasfallenheroesride.com.**

EMS Week May 17-23, 2015

The American College of Emergency Physicians in partnership with the National Association of EMTs celebrates National EMS Week May 17-23, 2015.

The hard work and dedication of EMS throughout the region is critical to the care Memorial Hermann-Texas Medical Center provides to the community. Thank you for being our valued partners in saving lives.

American Stroke Month May 2015

Each May, the American Heart Association/American Stroke Association recognizes American Stroke Month to raise awareness of the threat of stroke.

As a reminder, the Memorial Hermann-Texas Medical Center Emergency Department (ED) will transport stroke patients directly to CT upon their arrival. When transporting stroke patients to Memorial Hermann-TMC, please call ahead to the ED (713-704-1223) with your estimated time of arrival so our staff can be on standby, ready to assist.

Memorial Hermann Life Flight Joins in Groundbreaking for New Helipad

Memorial Hermann Life Flight® recently joined in a groundbreaking for a new helipad, complete with lighting and ambulance access, in Crosby, Texas. The helipad – a milestone project that has been in development by the city of Crosby for nearly a year and is scheduled to be completed in the fall of 2015 – will provide a centrally located rendezvous point for EMS units in Crosby to meet Life Flight at a safe and secure location. The new heliport will be the first of its kind on the Texas Gulf Coast to be equipped with helicopter GPS Point-in-Space Instrument Approach Procedure, allowing Life Flight to serve the region when weather conditions aren't ideal. Present for the groundbreaking were: Christy Graves, EMS director for Crosby; the voting board members of Harris County Emergency Service Districts 5 and 80; Eric von Wenckstern, Life Flight administrative director; Georgie Brown, chief flight nurse; and Todd Grubbs, chief pilot.

In December, Life Flight became the first helicopter air-ambulance program in Southeast Texas to be granted authority to conduct flights under instrument flight rules (IFR) by the Federal Aviation Administration (FAA). This new capability allows Life Flight crews to utilize aircraft flight instruments and advanced navigation systems rather than relying solely on visual cues or what is referred to in aviation as visual flight rules (VFR). In an effort to maximize these new IFR capabilities and further reduce patient transport time, the program will be adding its own proprietary GPS procedures to several of the hospitals

and other heliports in and around the Greater Houston area. These procedures will allow for direct takeoff and landing at multiple locations that historically might have been restricted to use under VFR only. Together, all of these advancements mean healthcare and pre-hospital providers across the region can now depend upon Life Flight's much-needed service more than ever.



The Life Flight fleet, which completes more than 3,000 missions each year, consists of six Airbus EC-145 helicopters, all of which are equipped and certified for single-pilot IFR operation. The John S. Dunn Helipad at Memorial Hermann-Texas Medical Center can accommodate four helicopters at one time and is considered one of the busiest helipads in the United States. Founded in 1976 by James "Red" Duke, M.D., who still serves as medical director of the program today, the service retrieves critically ill and injured patients in the Greater Houston area and beyond, 24 hours a day, 365 days a year.



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To transfer a patient, please contact the Transfer Center at 713.704.2500.

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