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Red Duke
Trauma Institute

MEMORIAL
HERMANN

Thank you for reading the Red Duke Trauma Institute 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, clinical protocols, available educational opportunities and any other useful updates. We value the work you do, and we are grateful for your partnership as we work together to serve the people of Houston and its surrounding communities. If you have ideas, suggestions or questions, please contact our Memorial Hermann EMS program directors at EMSFeedback@memorialhermann.org.

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To contact the crews from Memorial Hermann Life Flight, email LifeFlightPR@memorialhermann.org.

Team approach saves the life of severe burn victim.

A freak motorcycle accident almost claimed the life of Kingwood resident Gary Eakin. What began as an innocent ride around the block on a beautiful spring afternoon quickly went awry as the 60-year-old (former) motorcycle enthusiast returned home.

"The last thing I remember was walking my bike through the gate to the back," he says. His wife, Michelle Eakin, who was in the couple's home at the time of the incident, explains what happened next. "Through the window I saw Gary come up the driveway, and I heard the motorcycle rev up. Then I felt a bang. I looked out and saw a giant skid mark across the pool deck. I looked the other way and saw that Gary was pinned between the fence and his bike. He was knocked out. There was blood all over his head. I thought he was dead."

Frantic, Michelle called 911 and ran next door to the home of the couple's 33-year-old son, Gary, for help. But their son was unable to lift the bike off of his father. Neighbors arrived and began pulling boards off of the fence, finally freeing Gary from the wreckage. "It was so chaotic," says Michelle.

EMS ARRIVES ON SCENE

Minutes later, paramedics from Kingwood Fire Department 101 arrived on the scene, stabilized Gary and transported him to nearby Kingwood Medical Center. Michelle says that the medical team's initial priority was addressing Gary's head wound.

Tests revealed several broken bones on the left side of his face and a brain bleed. Physicians were concerned his injuries might obstruct his airway.

Upon removing Gary's clothes, however, the medical team's priorities changed. In addition to burns on his right hand, wrist and lower leg, Gary had sustained severe burns on his buttocks and genitalia. It was apparent he needed to be placed in the care of a specialized burn unit. At about 2:30 the next morning, Gary was transported to the John S. Dunn Burn Center at the Red Duke Trauma Institute at Memorial Hermann-Texas Medical Center.

"SOME OF THE WORST BURNS I'VE SEEN."

Affiliated burn surgeon Todd Huzar, MD, FACS, associate professor of acute care surgery at McGovern Medical School at UTHealth Houston, was the first to treat Gary in the Burn Center. "We excised deep burns to his right hand and wrist and to his right lower extremity," he says. "In addition, we further assessed burns to his genitalia and thighs. His were some of the worst burns I've seen, extending down to muscle in certain parts of his body."

Over the next eight weeks, as an inpatient at the Burn Center, Gary underwent more than a dozen surgeries, including multiple debridement and skin grafting procedures and a colostomy,

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performed by a team of surgeons that included Dr. Huzar, general surgeon John Harvin, MD, FACS, associate professor at UTHealth Houston, and plastic surgeon Daniel J. Freet, MD, FACS, associate professor at UTHealth Houston, and others.

As the family quickly learned, recovery from serious burn injury is not a straight line. “There were up days, down days, and twist and turn days,” says Michelle. “For the first few days, Gary was doing well, then he suddenly went downhill. Twice he was placed on a ventilator. We weren’t sure he was going to make it.”

FREE FLAP PROCEDURE

Among the six surgeries Dr. Freet performed on Gary was the debridement and coverage of the wound of the dorsum (top side) of Gary’s right hand and forearm, which were so severely burned that at one point doctors thought they might need to amputate. During an eight-hour “free flap” procedure, Dr. Freet moved approximately 13 inches of tissue from Gary’s right leg to the top of his hand and wrist.

Michelle was at Gary’s side from the start, visiting him every day in the Burn Center. “The family was always there,” says Dr. Huzar, “which makes a big difference.” Michelle provided family and friends with daily Facebook updates and asked for their prayers.

Dr. Freet believes Gary’s positive attitude played a significant role in his recovery. “He has such a positive attitude about his injuries and his recovery and has always been extremely pleasant and easy to work with,” he says.

THE ROAD AHEAD

Gary’s prognosis is good, but his journey is not over. He continues to go to occupational therapy to increase the passive range of motion of his right hand, and he will undergo



“I want everyone at the hospital to know how grateful I am. They are the most amazing people.” – Gary and Michelle Eakin

additional procedures to “debulk” (reduce the size of) the flap on his hand and wrist and to reverse his colostomy.

Gary says his motorcycle days are over. “I’ll never swing a leg over another bike,” he says. It was determined that a motorcycle malfunction triggered the accident. “The throttle was stuck wide open,” he says. It is believed that when his motorcycle struck the fence, his head hit the motorcycle’s speedometer, causing his head injuries. His burns were caused by the motorcycle’s exhaust system.

STRENGTH IN FAITH

The family is extremely grateful for the care they’ve received—from the EMS personnel who cared for Gary on

scene, to his surgeons, the nurses on the burn unit and his therapy team.

“I want everyone at the hospital to know how grateful I am,” says Gary, his voice cracking. “They are the most amazing people.” Michelle adds, “I would mention each one by name—they deserve it—but there are so many.”

Throughout their ordeal, the couple has found strength in their faith. “I would never have chosen for this to happen,” says Gary. “But I feel privileged and honored to have been chosen to walk this road.”

“We have seen so many miracles,” says Michelle. “We see the hand of God all over this.”

Memorial Hermann Life Flight® provides training and support for law enforcement, fire departments and EMS.

No one would argue that law enforcement, firefighting and emergency medical services are dangerous occupations. According to the National Law Enforcement Officers Memorial Fund, in the first six months of 2022, 129 federal, state, tribal and local law enforcement officers died in the line of duty, including 25 in Texas, more than double the number in any other state.

Firefighters and EMS personnel also face a litany of life-threatening hazards: overexertion, stress, medical issues, crashes, collisions and falling, and exposure to illness, among others. In addition, firefighters often serve as first responders at active shooter incidents and other hostile events.

As part of the largest Level I Trauma Center in the U.S., Memorial Hermann Life Flight is uniquely suited to help law enforcement and first responders protect their ranks, both human and K-9. Since 2015, Life Flight's Operational Medicine Group has provided training, education and tactical medical support to federal, state and local law enforcement agencies, including Special Response Teams (SRTs). And the team provides training and education for local fire departments and EMS agencies.

TACTICAL MEDICAL SUPPORT

George Tarver, III, who leads the group and was one its two founding members, explains how the team's tactical medical support services began and have evolved. "When Dr. Duke was alive, he was always concerned about local law enforcement agencies and officers being injured in on the job," he says. "At that time, when an SRT operation was being planned, Life Flight would be put on standby and would be dispatched by local EMS.



But local EMS were not always on scene, and it might take Life Flight 20 or 30 minutes to arrive and begin administering lifesaving care. So we began putting our Life Flight crew on the ground, in the 'cold zone' (out of harm's way), in a vehicle outfitted with the blood products and other equipment they carry onboard our aircraft. Now, because we're already onsite, we can start immediate lifesaving care while Life Flight is being dispatched to the scene."

TRAINING AND EDUCATION

In addition to medical support, the Op Med team provides several different classes and has trained over 50 agencies and over 1,000 officers, including nearly 700 K-9 officer handlers. Tarver says the trauma and active-shooter courses are the most popular with local EMS.

As part of Life Flight's K-9 program, two classes are offered: one for K-9 handlers and another for EMS, tactical medics and advanced care givers. Houston Police Department Senior Officer Paul Foster credits the first-aid training he received in Life Flight's K-9 Casualty Care Course with enabling him to save the life of his

K-9 partner, Nate, who was stabbed by a carjacking suspect.

LIFE FLIGHT CLASSES

- Tactical Emergency Casualty Care (TECC)
- Tactical Combat Casualty Care (TCCC)
- Stop The Bleed
- A.L.E.R.T.-AAIR (Active Shooter Training)
- K-9 Tactical Emergency Casualty Care (K-9 TECC)
- Cadaver Lab
- Pre-hospital Trauma Life Support (PHTLS)
- Tactical Paramedic Certification (TP-C)
- Advanced Medical Life Support (AMLS)
- Tactical Emergency Casualty Care-Law Enforcement Officer (TECC-LEO)

SPECIALLY TRAINED TEAM

Since 2015, Life Flight's Op Med team has grown to over 13 and includes four physicians, five flight paramedics and five flight nurses (who are also EMT-Ps), two of whom are also nurse practitioners. All have been specially trained for medical treatment/evacuation of injured officers or others injured in law enforcement operations. Several have served or currently serve in the U.S. Armed Forces or law enforcement.

Tarver says Life Flight is one of only a few air medical services with an operational medicine department, and the group has received several letters of accommodation for the program from federal agencies in Washington, D.C., as well as local police chiefs and sheriffs.

For more information about Life Flight Operational Medicine services, or to enroll in a training program for your agency, contact George Tarver III at George.TarverIII@memorialhermann.org or call (713) 875-9071.

Teen overcomes “a constellation” of traumatic injuries

Emilia “Mia” Tschen wants you to know her story. The 20-year-old Lake Jackson, Texas resident survived a traumatic car crash and lives to tell about it. Not so much about the crash itself, which took place 45 minutes from her home on the evening of September 28, 2019, but about her healing journey.

On the day of the accident, Tschen, then 16 years old, and three of her friends were headed home from a rabbit farm in Danbury, Texas, where Tschen was trying to get her grand champion show rabbit to breed. The breeding didn’t occur, and the breeder gave Tschen his buck so she could try again the next day. “I remember it as a very good day,” she recalls. “We were all very happy.”

“I DIDN’T SEE THE TRUCK.”

By the time they left, with Tschen at the wheel, it was dark. “I really don’t remember the accident all that well, just what people have told me,” she says. “I was making a left turn, and there was a blind spot. I didn’t see the truck.”

The driver’s side of Tschen’s car was stuck by a heavy-duty pickup truck hauling a horse in a trailer, traveling at an estimated 60 miles per hour. The driver and two passengers had just left the Brazoria County Fairgrounds, where they were roping horses. All three escaped injury.

Against her dad’s wishes, Tschen had placed her rabbit cage not in the trunk, as he had instructed, but in the back seat of her car, behind the driver’s seat. Tschen’s two girlfriends, Angie and Lainey, were sitting in the back seat, Angie in the middle and Lainey on the passenger side. “If Angie had been sitting behind me, she would not have survived,”



Tschen (second from right) shares her story at the Red Duke Trauma Symposium.

says Tschen. Both girls sustained injuries but survived.

Seconds before impact, Tschen’s boyfriend, Matthew, sitting next to her, pulled her toward him. Tschen credits that action with saving her life.

It took local EMS over an hour, using the Jaws of Life to pull Tschen from the wreckage. Memorial Hermann Life Flight was standing by to transport her to Memorial Hermann-TMC. Flight nurse Joel Benavides says Tschen was alert and oriented. “Prior to Life Flight’s arrival, she was in a lot of pain. EMS administered ketamine, which helped to resolve some of that. She had an open wound on her left femur, which we assumed was an open fracture. We applied a pelvic binder to support and stabilize her pelvis.”

In the air, the Life Flight team performed an ultrasound of Tschen’s chest and abdomen to look for

internal bleeding and found none at that time. “We kept her hemodynamically stable and were able to transport her to the ER for further evaluation and treatment,” says Benavides.

A CONSTELLATION OF TRAUMATIC INJURIES

Stephen Warner, MD, PhD, assistant professor of orthopedic surgery at McGovern Medical School at UTHealth Houston and Memorial Hermann affiliated trauma orthopedic surgeon, says Tschen sustained “a constellation” of traumatic injuries that included a head injury resulting in concussion and brain bleed, broken ribs, a pneumothorax, fractured pelvis and an open femur fracture.

“One of the very advantageous aspects about being at a trauma center such as Memorial Hermann-TMC is the amount of subspecialty care available, which provides patients with such a high quality

Tschen's head injury was cared for by the neurosurgery team, her lung injury by the trauma surgery team, and her pelvis injury and femur fracture by the orthopedic trauma surgery team.

of care," says Dr. Warner. Tschen's head injury was cared for by the neurosurgery team, her lung injury by the trauma surgery team, and her pelvis injury and femur fracture by the orthopedic trauma surgery team.

Dr. Warner says the orthopedic team's initial focus was to stabilize Tschen's potentially life-threatening pelvis injury and to temporarily stabilize her open femur fracture using an external fixator. A few days later, when she was more clinically stable, they definitively stabilized her femur fracture with a rod and screws inside the femur.

A week and a half after Tschen was admitted, the trauma surgery team performed surgery to treat Tschen's persistently collapsed lung. After several days spent in the ICU, she was released to inpatient physical

therapy at a community hospital near her home.

A TEAM SPORT

Dr. Warner describes trauma as a "team sport" and credits the first responders, including the local EMS agency and the Life Flight crew, with playing a critical role. "They are absolutely critical in their initial assessment and stabilization of patients and in getting patients from the prehospital setting into the hospital," he says.

Dr. Warner also includes the patient and her family as an integral part of the team. "We can do everything we can to fix injuries the patient presents with," he says, "but if the patient doesn't have the right mindset, motivation and mental fortitude to overcome their injuries and to make a functional recovery,

then the recovery's going to be much more limited. Tschen was able to stay mentally strong and to deal with everything that occurred in such a formidable way, with the support of her family."

In total, Tschen spent over a month in a hospital setting. Initially in a wheelchair, through hard work she graduated to a walker and then a cane. She returned to complete her junior year of high school after the Christmas break. And three years later, she is a marine biology major at Texas A&M Galveston.

She says it was easier for her to cope with the physical trauma than the emotional trauma. "I still feel some sadness," she says. "The hardest part was the guilt, of putting my friends and boyfriend in that position."

She says she has benefited from eye movement desensitization and reprocessing (EMDR) therapy, which she says helps her separate her emotions from the memory of it. And she says talking about her trauma with others also helps. After taking a public speaking course, Tschen spoke at the Red Duke Trauma Symposium in July 2022. She also shares her experience in casual settings with others who have undergone trauma.

Eric Herdejürgen's heart stopped for over an hour. ECMO brought him back from the brink.

When Eric Herdejürgen gets home from his job as a control operator at an oil company in Port Arthur, he likes to blow off some steam by getting on his Peloton® bike. One night this past January, the ride did not go as planned.

"After about 30 minutes, I started to feel some discomfort," Herdejürgen said. "I was feeling pain in my neck, arm and chest, and I eventually got to the point where I blacked out."

Herdejürgen, 48, always felt he was relatively healthy. He did have high blood pressure, which he was taking medication for, and he was a bit overweight, but never had any heart issues. That night, however, his wife, Aliyah, a cardiac nurse at Memorial Hermann Heart & Vascular Institute, recognized the signs of a heart attack and immediately called 911.

"I started to go downhill in the ambulance, and Memorial Hermann

Life Flight came and picked me up and took me to the Texas Medical Center," Herdejürgen said. "I don't remember the CPR, or the helicopter ride. I briefly remember being in the emergency room at Memorial Hermann when they shocked me. I was shocked a couple times."

Emergency staff performed CPR for almost 75 minutes; about 45 minutes of that was in transit in the Life Flight helicopter. Herdejürgen was found

to have a 100% occlusion of his left anterior descending artery, which is also informally called a “widow maker,” which leaves no question about its usual outcome.

Doctors placed Herdejurgan on the extra-corporeal membrane oxygenation (ECMO) machine. This advanced treatment is for critically ill patients with life-threatening heart or lung problems. The machine pumps blood from the patient’s body to an artificial lung (oxygenator) that adds oxygen to it and removes carbon dioxide, giving the heart and lungs a chance to rest. The blood is warmed to body temperature and pumped back into the body. Meanwhile, doctors placed a stent in Herdejurgan’s artery to restore blood flow. The procedure was a success.

Two pioneering heart doctors—Igor Gregoric MD, a professor of cardiothoracic with UTHealth Houston Heart & Vascular and program director of the surgical division for the Memorial Hermann Center for Advanced Heart Failure, along with Biswajit Kar, MD, a professor of cardiology at UTHealth Houston Heart & Vascular and chief of the medical division for the Center For Advanced Heart Failure at Memorial Hermann—were instrumental in laying the groundwork for patient bedside ECMOs and equipping Life Flight with the lifesaving machine. The Center for Advanced Heart Failure is celebrating its 10th anniversary this year, following a decade of rapid expansion.

“In our short existence, we have made tremendous advances in structural heart, minimally invasive surgery and catheter-based therapies,” Dr. Kar said. “We have also been involved with the development of new pumps and innovative technologies to improve health and survival. Our team is committed to doing whatever it takes to improve the lives of our patients.”



“Our team is committed to doing whatever it takes to improve the lives of our patients.” –Dr. Biswajit Kar

Herdejurgan spent three weeks in the hospital following his procedure, and then he began the long, arduous rehabilitation process.

“I’m still doing physical therapy and cardiac rehab. I’m about halfway through,” Herdejurgan said. “I’m also watching my diet and exercising. I’ve lost 50 pounds. I’m trying to eat better: no sugar, sodas or red meat, and more vegetables and fruit. I’m just eating clean.”

He takes several pills every day to regulate blood pressure, cholesterol, insulin and iron, and to help control his weight. He also has a pacemaker now. At this point, his heart is pumping at 35% capacity.

“It’s still hard to walk up the stairs. I can’t run or jog. I can only curl about 12 to 15 pounds, and I can’t do strenuous activities because I don’t

have the endurance,” Herdejurgan said. “At least I can take a shower now without feeling wiped out. I couldn’t do any of that before. It’s getting better, but it’s kind of slow.”

The experience has put life into perspective for Herdejurgan, his wife and his four sons. He’s more aware now that life is short and he wants to make the most of it. He encourages everyone to go for regular checkups, get their hearts checked and take steps toward a healthy lifestyle.

“I credit everyone at UTHealth Houston and Memorial Hermann for saving my life. They never gave up on me, and I cannot thank them enough,” Herdejurgan said. “I’ve been given a second chance, and I am going to make the most of it with my family and by doing the things I love.”

The 2023 Red Duke Trauma Symposium makes huge impact

On March 3-4, 2023, Memorial Hermann Health System Integrated Trauma Network hosted the 2023 Red Duke Trauma Symposium at The Westin Houston, Memorial City. For the first time, the Trauma Symposium was held in conjunction with the Red Duke Trauma Institute Orthopedic Trauma Symposium.

Across the two-day event, over 400 prehospital care providers, nurses, advanced practitioners and physicians participated in didactic lectures, case studies and hands-on training provided by leading specialists in acute care general surgery, emergency medicine, orthopedic traumatology and neuro trauma.

Among participants was Chance Brown, quality improvement coordinator for Acadian Ambulance Texas of Humble, Texas, who says, “My first Red Duke Trauma Symposium was nothing short of incredible. The instructors were knowledgeable in current medical trends and gave great tips and tricks on treating trauma patients.”

Attendee Elizabeth Breaux, lieutenant, Fort Bend County EMS, says, “The Memorial Hermann Trauma Symposium really is one of the best conferences around. The selection of topics and doctors that are chosen is always well thought out! I love how the entire staff, from Life Flight to nurses working the event and the doctors, are so personable! I recommend it to all services.”

The first day featured sessions on topics ranging from hemorrhagic shock, prehospital care (including the use of ketamine), pediatric trauma and forensics, to specialty trauma care (including trauma in pregnancy and in the geriatric population), mass casualty and mental health. During the lunch break, participants attended skills stations on difficult airways, FAST exams mega codes and more.

Day two focused on ortho topics and training and featured three multidisciplinary cases on polytrauma. In each, the patient and their prehospital and hospital

care providers presented their unique perspectives, followed by a Q&A and panel discussion. Six skills stations, manned by Life Flight crew members and others, enabled participants to improve their knowledge, skills and techniques through hands-on training and simulations.

“The event was a perfect blend of lectures and skills stations that set attendees up to be receptive to interact with the vendors,” says James T. Woodson, MD, chief executive officer of Pulsara. “It was a fantastic opportunity to connect with current prehospital and hospital users to update them on new functionality as well as highlight best practice workflows to make their lives easier. In addition, we had great exposure to downstream hospital care teams in a friendly environment that can help us expand our value throughout the Memorial Hermann Health System.”

Planning is already underway for next year’s events.



From scene to hospital: the importance of an accurate patient-care report

Understanding the patient's status on arrival can have a major impact on their outcome. EMS providers experience, firsthand, the changes that can occur in the short amount of time from the scene to the hospital, and hospital providers rely on a complete set of information. Accurate details from EMS ensure that patients receive the most appropriate hospital care, as quickly as possible.

Ben Ma, MD, assistant professor of emergency medicine, at McGovern Medical School at UTHouston and assistant medical director of the emergency department at Memorial Hermann-TMC, credits EMS providers with being the critical link between patients and the hospital team, especially when it comes to vital signs. "There is no other set of information that can make as drastic of a difference in the patient's care," he says.

VITAL SIGNS TELL THE STORY

One of the fastest ways to determine the most appropriate care is to fully understand the starting point. Vital signs provide a map to the best course of treatment, and knowing the numbers can save time and prevent pursuing options that should be ruled out. "Working from the vital signs makes a huge difference in how we approach the patient, and those numbers hold more keys to the diagnosis than many people realize," says Dr. Ma.

The assessment conducted when the patient first arrives at the hospital doesn't always include each piece of the puzzle that is important to emergency physicians. "We need to know what has changed from the



Ben Ma, MD, assistant professor of emergency medicine, UTHouston, and assistant medical director, emergency department, Memorial Hermann-TMC.

scene to the hospital," Dr. Ma says. If a patient's blood pressure is abnormal when EMS providers make the initial assessment, but the level returns to normal by the time they arrive at the hospital, that change is important information. "Studies have correlated an abnormal vital sign in the prehospital setting with more negative long-term outcomes, even if things look better when they get to us," says Dr. Ma.

GET THE BASICS

An accurate patient-care report gives the patient a better chance of a successful outcome. Dr. Ma says knowing the basics of heart rate, blood pressure, respiration rate, SpO2 and body temperature (along with blood glucose if stroke is suspected) helps his team provide more appropriate care.

CHALLENGES IN THE FIELD

Hospital providers know the challenges EMS providers face and understand that providing complete information isn't always possible, especially when dealing with situations like severe car crashes or non-compliant patients.

When a situation prevents collecting a full, accurate set of vitals, Dr. Ma advises EMS providers to communicate this upon arrival at the hospital. "When this happens, we understand," he says. "Just be sure to communicate with the emergency department crew that is taking over care of the patient. This transparency is very important."

A PARTNERSHIP WITH MEMORIAL HERMANN

At Memorial Hermann, we understand the complexity of the types of injuries and patients you treat. Our goal is to partner with you to provide the best possible patient care with a comprehensive range of specialties and expertise, available 24 hours a day, 7 days a week. For the most critically injured, we are ready to treat patients directly from the scene at our Level I Trauma Center that includes a 24/7 orthopedic trauma team, Scene-to-OR pathway and a Hybrid OR.