A DAY IN THE LIFE

At 8:30 on a Tuesday morning, the Surgical Intensive Care Unit (SICU) on Ellison 4 is quiet except for the beep of heart monitors and the gush of respirators. At the end of the hallway, a small cluster of clinicians in turquoise scrubs and white coats moves from one patient room to the next, waiting while a tall doctor with short curly hair and glasses enters each one, spends several minutes and returns.
TWO BOSTON POLICE OFFICERS stand outside one room. The tall doctor nods to them before heading in. Unfazed that his patient’s wrist is handcuffed to the bed, he leans over the young man, forges eye contact and questions him about his pain levels, head and neck. When he’s finished, the doctor steps back into the hallway, sliding the glass doors shut behind him. Some 20 surgical residents, SICU attending physicians, anesthesiology residents, nurses, nurse practitioners, trauma fellows, respiratory therapists and medical and nursing students are watching intently by the time he’s started speaking. George Velmahos, MD, PhD, MSEd, chief of the Division of Trauma, Emergency Surgery and Surgical Critical Care, is conducting this morning’s SICU teaching rounds.

VELMAHOS WAS APPOINTED chief of the MGH Trauma Center in 2004, after a career that included some of the busiest trauma centers in the world. The MGH center’s clinical leadership includes Hasan Alam, MD, director of the Surgical Critical Care Fellowship and director of Trauma Research; Marc de Moya, MD, director of the Surgical Clerkship; and Alice Gervasini, RN, PhD, Trauma nurse director. Unlike a traditional unit-based practice, the MGH Trauma Center is virtual: “We’re wherever the patient is,” explains Velmahos.

Prior to the center’s founding, trauma cases were handled by general surgeons on call. These doctors also had private practices, however, and the hospital’s leadership identified the need for a dedicated trauma unit. Unlike general surgeons, for Velmahos, de Moya and Alam, trauma is a full-time job, and effective care for their patients requires depth and breadth of experience, operating room expertise and an environment that’s capable of supporting complex clinical efforts. Massachusetts mandates a trauma system, and the MGH is a state-designated Level 1 Adult and Level 1 Pediatric Trauma Center – meaning it is able to take the most complex and challenging cases. The MGH admits about 2,200 trauma patients and another 2,000 emergency surgery patients per year, the vast majority of whom are from the Boston metropolitan area. If the president of the United States suffered a trauma while in the Northeast, he or she would likely be brought here.

The biggest difference between general surgery and trauma surgery is the difference between action and reaction.

In a methodical but almost lyrical tone – a native of Greece, English is his second language – Velmahos describes the patient’s condition: a male, early 20’s, gunshot wounds to the chest and abdomen. Gesturing with his hands and shifting his gaze to the different listeners, Velmahos explains the common presentations of gunshot wounds. He differentiates between an entrance and an exit wound, offering tips for proper clinical documentation.

“So this patient arrives,” Velmahos says, “and he is in a lot of pain and bleeding profusely. What do you do,” – he scans the group before settling on an anesthesia resident – “Daniel?”

Velmahos nods as the young doctor lists potential interventions, challenging him occasionally to explain how or why. The resident, though clearly on the spot, thinks his way through the issue. Satisfied, Velmahos then turns to his specialty: trauma surgery. “This is not elective, and time is short,” he says. He enumerates the roles of the members of the trauma team, explaining in encyclopedic detail the order of operations to stabilize the patient.

When he’s done, it’s time to go to the Emergency Department (ED) for the next case.
residency the surgeons are given more responsibility and authority under a philosophy of gradual autonomy. Says Velmahos: “I want to feel comfortable knowing that, if I needed it, they could operate on me.”

AT 9:05, an elderly woman with dementia and a bowel obstruction awaits Velmahos in the ED. Having examined her CT scan during that morning’s 7 am pass-off rounds, he has a good idea of the nature and severity of her illness, but will examine her before she is prepped for surgery. He enters her bay space in the ED and, putting on gloves, leans over her. Velmahos looks deeply into her eyes, smiles and introduces himself. Touching different parts of her belly, he asks, “Does it hurt here? How about here?” She doesn’t respond verbally but he notes the discomfort in her face.

She is brought up to the Main OR on Gray 4 and anesthetized while Velmahos scrubs in. As he opens the door of the OR, however, his beeper sounds off as a general trauma page alerts him that a new case requiring immediate attention is arriving in the ED: a man has been struck by a car in the vicinity of the hospital. Velmahos turns heel and heads back downstairs.

Thankfully, the pedestrian is not seriously injured. Overseeing a resident perform the physical examination, Velmahos helps the doctor diagnose a possible rib fracture and a broken nose. A CT scan is ordered and Velmahos returns to the OR, where his patient is ready for surgery and a senior surgical resident has scrubbed in. Joining him are four anesthesiologists, two scrub nurses, two circulation nurses, a medical student and two research fellows. This is nontrauma emergency surgery: the patient was admitted to the ED during the night, with a subsequent CT scan indicating advanced bowel disease. Her symptoms and pain were managed and she was fit into the next day’s schedule for an exploratory laparoscopy – an incision into the abdomen to view what’s going on inside.

The patient’s stomach, which the resident is swabbing with antiseptic orange iodine, is the only part of her body not covered in blue scrub material. The scrub nurse, keeper of the hundreds of knives, tweezers, clamps, scissors, sponges, gauzes and sutures, passes instruments with wordless skill. The resident begins to make the incision.

THE AFTERNOON PASSES: a meeting with the patient’s son to explain that his mother’s operation – the removal of her sigmoid colon and placement of a colostomy – had been successful; a trip to the ED to assist in the intubation of a patient with respiratory distress; a hurried lunch at the Trauma Journal Club, where residents
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give presentations on recent articles of interest in academic and medical journals; another trip to the OR to repair an inguinal hernia. At 3 pm, Velmahos visits his office for the first time that day.

Large windows provide a sweeping view southward onto the brick facades and green roofs of Beacon Hill. More than 30 certificates, awards and plaques line his walls, several denoting excellence in teaching. Velmahos quickly sorts through dozens of e-mails before sitting down with one of the two research fellows the Trauma Center supports. The Trauma Center’s research suite is impressive: among Velmahos, de Moya and Alam, 2007 saw the publication of 36 peer-reviewed articles. The trio has 13 manuscripts in preparation and 18 clinical projects currently under way, of which 10 are lab-based.

The MGH Trauma Center specializes in the study of the early phase of trauma. In the last 50 years, the capacity of EDs to treat trauma victims has increased significantly, and the majority of fatalities from trauma now occur before the patient arrives at the hospital, most commonly owing to uncontrollable blood loss. Alam currently is investigating a technique he calls “fluidless resuscitation,” which would prevent cell death related to blood loss by communicating directly with the DNA inside the cell. The therapy has successfully been tested in rats and pigs, and while the physiological consequences of preserving life in this way are not yet known, Alam and Velmahos believe that, with further study, fluidless resuscitation has the potential for widespread use in emergency medicine.

IT IS 10:30 AT NIGHT and Velmahos, who has spent the late afternoon and evening between the OR and ED, where he treated a victim of a head-on motor vehicle crash, is back at his office to catch up with paperwork. As the trauma surgeon on call, he has a long night and day ahead. Each senior trauma clinician – Velmahos, de Moya and Alam – is always either on call, post-call or pre-call.

In trauma, the hours are long and the work is demanding. Split-second decisions require clarity, superior knowledge and experience. Velmahos laments that fewer and fewer students are choosing trauma as a career path, but he admits that it’s not for everyone. “If my kid came to me and told me he wanted to manage money for a living, I’d tell him to go for it,” he says. “If he told me he wanted to be a surgeon, I’d say, that’s great too – but make sure you want it.”

Having worked on three continents and visited hundreds of hospitals over the course of his career, Velmahos is proud to call the MGH his home. The special systems in place to enhance patient safety, he says, make it possible for him to execute his job with total confidence.

Checking his schedule on his way back to the OR, he sees that he has two full OR shifts the next day. Velmahos frowns, then shrugs. “When I look at the hours I work, and the intensity of those hours,” he says, “I’m not sure there’s money that can pay for it. But I know that I could never do anything else.” He flicks off the light in the deserted office behind him. “This is what I love.” It is 2:30 am.