In Medical Triumph, Homicides Fall Despite Soaring Gun Violence

In October 2012, The Wall Street Journal got an inside look at the "ballet of organized chaos" that is a normal shift at the R Adams Cowley Shock Trauma Center in Baltimore, MD.

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BALTIMORE—The number of U.S. homicides has been falling for two decades, but America has become no less violent. Crime experts who attribute the drop in killings to better policing or an aging population fail to square the image of a more tranquil nation with this statistic: The reported number of people treated for gunshot attacks from 2001 to 2011 has grown by nearly half.

"Did everybody become a lousy shot all of a sudden? No," said Jim Pasco, executive director of the National Fraternal Order of Police, a union that represents about 330,000 officers. "The potential for a victim to survive a wound is greater than it was 15 years ago."

In other words, more people in the U.S. are getting shot, but doctors have gotten better at patching them up. Improved medical care doesn't account for the entire decline in homicides but experts say it is a major factor.

Emergency-room physicians who treat victims of gunshot and

knife attacks say more people survive because of the spread of hospital trauma centers—which specialize in treating severe injuries—the increased use of helicopters to ferry patients, better training of first-responders and lessons gleaned from the battlefields of Iraq and Afghanistan.

"Our experience is we are saving many more people we didn't save even 10 years ago," said C. William Schwab, director of the Firearm and Injury Center at the University of Pennsylvania and the professor of surgery at the Hospital of the University of Pennsylvania.

Daniel Borowy was a recent beneficiary. He was in the cafeteria of Perry Hall High School in suburban Baltimore on the first day of school this fall when he was shot in the chest at close range with a 16-gauge shotgun. The pellets broke several ribs, bruised a lung and spread through his chest and abdomen. The 17-year-old sophomore collapsed, as a guidance counselor wrestled the gun from the 15-year-old alleged shooter. Police said the boy smuggled the gun, unassembled, into the school.

Within minutes, Daniel was in the care of flight paramedics in a Maryland State Police helicopter en route to the R Adams Cowley Shock Trauma Center at the University of Maryland Medical Center. There, using new techniques borrowed from battlefield medicine, the doctors "saved his life," said Daniel's mother, Rosemary Borowy, weeks after the shooting. "They gave him back to us."

After a steady decline through the 1990s, the annual number of homicides zigzagged before resuming a decline in 2007, falling from 16,929 that year to an estimated 14,722 in 2010, according to FBI crime data.

At the same time, medical data and other surveys in the U.S. show a rising number of serious injuries from assaults with guns and knives. The estimated number of people wounded seriously enough by gunshots to require a hospital stay, rather than treatment and release, rose 47% to 30,759 in 2011 from 20,844 in 2001, according to data from the Centers for Disease Control and Prevention's National Electronic Injury Surveillance System-All Injury Program. The CDC estimates showed the number of people injured in serious stabbings rose to 23,550 from 22,047 over the same period.

Mortality rates of gunshot victims, meanwhile, have fallen, according to research performed for The Wall Street Journal by the Howard-Hopkins Surgical Outcomes Research Center, a joint venture between Howard University and Johns Hopkins University. In 2010, 13.96% of U.S. shooting victims died, almost two percentage points lower than in 2007. (Earlier data used different standards, making comparisons useless.)

The Howard-Hopkins analysis of the National Trauma databank, which collects information from more than 900 trauma centers in the U.S., also found a decrease in the death rate for victims admitted for stab wounds.

Criminologists say they are cautious about using such medical statistics to draw conclusions because of year-to-year inconsistencies in the number of medical institutions reporting data. The FBI collects annual homicide and aggravated assault statistics but doesn't have reliable numbers for gun and knife attacks.

Jens Ludwig, a law professor and the director of the University of Chicago Crime Lab, said he was leery of any number beyond reported homicides.

"Homicide is the one thing we're measuring well," he said. "Everything else is subject to much more uncertainty," including varying numbers of emergency departments contributing data, as well as differences in how injuries are classified.

No studies have quantified the relationship between emergency medicine and the recent decline in homicides. But many on the front lines of crime fighting believe they are linked. "Presbyterian, Mercy and Allegheny are our three main trauma centers in Pittsburgh. If it wasn't for those hospitals our homicide rate would be skyrocketing," said Maurita Bryant, Pittsburgh assistant police chief and president of the National Organization of Black Law Enforcement Executives. Homicides in Pittsburgh fell to 43 in 2011 from 54 in 2010.

A national study in the New England Journal of Medicine in 2006 concluded that the risk of death was "significantly" lower when patients were treated at trauma centers compared with regular hospitals. As of 2010, 90% of the U.S. population was within 60 minutes of a trauma center by helicopter or ambulance, according to the American Trauma Society. Driving the advances in treatment is a symbiotic relationship between trauma centers and military medicine. Military doctors honed the use of blood banks and helicopter transport during the Korean and Vietnam wars, said Thomas Scalea, Physician-in-Chief at the R Adams Cowley trauma center in Baltimore.

Civilian doctors made advances in the treatment of gunshot wounds during the late 1980s and early 1990s, when U.S. homicides peaked. They learned that patients were more likely to survive if doctors first stabilized them and then treated one injury at a time, Dr. Scalea said. That allowed the patient to

recover between operations.

Methods were refined by the military over the past decade in Iraq and Afghanistan. War doctors learned how to better deal with blood loss, a major cause of death from such injuries. Previously, doctors gave patients red blood cells, along with crystalloid fluids given intravenously, because they thought bleeding victims needed more oxygen from blood cells. Today, based on battlefield experience, patients are instead pumped full of platelets and plasma to aid in clotting.

Advances by the military also helped refine the work of emergency first-responders. Emergency medical technicians now administer less fluids to patients and maintain a lower blood pressure "so they don't bleed so fast," said Norman McSwain, an expert on pre-hospital trauma care and professor of surgery at the Tulane University School of Medicine.
State police paramedics in Daniel's case limited the fluids the teenager received at the scene of the shooting and a helicopter carried him to a trauma center.

The trauma team gave him plasma and platelets to stave off coagulopathy, a condition where the blood doesn't clot. In the 1990s, the team would have used techniques to keep more blood flowing to vital organs, which would have made controlling the bleeding more difficult.

The teen remained in critical condition through multiple operations over several days. Three months later, he returned to school. The wound, which still holds shotgun pellets, is healing.

Daniel's parents consider their son lucky. "From the first person who got a hold of him, to bringing him here, to what

they did here—all of it working together gave our son back," said Milton Borowy, the boy's father.

R Adams Cowley is the nation's oldest shock trauma center. It was named for the emergency-room surgeon who coined the phrase, the "Golden Hour," for the period immediately after the injury, when patients have the greatest chances of survival. The facility handles about 8,600 cases a year, one in six of which is caused by violence.

The work is costly. Trauma centers across the U.S. lose about $230 million a year treating the uninsured, according to estimates by the Trauma Center Association of America, a trade group that lobbies for better government funding. Emergency care is reimbursed by Medicaid at a rate less than the cost of treatment, the group said.

The Cowley trauma facility is operated like a mini-hospital, with 12 patient bays arrayed in a horseshoe shape. In the middle, monitors display patient vital signs. A platelet separating machine shakes bags of blood, readying the clotting agent. A portable X-ray machine provides instant imaging. A roof helipad serves emergency helicopter rescue units, including several from the Maryland State police.

In the middle of the high-tech tools is an off-white push-button telephone that takes calls from ambulances and helicopters. On a recent fall weekend, the phone rang at 11 p.m., drawing all eyes and ears. A voice on the telephone speaker said an assault victim was heading their way with head injuries. The speaker reported the victim was unresponsive and added such vital statistics as blood pressure and estimated time of arrival. The injuries didn't turn out to be life-threatening.

At midnight, the phone rang again and a voice squawked, "We have a GSW," shorthand for a gunshot wound. A man had been shot several times, including in the chest. Unit members donned plastic gowns. Blood, platelets and the X-ray machine were wheeled into Bay 3.

The patient arrived eight minutes later and 16 people squeezed into the bay. Some began examining the wounds. Others began the transfusion of fluids. Workers cut off bloodied clothes. The man bled so fast that empty bags of platelets and blood piled up on the floor.

Within 20 minutes, the man was wheeled to surgery and Bay 3 was cleaned and sterilized.

What happens here, said Dr. Scalea, is "the ballet of organized chaos." The center's mortality rate for gunshot wounds is about 4%, including the patients who are dead on arrival. "There are crappy things that come with every job and going down and telling some mama her kid is not coming home ranks right at the top of that," Dr. Scalea said.

On the other hand, he said, "To take a young kid, to take anybody who comes in essentially dead and return them to their family in a good functional state and to see them reintegrate back into society is fabulous. What can be a better feeling than that?"

The trauma unit phone stayed quiet until 1:40 a.m. A pedestrian was hit by a car and critically injured. It would take hours to stabilize the man for surgery.

At 1:43 a.m., the phone rang again: Another man was shot several times, including once in the face. At 2 a.m., before he

could be moved to surgery, the phone rang with the third gunshot victim of the night. Around that time, news arrived from surgery: The night's first gunshot victim had died.
Dr. Scalea said he pushes away emotions, otherwise "the next patient doesn't get my A game."

Twenty minutes later, a young man arrived with stab wounds, gaping holes in his side and chest. As his gurney rolled into Bay 6, workers were attending to 15 patients in 12 bays. The unit filled with more than 80 people, including emergency-medical personnel and police and hospital-security officers.

T. Daryl Reece, a detective in the criminal division of Baltimore County had been out on two calls overnight. He had been working a shooting when he learned of the stabbing, which took place at a gas station. "He had words with some other guys and he ends up here," the detective said.

By the time the sun rose, 24 people had been admitted, including five people shot or stabbed. One man died.

"Violence down?" said Dr. Scalea. "I don't think so."