



INOVA REGIONAL TRAUMA CENTER

2007 ANNUAL REPORT



EMERGENCY
& TRAUMA CENTER

COMMITMENT TO THE COMMUNITY

THE TRAUMA CENTER AS AN EXAMPLE



Samir M. Fakhry, MD, FACS,
Chief, Trauma and Surgical Critical
Care Services

The Inova Regional Trauma Center experienced another busy year in 2007. As the regional referral center for injury for all of Northern Virginia, our workload continues to grow as the community expands. Our cases are also becoming more and more challenging every day. Nonetheless, we continually strive to provide the highest quality trauma care to all our patients.

I'm happy to report that in the fall of 2007 we successfully attained re-certification as a Level 1 Trauma Center for the Commonwealth of Virginia. Currently, we are working hard to achieve re-verification as a Level 1 Trauma Center by the American College of Surgeons Committee on Trauma (ACS COT), the acknowledged gold standard for trauma care. We are confident that we will successfully pass this rigorous evaluation for the sixth consecutive time in the fall of 2008.

Since we became Virginia's first (and until last year, the only) ACS COT Level 1 Trauma Center in 1993, we have undergone re-verification every three years to ensure that we continue to meet the highest possible standards for trauma care. This is a voluntary process and does not give us economic or other competitive advantage — except for ensuring the delivery of exceptional care. Some people argue that it is costly and disruptive for hospitals to pursue such a designation. Our thinking is that anything less would leave us open to one important question: "Are we delivering the best care to our patients and the best service to our community?"

There are only 84 ACS COT-verified Level 1 trauma centers in the United States, representing the best trauma care in the country. When individuals in Fairfax County or other Northern Virginia counties are seriously injured, they will most likely be brought to the Inova Regional Trauma Center. They will receive state-of-the-art care delivered by a highly experienced and dedicated team of professionals who are available 24 hours a day, 7 days a week.

As always, the delivery of excellent trauma care depends on the hard work and dedication of many people, many of whom choose to participate in this program despite the pressure, challenges and the immense workload our center carries as the region's only Level I Trauma Center. I cannot thank all the caregivers who work with us enough. It is an honor and a privilege to work side by side with them. I learn something new from them nearly every day. Through their hard work and commitment to the community, they have set a standard of excellence in trauma patient care for all the citizens we are proud to serve. Thank you!

A handwritten signature in black ink, appearing to read "S. Fakhry".

Samir M. Fakhry, MD, FACS
Chief, Trauma and Surgical Critical Care Services
Inova Regional Trauma Center | Inova Fairfax Hospital

ABOUT THE INOVA REGIONAL TRAUMA CENTER – Our Region’s Only Level 1 Trauma Center

The Inova Regional Trauma Center, based at Inova Fairfax Hospital, is Northern Virginia’s only Level 1 trauma center for both adults and children. “Level 1,” the highest level awarded to a trauma center, is given only to centers that can provide the highest level of specialty expertise, as well as meet or exceed national standards. The Inova Regional Trauma Center was the first, and until last year the only, trauma center in Virginia verified by the American College of Surgeons as a Level 1 trauma center.

With more than 3,500 trauma patients treated annually from Fairfax and surrounding counties and states, our team of trauma surgeons, emergency physicians, anesthesiologists, specialty surgeons and nurses is available around-the-clock, 365 days a year to treat life-threatening injuries including car crashes, falls, industrial incidents and gunshot wounds. Burn patients are stabilized and then transferred to a burn center.

THE IMPACT OF TRAUMA – The Leading Cause of Death for Ages 1-34

Traumatic injury accounts for nearly 140,000 deaths each year and is the leading cause of death in the United States for individuals ages 1 to 34. An additional 10 to 13 times as many more Americans are disabled by injury each year, with brain injuries and paralysis being the most debilitating. Since those who die of injury are mostly young, trauma accounts for more years of lost productivity before age 65 — more than heart disease, cancer and stroke combined.

Injury is America’s most costly health issue — accounting for \$300 billion in annual economic costs. These include the direct cost of medical care coupled with the loss of earnings due to disability and premature death. The cost in human terms, for victims and their families, is enormous and cannot be quantified.

The Inova Regional Trauma Center plays a central role in reducing the economic costs of injury by saving lives and helping the injured back to productivity.



EDUCATION AND OUTREACH

REBUILD – Celebrating 13 Years of Service



Former trauma patients and Rebuild volunteers, Robert France and Harry Fiske, visit a trauma patient as part of Inova's Rebuild program, at the Inova Regional Trauma Center.

Inova's Rebuild program focuses on the psychosocial concerns of the trauma patient. Through support groups that include general trauma, spinal cord injury and traumatic brain injury, recovering patients, as well as their family and friends, help each other with the long-term consequences of their injuries. Rebuild also gives trauma survivors the opportunity to use their experience to help others by visiting hospitalized trauma patients.

Rebuild also educates local healthcare providers via community presentations designed to enhance the providers' understanding of the trauma experience and increase their ability to address the emotional needs of trauma patients.

2007 REBUILD HIGHLIGHTS

- Rebuild's five support groups held 49 educational and support group meetings for a combined attendance of 457 survivors and family members.
- Fifteen Rebuild volunteers provided 126 peer-to-patient visits to hospitalized trauma patients.
- Rebuild offered training sessions to 19 different groups of training professionals with a total of 595 participants.

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Daniel Stanto, LCSW, Assistant Program Coordinator

CIREN – An Award-Winning Research Program

The Crash Injury Research and Engineering Network (CIREN) is a multi-center research program involving a collaboration of clinicians and engineers in academia, industry and government. The program brings together data on patient injuries, personal interviews, findings from the crash site and vehicle wreckage with the goal to identify motor vehicle design features that offer maximum occupant protection and to improve the diagnosis, treatment and rehabilitation of people involved in motor vehicle, pedestrian or motorcycle crashes.

In 1999, Ford Motor Company awarded a \$1 million dollar grant to the Inova Regional Trauma Center to establish a CIREN center in Northern Virginia. In September 2002, the Inova Regional Trauma Center entered into an agreement with Honda R&D Co., Ltd, to continue the CIREN project for an additional five-year period. During this funding period, the Honda Inova Fairfax Hospital CIREN Center agreed to include the study of pedestrian crashes.

Since 1999, the CIREN center has enrolled more than 240 severe motor vehicle and 60 pedestrian crashes. The experience and

methodology of pedestrian crashes has been presented at local and national conferences, and an article was accepted for publication by the Journal of Emergency Nursing's June 2007 edition. Our pedestrian research, which has focused on the wrap distance (how far toward the windshield the pedestrian moved during impact. The further up the pedestrian moves, the more severe the injury) of the pedestrian and associated head injuries, was accepted in the proceedings of the 2007 Enhanced Safety of Vehicle (ESV) conference.

To improve the safety of the motor vehicle occupant, our center's current research is focusing on side-impact air bag deployment in side-impact crashes.

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Gregory Stadter, Crash Reconstructionist

INJURY PREVENTION — A Full-Time Commitment

Preventing traumatic injuries remains a priority for the Inova Regional Trauma Center, which is why we hired a full-time injury prevention coordinator in 2007 to plan and implement educational and outreach programs in our local community.

Our 2007 community outreach programs included:

- The Trauma Prevention Coalition, which is comprised of members from a variety of community organizations including Fairfax County Police, Fairfax City Police, Fairfax County Public Schools, the Fairfax County government and the Poison Control center—all with a vested interest in reducing injury and trauma.
- The Safe Kids Fairfax Coalition, which implements community-based programs and events aimed at reducing injury to children aged 14 and under.
- The Substance and Alcohol Focused Education (SAFE) program, which aims to educate adolescents who have already begun to use alcohol and/or drugs of the adverse consequences of engaging in such activity.
- A Bike Safety Rodeo in partnership with Fairfax County Police Department. Also, children at Mount Vernon Woods Elementary in Alexandria received bike safety training and new bike helmets at no cost.
- Presentations on child passenger safety at elementary schools in Fairfax County during Parent Back-to-School nights.
- “Teen Driving Safety Day” at the Fairfax County Government Center.
- Child passenger safety education at the Fall for Fairfax Festival and the Fair Oaks Hospital Kids Health and Safety Fair at Fair Oaks Mall.
- Reality Check, an in-hospital program aimed at educating teens and their parents about the real-life consequences of unsafe driving behavior.
- A teen to teen education program on safe driving and alcohol and drug abuse for implementation in local high schools.
- Children’s safety fair at Inova Fairfax Hospital to teach elementary school children how to prevent common injuries.

Ashley El-Zein, MPH, *Injury Prevention Coordinator*
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EDUCATION AND OUTREACH

LECTURES AND SYMPOSIUMS – From Preventative Care to Combat Care

Our 2007 professional educational programs included:

EMERGENCY MEDICAL SERVICE (EMS) NIGHT

EMS Night was held twice in 2007 with the support and participation of the Aircare Flight Team. The topics included recognizing and managing thoracic trauma in the field; and the participants reviewed a pedestrian CIREN case. Both nurses and paramedics from the Northern Virginia region attended.

TRAUMA CAREGIVER'S LUNCHEON

A quarterly luncheon was held for nurses, physical therapists, occupational therapists and residents, covering topics ranging from providing trauma care in a combat environment to maintaining oxygenation of the spinal cord injured patient. A code-blue survivor described life before and after the trauma and how everyone on the trauma team helped her.

NURSING UPDATE SEMINAR

This seminar was attended by nurses from the Northern Virginia region. The topics presented included compartment syndrome, shock, adolescent's response to pain, and assessment of head injuries.

TRAUMA EDUCATION DAYS

In conjunction with the Inova Learning Network (ILN), the Trauma Clinical Nurse Specialist (TCNS) presented the following topics: pediatric trauma; the use of propofol in the adult Emergency Department (ED); head injuries, including ventriculostomies; a trauma

novice to expert lecture; and spine immobilization. Several full days of trauma education for specific areas were developed. Topics taught were shock, nutrition in the trauma patient, care of the patient with fractures, and screening and brief intervention for trauma patients. Posters for cervical spine clearance and compartment syndrome were made and rotated to all units caring for trauma patients.

TRAUMA SYMPOSIUM

The trauma symposium was attended by nurses and paramedics from the Northern Virginia region. Education for the pediatric trauma population included current trends in prevention and care, role of the medical examiner and preservation of evidence. Other topics presented were the management of the Virginia Tech disaster, controversies in trauma care and screening, and brief intervention for alcohol. A pediatric and adult airway lab was well attended and included an opportunity for EMS attendees to gain hands-on experience.

A trauma education academy was also started that includes discussion of the curriculum content and posting of the content on Inova's employee Web site.

For more information on our professional education programs:

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EXTERN PROGRAM – An In-Depth Look at Trauma Medicine and Care

This program is offered to pre-professional students considering careers in medicine, nursing or other allied health professions in an effort to attract individuals to a career in trauma medicine. The program, held twice a year, is an intensive three-week introduction to the world of trauma medicine, emphasizing the coordination of the multi-disciplinary team required to care for trauma patients.

From the Fairfax County Fire and Rescue Department who attend to the patient at the scene to Inova Mount Vernon Hospital's inpatient rehabilitation program that prepares patients for their return to their daily lives, the students follow a mentor in each area required in the complex care of a trauma patient.

For more information on our extern program: 703-776-2274



FPO

THE PEOPLE BEHIND THE MEDICINE

TRAUMA SERVICES STAFF

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*Data Specialist
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TRAUMA COMMITTEE MEMBERS

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Colleen Beres, BSN, RN
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Intermediate Care*

Robert Cates, MD
*Chairman
Emergency Department*

Joan Cook, RN
Tower OR

Keith Dockery, MD
Pediatric Intensivists

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*Battalion Chief
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*Captain
Fairfax County Fire and Rescue*

RESEARCH – A Commitment to Advances in Patient Care

The Inova Regional Trauma Center is committed to the improvement of patient care through research. While many trauma centers in the United States have been closed due to the rising cost and the decreased cost recovery of providing trauma care, several of our research studies have focused on improving care while maintaining, or decreasing, costs.

Our trauma center has also published research demonstrating the safety and positive effects of pre-hospital airway intubation for seriously ill trauma patients. This year, the Inova Regional Trauma Center hosted a forum of the top researchers in our area to write a critical consensus statement about pre-hospital intubation. This statement will provide national guidelines for paramedic training and practice.

In addition, we also studied how we can best respond to women involved in car crashes in early pregnancy, and, through research, we determined that in the absence of other indications, the obstetrics staff were best able to provide for her needs with the trauma team taking a secondary role.

Our research has also provided important findings for the development of the surgical residency program — staffing the Emergency Department for trauma and cost recovery. New this year is the Surgical Residents' Research Forum initiated and staffed by Trauma Services. This program provides surgical residents with systematic education in research methods and mentoring in the execution of original research. This support will increase the number and quality of research studies in trauma and surgery.

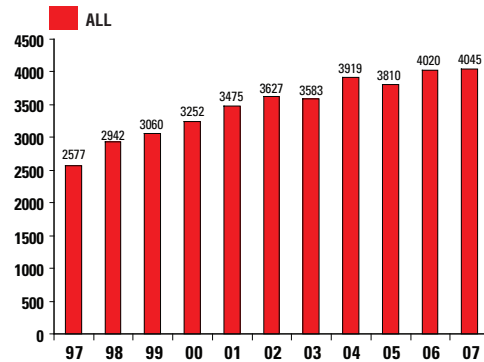
2007 TRAUMA SERVICES – Publications and Presentations

- 1 Davis DP, Fakhry SM, Wang HE, Bulger EM, Dormeier RM, Trask AL, Bochiccho GV, Hauda WE, Robinson L. Paramedic rapid sequence intubation for severe traumatic brain injury: perspectives from an expert panel. *Prehosp Emerg Care* 2007;11(1):1-8.
- 2 Fakhry SM, Robinson L, Hendershot KM, Reines HD. Surgical residents' knowledge of documentation and coding for professional services: an opportunity for a focused educational offering. *American Journal of Surgery* 2007;194:263-7.
- 3 Greene W, Robinson L, Rizzo AG, Sakran J, Hendershot KM, Moore A, Weatherspoon K, Fakhry SM. Pregnancy is not a sufficient indicator for trauma team activation. *Journal of Trauma: Infection, Injury and Critical Care*. 2007;63(3):550-5.
- 4 Greene W, Robinson L, Rizzo AG, Sakran J, Hendershot KM, Moore A, Weatherspoon K, Fakhry SM. Pregnancy is not a sufficient indicator for trauma team activation. Presented at the Eastern Society for the Surgery of Trauma. January, 2007.
- 5 Hearrell C, Burke C. Walking Through the Ages: The Impact of Pedestrian Injury. *Journal of Emergency Nursing* 2007;33(3):217-22.
- 6 Ivarsson BJ, Manaswi A, Genovese D, Crandall JR, Hurwitz SR, Burke C, Fakhry SM. Site, type, and local mechanism of tibial shaft fracture in drivers in frontal automobile crashes. *Forensic Sci Int* 2007;In press.
- 7 Michetti CP, Hanna R, Crandall J, Fakhry SM. Contemporary Analysis of Thoracic Aortic Injury: Importance of Screening Based on Crash Characteristics. *Journal of Trauma: Infection, Injury and Critical Care*. 2007;63(1):18-25.
- 8 Reines HD, Robinson L, Nitschke S, Rizzo A. Defining service and education: the first step to developing the correct balance. *Surgery* 2007;142(2):303-10.
- 9 Reines HD; Robinson L; Nitzsxlhke S; Rizzo A. Defining education and service: The first step to developing the correct balance. *Academic Surgical Congress: Society for University Surgeons*; 2007.
- 10 Vaziri K, Roland JC, Robinson L, Fakhry SM. Optimizing Physician Staffing and Resource Allocation: Sine-Wave Variation in Hourly Trauma Admission Volume. *Journal of Trauma* 2007;62(3):610-4.
- 11 Watson J; Fakhry SM; Rizzo A Basilar skull fracture: a risk factor for transverse/sigmoid venous sinus obstruction. Presented as a digital poster at the Congress of Neurological Surgeons Annual Meeting; San Diego, CA; Sept. 15-20, 2007.
- 12 Yealy DM; Fakhry SM. Documentation, Coding, Compliance, and EMTALA. in: Peitzman AB; Rhodes M; Schwab WC, et al. *The Trauma Manual: Trauma and Acute Care Surgery*. 3rd ed. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins; 2008.
- 13 Henry LR, Rizzo AG, Gunther W, McCoy K, Wang DG, Jordan MH. Meningitis complicating traumatic lumbar herniation. *Journal of Trauma* J2006;60(6):1342-3.

TRAUMA STATISTICS

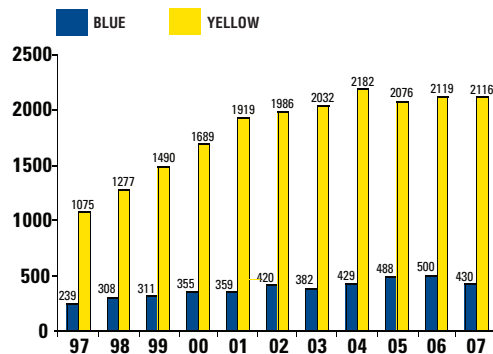
All Trauma Patients 1997-2007

In 2007, we entered the names of 4,045 trauma patients into the trauma registry. This is a 1% increase over last year.

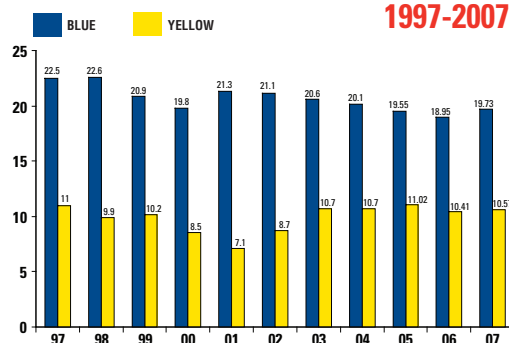


All Trauma Codes 1997-2007

Code blue patients are unstable with life-threatening injuries. Code yellow patients are stable with potential for life-threatening injuries.

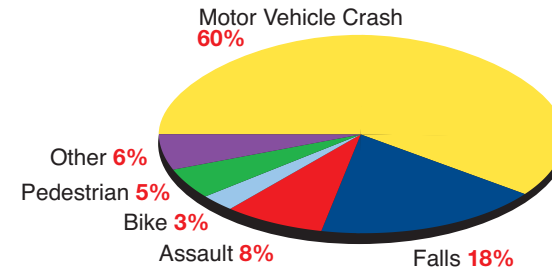


Injury Severity Score (ISS) Mean for Admitted Trauma Codes 1997-2007



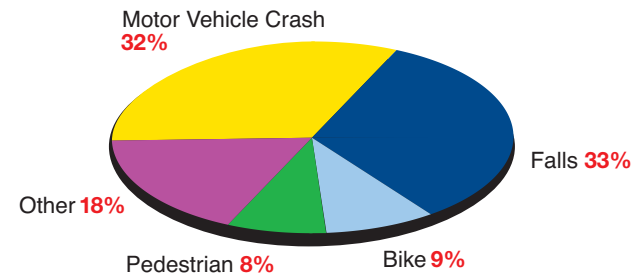
Leading Causes of Injury for Adults 2007

The leading cause of injury for adults continues to be motor vehicle crashes. Falls are the next leading cause of injury, but encompass only 18% of adult patients seen at Inova Regional Trauma Center.



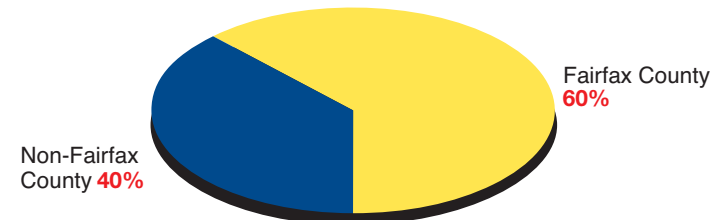
Leading Causes of Injury for Children 2007

In 2007, the leading cause of injury for children was falls which is a change from 2006 where motor vehicle crashes were the leading cause of injury. The number of children seen as a result of a fall increased 4% from last year.



Geographic Site of Trauma 2007

Of the Inova Regional Trauma Center's patients, 40% were injured outside of Fairfax County. This is a 1% increase over last year.



“The Inova Regional Trauma Center is one of only 84 ACS-COT accredited Level 1 trauma centers in the United States, representing the best trauma care in the country. When individuals in Northern Virginia counties are seriously injured, they will most likely be brought to the Inova Regional Trauma Center.”

– Dr. Fakhry, Chief, Trauma and Surgical Critical Care Services

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Inova Health System is a not-for-profit healthcare system based in Northern Virginia that consists of hospitals and other health services, including emergency- and urgent-care centers, home care, nursing homes, mental health and blood donor services, and wellness classes. Governed by a voluntary board of community members, Inova's mission is to improve the health of the diverse community it serves through excellence in patient care, education and research. Inova provides a healthy environment for its patients, families, visitors, staff and physicians by prohibiting tobacco use on its campuses.

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