PARKVIEW TRAUMA 2015

ANNUAL REPORT

PARKVIEW
ADULT TRAUMA CENTER

PARKVIEW
PEDIATRIC TRAUMA CENTER

MISSION STATEMENT

OUR MULTIDISCIPLINARY TEAM IS DEDICATED TO THE TREATMENT OF VICTIMS OF TRAUMA, THE EDUCATION OF THE COMMUNITY AND THE PREVENTION OF INJURY. WE STRIVE FOR OPTIMAL OUTCOMES BY PROVIDING EFFICIENT, QUALITY CARE, AND ARE COMMITTED TO SUPPORTING THE CAREGIVERS IN THE CRISIS ARENA.

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Parkview Adult and Pediatric Trauma Centers' Annual Report was published in December 2015.

A DEMONSTRATION OF TEAMWORK

In December 2014, the American College of Surgeons (ACS) returned to Parkview Regional Medical Center to conduct an objective, external review of Parkview Trauma Centers' institutional capability and performance. These functions were accomplished with an on-site review by a peer review team experienced in the field of trauma care.

Much of the site review team's time was spent reviewing clinical care and performance improvement centered on the injured patient. In addition, reviewers toured the hospital and visited various departments to ask questions and verify documentation.

The result of the two-day site visit: Re-verification of Parkview Trauma Centers as Level II Adult and Pediatric Trauma Centers for three years. It was a perfect program review — without any deviations from the ACS standard of care as outlined in the *Resources for Optimal Care of the Injured Patient.*

This recognition by the ACS provides confirmation that a trauma center has demonstrated its commitment to providing the highest quality trauma care for all injured patients. Re-verification also reflects broadly on members of the trauma team, both those who provide assessment and care to patients before they arrive at the hospital and those who provide services within the hospital walls.

Strengths of Parkview's trauma program, as identified during the ACS site review, include:

- Institutional commitment to the trauma program as evidenced by dedicated resources and assumption of a regional leadership role in trauma care.
- Implementation of an electronic data-monitoring system for all vital issues, including patient care and program administration.
- The physical plant, comprised of Parkview Regional Medical Center (PRMC), including design of the Emergency Department, Intensive Care Unit and Surgery, results in staff efficiencies and improved patient outcomes.

- Support from the PRMC Emergency Department, which is staffed 24/7 by board-certified emergency physicians.
- Support from the physicians and staffs of the Imaging Department.
- Support from critical-care experts such as trauma surgeons, orthopedic traumatologists, neurosurgeons, cardiovascular surgeons and plastic surgeons.
- Expanse of outreach and education efforts, as well as follow-up reporting to EMS and referring hospitals to share patient outcomes with local providers.
- Commitment to research that impacts how care is delivered locally and nationwide.

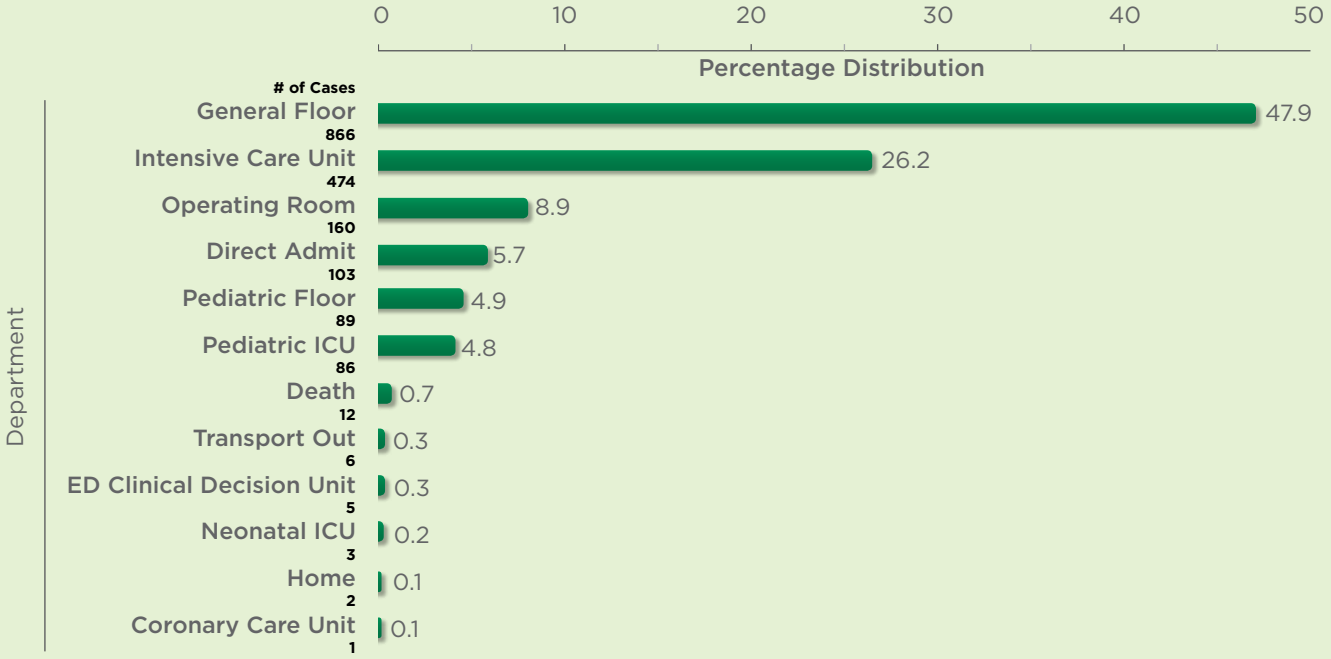
In 2000, Parkview was the first Indiana trauma center outside Indianapolis to be verified as an adult trauma center by the ACS. Verification as Indiana's first pediatric trauma center outside of Indianapolis followed in 2003. Both programs have consistently been re-verified since these dates.

In addition to re-verification, trauma prevention efforts resulted in several milestones during the past year. Parkview partnered with the American Orthopaedic Association to educate geriatric patients on how to prevent bone fractures. The trauma centers also worked with Parkview LaGrange Hospital to refresh and expand the Share the Road message, customizing it for a growing Amish population in LaGrange County.

Parkview Adult and Pediatric Trauma Centers are strong because of the commitment by each member of the trauma team. From the pre-hospital phase through inpatient care and the rehabilitation process, each team member demonstrates commitment to accomplish clinical excellence. This commitment provides the best outcomes for injured individuals throughout the region.

ER Disposition, All Ages

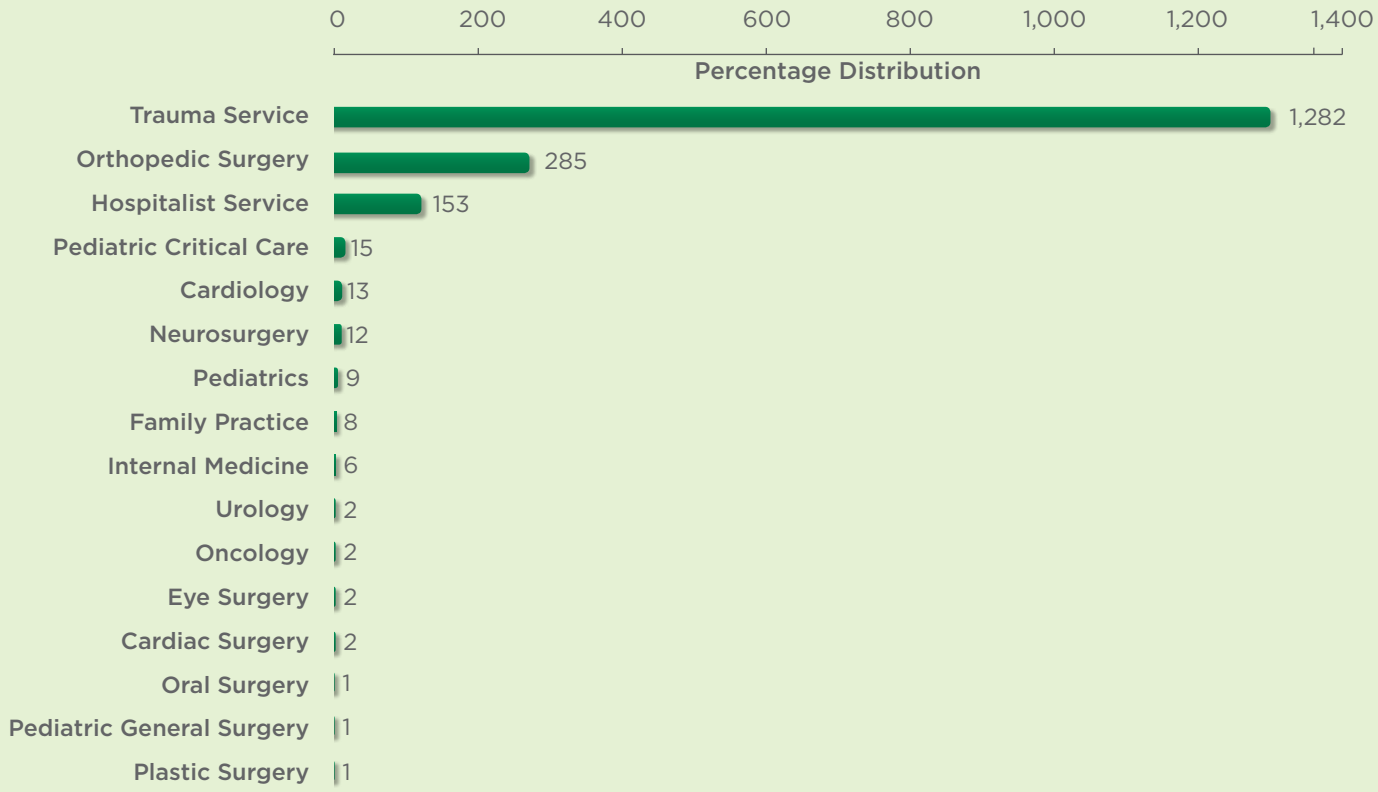
2014



A DEMONSTRATION OF TEAMWORK *continued*

Admission Service*, All Ages

2014* (n=1794)



Note: Thirteen cases were not admitted; these patients either expired or transferred out from the Emergency Department.

* Excludes 287 cases with isolated hip fractures.

CLINICAL DEFINITIONS

What qualifies as a trauma?

Trauma resulting in injury may be characterized by abnormal energy transfer involving mechanical energy (moving objects), thermal, electrical, chemical and radiation; the catastrophic injuries arising from automobile crashes are the result of transfer of energy between the victim and a stationary object (the ground) or a moving object (another vehicle).

Who is a trauma patient?

Trauma patients include individuals with an injury diagnosis of ICD-9 codes 800.00 – 959.90, excluding ICD-9 codes 905 – 909 (late effects of injuries) and 930 – 939 (foreign bodies entering through orifice). ■

RATING SCALES

Injury Severity Score (ISS)

Injury Severity Score is an anatomical scoring system designed to provide an overall score for trauma patients with multiple injuries. The Injury Severity Score is the sum of squares of the three highest abbreviated injury scale scores for injuries to different body regions (head/neck, face, thorax, abdomen and pelvic contents, extremities and external).

ISS takes values from 0 to 75 and correlates with mortality, morbidity and hospital length of stay.

Glasgow Coma Scale (GCS)

The Glasgow Coma Scale is a standard measure to quantify level of consciousness in head injury patients. It is composed of three parameters: best eye response (4), best verbal response (5) and best motor response (6).

The lowest GCS total is a 3 and the best score is a 15. ■

REGISTRY

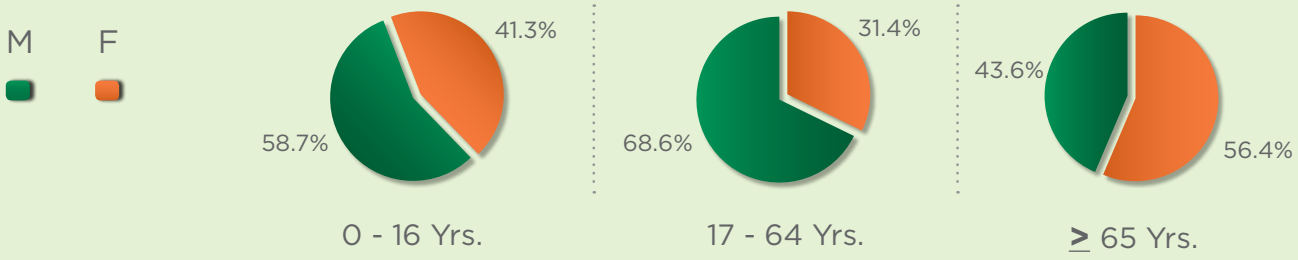
The expedient disposition of patients from the Emergency Department to Surgery has tremendous bearing on patient outcomes. Related data is tracked by the Parkview trauma registry.

A trauma registry is an electronic database with uniform data elements that describe the injury event, demographics, pre-hospital information, diagnosis, care, outcomes and costs of treatment. The database is used to collect, organize and analyze information on trauma patients and is essential to providing trauma service.

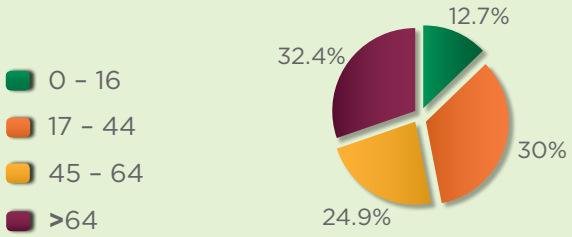
The data have many uses but are primarily used to monitor the continuum of care, from injury prevention to outcomes measurement. Currently, the Parkview trauma registry manages data for more than 35,000 patients.

The Parkview trauma registry contributes information to the National Trauma Data Bank, the Indiana State Department of Health and the Trauma Quality Improvement Project (TQIP) on a regular basis. This contribution to a larger database allows Parkview to identify trends in quality measurements, shape public policy and benchmark at national, state and regional levels.

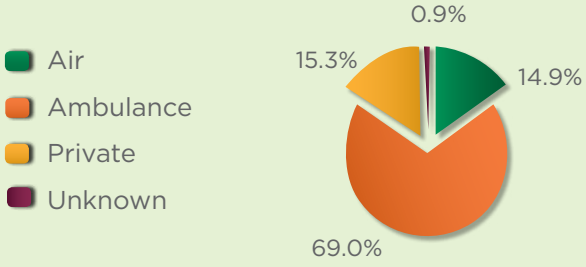
Age and Gender, All Patients
2014



Ages of All Patients
2014

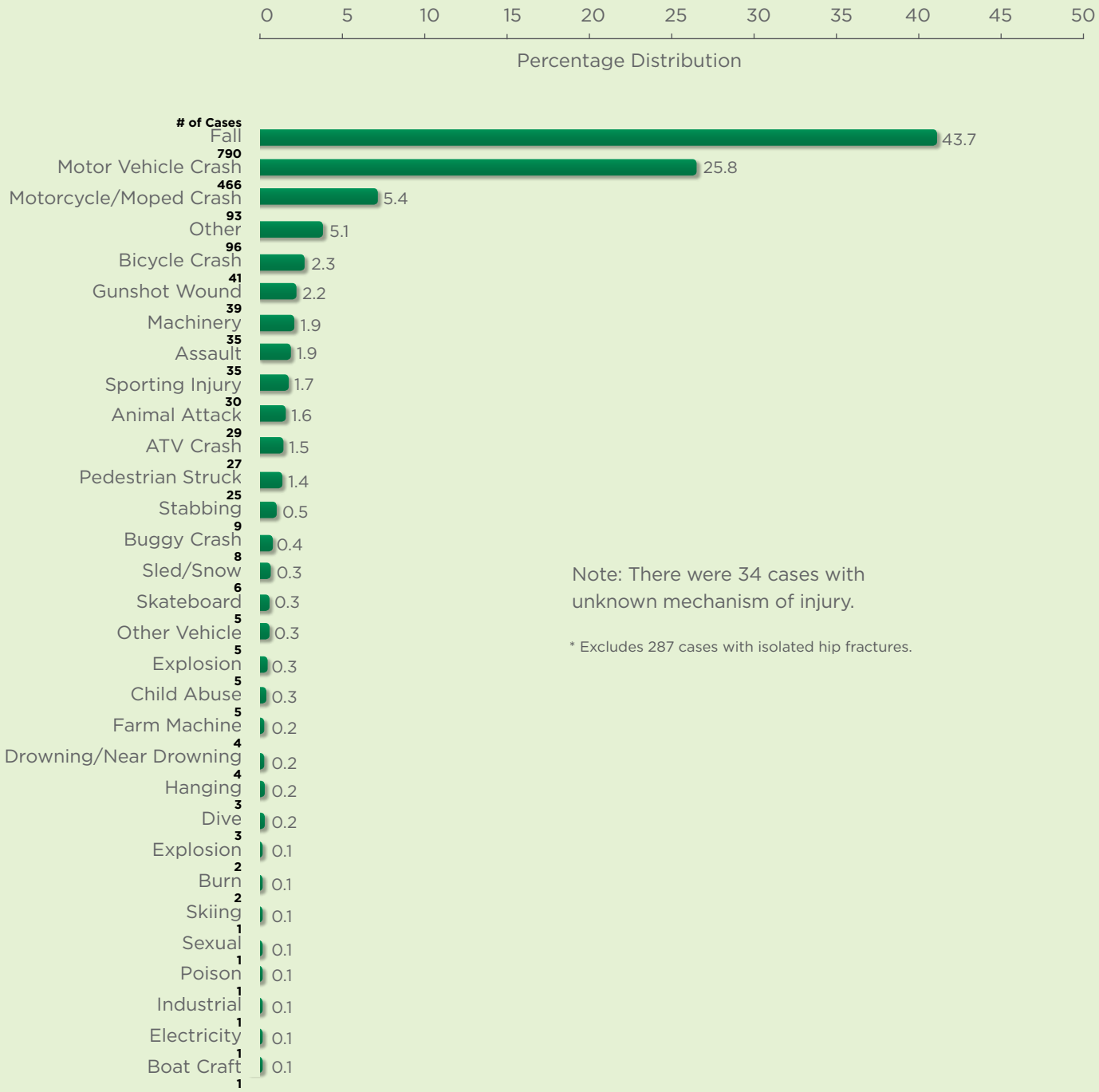


Mode of Transport for Patients to Parkview Trauma Centers
2014



Mechanism of Injury, All Ages

2014*

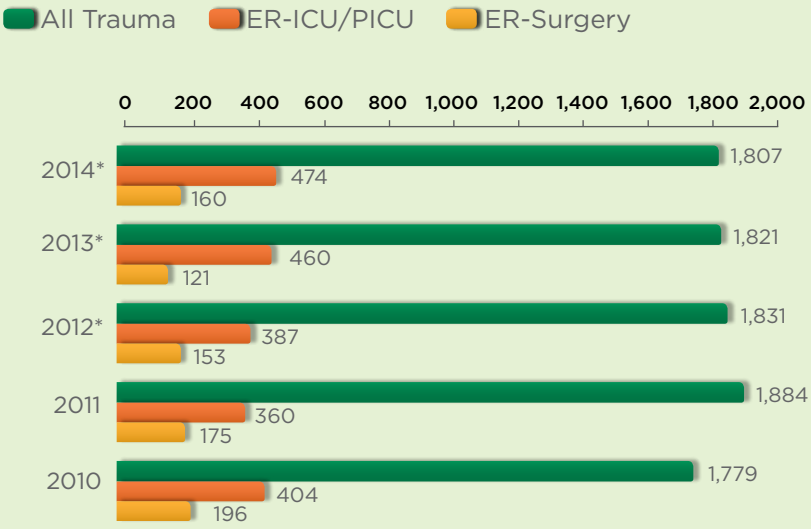


Note: There were 34 cases with unknown mechanism of injury.

* Excludes 287 cases with isolated hip fractures.

Volume of All Ages Admitted from ER to ICU and OR

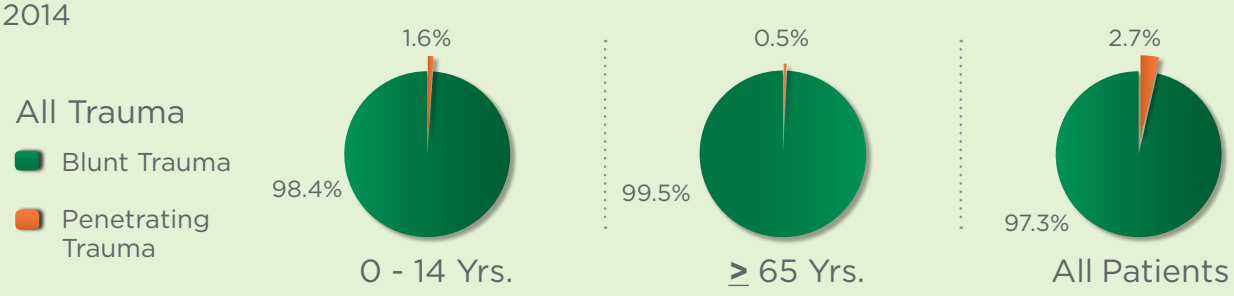
2010 – 2014



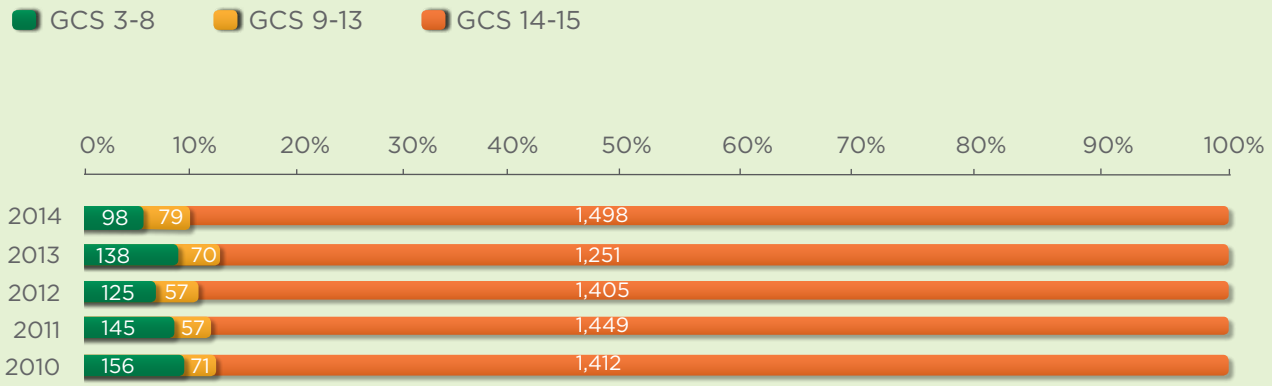
* Excludes 287 cases with isolated hip fractures.

Trauma Type

2014



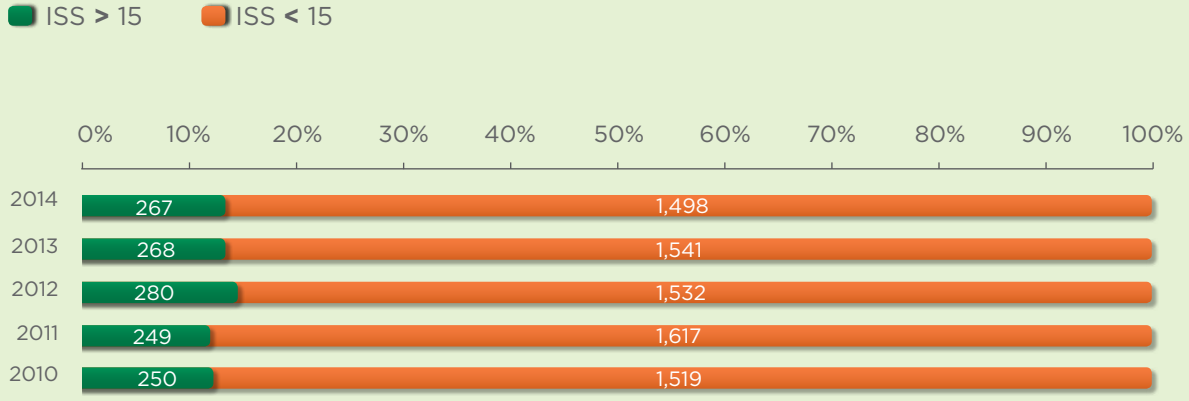
Volume (and Percentage) of All Patients by Admit Glasgow Coma Score (GCS) Value
2010 – 2014*



GCS 3-8 = Possible severe head injury
GCS 9-13 = Possible moderate head injury
GCS 14-15 = Possible mild head injury

* Excludes cases for which GCS is unknown.

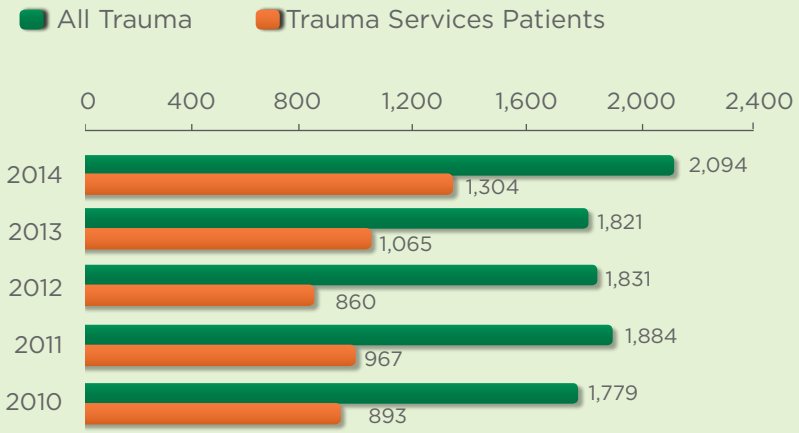
Volume (and Percentage) of All Ages by Injury Severity Score (ISS) Value
2010 – 2014*



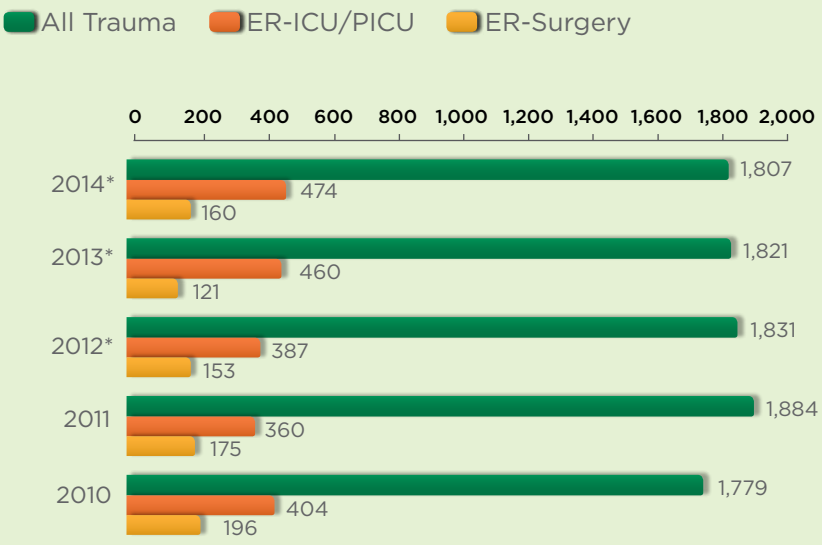
ISS **>** 15 can include life-threatening, critical or fatal injuries.

* Excludes cases for which ISS is unknown.

Trend of Trauma Admission by Type
2010 – 2014



Volume of All Ages Admitted from ER to ICU and OR
2010 – 2014



* Excludes 287 cases with isolated hip fractures.

PEDIATRICS

Pediatric nurse Kelly Vandemark, RN, puts a young patient at ease. The Parkview Pediatric Trauma Center draws on the expertise of many specialties in the triage and treatment of pediatric patients.

Children experience trauma differently than adults due to significant anatomical and physiological differences, as well as varying mechanisms and patterns of injury. This requires a unique response to major trauma in children, which drives a need for specialized pediatric services. Parkview Regional Medical Center is verified as a pediatric trauma center by the American College of Surgeons, and is dedicated to providing the resources necessary to accommodate the specialized needs of the pediatric trauma population. Verification is granted to trauma centers that demonstrate the highest quality of care, in addition to a commitment to injury prevention, outreach, performance improvement and education.

More children die from injury than from all other causes combined. For injured children who survive, severe disability may become a lifelong problem:

- Drastically affecting their quality of life
- Requiring multiple surgeries and/or long-term care
- Impacting their families' financial well-being
- Further adding to societal healthcare costs

Parkview provides effective care to each injured child through a comprehensive and inclusive approach that:

- Recognizes childhood injury as a major public health concern
- Identifies effective strategies for prevention

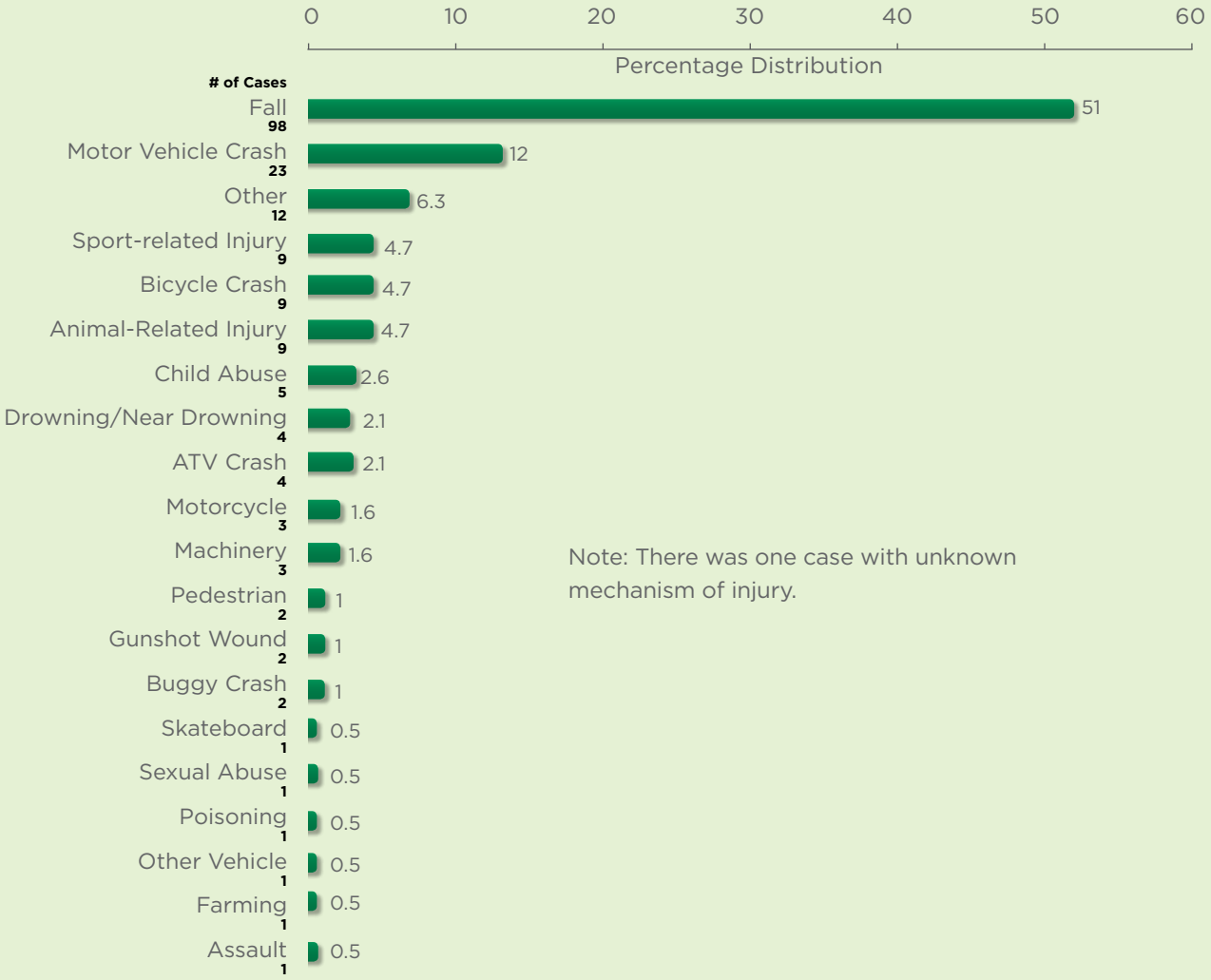
- Improves systems of emergency medical care for children
- Provides the highest-quality pediatric trauma care, including rehabilitation care

As a pediatric trauma center, Parkview has special resources dedicated to the care of injured children. The high quality of pediatric trauma care at Parkview can be attributed to the pre-hospital providers, physicians and hospital-based personnel who support the trauma program. All members of the trauma team are committed to pediatric trauma care, and all members of the trauma team who care for injured children are appropriately trained and credentialed. For the pediatric patient, there is active collaboration with other surgical and pediatric subspecialists, such as neurosurgeons, orthopedic surgeons, pediatric emergency medicine physicians and pediatric critical care physicians.

Parkview Trauma Centers continue to host the annual Pediatric Trauma Symposium and coordinate site visits to the simulation lab at Cincinnati's Children's Hospital Medical Center in Cincinnati, Ohio. Members of the pediatric trauma team participate in bi-monthly pediatric simulations hosted by Parkview's Trauma Center. Additionally, the trauma program is collaborating on the development of a Child Maltreatment Response Team and supports the Child Abuse Symposium to increase awareness and prevention of child maltreatment. These efforts support a high level of trauma expertise among the regional system of providers who care for injured children. ■

Mechanism of Injury, Pediatric Patients (Ages 0 - 14)

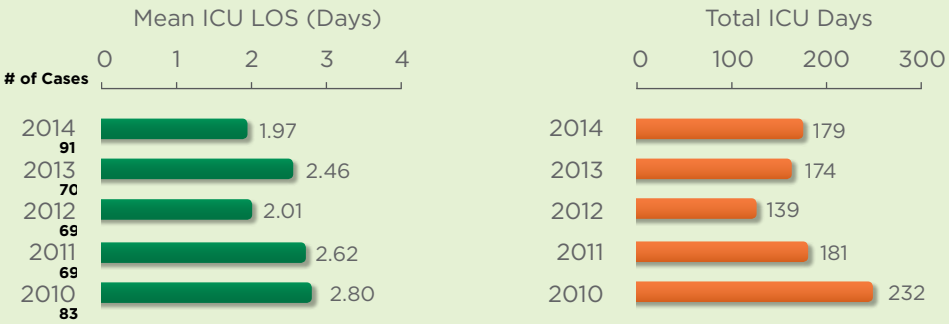
2014



Note: There was one case with unknown mechanism of injury.

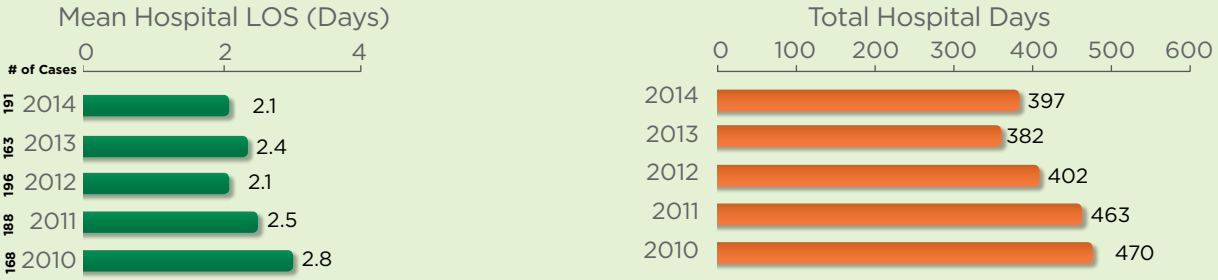
ICU Length of Stay (LOS), Pediatric Trauma (Ages 0 - 14)

2010 – 2014



Hospital Length of Stay (LOS), Pediatric Trauma (Ages 0 - 14)

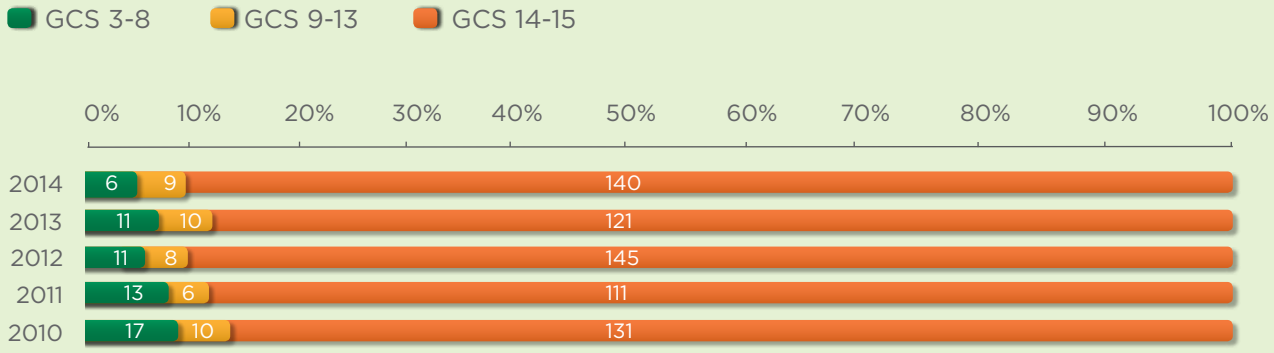
2010 – 2014



Note: Excludes patients who expired in the Emergency Department or were transferred out of the Emergency Department.

Volume (and Percentage) of Pediatric Patients (Ages 0 - 14) by Admit Glasgow Coma Score (GCS) Value

2010 – 2014*



GCS 3-8 = Possible severe head injury

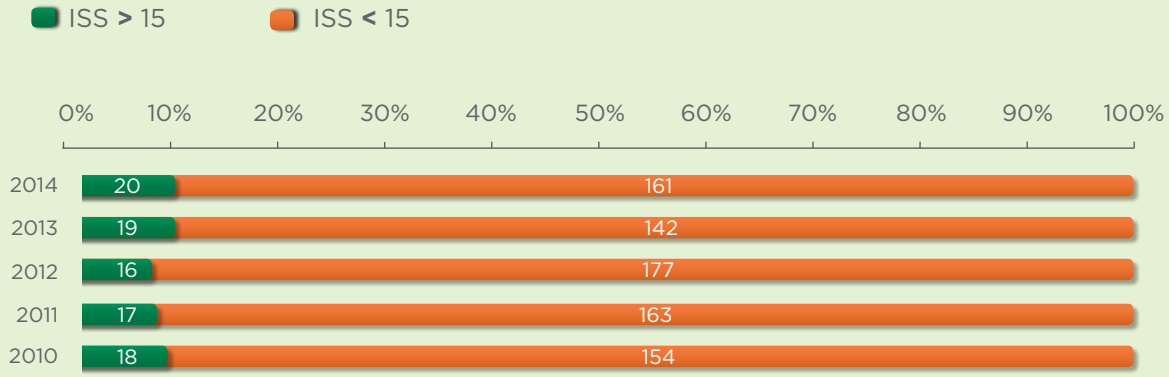
GCS 9-13 = Possible moderate head injury

GCS 14-15 = Possible mild head injury

* Excludes cases for which GCS is unknown.

Volume (and Percentage) of Pediatric Patients (Ages 0 - 14) by Injury Severity Score (ISS) Value

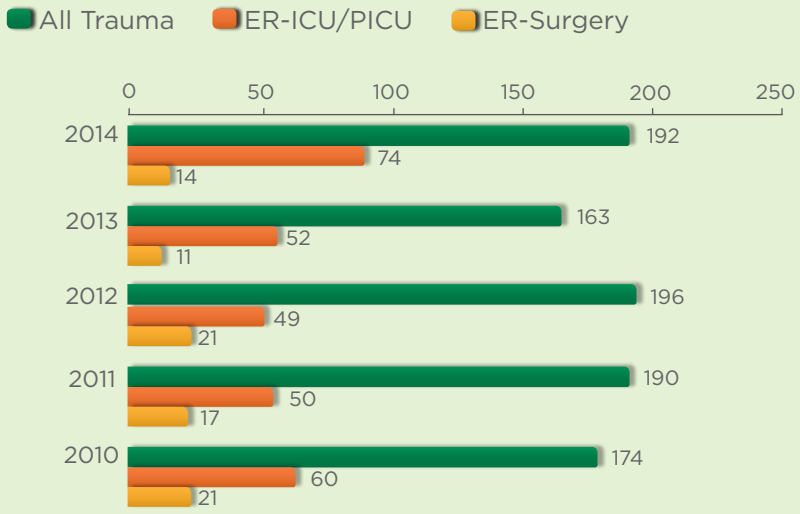
2010 – 2014



ISS **>** 15 can include life-threatening, critical or fatal injuries.

Volume of Pediatric Patients (Ages 0 - 14) Admitted from ER to ICU or Surgery

2010 – 2014



GERIATRICS

Jason Heisler, DO, orthopedic trauma medical director and orthopedic surgeon with Ortho NorthEast; and Tabitha Bane, NP, geriatric fracture coordinator, Parkview Trauma Centers, collaborate on the geriatric fracture program.

Fragility fractures are the first sign of poor bone health. In recent years, the occurrence of fragility fractures has become nearly epidemic among older adults in the United States, with more than two million fractures diagnosed annually — more than heart attacks, strokes and breast cancer cases combined. The statistics are alarming:

- Up to one-half of all women and one-quarter of all men will suffer fragility fractures in their lifetimes.
- Nearly 25 percent of patients who suffer a hip fracture die within a year. Those who do survive often experience a loss of independence and may require long-term nursing home care.
- At least 44 million Americans are affected by osteoporosis or low bone density.
- Approximately 80 percent of patients do not receive recommended osteoporosis care following a fracture.
- One of the best indicators for a future fracture is a previous fragility fracture. Patients who have had a fragility fracture are at an 86 percent higher risk of a second fracture.

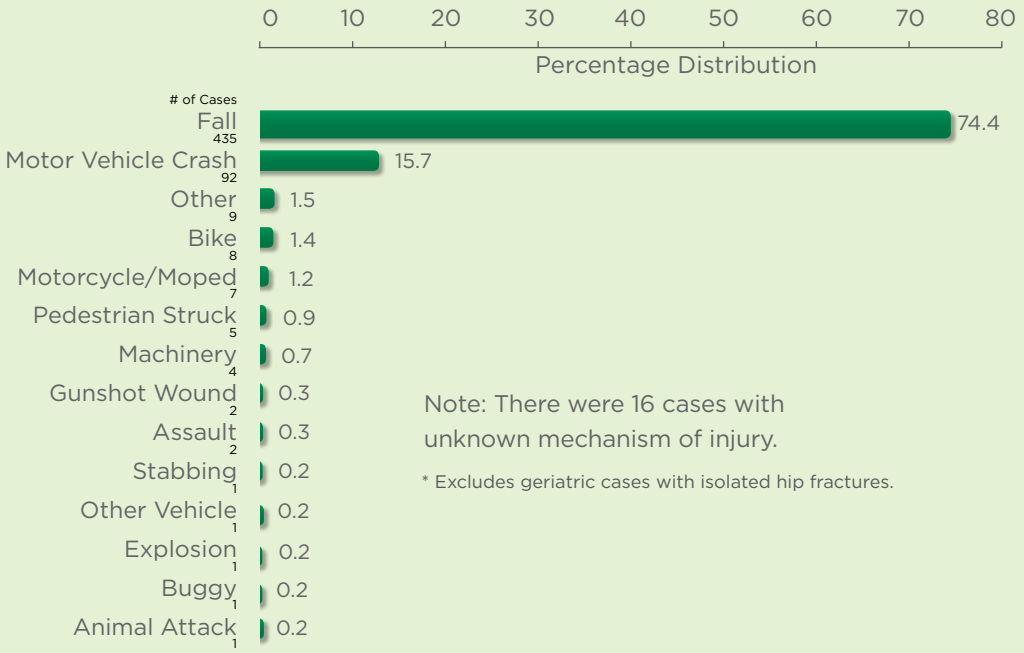
As sentinel events, fragility fractures provide opportunities for physicians to educate patients, fellow physicians and other healthcare professionals. The seriousness of the fracture episode provides physicians with a "teachable moment" in which it is possible to impact behavior and treatment.

Parkview has partnered with the American Orthopaedic Association's "Own the Bone®" program in bridging the gap between osteoporosis and fragility fracture care. Own the Bone serves to identify, evaluate and treat fragility fracture patients through use of a national web-based registry, collaborating physicians and a fracture-care liaison to facilitate both inpatient and outpatient care. Through Own the Bone partnership, Parkview recognizes the specialized needs of this population of patients as well as the positive impact offered through initiating a geriatric fracture program. ■

Own the Bone® is a registered trademark of the American Orthopaedic Association.

Mechanism of Injury, Geriatric Patients (Ages ≥ 65)

2014*

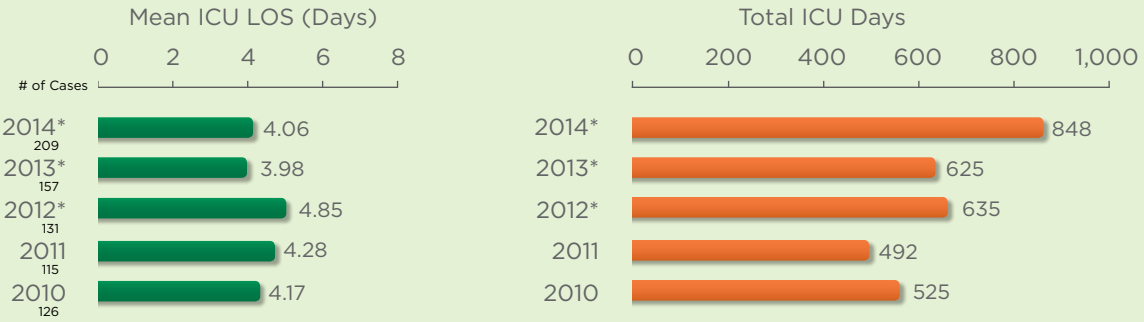


Note: There were 16 cases with unknown mechanism of injury.

* Excludes geriatric cases with isolated hip fractures.

ICU Length of Stay (LOS), Geriatric Trauma (Ages ≥ 65)

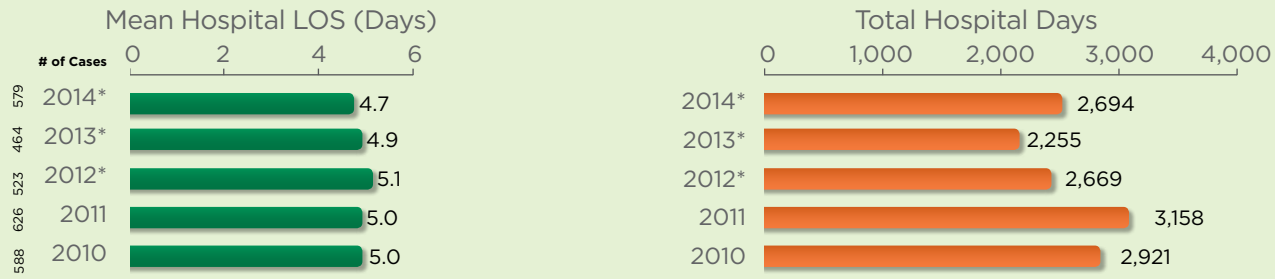
2010 – 2014



* Excludes geriatric cases with isolated hip fractures.

Hospital Length of Stay (LOS), Geriatric Trauma (Ages ≥ 65)

2010 – 2014

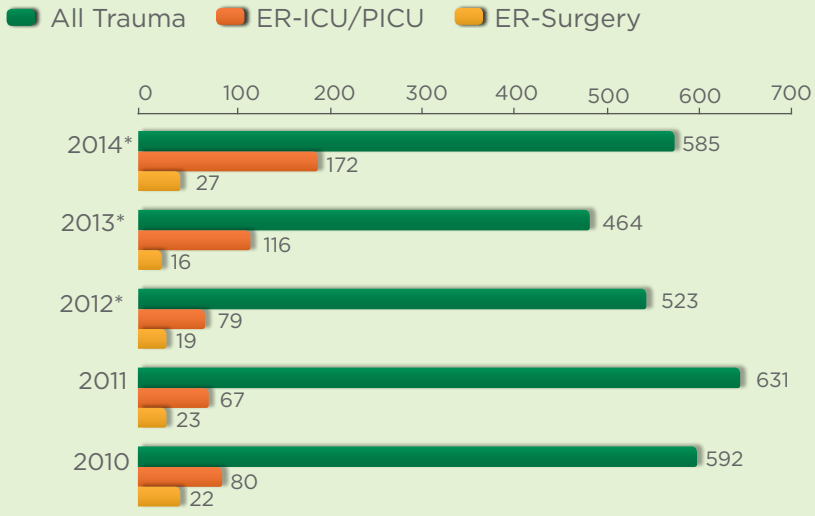


Note: Excludes patients who expired in the Emergency Department or were transferred out of the Emergency Department.

* Excludes geriatric cases with isolated hip fractures.

Volume of Geriatric Patients (Ages ≥ 65) Admitted from ER to ICU or Surgery

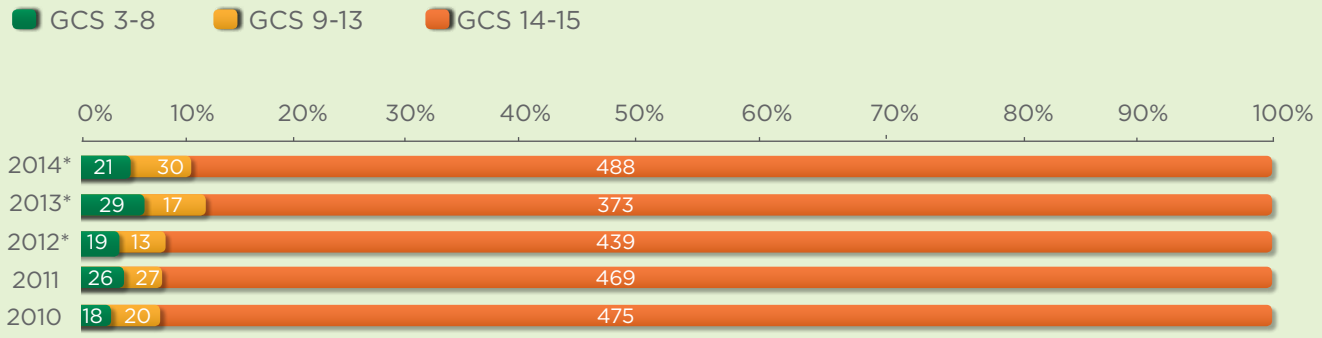
2010 – 2014



* Excludes geriatric cases with isolated hip fractures.

Volume (and Percentage) of Geriatric Patients (Ages ≥ 65) by Admit Glasgow Coma Score (GCS) Value

2010 – 2014



GCS 3-8 = Possible severe head injury

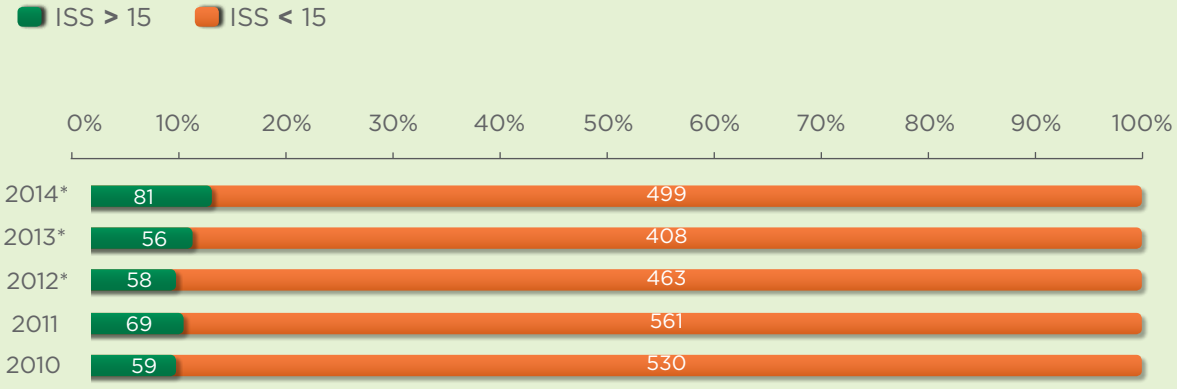
GCS 9-13 = Possible moderate head injury

GCS 14-15 = Possible mild head injury

* Excludes geriatric cases with isolated hip fractures.

Volume (and Percentage) of Geriatric Patients (Ages ≥ 65) by Injury Severity Score (ISS) Value

2010 – 2014



ISS > 15 can include life-threatening, critical or fatal injuries.

* Excludes geriatric cases with isolated hip fractures.

TRAUMA SPECIALTIES

For a health system to maintain a successful trauma center, specialty physicians must take an active role in providing optimal care to the injured patient. The roles of the trauma surgeons, emergency medicine physicians, orthopedic surgeons, plastic surgeons and neurosurgeons have been defined by the American College of Surgeons (*American College of Surgeons: Committee on Trauma, 2014*). The team approach of specialty surgeons is available at Parkview Regional Medical Center 24 hours a day, seven days a week to ensure the highest level of comprehensive care for our injured patients.

Neurosurgery

Nationwide, traumatic brain injuries (TBIs) account for more than 500,000 hospitalizations and result in more than 175,000 significant disabilities. Close to 40 percent of all deaths related to acute trauma are caused by TBIs, with this percentage gradually decreasing over the past few years due to clinical and laboratory research (*American College of Surgeons: Committee on Trauma, 2014*).

Active neurosurgical participation is crucial for the injured patient and requires successful planning and implementation. The neurotrauma care at Parkview Regional Medical Center is organized by a highly experienced team of six board-certified neurosurgeons, who are available 24/7 to ensure effective neurotrauma care for all traumatic brain injured patients, as well as cervical spine stabilization and treatment. The six neurosurgeons are led by a devoted neurosurgery trauma liaison, James Dozier, MD, Fort Wayne Neurological Center.

In 2014, Neurosurgical Services collaborated in the care of 524 traumatically injured patients admitted at Parkview Regional Medical Center (PRMC).

Orthopedic Surgery

Close to 50 percent of all hospitalized trauma patients have one or more musculoskeletal injuries. These injuries can be life- or limb-threatening and may result in significant functional impairment (*American College of Surgeons: Committee on Trauma, 2014*).

Parkview Regional Medical Center offers the latest technologies, readily available operating rooms, and a well-trained, highly experienced staff to care for musculoskeletal trauma. PRMC offers 15 experienced orthopedic surgeons with additional specialty board certification training in hand and wrist, foot and ankle, and spine trauma treatment, as well as two specialty trained board-certified trauma orthopedic surgery specialists. The trauma orthopedic specialty services are available around the clock, seven days a week, at PRMC and are led by David Goertzen, MD, and Jason Heisler, DO, both of Ortho NorthEast.

In 2014, orthopedic surgeons collaborated in the care of 927 traumatically injured patients admitted at PRMC.

Plastic Surgery

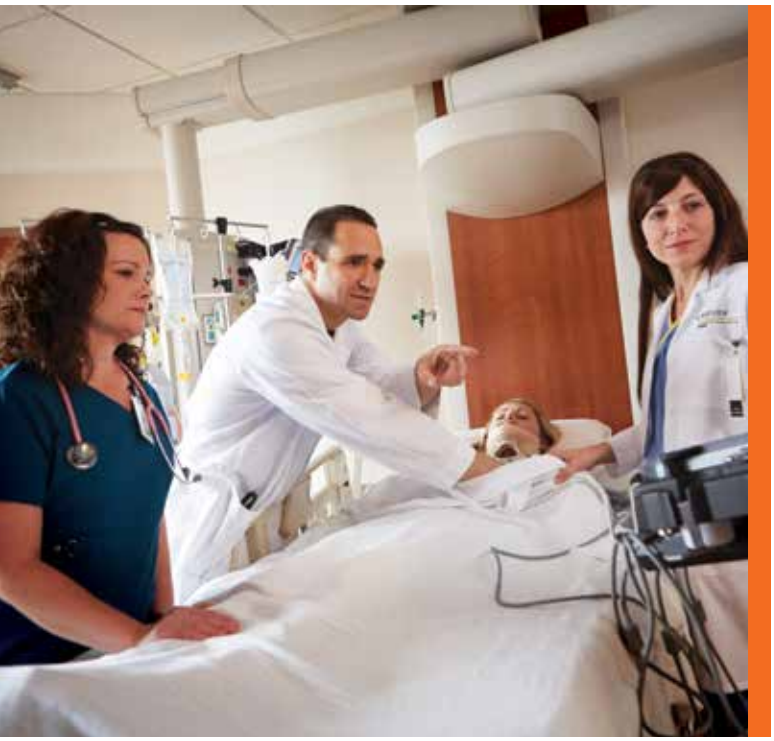
Comprehensive traumatic wound and laceration treatment is available at Parkview Regional Medical Center through collaboration with six board-certified plastic surgeons.

In 2014, plastic surgery collaborated in the care of 162 traumatically injured trauma patients admitted at PRMC. ■

Reference:

American College of Surgeons: Committee on Trauma. (2014). Resources for Optimal Care of the Injured Patient.

CRITICAL CARE



At Parkview Regional Medical Center (PRMC), critical care is provided to trauma patients within the Surgical Trauma Intensive Care Unit (STICU). By responding to trauma activations, STICU nurses are a part of the hospital-based trauma team from the beginning of a patient's arrival. Nurses work in partnership with the emergency room, operating room and diagnostic services to achieve the goal of providing early comprehensive resuscitation for trauma patients. Vital responsibilities in the ER include assisting with initial patient stabilization and assessment, obtaining critical lab results and assisting with procedures. To support a seamless care transition, the ICU nurse then assists with transport of a patient to the ICU.

Environmental design and technology address the critical needs of trauma patients. STICU has technology that allows staff to monitor multimodal invasive hemodynamic pressure, brain pressure, intravascular or surface warming or cooling, continuous dialysis, mechanical rotation, and massive transfusion resuscitation. The ICU rooms are large enough for in-room surgery or resuscitation, if needed. Space design promotes a quiet atmosphere, allowing patients and their loved ones to experience care in a therapeutic healing environment.

Bedside nurses from STICU are dedicated to continual professional development in order to enhance the outcomes of their trauma patients. This is accomplished by participating in educational opportunities planned and presented by Trauma Services team members, as well as simulation events provided within the hospital and at the Parkview Center for Advanced Medical Simulation. This critical-care training further develops the skills of STICU nurses. The nursing team is actively working with the Trauma Services Department on performance improvement initiatives.

Here at PRMC, our care team of board-certified trauma surgeons, anesthesiologists and other specialists are available to provide rapid diagnosis and immediate treatment of life-threatening injuries. A variety of specialists are on-call to respond to the needs of trauma patients, including orthopedic trauma surgeons, neurosurgeons and other medical experts. Patients may be admitted to the trauma ICU from the emergency room, operating room, or another floor of the hospital. Rounding involves the trauma provider team, patient nurse, trauma case manager, rehabilitation therapy, pharmacy, nutrition and respiratory departments to assure that the patient progresses toward goals.

POST-TRAUMA CARE

Parkview Rehabilitation Center provides a full range of inpatient, therapeutic services and programs for patients ages six and older. As an integral part of the trauma care continuum available through Parkview's verified Level II Adult and Pediatric Trauma Centers, the acute-care rehabilitation center is well equipped to treat patients who have a wide range of traumatic injuries, as well as neurological conditions and diseases.

Quality and expertise

Committed to providing excellent patient care, the rehabilitation center:

- Is accredited by The Joint Commission
- Has consistently received certification for its comprehensive inpatient, brain injury and stroke programs from CARF, the Commission on Accreditation of Rehabilitation Facilities
- Offers the added expertise of:
  - > Certified rehab registered nurses
  - > Staff members certified as brain injury specialists
  - > Therapy staff members certified in neuro developmental treatment (NDT)
  - > Staff members certified in the use of VitalStim® therapy for dysphagia, or difficulty swallowing

Parkview Rehabilitation Center offers patients huge advantages over other rehabilitation facilities in the region:

- Location on a dedicated floor inside Parkview Hospital Randallia, an acute-care hospital.
- On-site availability of any medical services required during the patient's stay – such as CT scans and other diagnostic procedures, wound care or constant care. The skilled medical specialists of this acute-care hospital are readily available to assist in patient care as needed. If there are critical needs, the rehab physician and consulting physicians will identify the appropriate level of care.

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POST-TRAUMA CARE *continued*

Continuity of care

Physicians who have treated a patient prior to his or her admission to the rehab program may continue to participate in care along with the rehab team.

The rehab team includes medical professionals from many different specialty areas. In a well-coordinated process, these physicians, nurses, therapists and other staff members provide intensive therapies with 24-hour rehabilitation nursing care. The patient and family are integral members of the team. This approach helps patients maximize their highest level of ability during recovery from illness or injury.

Accreditation

Parkview Rehabilitation Center meets rigorous national standards as evaluated by The Joint Commission and CARF. Earning accreditation is an exacting process, and the Parkview Rehabilitation Center strives to continually meet and exceed recognized quality standards. Patient families can be confident that the professionals providing care at the center are focused on helping their loved ones achieve the most favorable results possible.

Parkview Rehabilitation Center has been accredited by CARF for the following programs:

- Brain Injury program (child/adolescent and adult)
- Comprehensive Inpatient Medical Rehabilitation program (child/adolescent and adult)
- Stroke program

The Comprehensive Inpatient Medical Rehabilitation program received initial accreditation in 1978 and has been re-accredited for each period since then. The Brain Injury program received initial accreditation in 1988 and has been re-accredited for each period since then. The Stroke program was the first reviewed by CARF in 2009. ■

PERFORMANCE IMPROVEMENT

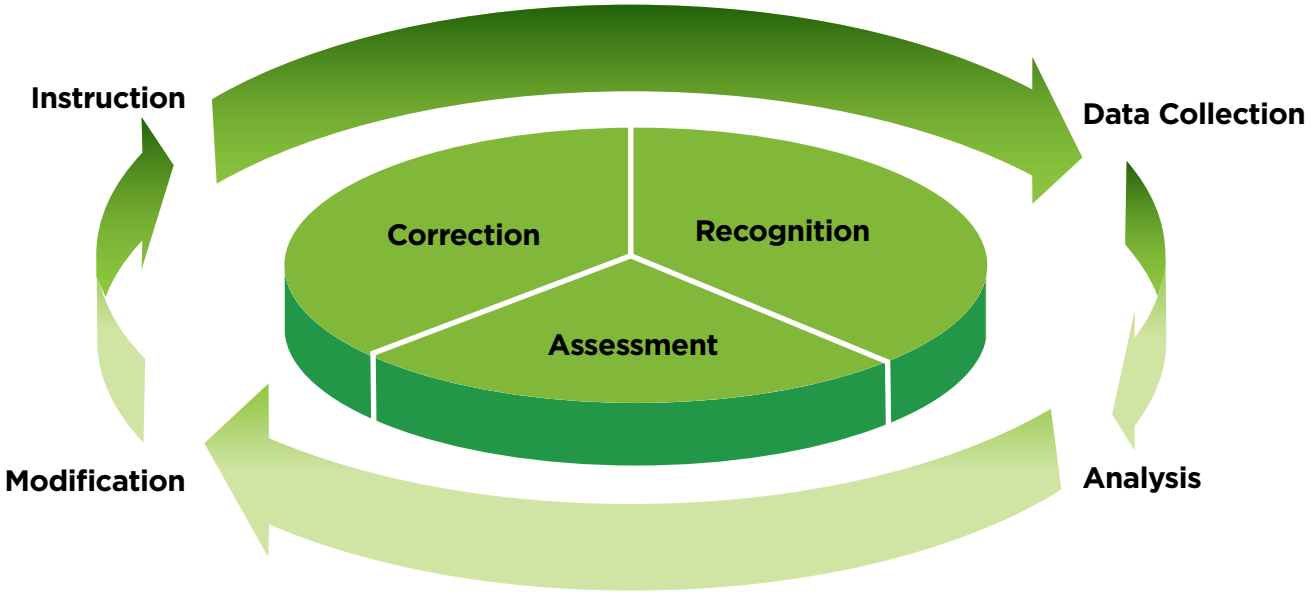
Trauma Performance Improvement and Patient Safety

According to the American College of Surgeons Committee on Trauma (2014), all trauma centers should provide safe, efficient and effective care to the injured patient. Doing so will require the authority and accountability to reduce unnecessary variations in care and prevent adverse events.

The Adult and Pediatric Trauma Centers, located at Parkview Regional Medical Center, have adopted the modern Performance Improvement and Patient Safety (PIPS) model for measuring quality. The PIPS model (below) includes a continuous and concurrent process of monitoring, assessing and managing trauma care using a multidisciplinary effort to measure, evaluate and improve the process of care and its outcomes. Performance improvement and patient safety are inseparable. The performance improvement process is directed at the care itself, and the patient safety process is directed at the environment in which the care is given.

In the PIPS model, a trauma center is required to continuously monitor, assess and manage the environment in which care is given, the trauma care itself and the patient outcomes that follow. This is accomplished by concurrent and continuous extensive chart review, multiple levels of peer review and multidisciplinary meetings that review all of the aspects related to trauma care.

The PIPS program is supported by a trauma registry of concurrent data collection that obtains the necessary information to identify opportunities for improvement. The data collection allows the PIPS program to monitor and continually improve internal and external structures, processes and outcomes.



PERFORMANCE IMPROVEMENT *continued*

Process Measures

Process measures include:

- Compliance with guidelines, protocols and pathways
- Appropriateness of triage by pre-hospital providers and the Emergency Department
- Delay in assessment, diagnosis, technique or treatment
- Timeliness and availability of imaging reports
- Judgment, communication and treatment
- Completeness of documentation
- Professional behavior

Corrective Measures

Corrective measures include:

- Guideline, protocol or pathway revision or development
- Targeted education
- Enhanced resources, facilities or communication
- Peer review presentations
- Multidisciplinary presentations
- External review

Outcomes Measures

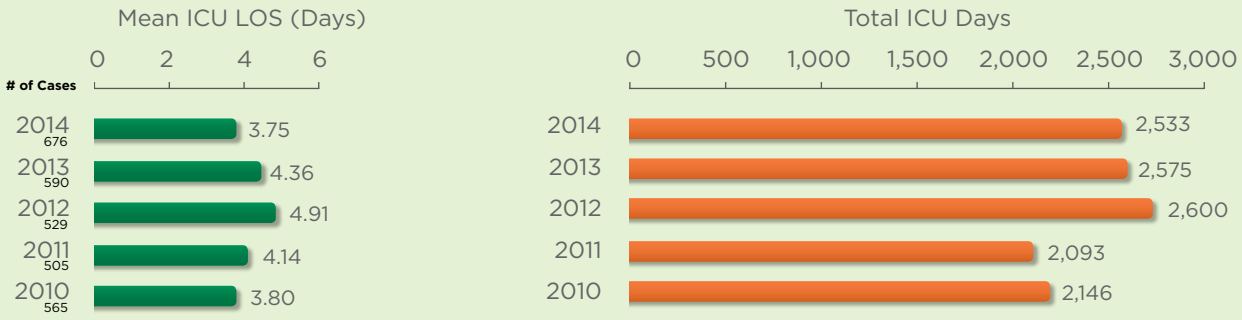
Outcomes measures include:

- Mortality
- Morbidity
- Length of stay in the Emergency Department, ICU and overall
- Cost
- Quality of life

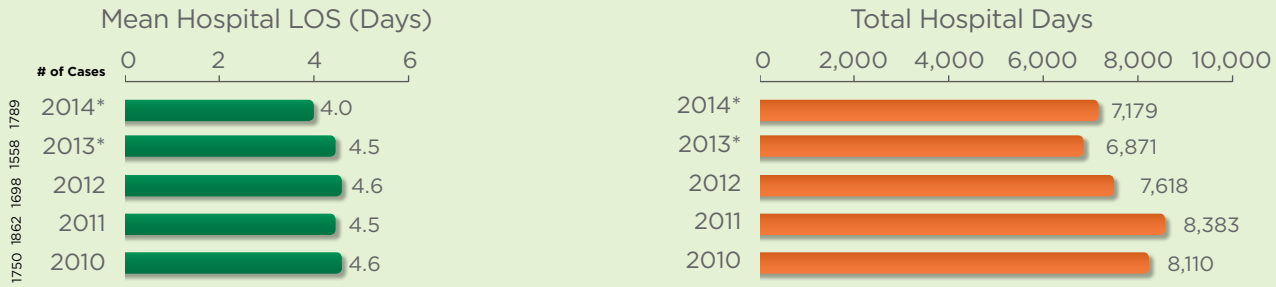
Reference:

American College of Surgeons: Committee on Trauma. (2014). Resources for Optimal Care of the Injured Patient.

ICU Length of Stay (LOS), All Ages
2010 – 2014



Hospital Length of Stay (LOS), All Ages
2010 – 2014



Note: Excludes patients who expired in the Emergency Department or were transferred out of the Emergency Department.

* Excludes 287 cases with isolated hip fractures.

RESEARCH

Left to right:
Dazar Opoku, MPH, *Trauma Data Specialist, Trauma Services, Parkview Regional Medical Center*
Thein Hlaing Zhu, MB BS, DPTM, FRCP, FACE, *Trauma Epidemiologist, Trauma Services, Parkview Regional Medical Center*

Research is a vital activity of the Parkview Trauma Centers because of its implications for quality patient care, proper utilization of healthcare services within the hospital setting, quality registry data and prevention efforts.

Parkview has engaged in trauma research since initial verification as a Level II trauma center in May 2000. Parkview Adult and Pediatric Trauma Centers are among the elite few trauma centers nationwide whose staffs include a trauma epidemiologist and a data specialist with master's degree-level training in public health. Together, this research team is dedicated to data validation and tracking trends related to traumatic injury.

Within this report, we highlight two research projects.

Project 1: Effectiveness of the Rural Trauma Team Development Course (RTTDC©) for Educating Nurses and Other Healthcare Providers in Rural Community Hospitals

Parkview Adult and Pediatric Trauma Centers have been providing RTTDC education to raise the standard of trauma care at rural hospitals since November 2011. In the year under report, further data analysis on the RTTDC research project was done to assess the early transfer of trauma patients from rural emergency departments at the four Parkview community hospitals (PCHs) to Parkview Trauma Centers (PTC).

We used a pre- and post-study design by querying the trauma registry, as well as Allscripts™ ED data that were transferred out from PCHs to PTC within six months before and after RTTDC education (six-month pre-/post-education group) and 12 months before and after education (12-month pre-/post-education group). Emergency Department time (EDT) was obtained from Allscripts and used as a primary measure to indicate the time from patient arrival at a community hospital to the time of decision to transfer to PTC. EDT is an appropriate indicator for early transfer from referring hospitals to a verified trauma center. However, there may be a waiting time in which communication occurs between the trauma center and transport agency before actually transferring out the patient. We therefore also used the ED length of stay (LOS) at the referring hospital as a proxy measure to assess early transfer to the trauma center in question.

The overall reduction of 21.7 minutes of EDT and 18.5 minutes of ED LOS were observed in the six-month group, and 21.6 minutes of EDT and 20.4 minutes of ED LOS in the 12-month pre-/post-education group. After controlling for covariates, there was a significant reduction of 28 minutes in EDT (95% CI: -57, -0.1) in

the six-month group and 29 minutes (95% CI: -53, -6) in the 12-month education group. (*See the table below.*) In using the ED LOS as the indicator, there was a non-significant reduction of 29 minutes (95% CI: -60, +2) in the six-month group and a significant reduction of 43 minutes (95% CI: -72, -14) in the 12-month education group.

Improved knowledge and experience in rural trauma care among healthcare providers through the provision of RTTDC education reduces either the EDT or ED LOS. The research findings from the project were presented as a poster at the fifth annual American College of Surgeons (ACS) TQIP conference in Chicago, Ill., in November 2014.

Project 2: Assessment of Hospital Cost at a Level II Trauma Center

Studies on trauma care cost have mostly been conducted at the state level and at Level I trauma centers, but rarely at a Level II trauma center. The purpose of this study was to determine hospital cost for trauma patients by patient, injury characteristics, mechanism of injury and payment source at a Level II trauma center. The study also looked at various factors influencing trauma care cost and which payer sources provided the highest reimbursement for trauma care.

Multiple Linear Regression Analysis for Predictors of EDT at Referring Hospitals

	6 Months Pre-/Post-RTTDC Education		12 Months Pre-/Post-RTTDC Education	
	Reduction/Increase	95% CI	Reduction/Increase	95% CI
Intercept	23.5	-124.0, 171.0	-209.4	-503.4, 84.64
Education (Pre- vs. Post-)	- 28	- 57, -0.1	-29	-53, - 6
TTA (No vs. Yes)	- 42	- 76, -7	-52	-80, -24
EMS Time	0.8	-0.1, 1.7	1.3	0.6, 2.0
Age, Years (< 55 vs. ≥ 55)	45	14, 77	22	-3.0, 48

RTTDC = Rural Trauma Team Development Course
CI = Confidence Interval
EMS time = Time in minutes taken by EMS from notification to hospital arrival
TTA = Trauma Team Activation

The project was approved by the Parkview Health Institutional Review Board. Data were queried from the trauma registry from 2011 to 2013. Financial data of total cost per patient were provided by the Parkview Health Finance Department and were linked to the trauma patients. The data were analyzed using SPSS (Statistical Package for Social Science) software version 22.

The mean and median costs were significantly higher for patients who died in the hospital, despite their shorter lengths of stay (LOS) relative to those of the patients who survived. There were more male patients with higher costs compared to females. The average LOS was about the same for both males and females. Falls were the most prevalent mechanism of injury, but road trauma accounted for the highest mean and median patient cost. Gunshot wound, stab wound and other mechanism of injury produced lower costs than fall and road trauma. (*See table below for cost by mechanism of injury.*)

Medicare, besides other categories, was the most common payer source for every year, followed by self-pay, Medicaid, Blue Cross and Signature Care. The mean ± standard deviation cost per patient over the years was $15,135 ± $18,811 and the median and interquartile range were $9,491 and $5,929 – $16,068.

This was a preliminary study. Further data analysis is in progress. The research findings were presented as a poster at the 27th annual MAHE Student Research Fellowship Program conference held at Indiana University–Purdue University Fort Wayne on August 6, 2014. ■

Mean and Median Cost by Mechanism of Injury, 2011 – 2013

Mechanism of Injury	No. of Patients	Patient Actual Cost		
		Mean	Median	Total
Fall	2,072	$13,388	$9,190	$26,964,102
Road Trauma	1,898	$18,146	$10,537	$33,333,485
Violence (Gunshot/Stabbing)	222	$12,784	$9,429	$ 2,671,831
Others	652	$12,529	$8,001	$9,180,227

OUTREACH AND EDUCATION

A verified trauma center is one component of a trauma system — the broad network of emergency medical providers, firefighters and law enforcement personnel who care for individuals with life-threatening injuries. The Parkview Trauma Centers have a robust outreach program designed to enhance the quality of trauma patient care by supporting ongoing clinical education for members of the trauma system.

Parkview provides both instruction and hosts educational opportunities featuring industry experts. Trauma-related educational events are presented throughout the year to area community hospitals, fire departments and emergency medical services providers. These courses are offered at each group's location. Presentations are customized to the audience, with the objective of improving the care of injured people. Since 1989, Parkview Trauma Centers have provided trauma-related education to area physicians, nurses, pre-hospital providers and other allied health providers.

The learning events have been held at organizations in 30 counties across northeast Indiana, northwest Ohio and south-central Michigan. More than 1,000 providers participated in trauma-related education in 2014.

In November 2011, Parkview Trauma Centers began offering a trauma team-building course called the Rural Trauma Team Development Course (RTTDC©)

OUTREACH AND EDUCATION *continued*

to area community hospitals. The course was created by the American College of Surgeons Committee on Trauma via the Ad Hoc Rural Trauma Committee. The goal of this education is to better equip clinical and emergency services personnel to provide quality trauma care in the rural setting. Since 2011, more than 300 providers from 14 rural hospitals have successfully completed the course.

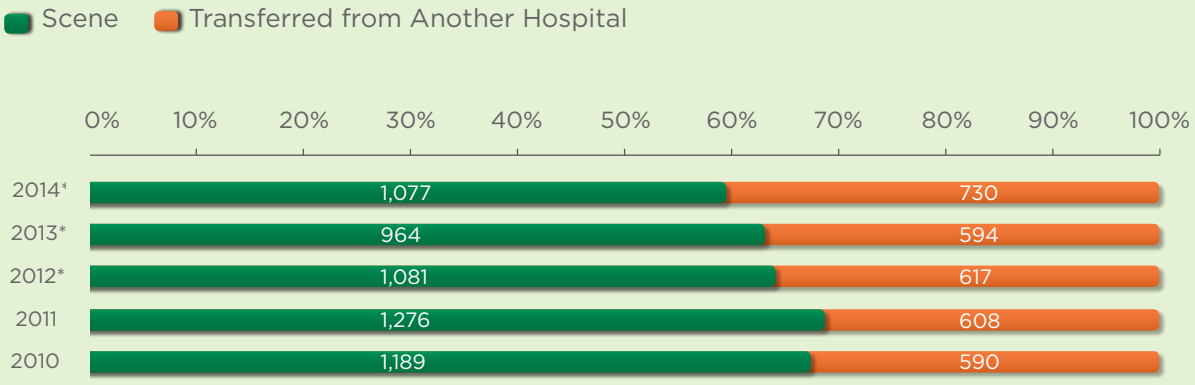
In February 2011, Parkview Trauma Services began offering the Advanced Trauma Care for Nurses (ATCN) course. This clinically intensive course, created by the Society of Trauma Nurses, is offered annually in conjunction with the Advanced Trauma Life Support Course for physicians. Since 2011, 72 emergency department, intensive care unit, operating room and flight nurses have successfully completed our ATCN course.

Other ongoing education programs include:

- Annual Trauma Symposium in May highlights a variety of topics related to trauma care of adults and children.
- Annual Pediatric Trauma Symposium in November focuses solely on care of the injured child. The intended audience includes the entire team of healthcare professionals who care for injured children.
- Trauma Grand Rounds is a live monthly educational event open to the region's healthcare providers who are interested in developing their knowledge of trauma care. Trauma cases from the previous month are reviewed to celebrate trauma team success and identify opportunities for improvement.
- Monthly trauma case studies review all aspects of care, from triage at the trauma scene to discharge from the trauma centers. The case studies enable participants to earn continuing education credit.
- Trauma simulations are presented monthly to provide a realistic training experience using high-fidelity adult and pediatric human patient simulators to practice trauma care under controlled conditions without lives being at stake. The focus is on teamwork, as well as on clinical care. More than 300 physicians, nurses, patient care technicians and pre-hospital personnel participated in 2014.
- Pre-hospital Skills Workshops offer monthly educational offerings focused on the pre-hospital trauma provider. These workshops provide an opportunity to maintain and enhance the pre-hospital provider's hands-on skill, technique and knowledge.
- Trauma MD newsletters communicate Performance Improvement and Patient Safety (PIPS) educational material to physicians who care for victims of traumatic injury at Parkview Trauma Centers.
- A robust trauma education extranet page offers numerous trauma-related educational activities and resources in multiple formats, including audio, video, podcasts, webinars, images and links to additional information.
- Follow-up letters are sent to pre-hospital personnel and community hospital Emergency Department staff members who cared for patients referred to Parkview Trauma Centers. The purpose of these continuum-of-care letters — which include identified injuries, procedures and outcomes — is to aid in performance improvement. More than 1,500 follow-up letters were sent to providers in 2014. ■

Volume (and Percentage) of All Patients from Scene or Transferred to Parkview Trauma Centers

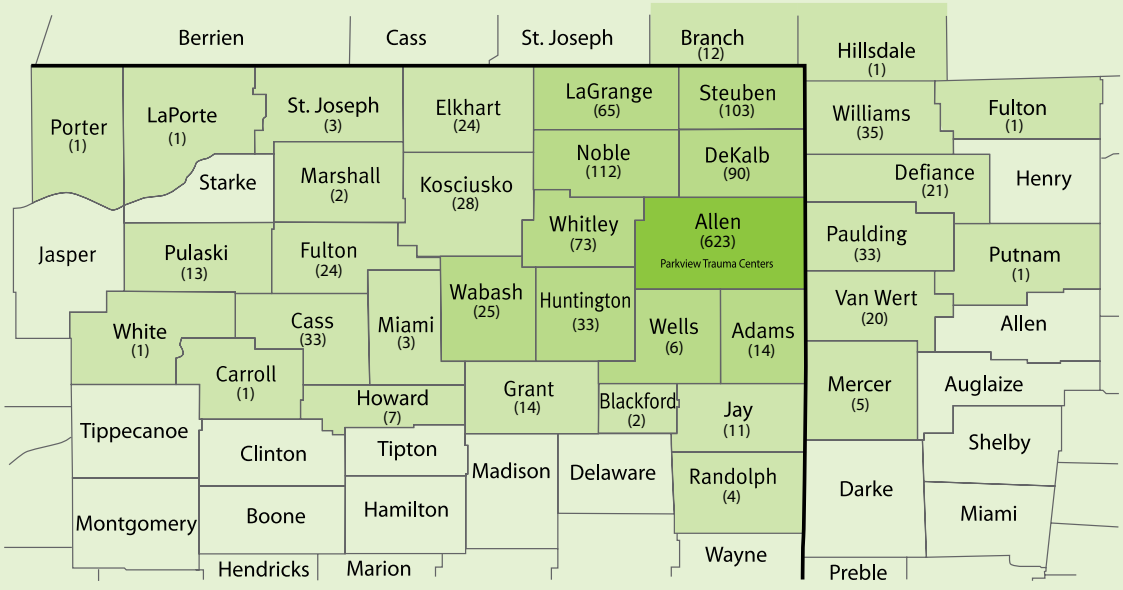
2010 – 2014



* Excludes 287 cases with isolated hip fractures.

County of Injury Occurrence in Catchment Area

2014



Inference: Parkview Adult Trauma Center and Parkview Pediatric Trauma Center are regional referral trauma centers. As such, Parkview Trauma Centers received patients from these counties for treatment.

COMMUNITY HOSPITALS

Jennifer Konger, RN, BSN
Community Trauma Program Manager, Parkview Trauma Centers

Parkview Hospital Randallia

Parkview Hospital Randallia has been committed to the health and well-being of Allen County residents for decades, and it continues to be a center for healthcare excellence today. This facility was the original Parkview Trauma Center and still operates in the near-central portion of the City of Fort Wayne. Today, Parkview Randallia continues to be the busiest Emergency Department in the region. Whether providing care for traumatic or less-emergent injuries, physicians, nurses and other health professionals strive to provide excellent care to every patient every day.

Structurally, Parkview Randallia is undergoing renovation to better the environment in which patients experience rapid-fire diagnosis and treatment when visiting the hospital's Emergency Department.

Parkview Huntington Hospital

Parkview Huntington Hospital has continued to advance the quality of trauma care with a team approach to traumatically injured individuals within the county. The hospital continues to monitor metrics for standards of documentation and care. Trauma team activations allow the trauma team to rapidly assess and treat the injured patients to optimize their overall care. The collaboration of team members ensures that care for trauma patients at Parkview Huntington is optimized, as demonstrated by the metrics.

Collaborating with a dedicated orthopedic surgeon who practices in Huntington County enables the hospital care team to treat patients closer to home if they have isolated orthopedic injuries. The goal is to help patients remain within their own community for treatment whenever possible.

Parkview LaGrange Hospital

From vehicular crashes on the Indiana toll-road to Amish farm injures, Parkview LaGrange Hospital sees various types of trauma. Parkview LaGrange Hospital physicians and staff continue to demonstrate their commitment to providing the best possible care for injured patients.

The hospital has adopted trauma activation guidelines and collaborates with LaGrange County EMS to develop a systematic response to caring for injured patients. In 2014, LaGrange Emergency Department focused on transfer-out times of the severely injured patients. Parkview Samaritan's flight and ground transport team plays a crucial role in these rapid transfers. When additional resources are needed, adult and pediatric trauma patients are transferred to the Level II Parkview Trauma Centers at Parkview Regional Medical Center in Fort Wayne.

LaGrange County has experienced an increase of serious accidents involving motor vehicles and people who are vulnerable due to their mode of transportation — horse-drawn buggy, bicycle or foot traffic. Amish and Plain Church community members now represent nearly 40 percent of the county's population. Growth in the county's Amish community and the heavy truck and tourist traffic often create dangerous situations. The hospital expanded the Share the Road trauma prevention campaign within the county in order to heighten awareness, promote safety for car and buggy travellers and decrease the number of life-changing traumatic injuries.

Parkview Noble Hospital

Parkview Noble Hospital staff members follow a systematic approach when traumatically injured patients arrive at the hospital. Such an approach is critical in order for patients to receive the most appropriate, quality care each time.

For patients with major trauma, the Emergency Department staff strives to work in a coordinated fashion with the pre-hospital professionals of EMS and their dispatchers, as well as other hospital-based providers. The Emergency Department personnel calls on team members in Lab, X-ray, Cardiopulmonary and other departments to assess and meet the needs of each trauma victim as rapidly as possible, just as they do for heart attacks and strokes. Under the medical direction of Terry Gaff, MD, the Emergency Department team does their best to provide every available resource for assessment and treatment immediately in these time-critical situations. For those who are injured, Parkview Noble Hospital Emergency Department steps forward to be the patient's trauma team.

Parkview Wabash Hospital

Parkview Wabash Hospital is the newest member of the Parkview family of community hospitals. The hospital is a 25-bed critical access hospital with a 24-hour Emergency Department. It's a community-focused hospital with a commitment to excellent patient care. When trauma strikes in Wabash County, the Emergency Department team responds with speedy triage and expert care. Performance improvement efforts currently focus on Emergency Department length of stay. Quality goals are driven by achieving the best outcomes for local residents who need services.

Parkview Whitley Hospital

The staff of Parkview Whitley Hospital strives daily to provide excellent care to seriously injured patients. Hospital-based providers have taken steps to identify injuries quickly in order to facilitate appropriate disposition of injured patients.

Parkview Huntington Hospital EMS team members from left to right:
Rick Uecker, *Paramedic Supervisor*
Katrina (Katie) Adelman, *Paramedic*
Isaac Martin, *Advanced EMT*

The Parkview Whitley Emergency Department collaborates with EMS personnel in order to triage each patient according to the national standards. The hospital implemented documentation standards, trauma team activations and quality metrics. These efforts ensure that patients receive the best possible care and, ultimately, experience the best outcomes.

While each local hospital identifies its own performance improvement focus each year, all Parkview hospitals share a commitment to data collection and a team approach. Parkview's community hospitals upload trauma data into the Indiana State Department of Health database, as well as the National Trauma Data Bank. As each hospital continues to measure process improvement and practice in accordance to national trauma guidelines, trauma patients receive excellent care throughout Parkview facilities. A vast network including local teams of physicians, nurses and ancillary departments work hand-in-hand with EMS and other first responders in order to achieve excellent trauma outcomes for individuals experiencing life-threatening injuries. ■

EMERGENCY PREPAREDNESS

As the home of the Parkview Trauma Centers, Parkview Regional Medical Center (PRMC) has a robust emergency preparedness program. At its heart is a multidisciplinary team that meets monthly to discuss emergency codes and plan exercises. The team conducts several tabletop exercises each year with leadership, as well as a functional exercise for further education and training in the command center.

The in-house decontamination team, also comprising a multidisciplinary group of staff members, conducts quarterly "wet decon drills" to maintain their skills and ensure that equipment is in proper working order. Each year's activities culminate in a full-scale exercise using a scenario that is based upon the hazard vulnerability analysis from the prior year. This full-scale exercise involves multi-agency coordination and patient influx, as well as decontamination of live "victims."

These efforts, drills and exercises assist the Emergency Preparedness Team in building and maintaining a comprehensive program for the Parkview Regional Medical Center campus.

Facility design also contributes to preparedness efforts. The decontamination system on the PRMC campus comprises two distinct areas:

- **Decontamination shower room** — Directly adjacent to the Emergency Department, this shower room has four shower heads and a closed containment tank system capable of holding up to 300 gallons of run-off water. It can be used in the event that several people or a small group of ambulatory patients needs decontamination.
- **Built-in shower system** — Incorporated into the EMS bay canopy outside the Emergency Department, this shower system can potentially be used for mass decontamination. The area beneath the canopy can be set up in two separate corridors to accommodate large groups of both male and female victims.

In addition, an inflatable decontamination tent, housed on the disaster trailer, provides a portable third option. The tent can be transported and set up on other areas of the campus, or off-campus, should the PRMC's Emergency Department become contaminated or otherwise unsuitable for patient care. ■

PREVENTION

The Share the Road campaign promotes safety for all people using various modes of transportation in the region, and reminds motorists to be alert and allow plenty of room for more vulnerable, slower-moving travelers.

Trauma prevention programs reveal the Parkview Adult and Pediatric Trauma Centers' continuing commitment to reducing the number of lives impacted by life-threatening injuries.

Don't Text & Drive

Parkview's Don't Text & Drive (DT&D) campaign began raising awareness about the dangers of distracted driving years before national campaigns proliferated. Parkview Trauma Centers have been deeply involved in the program, which continues to mature year after year. The program is an outreach to the community to help save lives by raising public awareness.

Social media played a huge part in ongoing growth as the Don't Text & Drive campaign spread the word at local and regional events, and the Facebook page featured studies, videos and personal stories. The DT&D Facebook page now has more than 157,000 followers and continued support from all over the world.

Parkview added new billboards and transit advertising with a thought-provoking message reminding adults that they, too, should refrain from texting and driving: "Your kids are watching."

Parkview continues to collaborate with Evans Toyota, Fort Wayne, and the Indiana State Police to share the messages of the Don't Text & Drive and Share the Road campaigns.

Don't Text & Drive Seminars for Teens and Parents

Parkview Trauma Centers periodically sponsor free seminars to help equip young drivers and their parents with the tools they need to become more focused, safer drivers. Powerful testimonials from people who have lost loved ones to distracted driving crashes prompt frank conversation.

PREVENTION *continued*

Laws governing distracted driving are also discussed, and seminar participants experience the dangerous nature of distracted driving firsthand while using a driving simulator provided by AAA.

Share the Road

Parkview Trauma Centers have implemented the growing Share the Road program to help protect and prevent injuries within the community. With the increased activity that is taking place on the road systems, motorists and other travelers alike need to become more alert and aware of the variety of commuters. Parkview has been working closely with the City of Fort Wayne to magnify the importance of sharing the road with pedestrians, bicyclists, motorcyclists, and Amish buggy passengers. Public outreach includes billboards designed with runners, motorcyclists, cyclists, and Amish buggies in mind. The latest mobile advertisement for this program is the Share the Road vehicle wrapped in artwork that helps remind motorists to be aware.

Bike Helmet Safety and the Parkview Safety Store

The Parkview Safety Store located at Carew Medical building offers injury-prevention merchandise and safety supplies that will keep you safe at any age, from inside the home to being outside. The store also provides safety-certified bike helmets and fittings to ensure the proper fit for each individual. Apparel and other items supporting Parkview's Don't Text & Drive and Share the Road campaigns are available for purchase at the store.

Parkview Safety Store

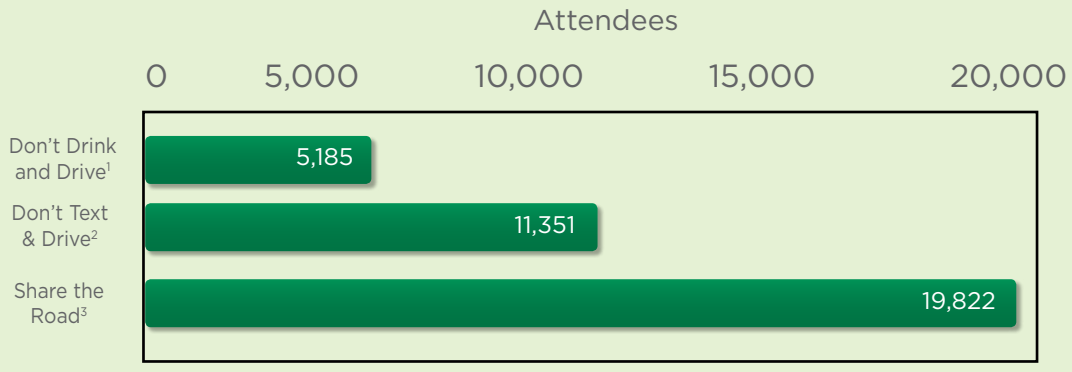
(260) 373-7201

1818 Carew Street, Suite 140
Parkview Hospital Randallia campus
Fort Wayne, IN 46805

Tuesdays, 10 a.m. – 1 p.m. and 4 – 7 p.m.

Provision of Trauma Prevention Education Program

Members of the Public Attending Presentations/Program Displays



[1] Implemented in 1998 [2] Began in 2009 [3] Launched in 2010

Don't Drink and Drive

In order to reduce the number of deaths and severe, long-term disabilities from crashes due to drinking and driving, Parkview Trauma Centers offer free presentations and displays to schools and community organizations. Presentations offer a personal story involving loss of life due to drunk driving. The very powerful presentations are known for capturing the attention of even restless teens. "Fatal vision" glasses are also available for participants, enabling them to safely experience the sensation of driving drunk to fully understand how intoxication impairs vision and reflexes.

Multiplier Effect

Trauma prevention is a collaborative effort that reaches across departments and disciplines. Parkview Trauma Centers convened a task force to multiply the impact of the range of programs aimed at reduction of injuries. Trauma staff members and the prevention specialist are available to provide education on all of these programs.

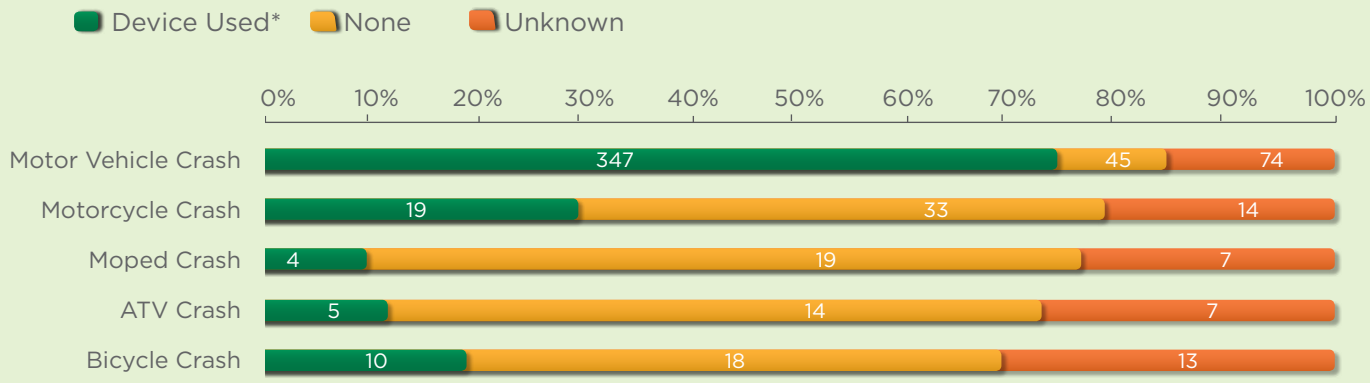
Child Maltreatment Team

Parkview has initiated an expert team whose members are available at a moment's notice when abuse, neglect or other maltreatment is suspected. The trauma pediatric coordinator serves as a liaison to the team, which includes child life specialists and members from pediatric critical care, pediatric emergency medicine, trauma surgery and pediatric psychiatry.

Safe Sleep

In recent years, SIDS (Sudden Infant Death Syndrome) has been linked to unsafe sleep practices such as co-sleeping (infants sleeping with their parents in bed)

Protective Devices Used in Selected Crashes, All Trauma
2014



*Note: Multiple devices used in a single vehicle crash are counted as one.

PREVENTION *continued*

and suffocation from inappropriate bedding. Under the aegis of Parkview's Safe Slumber program, registered nurses from Parkview Community Nursing educate parents-to-be on the hazards of unsafe sleep practices and provide tips on creating a safe sleep environment. The program also supplies cribs to families who need a safe place for their infant to sleep.

Car Seat Safety

Parkview provides free car seat inspections to aid parents in ensuring their children are properly restrained in safety-approved car seats whenever they're on the road. Inspections are offered by appointment and at some community events.

ThinkFirst

Parkview helps elementary and high school students recognize dangerous behaviors and avoid life-threatening or permanently disabling injuries through ThinkFirst presentations in the classroom.

ThinkFirst is a National Injury Prevention Foundation program, and presentations are geared to specific age groups, with subject matter for younger children aimed at encouraging use of safety habits at an early age, and more serious discussion for teens. Individuals who have suffered brain or spinal cord injuries speak honestly with teens about risky behaviors and how their lives have been impacted by paralysis or brain damage. A rehab nurse facilitates discussion. Also covered are violence prevention, dealing with peer pressure and bullying, and safety in sports and recreation. Presentations are provided through Parkview Rehabilitation Center — in partnership with Fort Wayne Neurological Center — and Parkview Community Nursing.

Safety Camps

Parkview collaborates with emergency services providers and health-and-wellness organizations in several counties of its service area to provide one-day safety camps for youngsters. Camp provides fun, interactive activities that teach grade-school children about safety with regard to water, fire, household hazards, recreation,

strangers and pets. They also give the children a chance to learn about basic health topics and talk with first responders and law enforcement officers.

Driver Rehabilitation

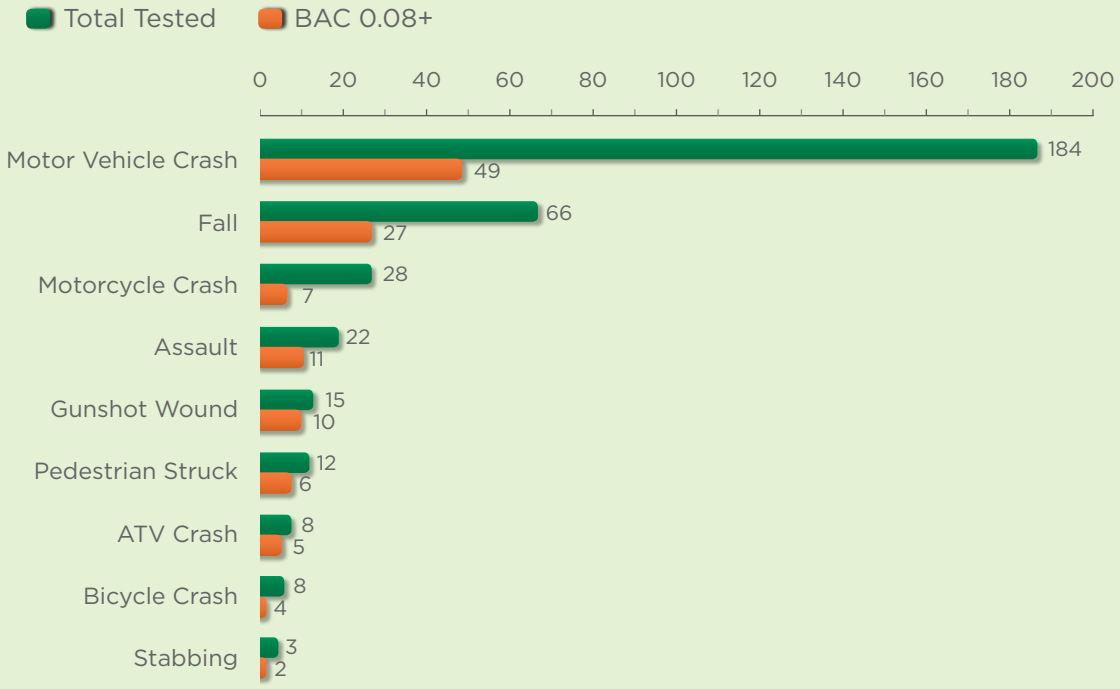
Medical conditions, effects of aging and other factors can erode a person's ability to safely operate a vehicle. Parkview Outpatient Therapy's Driver Rehabilitation program helps older adults and others regain their driving skills and avoid accidents. Occupational therapists, who are certified driver rehab specialists, evaluate each person's physical condition and cognition, provide on-the-road driving assessments and make recommendations for any education, equipment or other resources needed. These may include driving aids, behind-the-wheel training, vehicle modification and alternative transportation.

Fall Prevention

Many older adults restrict their activities because they are concerned about the possibility of falling. Indeed, falls are among the most numerous injuries treated at Parkview Trauma Centers. New in 2015, a designated nurse practitioner now oversees a geriatric fall prevention program to help better educate this population with inpatient and outpatient follow-up.

Parkview Center on Aging & Health offers a fall prevention program enabling patients to determine their risk for a fall. In addition, Parkview Senior Services offers an eight-session "A Matter of Balance" workshop that emphasizes practical strategies for managing falls, such as eliminating household tripping hazards and increasing activity levels.

Blood Alcohol Concentration (BAC) Level in Selected Patients
2014



*Note: BAC equal to or greater than 0.08 is considered legally intoxicated.

Parkview Health
10501 Corporate Drive
Fort Wayne, IN 46845

TRAUMA SERVICES TEAM

Raymond Cava, MD, FACS, Trauma Medical Director, Pediatric Trauma Medical Director and Pediatric ICU Co-medical Director, Parkview Regional Medical Center; and Acute Care/Trauma Surgeon, Parkview Physicians Group — Surgical Specialists

Joseph C. Muller, MD, FACS, Surgical/Trauma ICU Medical Director, Parkview Regional Medical Center; and Acute Care/Trauma Surgeon, Parkview Physicians Group — Surgical Specialists

Richard A. Falcone, Jr., MD, MPH, Pediatric Trauma Consultant, Parkview Pediatric Trauma Center; and Pediatric Trauma Medical Director, Cincinnati Children's Hospital Medical Center

Lisa Hollister, RN, BSN, Director, Trauma and Acute Care Surgery

Tabitha Bane, NP, Geriatric Fracture Coordinator

Roxanne Barnes, RN, BSN, Trauma Program Nurse

Debbie Hawkins, RN, BSN, Trauma Program Nurse

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