# 2015

# ISTCC Orientation

Division of Trauma and Injury Prevention
Indiana State Department of Health
2/5/2015

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# 1 State Leadership

## 1.1 State Government Leadership

- Governor
  - Mike Pence
- State Health Commissioner
  - Jerome M. Adams, MD, MPH
- Deputy Commissioner
  - Jennifer Walthall, MD, MPH
- Chief of Staff
  - Eric Miller
- Assistant Commissioner, Health & Human Services Commission
  - Art Logsdon, JD

## 1.2 Division of Trauma and Injury Prevention Staff

**Katie Hokanson, Director, Trauma and Injury Prevention Division**
Katie graduated from Purdue University with a Bachelor of Science degree in industrial engineering and a minor in management. She worked at Frito-Lay as a front line supervisor for a year and a half prior to joining ISDH in 2012. She started in the Division of Trauma and Injury Prevention as the Trauma Registry Manager and served in that role for two and a half years before moving into her current role as division director.
Contact information: khokanson@isdh.in.gov, 317-234-2865

**Jessica Skiba, Injury Prevention Epidemiologist**
Jessica graduated from Purdue University with a Bachelor of Science degree in Cellular, Molecular, and Developmental Biology and from the University of Michigan School of Public Health with a Master's degree in Epidemiology and a Certificate in Public Health Genetics. She worked at the UMSPH Center for Public Health and Community Genomics, St. Joseph Community Health Foundation, and the McMillen Center for Health Education prior to joining ISDH.
Contact information: jskiba@isdh.in.gov, 317-233-7716

**Murray Lawry, EMS Registry Manager / INVDRS Coroner Records Coordinator**
Murray graduated from Ball State University with a Bachelor of Science degree in Political Science and a Master's in Public Administration. He is also a certified EMT. Murray has been with the Indiana State Department of Health for a number of years. He transferred to the Trauma Program from the ISDH Hospital Preparedness Program, where he was responsible for the hospitals in Preparedness Planning Districts 1,2,3,4 and 6.
Contact information: mlawry@isdh.in.gov, 317-233-7695

**Ramzi Nimry, Performance Improvement Coordinator**
Ramzi graduated from Indiana University (Indianapolis) with a Bachelor of Arts in Communication Studies and a minor in Psychology. He spent three years with the Family Social Services

Administration, Division of Mental Health and Addiction, and two years with Regenstrief Institute, IU Center for Aging Research, prior to joining ISDH.
Contact information: rnimry@isdh.in.gov, 317-234-7321

**Camry Hess, Data Analyst**
Camry graduated from Goshen College with a Bachelor of Science degree in Biochemistry and Environmental Science and from the Richard M. Fairbanks School of Public Health with a Master's degree in biostatistics. She worked at the Center for Health Policy at IUPUI prior to joining ISDH.
Contact information: chess1@isdh.in.gov, 317-234-3265

## 1.3 Division of Trauma and Injury Prevention Mission

To develop, implement and provide oversight of a statewide comprehensive trauma care system that:

- Prevents injuries.
- Saves lives.
- Improves the care and outcomes of trauma patients.

## 1.4 Division of Trauma and Injury Prevention Vision

Prevent injuries in Indiana.

## 1.5 Current State of Indiana's Trauma System

Indiana does not have an integrated statewide trauma system—one of only 6 states without one. Indiana has components of a system:

- Emergency medical services (EMS) providers.
- Trauma centers.
- A trauma registry (repository of data on patients who receive hospital care for certain types of injuries).
- Rehabilitation facilities.

# 2 Indiana State Trauma Care Committee (ISTCC)

## 2.1 Executive Order

The Indiana State Trauma Care Committee is established through Executive Order. Governor Daniel's originally created the committee in 2009 and Governor Pence re-issued the Executive Order in 2013. The Committee serves as an advisory group for the Governor and State Health Commissioner regarding the development and implementation of a comprehensive statewide trauma system.

## 2.2 ISTCC Structure

Every committee member is appointed by the governor and fulfills the roles listed in the Executive Order.

| Executive Order Role: | Role/Representing | Member | Representing |
|---|---|---|---|
| a. The State Health Commissioner or the Commissioner's designee. | Chair | Jerome M. Adams, MD, MPH | ISDH |
| b. The Executive Director of the Department of Homeland Security or the Executive Director's designee. | Vice Chair | David Kane | IDHS |
| c. One physician licensed under IC 25-22.5 from each hospital in Indiana that has an accredited level I or level II trauma center. | Level I Trauma Center Physician | Gerardo Gomez, MD | Eskenazi Health |
| | Level I Trauma Center Physician | R. Lawrence Reed, MD, FACS, FCCM | IU Health – Methodist Hospital |
| | Level I Trauma Center Physician | Thomas M. Rouse, MD | IU Health – Riley Hospital for Children |
| | Level II Trauma Center Physician | Lewis E. Jacobson, MD, FACS | St. Vincent Indianapolis Hospital |
| | Level II Trauma Center Physician | Stephen Lanzarotti, MD | St. Mary's Hospital |
| | Level II Trauma Center Physician | Donald Reed, MD, FACS | Lutheran Hospital |
| | Level II Trauma Center Physician | Scott Thomas, MD | Memorial Hospital of South Bend |
| | Level II Trauma Center Physician | W. Matthew Vassy, MD | Deaconess Hospital |

| | | | |
|---|---|---|---|
| | Level II Trauma Center Physician | Mitchell Farber, MD | Parkview Regional Medical Center |
| One emergency medicine physician licensed under IC 22-22.5 recommended by the Indiana Chapter of the American College of Emergency Physicians. | Emergency Medicine Physician | Chris Hartman, MD | St. Francis Hospital and Health Centers |
| One emergency medical services provider. | Emergency Medical Services Provider | Ryan E. Williams, RN, BSN, EMT-P | Reid Memorial Hospital |
| One individual representing fire rescue services appointed by the Governor. | Fire Rescue Services Representative | Tim Smith, Fire Chief | Vincennes Township Fire Department |
| Two nurses licensed under IC 25-23 who are employed as trauma care coordinators appointed by the Governor. | Nurse | Meredith J. Addison, RN, MSN, CEN | Terre Haute Regional Hospital |
| | Nurse | Lisa Hollister, RN | Parkview Regional Medical Center |
| Two physicians licensed under IC 22-22.5 affiliated with a hospital that is<br>1) Is not accredited as a level I or level II trauma care center; and<br>2) Is located in either a rural area or Gary; recommended by the Indiana State Medical Association | Physician – Rural | David J. Welsh, MD | General Surgeon |
| | Physician – Gary | Michael A. McGee, MD | Methodist Hospital of Gary |
| A representative from the Indiana Hospital Association who is not from Marion County. | IHA Representative | Spencer Grover | Indiana Hospital Association |
| | Ex-Officio | Tony Murray | Professional Fire Fighters' Union of |

| | | | |
|---|---|---|---|
| | | | Indiana |

## 2.3 ISTCC Meeting Information

The ISTCC meets on a quarterly basis at the Indiana State Department of Health located at 2 North Meridian Street in Indianapolis. Meeting topics have included:

- Trauma system updates.
  - Subcommittee updates.
- Trauma registry data reports.
- Trauma system rules and regulations.
- Review of "in the process of ACS verification" trauma center status applications and one year review documents.
- Updates/information from Office of EMS and prehospital care by the Indiana Department of Homeland Security.
- Updates/information from the Indiana Disaster Management and Emergency Preparedness division at ISDH.
- Regional trauma system development information.
- Injury prevention updates/information from the Injury Prevention Advisory Council.
- Statewide trauma tour events.
- Trauma education opportunities.

# 3 Trauma Facts

## 3.1 U.S. Trauma Facts

- Injury is the number 1 killer of Americans between the ages of 1-44.

**10 Leading Causes of Death by Age Group, United States – 2012**

| | Age Groups | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rank | <1 | 1-4 | 5-9 | 10-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | Total |
| 1 | Congenital Anomalies 4,939 | Unintentional Injury 1,353 | Unintentional Injury 743 | Unintentional Injury 807 | Unintentional Injury 11,908 | Unintentional Injury 15,851 | Unintentional Injury 15,034 | Malignant Neoplasms 48,028 | Malignant Neoplasms 113,130 | Heart Disease 477,840 | Heart Disease 599,711 |
| 2 | Short Gestation 4,202 | Congenital Anomalies 501 | Malignant Neoplasms 440 | Malignant Neoplasms 472 | Suicide 4,872 | Suicide 6,216 | Malignant Neoplasms 11,337 | Heart Disease 35,265 | Heart Disease 71,228 | Malignant Neoplasms 403,497 | Malignant Neoplasms 582,623 |
| 3 | SIDS 1,679 | Malignant Neoplasms 392 | Congenital Anomalies 167 | Suicide 306 | Homicide 4,614 | Homicide 4,342 | Heart Disease 10,489 | Unintentional Injury 20,394 | Unintentional Injury 15,822 | Chronic Low. Respiratory Disease 122,375 | Chronic Low. Respiratory Disease 143,489 |
| 4 | Maternal Pregnancy Comp. 1,507 | Homicide 339 | Homicide 138 | Homicide 173 | Malignant Neoplasms 1,574 | Malignant Neoplasms 3,674 | Suicide 6,758 | Liver Disease 8,877 | Chronic Low. Respiratory Disease 15,212 | Cerebro-vascular 109,127 | Cerebro-vascular 128,546 |
| 5 | Unintentional Injury 1,169 | Heart Disease 154 | Heart Disease 67 | Congenital Anomalies 160 | Heart Disease 956 | Heart Disease 3,231 | Homicide 2,705 | Suicide 8,862 | Diabetes Mellitus 12,553 | Alzheimer's Disease 82,690 | Unintentional Injury 127,792 |
| 6 | Placenta Cord. Membranes 1,018 | Influenza & Pneumonia 93 | Chronic Low. Respiratory Disease 63 | Heart Disease 108 | Congenital Anomalies 423 | HIV 652 | Liver Disease 2,469 | Diabetes Mellitus 5,747 | Liver Disease 11,230 | Diabetes Mellitus 52,881 | Alzheimer's Disease 83,637 |
| 7 | Bacterial Sepsis 566 | Septicemia 62 | Benign Neoplasms 47 | Chronic Low Respiratory Disease 56 | Diabetes Mellitus 196 | Diabetes Mellitus 646 | Diabetes Mellitus 1,867 | Cerebro-vascular 5,654 | Cerebro-vascular 11,070 | Unintentional Injury 44,698 | Diabetes Mellitus 73,932 |
| 8 | Respiratory Distress 504 | Cerebro-vascular 56 | Influenza & Pneumonia 44 | Cerebro-vascular 51 | Cerebro-vascular 183 | Liver Disease 597 | Cerebro-vascular 1,730 | Chronic Low. Respiratory Disease 4,533 | Suicide 6,929 | Influenza & Pneumonia 43,355 | Influenza & Pneumonia 50,636 |
| 9 | Circulatory System Disease 492 | Benign Neoplasms 55 | Cerebro-vascular 34 | Influenza & Pneumonia 41 | Complicated Pregnancy 169 | Cerebro-vascular 535 | HIV 1,345 | HIV 2,582 | Septicemia 4,982 | Nephritis 37,740 | Nephritis 45,622 |
| 10 | Neonatal Hemorrhage 422 | Chronic Low Respiratory Disease 51 | Septicemia 26 | Benign Neoplasms 40 | Influenza & Pneumonia 147 | Congenital Anomalies 401 | Septicemia 757 | Septicemia 2,340 | Nephritis 4,765 | Septicemia 27,022 | Suicide 40,600 |

**Data Source:** National Vital Statistics System, National Center for Health Statistics, CDC.
**Produced by:** National Center for Injury Prevention and Control, CDC using WISQARS™.

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

- For every trauma death in the United States:
  - Approximately 10 people are hospitalized and transferred to specialized medical care.
  - 178 people are treated and released from hospital emergency departments.[1]

- Problems posed by injury are most acute in our rural areas:
  - 60% of all trauma deaths occur in areas of the United States where only 25% of the population lives.[2]

## 3.2 Indiana Trauma Facts

- Injury is the number 1 killer of Hoosiers between the ages of 1-44.
- A traumatic injury is a severe injury or injuries requiring rapid evaluation and transport to specific hospitals with trauma care capabilities – "worst of the worst".
- More than 4,409 died from injuries in Indiana in 2013.[3]

- Fifth leading cause of death overall.
- Contributed to nearly 7% of all deaths in Indiana.

- Nearly 32,000 Hoosiers are hospitalized every year from injuries.[4]
- About 11 people per day died from injuries in Indiana during the years 2009-2013.

## 3.3 Indiana's Trauma System

A trauma system is an organized approach to treating patients with acute injuries. We need to evaluate the ***entire*** trauma system to get a better understanding of the continuum of trauma patient care in Indiana.

# 4 Trauma Lessons

## 4.1 Trauma Lessons Learned Through War

Early trauma care was learned through war. Thousands more were saved in World War II versus World War I, because field doctors learned:

- The importance of close coordination.
- The importance of rapid stabilization and transport of severe trauma patients.
- The importance of "intense care" centers.

Lessons learned during the Vietnam War:

- "Golden hour" from injury to care is crucial.
  - The hour immediately following injury.
  - The most reliable predictor of trauma survival.
- Field and hospital coordination and integration are vital.
- Airlift medical services were introduced.

## 4.2 Trauma Lessons Learned

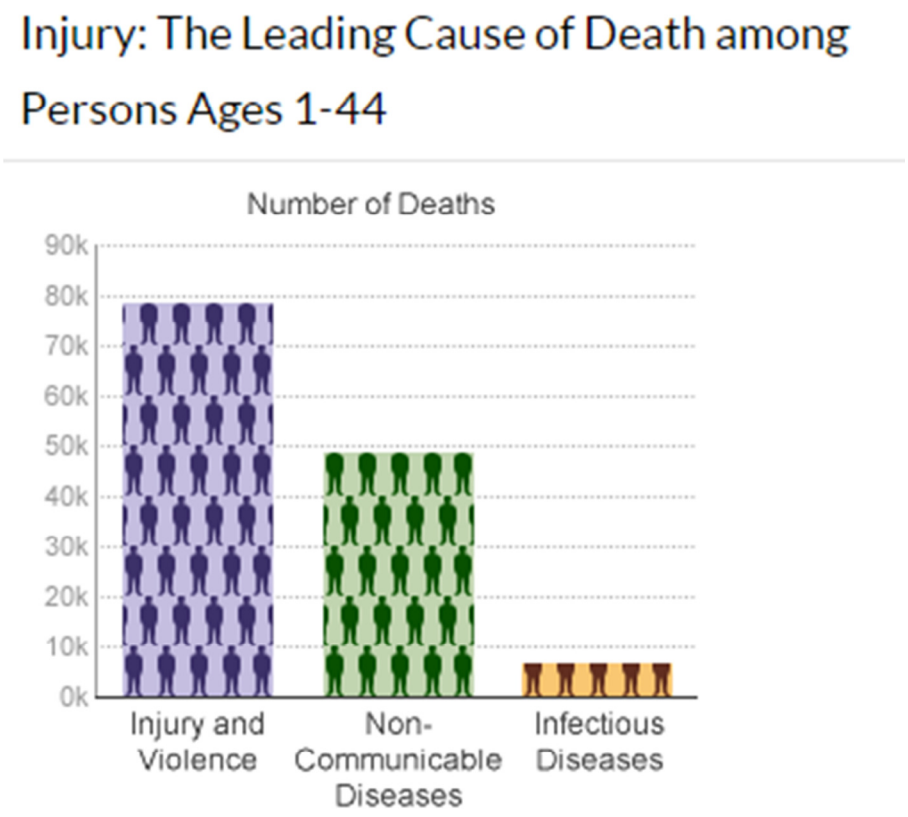
Trauma injuries require rapid evaluation by skilled personnel and immediate transportation to a qualified care center. Trauma centers are unique in capabilities and are NOT the community "emergency rooms." When trauma patients are transported, by ground or air, to trauma centers the preventable death rate DROPS by up to 25% and there are significant reductions of chronic disabilities and overall community care costs[5]. Oregon's trauma system, for example has reduced mortality by more than 25%, reduced morbidity by more than 40%, and reduced health care costs[6]. Another study showed that the costs of trauma in states with trauma systems dropped 9%[6].

# 5 Injury Prevention

## 5.1 What is Injury?

Injuries are NOT accidents! An accident is an unexpected occurrence, happening by chance. An injury is a definable, correctable event, with specific risks for occurrence. Injuries affect all regardless of age, race, or economic status.

In 2011 in the United States, injuries, including all causes of unintentional and violence-related injuries combined, accounted for 51.3% of all deaths among persons ages 1-44 years of age – this is more deaths than non-communicable diseases and infectious diseases combined[7].




Injury Deaths Compared to Other Leading Causes of Death for Persons Ages 1-44, United States, 2011

## 5.2 Cause of Injury Categories[8]

- Cut/Pierce
- Drowning/Submersion*
- Fall
- Fire/Burn
  - Fire/Flame
  - Hot object/substance
- Firearm

- Machinery
- Motor Vehicle Traffic
- Pedal Cyclist, Other
- Pedestrian, Other
- Transport, Other
- Natural/Environmental
    - Bites and Stings
- Overexertion
- Poisoning*
- Struck By, against
- Suffocation*

*Not considered a traumatic injury

## 5.3 Injury Intent

- Unintentional: Not inflicted by deliberate means.
    - Motor vehicle collision, fall, cut

**10 Leading Causes of Injury Deaths by Age Group Highlighting Unintentional Injury Deaths, United States – 2012**

| | Age Groups | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rank | <1 | 1-4 | 5-9 | 10-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | Total |
| 1 | Unintentional Suffocation 965 | Unintentional Drowning 415 | Unintentional MV Traffic 339 | Unintentional MV Traffic 407 | Unintentional MV Traffic 6,910 | Unintentional Poisoning 7,737 | Unintentional Poisoning 7,899 | Unintentional Poisoning 10,340 | Unintentional Poisoning 5,431 | Unintentional Fall 24,190 | Unintentional Poisoning 36,332 |
| 2 | Homicide Unspecified 170 | Unintentional MV Traffic 357 | Unintentional Drowning 141 | Suicide Suffocation 195 | Homicide Firearm 3,931 | Unintentional MV Traffic 5,949 | Unintentional MV Traffic 4,620 | Unintentional MV Traffic 5,359 | Unintentional MV Traffic 4,543 | Unintentional MV Traffic 6,378 | Unintentional MV Traffic 34,935 |
| 3 | Unintentional MV Traffic 68 | Homicide Unspecified 153 | Unintentional Fire/Burn 74 | Homicide Firearm 124 | Unintentional Poisoning 3,175 | Homicide Firearm 3,427 | Suicide Firearm 2,924 | Suicide Firearm 4,113 | Suicide Firearm 3,747 | Suicide Firearm 4,796 | Unintentional Fall 28,753 |
| 4 | Homicide Other Spec., Classifiable 43 | Unintentional Suffocation 138 | Homicide Firearm 67 | Unintentional Drowning 109 | Suicide Firearm 2,218 | Suicide Firearm 2,760 | Suicide Suffocation 2,054 | Suicide Suffocation 2,029 | Unintentional Fall 2,168 | Unintentional Unspecified 4,664 | Suicide Firearm 20,666 |
| 5 | Unintentional Drowning 43 | Unintentional Fire/Burn 101 | Unintentional Suffocation 34 | Suicide Firearm 104 | Suicide Suffocation 1,882 | Suicide Suffocation 2,085 | Homicide Firearm 1,887 | Suicide Poisoning 1,974 | Suicide Poisoning 1,485 | Unintentional Suffocation 3,403 | Homicide Firearm 11,622 |
| 6 | Undetermined Suffocation 41 | Unintentional Pedestrian, Other 98 | Unintentional Other Land Transport 24 | Unintentional Suffocation 45 | Unintentional Drowning 540 | Suicide Poisoning 852 | Suicide Poisoning 1,251 | Unintentional Fall 1,344 | Suicide Suffocation 1,172 | Unintentional Poisoning 1,655 | Suicide Suffocation 10,088 |
| 7 | Homicide Suffocation 26 | Unintentional Struck by or Against 52 | Unintentional Poisoning 21 | Unintentional Other Land Transport 43 | Homicide Cut/Pierce 386 | Undetermined Poisoning 557 | Undetermined Poisoning 640 | Homicide Firearm 1,181 | Unintentional Suffocation 677 | Adverse Effects 1,639 | Suicide Poisoning 6,729 |
| 8 | Undetermined Unspecified 26 | Homicide Other Spec., Classifiable 46 | Homicide Unspecified 18 | Unintentional Fire/Burn 36 | Suicide Poisoning 364 | Homicide Cut/Pierce 437 | Unintentional Fall 458 | Undetermined Poisoning 881 | Homicide Firearm 589 | Unintentional Fire/Burn 1,021 | Unintentional Suffocation 6,238 |
| 9 | Unintentional Natural/ Environment 19 | Homicide Firearm 45 | Unintentional Pedestrian, Other 18 | Unintentional Poisoning 30 | Undetermined Poisoning 247 | Unintentional Drowning 433 | Unintentional Drowning 370 | Unintentional Drowning 533 | Unintentional Fire/Burn 493 | Suicide Poisoning 799 | Unintentional Unspecified 5,915 |
| 10 | Unintentional Fire/Burn 17 | Unintentional Natural/ Environment 39 | Unintentional Struck by or Against 17 | Unintentional Firearm 22 | Unintentional Fall 218 | Unintentional Fall 319 | Homicide Cut/Pierce 351 | Unintentional Suffocation 451 | Undetermined Poisoning 467 | Suicide Suffocation 667 | Unintentional Drowning 3,551 |

**Data Source:** National Center for Health Statistics (NCHS), National Vital Statistics System.
**Produced by:** National Center for Injury Prevention and Control, CDC using WISQARS™.

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

- Intentional: Results from the purposeful use of force to a destructive (or self-destructive) end.
    - Assault, homicide, suicide.

## 10 Leading Causes of Injury Deaths by Age Group Highlighting Violence-Related Injury Deaths, United States – 2012

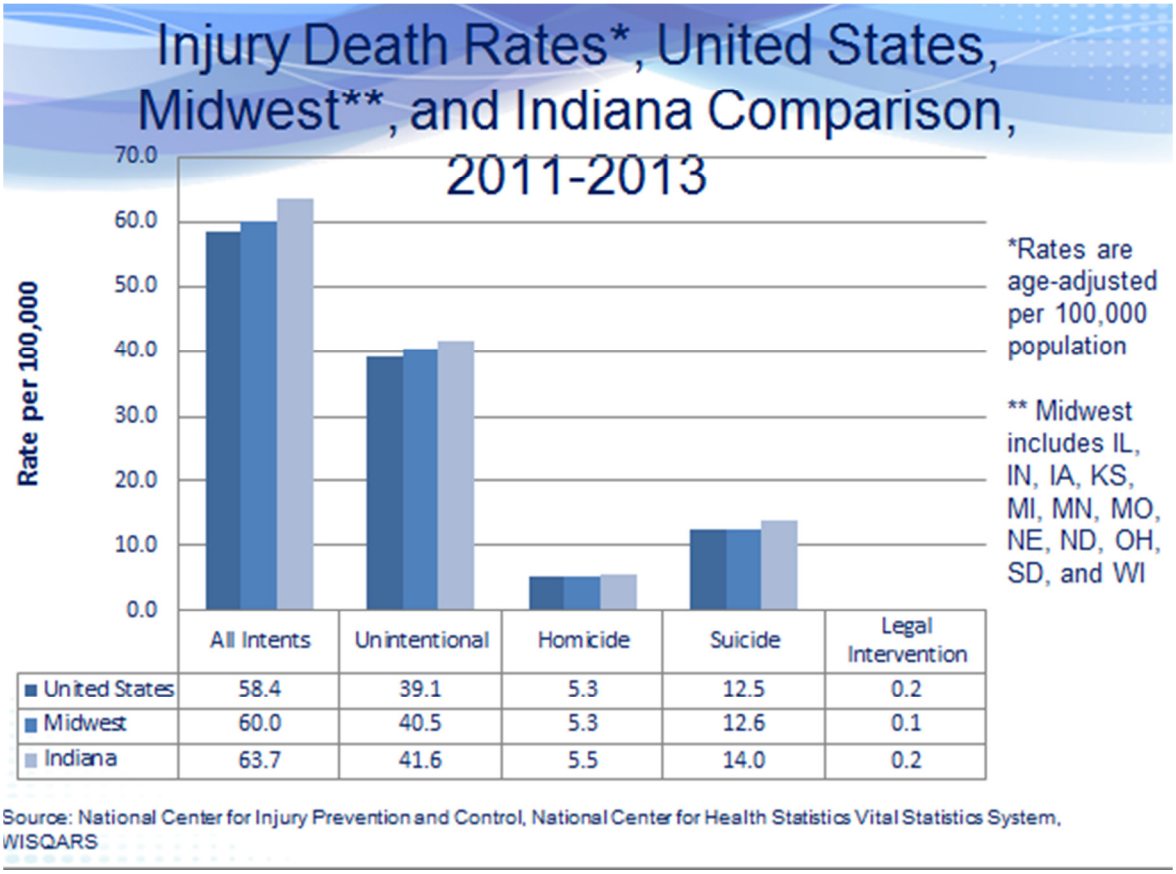
| | Age Groups | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rank | <1 | 1-4 | 5-9 | 10-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | Total |
| 1 | Unintentional Suffocation 965 | Unintentional Drowning 415 | Unintentional MV Traffic 339 | Unintentional MV Traffic 407 | Unintentional MV Traffic 6,910 | Unintentional Poisoning 7,737 | Unintentional Poisoning 7,899 | Unintentional Poisoning 10,340 | Unintentional Poisoning 5,431 | Unintentional Fall 24,190 | Unintentional Poisoning 36,332 |
| 2 | Homicide Unspecified 170 | Unintentional MV Traffic 357 | Unintentional Drowning 141 | Suicide Suffocation 195 | Homicide Firearm 3,931 | Unintentional MV Traffic 5,949 | Unintentional MV Traffic 4,620 | Unintentional MV Traffic 5,359 | Unintentional MV Traffic 4,543 | Unintentional MV Traffic 6,378 | Unintentional MV Traffic 34,935 |
| 3 | Unintentional MV Traffic 68 | Homicide Unspecified 153 | Unintentional Fire/Burn 74 | Homicide Firearm 124 | Unintentional Poisoning 3,175 | Homicide Firearm 3,427 | Suicide Firearm 2,924 | Suicide Firearm 4,113 | Suicide Firearm 3,747 | Suicide Firearm 4,796 | Unintentional Fall 28,753 |
| 4 | Homicide Other Spec., Classifiable 43 | Unintentional Suffocation 138 | Homicide Firearm 67 | Unintentional Drowning 109 | Suicide Firearm 2,218 | Suicide Firearm 2,760 | Suicide Suffocation 2,054 | Suicide Suffocation 2,029 | Unintentional Fall 2,168 | Unintentional Unspecified 4,664 | Suicide Firearm 20,666 |
| 5 | Unintentional Drowning 43 | Unintentional Fire/Burn 101 | Unintentional Suffocation 34 | Suicide Firearm 104 | Suicide Suffocation 1,882 | Suicide Suffocation 2,085 | Homicide Firearm 1,887 | Suicide Poisoning 1,974 | Suicide Poisoning 1,485 | Unintentional Suffocation 3,403 | Homicide Firearm 11,622 |
| 6 | Undetermined Suffocation 41 | Unintentional Pedestrian, Other 98 | Unintentional Other Land Transport 24 | Unintentional Suffocation 45 | Unintentional Drowning 540 | Suicide Poisoning 852 | Suicide Poisoning 1,251 | Unintentional Fall 1,344 | Suicide Suffocation 1,172 | Unintentional Poisoning 1,655 | Suicide Suffocation 10,088 |
| 7 | Homicide Suffocation 26 | Unintentional Struck by or Against 52 | Unintentional Poisoning 21 | Unintentional Other Land Transport 43 | Homicide Cut/Pierce 386 | Undetermined Poisoning 557 | Undetermined Poisoning 640 | Homicide Firearm 1,181 | Unintentional Suffocation 677 | Adverse Effects 1,639 | Suicide Poisoning 6,729 |
| 8 | Undetermined Unspecified 26 | Homicide Other Spec., Classifiable 46 | Homicide Unspecified 18 | Unintentional Fire/Burn 36 | Suicide Poisoning 364 | Homicide Cut/Pierce 437 | Unintentional Fall 458 | Undetermined Poisoning 881 | Homicide Firearm 589 | Unintentional Fire/Burn 1,021 | Unintentional Suffocation 6,238 |
| 9 | Unintentional Natural/ Environment 19 | Homicide Firearm 45 | Unintentional Pedestrian, Other 18 | Unintentional Poisoning 30 | Undetermined Poisoning 247 | Unintentional Drowning 433 | Unintentional Drowning 370 | Unintentional Drowning 533 | Unintentional Fire/Burn 493 | Suicide Poisoning 799 | Unintentional Unspecified 5,915 |
| 10 | Unintentional Fire/Burn 17 | Unintentional Natural/ Environment 39 | Unintentional Struck by or Against 17 | Unintentional Firearm 22 | Unintentional Fall 218 | Unintentional Fall 319 | Homicide Cut/Pierce 351 | Unintentional Suffocation 451 | Undetermined Poisoning 467 | Suicide Suffocation 667 | Unintentional Drowning 3,551 |

**Data Source:** National Center for Health Statistics (NCHS), National Vital Statistics System.
**Produced by:** National Center for Injury Prevention and Control, CDC using WISQARS™.

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

Intent is often uncertain, ambiguous, or unknown

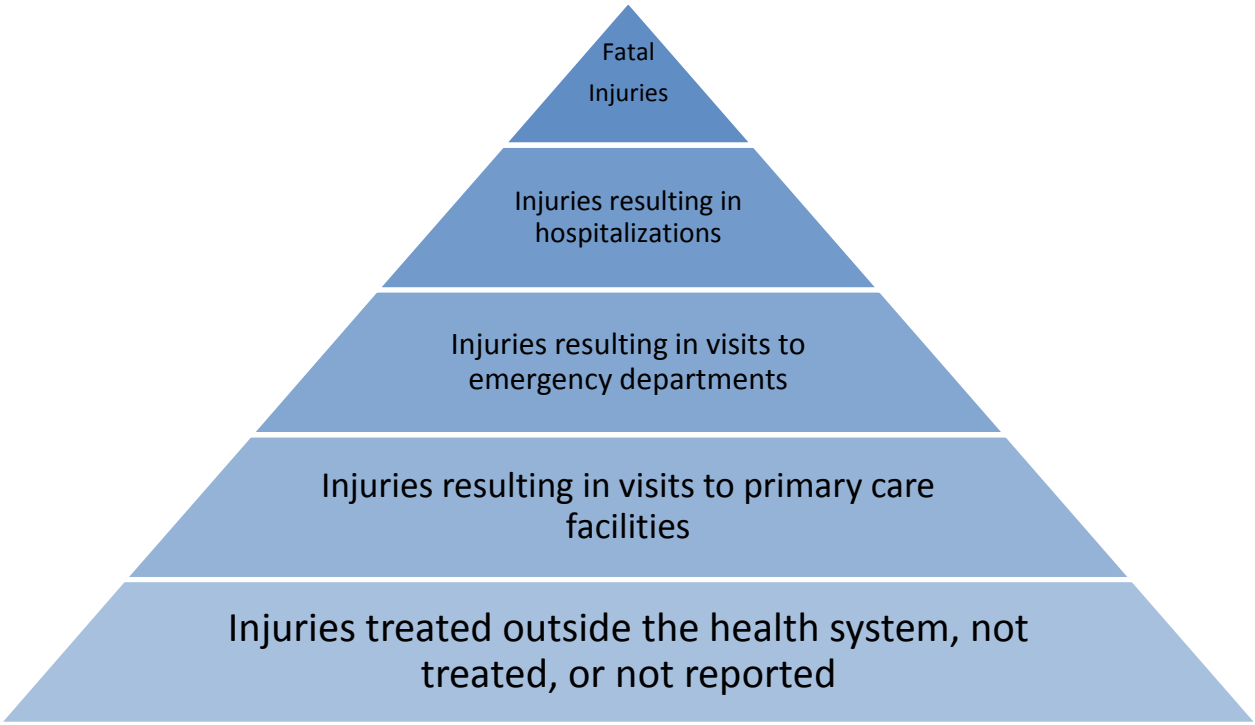
## 5.4 Injury Death Rates




| | All Intents | Unintentional | Homicide | Suicide | Legal Intervention |
|---|---|---|---|---|---|
| United States | 58.4 | 39.1 | 5.3 | 12.5 | 0.2 |
| Midwest | 60.0 | 40.5 | 5.3 | 12.6 | 0.1 |
| Indiana | 63.7 | 41.6 | 5.5 | 14.0 | 0.2 |

Source: National Center for Injury Prevention and Control, National Center for Health Statistics Vital Statistics System, WISQARS

## 5.5 Injury Pyramid



## 5.6 Injuries in the United States

- More than 180,000 deaths per year[8].
  - 1 person every 3 minutes[8].
- 2.5 million people are hospitalized each year.
- 31.6 million treated in ED each year[8].

### National Estimates of the 10 Leading Causes of Nonfatal Injuries Treated in Hospital Emergency Departments, United States – 2013

| | Age Groups | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Rank | <1 | 1-4 | 5-9 | 10-14 | 15-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ | Total |
| 1 | Unintentional Fall 134,229 | Unintentional Fall 852,884 | Unintentional Fall 624,890 | Unintentional Struck By/Against 561,690 | Unintentional Struck By/Against 905,659 | Unintentional Fall 742,177 | Unintentional Fall 704,264 | Unintentional Fall 913,871 | Unintentional Fall 930,521 | Unintentional Fall 2,495,397 | Unintentional Fall 8,771,656 |
| 2 | Unintentional Struck By/Against 28,786 | Unintentional Struck By/Against 336,917 | Unintentional Struck By/Against 403,522 | Unintentional Fall 558,177 | Unintentional Fall 814,829 | Unintentional Overexertion 638,745 | Unintentional Overexertion 530,422 | Unintentional Overexertion 461,114 | Unintentional Overexertion 266,126 | Unintentional Struck By/Against 281,279 | Unintentional Struck By/Against 4,214,125 |
| 3 | Unintentional Other Bite/Sting 12,186 | Unintentional Other Bite/Sting 158,587 | Unintentional Cut/Pierce 112,633 | Unintentional Overexertion 294,669 | Unintentional Overexertion 672,946 | Unintentional Struck By/Against 599,340 | Unintentional Struck By/Against 444,089 | Unintentional Struck By/Against 390,931 | Unintentional Struck By/Against 261,840 | Unintentional Overexertion 212,293 | Unintentional Overexertion 3,256,567 |
| 4 | Unintentional Foreign Body 10,650 | Unintentional Foreign Body 139,597 | Unintentional Other Bite/Sting 107,975 | Unintentional Cut/Pierce 114,285 | Unintentional MV-Occupant 627,565 | Unintentional MV-Occupant 526,303 | Unintentional MV-Occupant 374,231 | Unintentional Other Specified 385,221 | Unintentional MV-Occupant 227,620 | Unintentional MV-Occupant 197,646 | Unintentional MV-Occupant 2,462,684 |
| 5 | Unintentional Other Specified 10,511 | Unintentional Cut/Pierce 83,575 | Unintentional Overexertion 93,612 | Unintentional Pedal Cyclist 84,732 | Unintentional Cut/Pierce 431,691 | Unintentional Cut/Pierce 402,197 | Unintentional Other Specified 300,154 | Unintentional MV-Occupant 343,470 | Unintentional Other Specified 212,168 | Unintentional Cut/Pierce 156,693 | Unintentional Cut/Pierce 2,077,775 |
| 6 | Unintentional Fire/Burn 9,816 | Unintentional Overexertion 81,588 | Unintentional Pedal Cyclist 74,831 | Unintentional Unknown/ Unspecified 84,668 | Other Assault* Struck By/Against 381,522 | Other Assault* Struck By/Against 342,514 | Unintentional Cut/Pierce 297,769 | Unintentional Cut/Pierce 282,353 | Unintentional Cut/Pierce 189,440 | Unintentional Poisoning 100,988 | Unintentional Other Specified 1,767,630 |
| 7 | Unintentional** Inhalation/ Suffocation 8,294 | Unintentional Other Specified 65,120 | Unintentional Foreign Body 63,450 | Unintentional MV-Occupant 73,692 | Unintentional Other Specified 321,914 | Unintentional Other Specified 336,990 | Other Assault* Struck By/Against 207,287 | Unintentional Poisoning 237,328 | Unintentional Poisoning 153,767 | Unintentional Other Bite/Sting 90,850 | Other Assault* Struck By/Against 1,291,100 |
| 8 | Unintentional Cut/Pierce 7,139 | Unintentional Fire/Burn 52,884 | Unintentional MV-Occupant 58,114 | Unintentional Other Bite/Sting 64,848 | Unintentional Other Bite/Sting 177,665 | Unintentional Other Bite/Sting 180,922 | Unintentional Poisoning 175,870 | Other Assault* Struck By/Against 169,688 | Unintentional Other Bite/Sting 97,474 | Unintentional Other Specified 86,729 | Unintentional Other Bite/Sting 1,174,267 |
| 9 | Unintentional Unknown/ Unspecified 5,735 | Unintentional Unknown/ Unspecified 41,297 | Unintentional Dog Bite 43,499 | Other Assault* Struck By/Against 62,829 | Unintentional Unknown/ Unspecified 163,923 | Unintentional Poisoning 180,448 | Unintentional Other Bite/Sting 138,410 | Unintentional Other Bite/Sting 145,349 | Other Assault* Struck By/Against 73,674 | Unintentional Unknown/ Unspecified 74,864 | Unintentional Poisoning 1,055,960 |
| 10 | Unintentional Overexertion 4,985 | Unintentional Poisoning 32,443 | Unintentional Unknown/ Unspecified 35,303 | Unintentional Other Transport 35,609 | Unintentional Poisoning 152,962 | Unintentional Unknown/ Unspecified 129,308 | Unintentional Unknown/ Unspecified 106,498 | Unintentional Unknown/ Unspecified 110,102 | Unintentional Unknown/ Unspecified 67,974 | Unintentional Other Transport 68,022 | Unintentional Unknown/ Unspecified 819,878 |

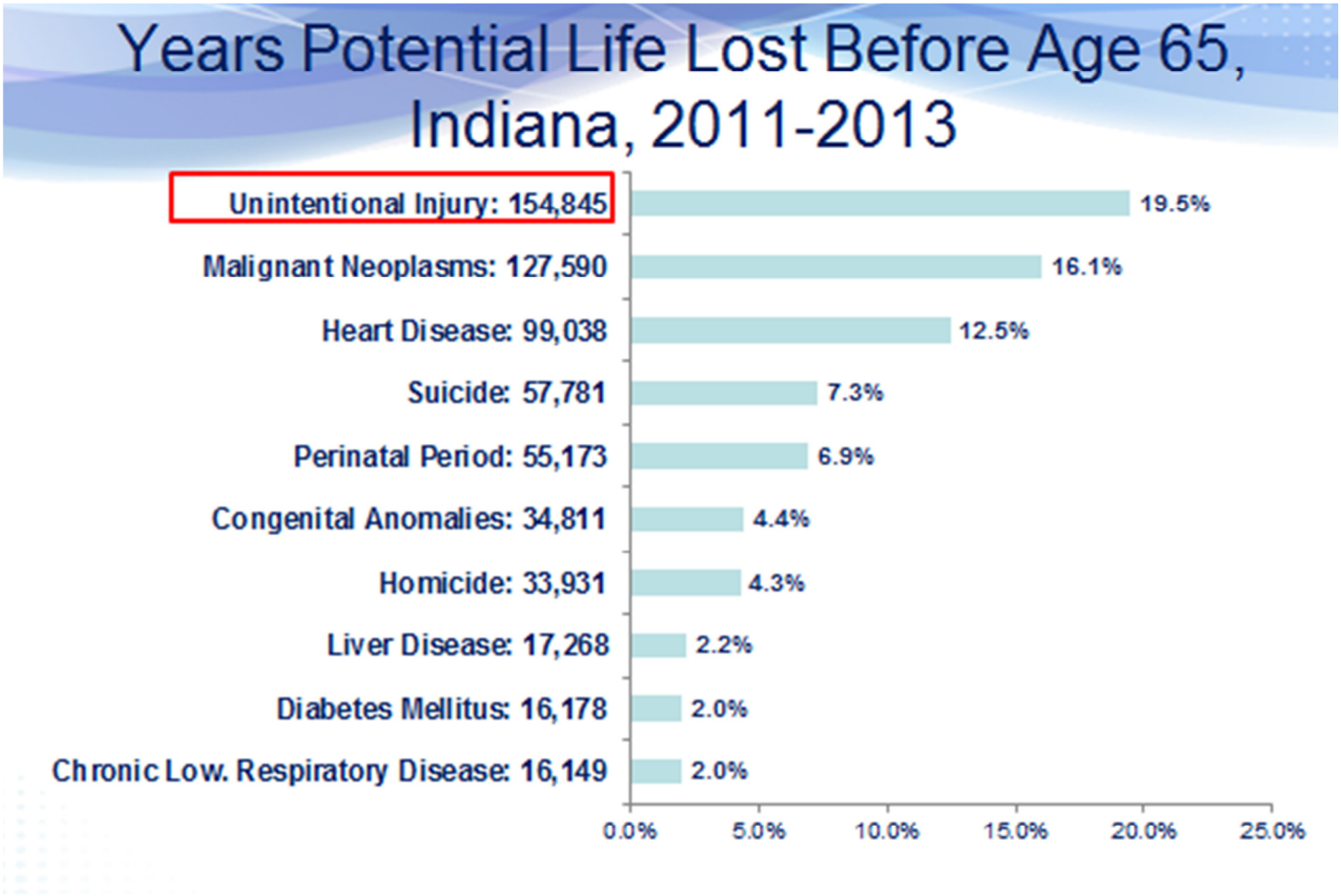
*The "Other Assault" category includes all assaults that are **not** classified as sexual assault. It represents the majority of assaults.
**Injury estimate is unstable because of small sample size.
**Data Source:** NEISS All Injury Program operated by the Consumer Product Safety Commission (CPSC).
**Produced by:** National Center for Injury Prevention and Control, CDC using WISQARS™.

Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

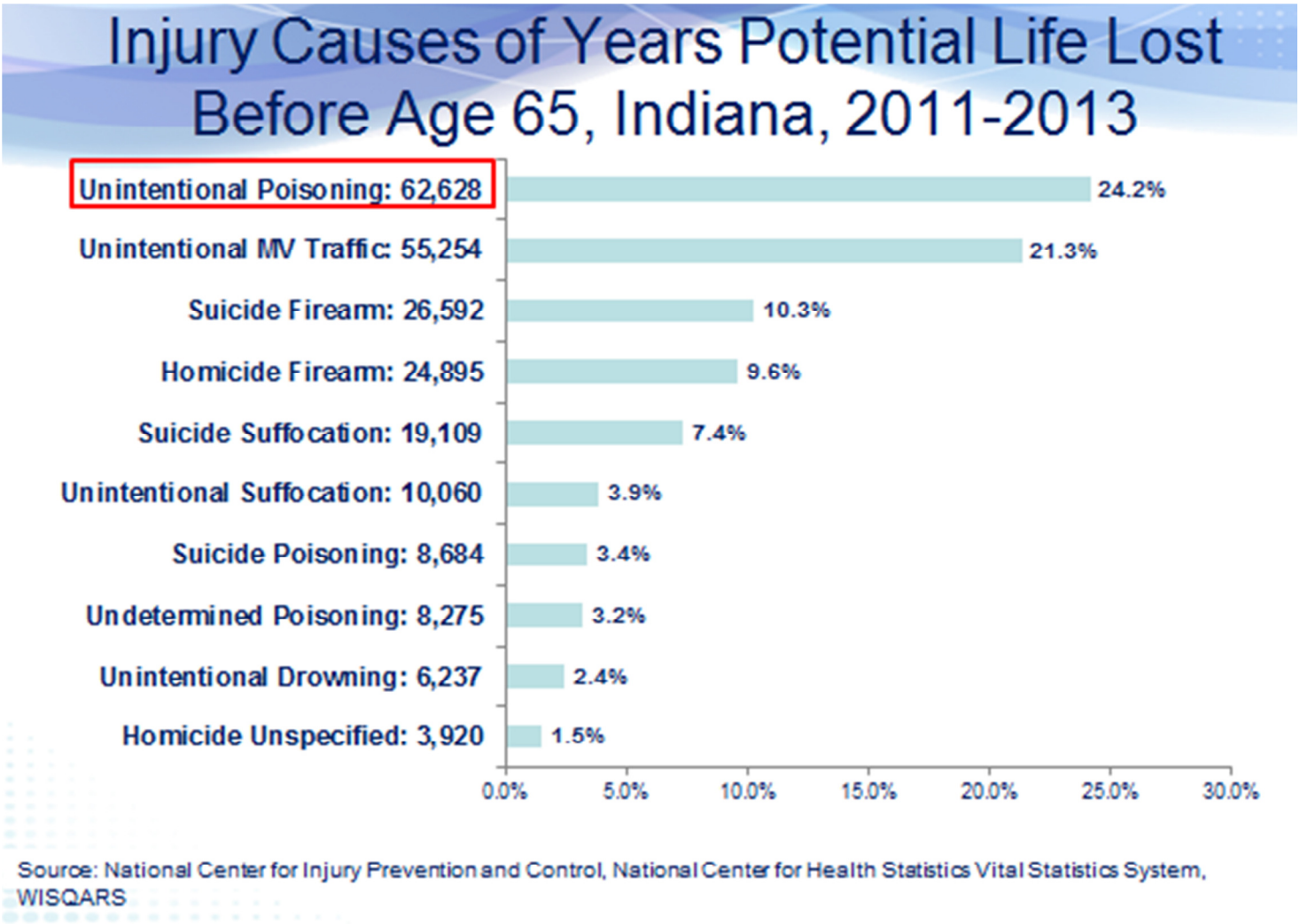
- ~$406 billion in medical care and lost productivity each year[9].

## 5.7 Injuries in Indiana

- Injury is the leading cause of death among persons age 1-44 years.
  - Unintentional injuries are the leading cause of Years of Potential Life Lost (YPLL).
- Injury is the fifth leading cause of death overall and contributes to nearly 7% of all deaths in Indiana.
- There were nearly 32,000 hospitalizations for all injuries in 2013[4].




Source: National Center for Injury Prevention and Control, National Center for Health Statistics Vital Statistics System, WISQARS




## 5.8 Haddon's 10 Basic Strategies for Injury Prevention[10]

- Prevent creation of hazard.
- Reduce amount of hazard.
- Prevent release of hazard.
- Modify the rate or distribution of hazard.
- Separate (in space or time) hazard from that to be protected.
- Separate hazard from that to be protected with barrier.
- Modify relevant basic qualities of hazard.
- Make what is to be protected more resistant to damage.
- Counter damage already done by hazard.
- Stabilize, repair and rehabilitate the object of the damage.

# 6 Indiana's Journey to a Trauma System

## 6.1 Timeline

**2004**

- Trauma System Advisory Task Force formed.

**2006**

- IC 16-19-3-28 (Public Law 155) named the State Health Department (ISDH) the lead agency for statewide trauma system:

  ***State department designated as lead agency of a statewide trauma care system; rule making authority***

  *Sec. 28*

  *(a) The state department is the lead agency for the development, implementation, and oversight of a statewide comprehensive trauma care system to prevent injuries, save lives, and improve the care and outcome of individuals injured in Indiana.*

  *(b) The state department may adopt rules under IC 4-22-2 concerning the development and implementation of the following:*

  *(1) A state trauma registry.*

  *(2) Standards and procedures for trauma care level designation of hospitals.*
- ISDH hired a trauma system manager.

**2007**

- Federal funding from the National Highway Transportation Safety Administration (NHTSA 408) for the state trauma registry was received from the Indiana Criminal Justice Institute (ICJI). A contract with a trauma registry software vendor (ImageTrend) was completed.
  - ICJI funding continues today.

**2008**

- Senate Bill 249 gave the Department of Homeland Security (IDHS) the authority to adopt Emergency Medical Services (EMS) triage and transportation protocols.
- ISDH hired its first state trauma registry manager.
- The American College of Surgeons (ACS) conducted an evaluation of Indiana's trauma system.

**2009**

- ACS provided a set of recommendations for further development of Indiana's trauma system.
- Governor Daniels created by executive order the Indiana State Trauma Care Committee (ISTCC).

**2010**

- The first meeting of the ISTCC (previously the Trauma Care Task Force) was held. The ISTCC serves as an advisory body to the ISDH on all issues involving trauma.

**2011**

- The ISDH hired a trauma and injury prevention division director, prioritizing trauma as a division within the agency.
- ISDH created the Trauma and Injury Prevention Division.

**2012**

- The EMS Commission adopted the Triage and Transport Rule.

**2013**

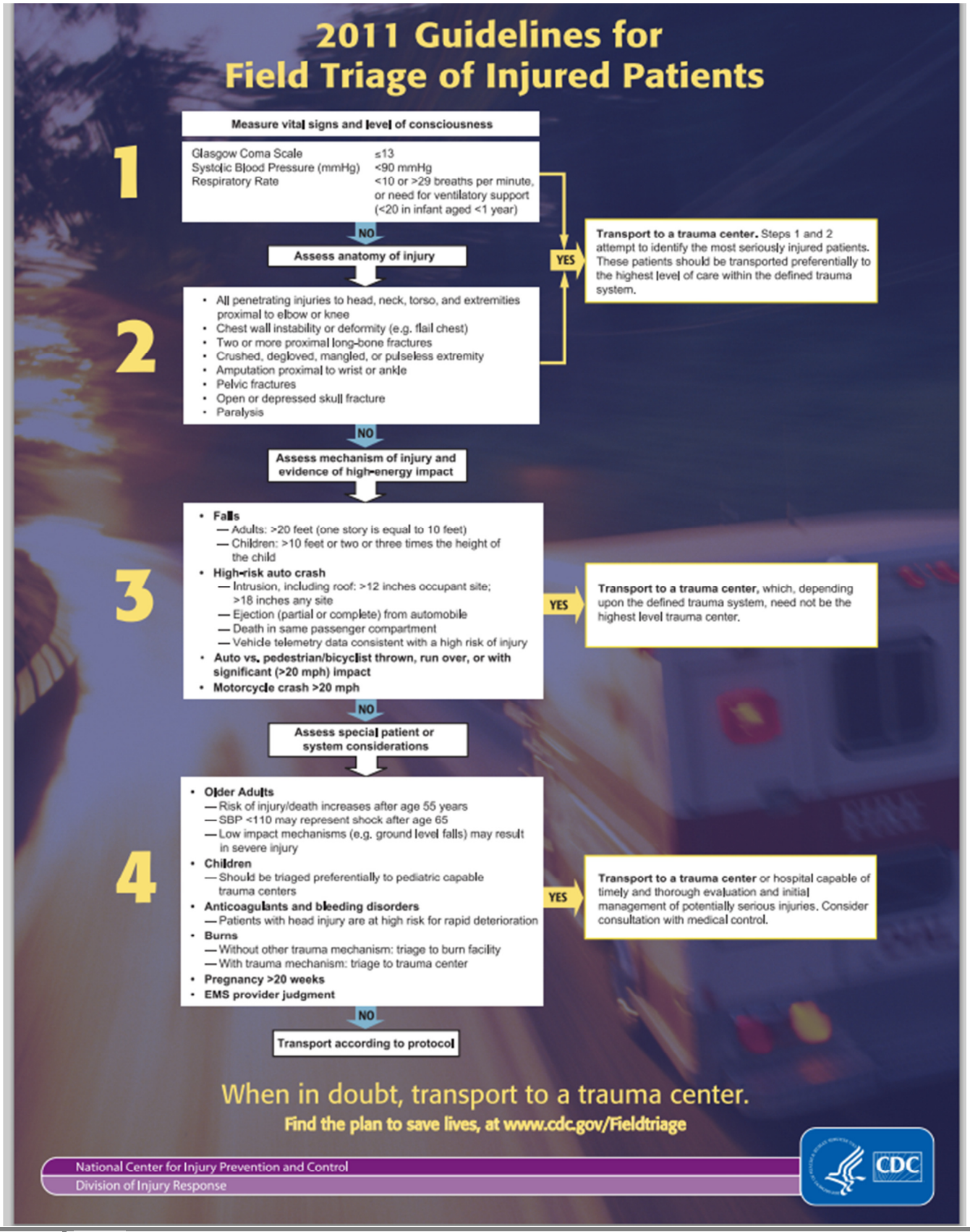
- Governor Pence re-issued Governor Daniel's original Executive Order creating the Indiana Trauma Care Committee.
- The ISDH and IDHS EMS Commission worked together to approve "in the process of ACS verification" trauma centers for purposes of the Triage and Transport Rule, which will greatly increase the number of trauma centers in Indiana and will better prepare Indiana hospitals to become ACS verified trauma centers.
- Governor Pence signs the Trauma Registry Rule. The trauma registry rule requires all EMS providers, hospitals with emergency departments, and rehabilitation hospitals to submit their trauma data to the state trauma registry.

**2014**

- The ISDH hosted the first statewide EMS Medical Director's Conference.
- IU Health Arnett Hospital and IU Health Ball Memorial Hospital became the state's first ACS verified level III trauma centers.
- The ISDH received $1.4 million from the Centers for Disease Control and Prevention (CDC) to gather critical data on violent deaths using the National Violent Death Reporting System (NVDRS).

## 6.2 CDC Field Triage Decision Scheme[11]

The most seriously injured patients should go to a trauma center no matter how long it takes to get them there.



## 6.3 Triage and Transport Rule

The CDC Field Triage Decision Scheme states that the most seriously injured patients should go to a trauma center no matter how long it takes to get them there. The Indiana EMS Commission's Triage and Transport Rule (836 IAC 1-2.1) provides a regulatory plan to ensure that injured patients in the pre-hospital setting are transported to the most appropriate hospital facility within the Indiana state trauma system based on field assessment by EMS personnel of the potential severity of injury, available transportation, and hospital resources. The IDHS put together a "Indiana Trauma Field Triage and Transport Destination Protocol Template[12]". The following steps are outlined in the protocol template:

1. Upon arrival at an incident, Emergency Medical Services (EMS) personnel shall assess the condition of each patient using the CDC field triage decision scheme to determine the appropriate transport destination.
2. Patients determined to need trauma center care by virtue of their satisfying either step one or step two of the CDC field triage decision scheme shall be transported to a trauma center [level of trauma center not specified in Triage and Transport Rule], unless:
    a. If the nearest trauma center is more than 45 minutes away.
    b. Or , if in the judgment of the EMS certified responder, the patient's life is in danger if care is delayed by going directly to a trauma center.
        i. In which case the patient shall be transported to the nearest appropriate hospital as determined by the provider's protocols.
3. Patients determined to need trauma center care by virtue of their satisfying either step three or step four of the field triage decision scheme shall be transported to either a trauma center or the nearest appropriate hospital, as determined by the provider's protocols.
4. Patients who do not meet the field triage decision scheme criteria for trauma center care may be transported according to provider's protocol.

**When in doubt, transport to a trauma center!**

Competent patients always have the right to decide where to be taken.

The Triage and Transport Rule also permits hospitals to be considered "trauma centers" if the hospital is either:

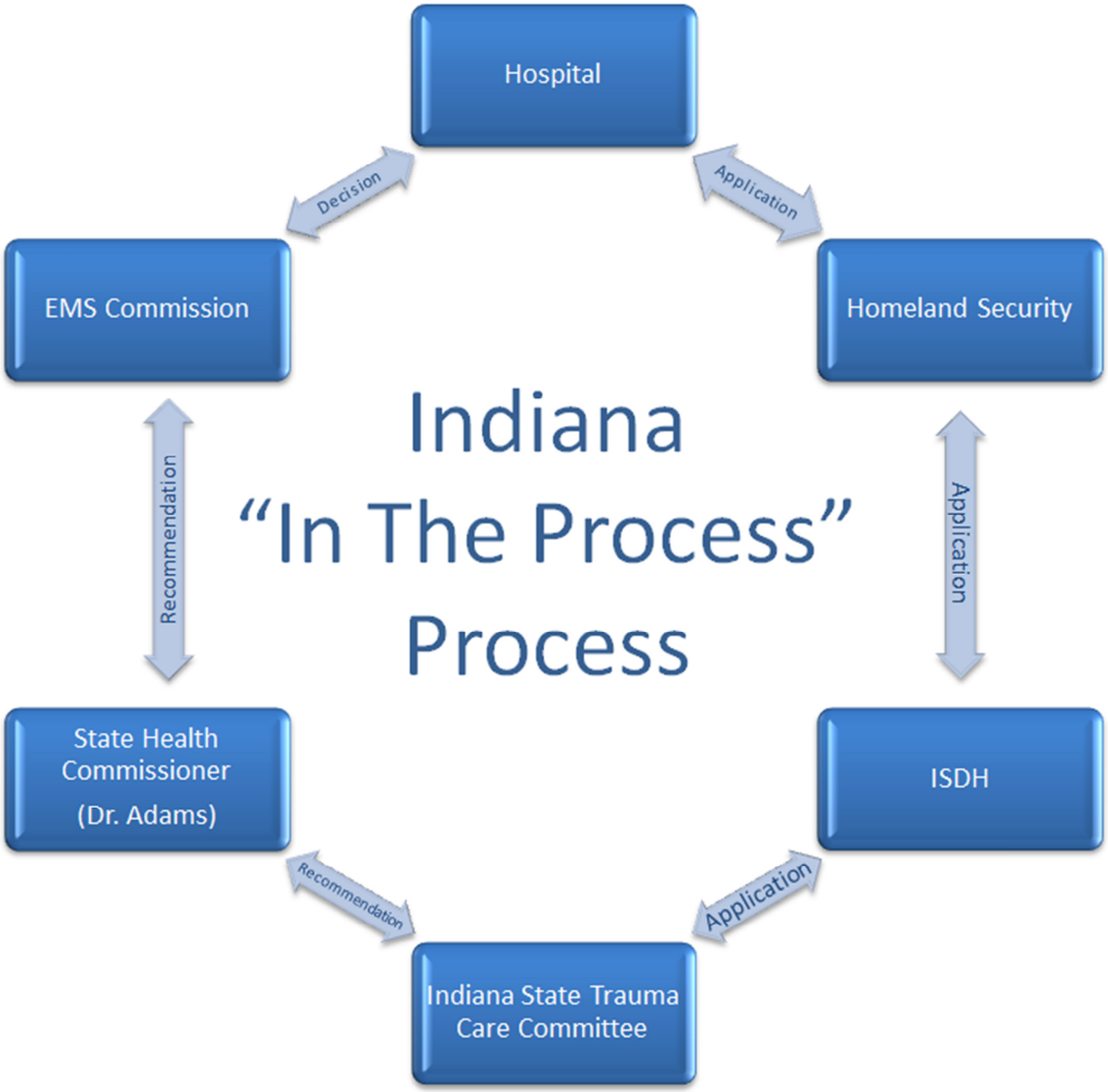
- Verified by the American College of Surgeons (ACS).
- Designated a "trauma center" by a neighboring state's trauma center designation system (if comparable to ACS' system).
- Or, "in the process of ACS verification".

## 6.4 "In the ACS Verification Process" Trauma Centers

The EMS Commission partners with the ISTCC to designate hospitals as "in the ACS verification process" trauma center status. The ISTCC/State Health Commissioner will review the hospital's application. The State Health Commissioner recommends to the EMS Commission whether a hospital should be considered a "trauma center" for this Rule's purpose. The "In the ACS verification process" application is available on the Indiana Department of Homeland Security (EMS Commission) website. Hospitals must provide sufficient documentation for the ISDH to conclude that the hospital complies with a series of requirements. The provisional trauma center status shall not exceed 2

years from the date the provisional status begins. If the hospital is not able to become verified as a trauma center within that 2-year period:

- Provisional status is revoked
- Hospital can't re-apply for "in the process" status for at least 3 years.



## 6.5 Trauma Registry Rule

Rule (410 IAC 34) that requires these providers to report data to the trauma registry:

- EMS providers must submit National EMS Information System (NEMSIS) Silver on the 15th of the month
- All hospitals with EDs must submit the National Trauma Data Standard (NTDS) on a quarterly basis
- Rehabilitation hospitals must submit Centers for Medicare & Medicaid Services (CMS) – Inpatient Rehabilitation Facility Patient Assessment Instrument (IRF-PAI) data on a quarterly basis

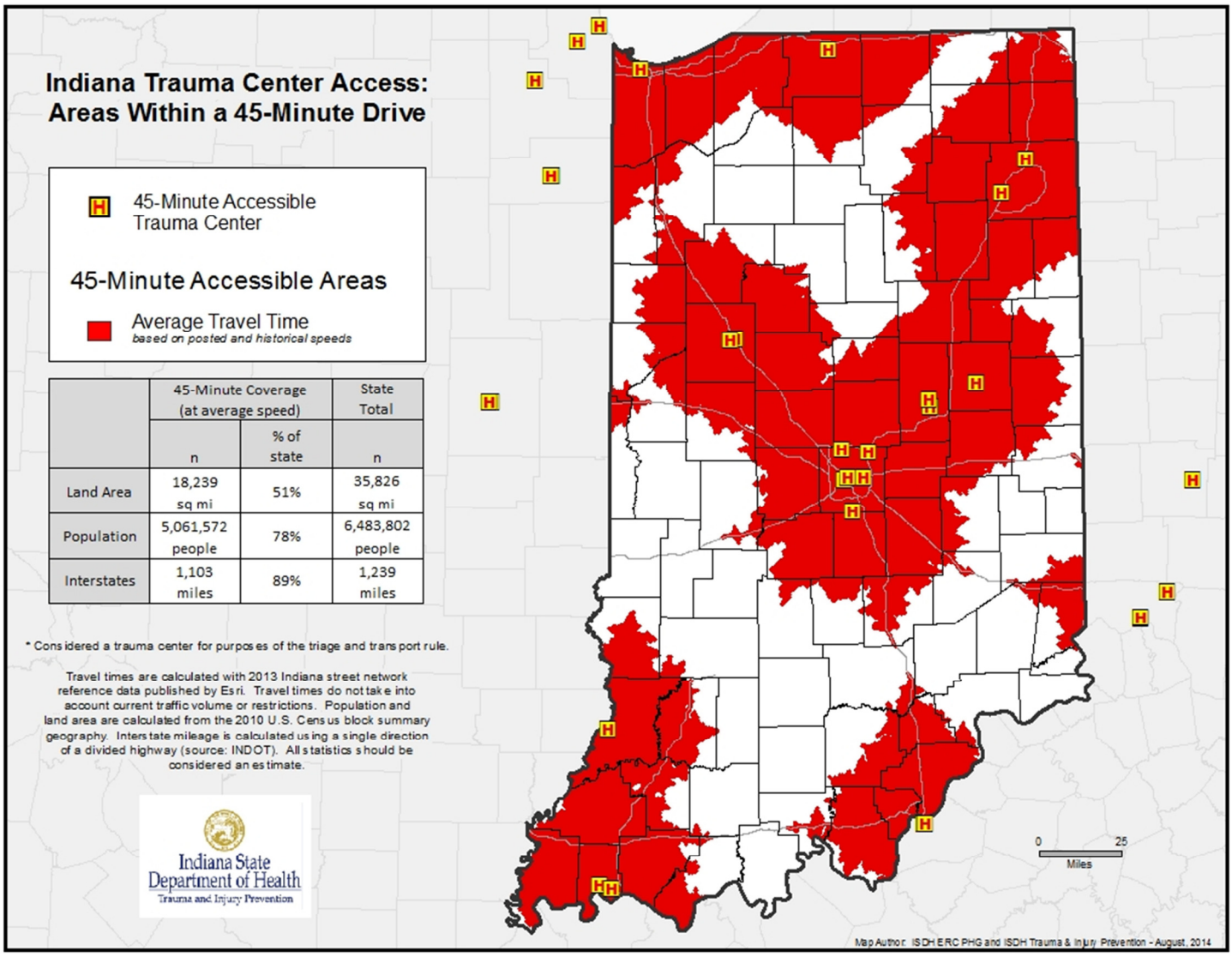
The Rule also permits ISDH to grant any person involved in a legitimate research activity access to confidential information.

## 6.6 Undertriage / Overtriage

- Undertriage: Transporting patients to non-trauma centers that should be taken directly to trauma centers
    - ACS recommends undertriage rate should be < 5%[13]
- Overtriage: Transporting patients to trauma centers that can be cared for appropriately at non-trauma centers
    - ACS recommends overtriage rate should be < 50%[14]

## 6.7 Trauma Center Access in Indiana

Trauma center access in Indiana is currently measured based on the EMS Commission's Triage and Transport Rule. The ultimate goal is to have 100% accessibility to trauma center care.



# 7 Trauma Care System Components

## 7.1 Trauma in Indiana Today – Agency Responsibilities

The Indiana State Department of Health (ISDH) has responsibilities over:

- Trauma and Injury Prevention Division.
- Trauma system development.
- Hospital and rehabilitation center regulation.
- Data collection/performance improvement.

The Indiana Department of Homeland Security (IDHS) has responsibility over:

- Emergency Medical Services (EMS).

## 7.2 Indiana's Trauma System Rules

1. Triage and Transport Rule (EMS Commission)
    - Right patient, right place, right time.
    - "In the process of ACS verification".
2. Trauma Registry Rule
    - EMS, hospitals and rehabilitation hospitals must report data to ISDH.
3. Designation Rule (yet to be promulgated)
    - State approval process of trauma centers.

## 7.3 Trauma System Components

The U.S. Department of Health and Human Services Health Resources and Services Administration (HRSA) put together a Model Trauma System Planning and Evaluation tool. In the tool, elements of a trauma system were outlined. A mature trauma system seeks to minimize quality of care variations by[15]:

- Managing, at the State level, the coordination and facilitation of statewide trauma system development.
- Collaborating and coordinating with related health care and non-health care systems.
- Establishing, consistently using, and maintaining common standards of trauma care that address the needs of all populations.
- Assessing, planning, coordinating, monitoring, and ensuring consistent and optimal care.
- Applying scientifically evaluated injury prevention strategies that target specific populations at risk, the mechanisms that wound them, and their injury environments.
- Using data systems to enhance care.
- Providing sustained funding for system maintenance.
- Setting priorities for injury prevention initiatives.
- Providing statewide ongoing technical assistance to all regions within a State.
- Establishing effective evaluation processes to continuously improve trauma care performance.

Trauma System Core Components include (but are not limited to)[16]:

- Evaluation:
    - Needs assessment.
    - Data collection.

        - EMS.
        - Hospital.
        - Rehabilitation.
    - Research.
        - Problem identification
        - Best practices.
- Public information and education:
    - Injury Prevention.
    - Trauma advisory committee.
- Legislation and regulations:
    - Trauma systems planning and operations
    - Regulations and rules.
    - Lead agency at State level.
- Pre-hospital care:
    - Communications
    - Triage and Transport.
    - Medical Direction.
    - Treatment protocols.
- Definitive care:
    - Facilities (designation and/or verification).
    - Inter-facility transfer.
    - Rehabilitation.
- Human resources:
    - Workforce resources.
    - Education preparation.
- Evaluation:
    - Data collection.
    - Research.
    - Interdisciplinary review committee.

## 7.4 Verified vs. Designated Trauma Centers

- Verified:
    - National process through the American College of Surgeons (ACS).
    - Levels I, II, III.
        - Refer to kinds of resources available in a trauma center.
    - Verified Trauma Centers in Indiana:
        - Level I:
            - Smith Level I Shock Trauma Center at Eskenazi Health, Indianapolis.
            - Methodist Level I Trauma Center at IU Health, Indianapolis.
            - Riley Hospital's Emergency Medicine and Trauma Center (EMTC) at IU Health Riley Hospital for Children, Indianapolis.

        - Level II:
            - Deaconess Regional Trauma Center at Deaconess Hospital, Evansville.
            - Lutheran Trauma Center at Lutheran Hospital, Fort Wayne.
            - Memorial Leighton Trauma Center at Memorial Hospital of South Bend.
            - Parkview Trauma Centers at Parkview Regional Medical Center, Fort Wayne.
            - St. Mary's Trauma Services at St. Mary's of Evansville.
            - St. Vincent Trauma Center at St. Vincent Indianapolis Hospital.
        - Level III:
            - IU Health Arnett, Lafayette.
            - IU Health Ball Memorial, Muncie.
- Designated
    - State process (not yet promulgated).
    - Levels I, II, III:
        - Refer to kinds of resources available in a trauma center.
    - Indiana's designation requirements will go hand-in-hand with the national verification requirements.
        - Additional, unique criteria.

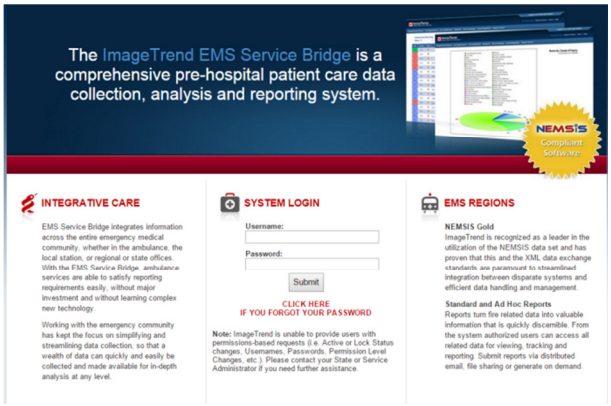
# 8 Pre-Hospital Data

## 8.1 Importance of Pre-Hospital Data

- Focus on data-driven decision making:
  - National push for quality improvement in healthcare.
  - Tied to funding from the Centers for Disease Control and Prevention (CDC), Health Resources and Services Administration (HRSA), National Highway Traffic Safety Administration (NHTSA), etc.
  - Lower future healthcare costs.
  - Preventable injuries.
- Identify unmet needs & priorities:
  - Pockets of healthcare disparities.
  - Trends due to age, race, gender, etc.
- Determine which treatments are effective:
  - Local medical directors know their population.
  - Effective treatments or adjustments to training.
  - Stocking medication or equipment based on known runs.

## 8.2 ISDH EMS Registry Website

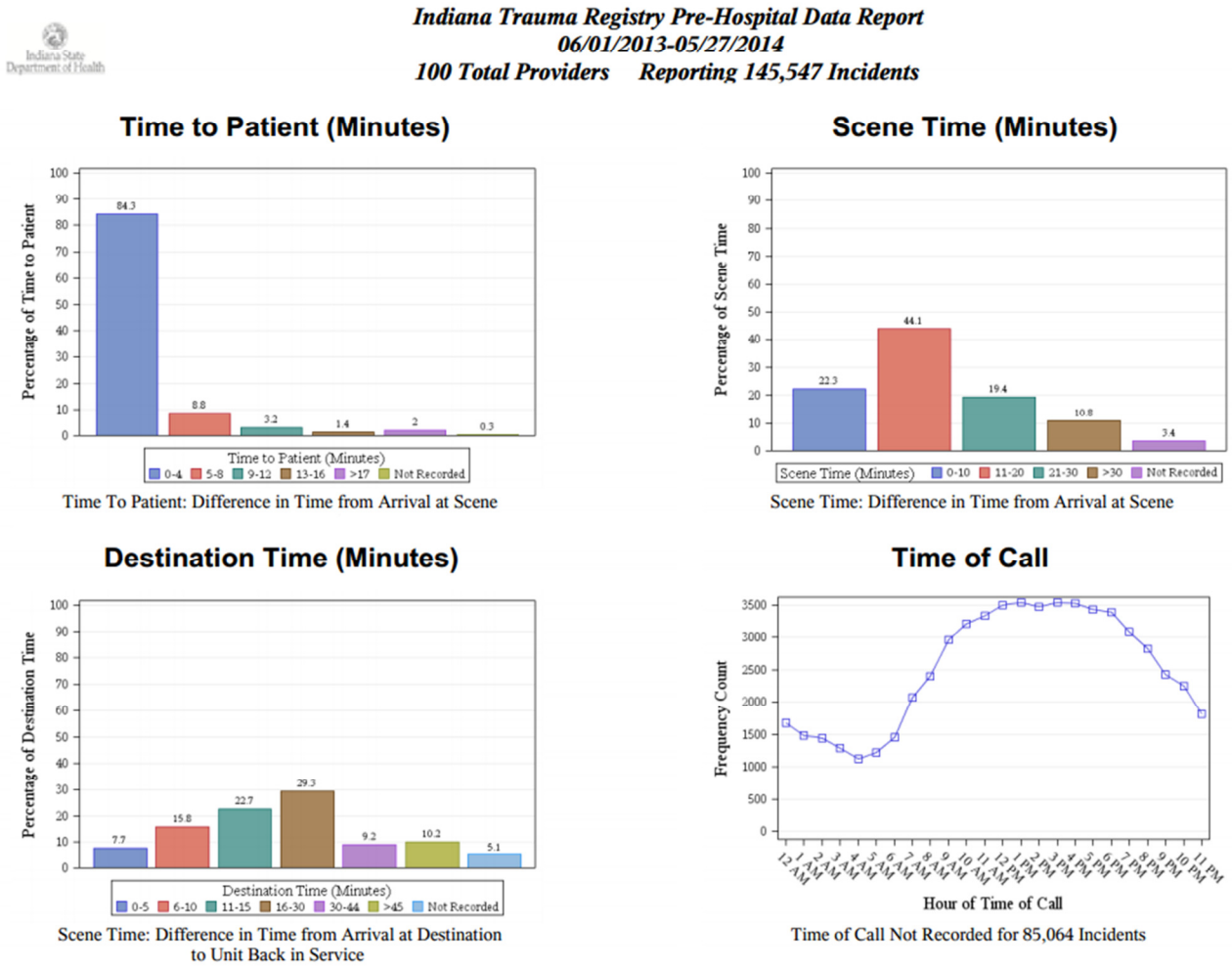
- Web-based software:
  - Provides an electronic patient care reporting (ePCR) system to EMS providers.
  - Allows EMS providers that use other software vendors to upload their data into the state's database.
- National Emergency Medical Services Information System (NEMSIS) (Silver & Gold) compliant.
  - In the future, it will be NEMSIS Version 3 compliant and include more trauma-related data elements as part of the reporting requirements.
- Secure, encrypted site.
- Unique username & password.
- Integrates data with Indiana trauma registry.
- Website: [https://indianaems.isdh.in.gov](https://indianaems.isdh.in.gov) .



## 8.3 Pre-Hospital Data Reports

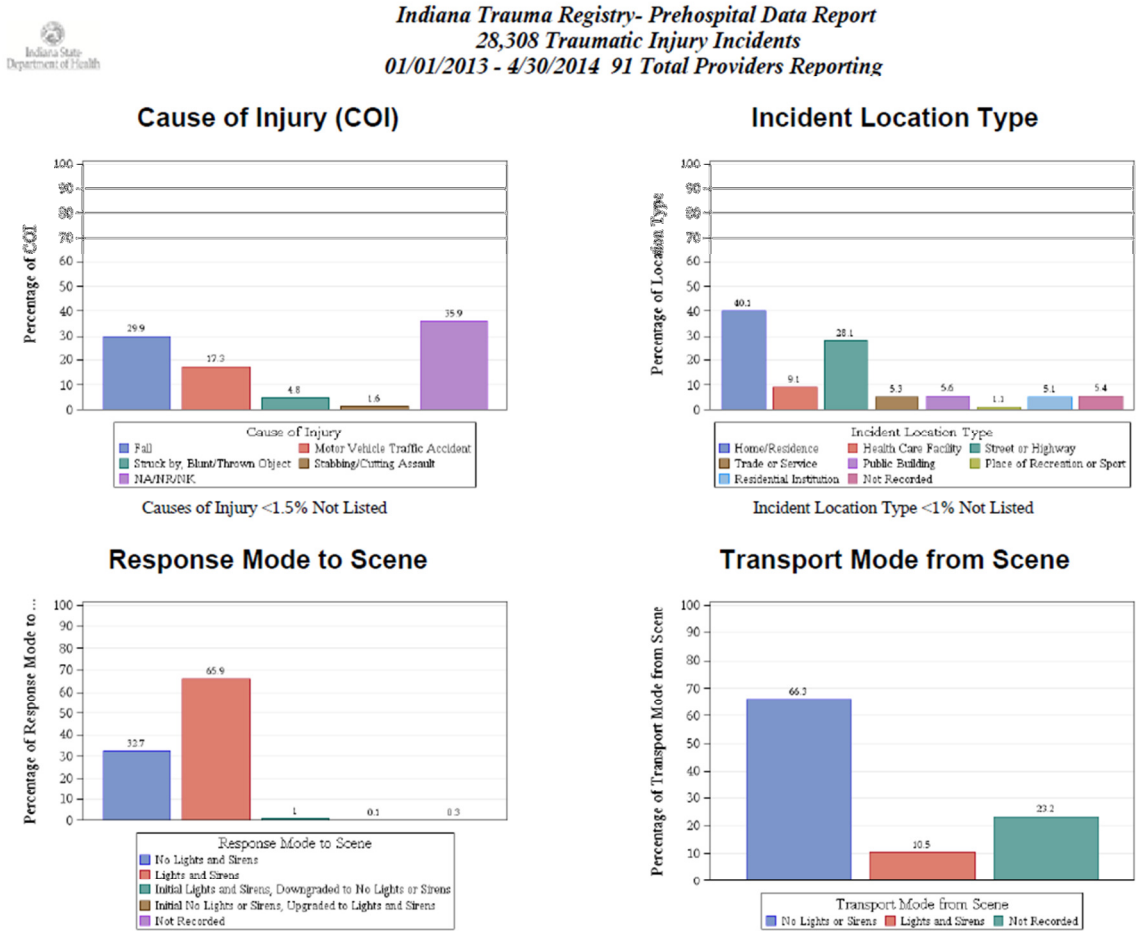
- Reporting Emergency Medical Services (EMS) Services as of February 2015:
  - 188 providers.
  - 880,000+ records.

The Indiana State Department of Health (ISDH) compiles several data reports for the EMS community. The EMS Commission report consists of statewide pre-hospital data:




The ISDH creates a Provider-specific data report that matches the EMS Commission report so that providers can look at their own data compared to the state. Every provider that regularly reports EMS data gets this data report from ISDH on a bi-monthly basis.

The ISDH also creates an Indiana State Trauma Care Committee (ISTCC) prehospital report that analyzes traumatic injury prehospital data. This report is presented at the quarterly ISTCC meetings.




The ISDH also produces ad hoc data reports based on requests submitted.

## 8.4 EMS Registry Timeline

- Summer 2012: ISDH has internal discussions about purchasing an EMS Registry. The CDC Preventive Health Block Grant funds are identified as the funding source for this one-time purchase.
- December 2012: Meeting with EMS Commission Chairman & Vice-Chairman.
- January 2013: Installed EMS database.
- February 2013: Pilot project begins.
- March 2013: Recruit electronic providers.
- April 2013 – November 2013: Pilot project.
- November 24, 2013: Trauma Registry Rule.
- April 2015: Handover EMS registry and responsibilities to the Indiana Department of Homeland Security.

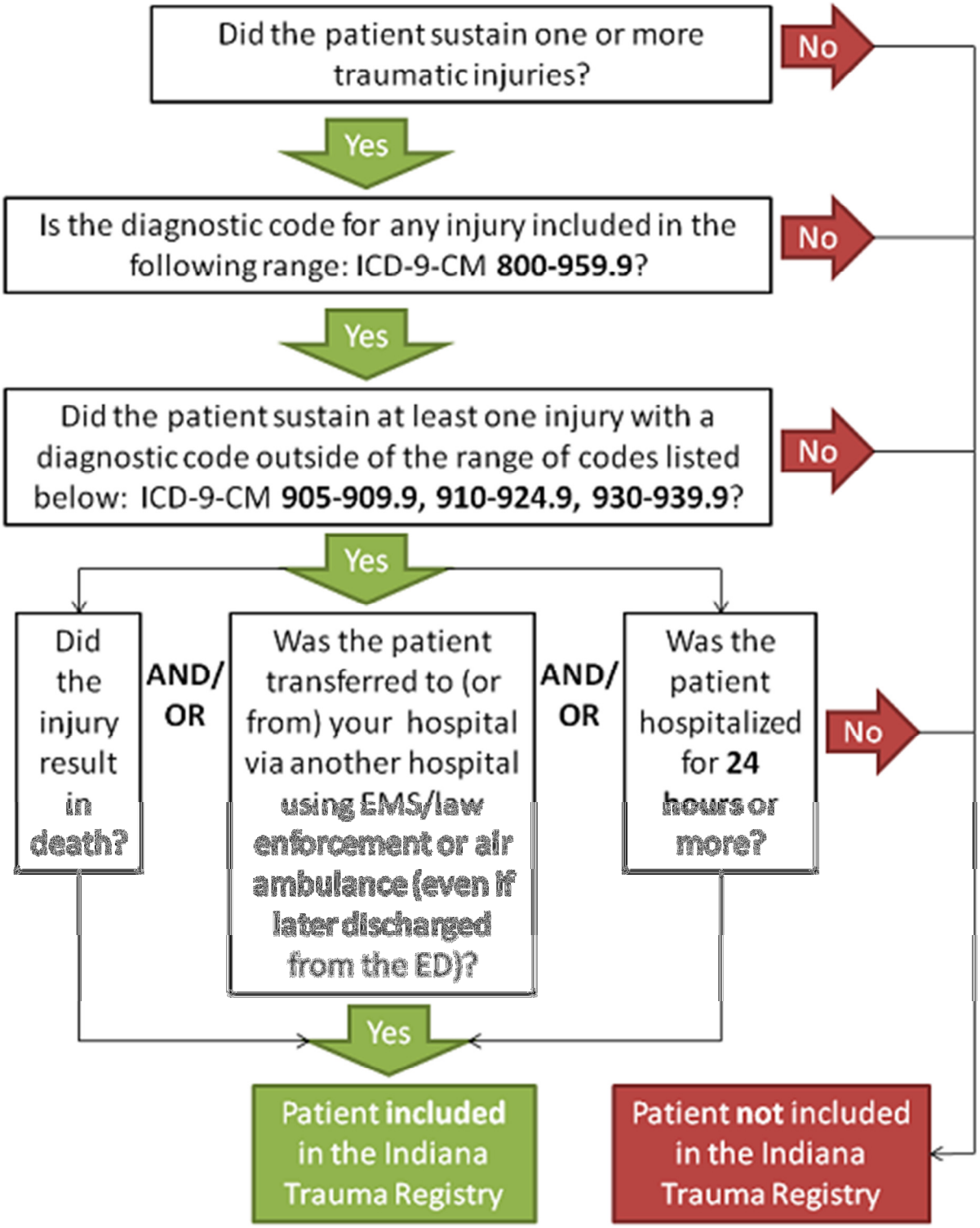
# 9 Indiana Trauma Registry

## 9.1 Scope of Indiana's Trauma Registry

- Began in 2007 with the 7 ACS verified trauma centers.
- State-wide, population-based registry. A directly defined population based on location (Indiana) and disease status (injury) allows ISDH to create programs tailored to the characteristics of our State.
- Trauma patients defined by the American College of Surgeons-Committee on Trauma (ACS-COT).
    - International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) codes: 800-959.9
        - ICD-10 (10th revision) has been designed to include new, more detailed diagnoses and treatments, which leads to enhanced coding accuracy.
- Utilized for overall management of the Indiana trauma system:
    - Monitor variations in incidence, outcomes.
    - Monitor system performance.

## 9.2 National Trauma Data Standard Patient Inclusion/Exclusion Criteria

To ensure consistent data collection across states into the National Trauma Data Bank (NTDB), a trauma patient is defined as a patient sustaining a trauma injury and meeting the following criteria.



## 9.3 ISDH Trauma Registry Website

- Compliant with ACS NTDB.
- Accessible with internet connection.
- Customizable user interface, easy to use.
- Capable of electronic data transfer from hospital's existing registries.
- HIPAA compliant.
- Website: [https://indianatrauma.isdh.in.gov](https://indianatrauma.isdh.in.gov) .

## 9.4 Trauma Registry Data

- Data submitted quarterly by hospital.

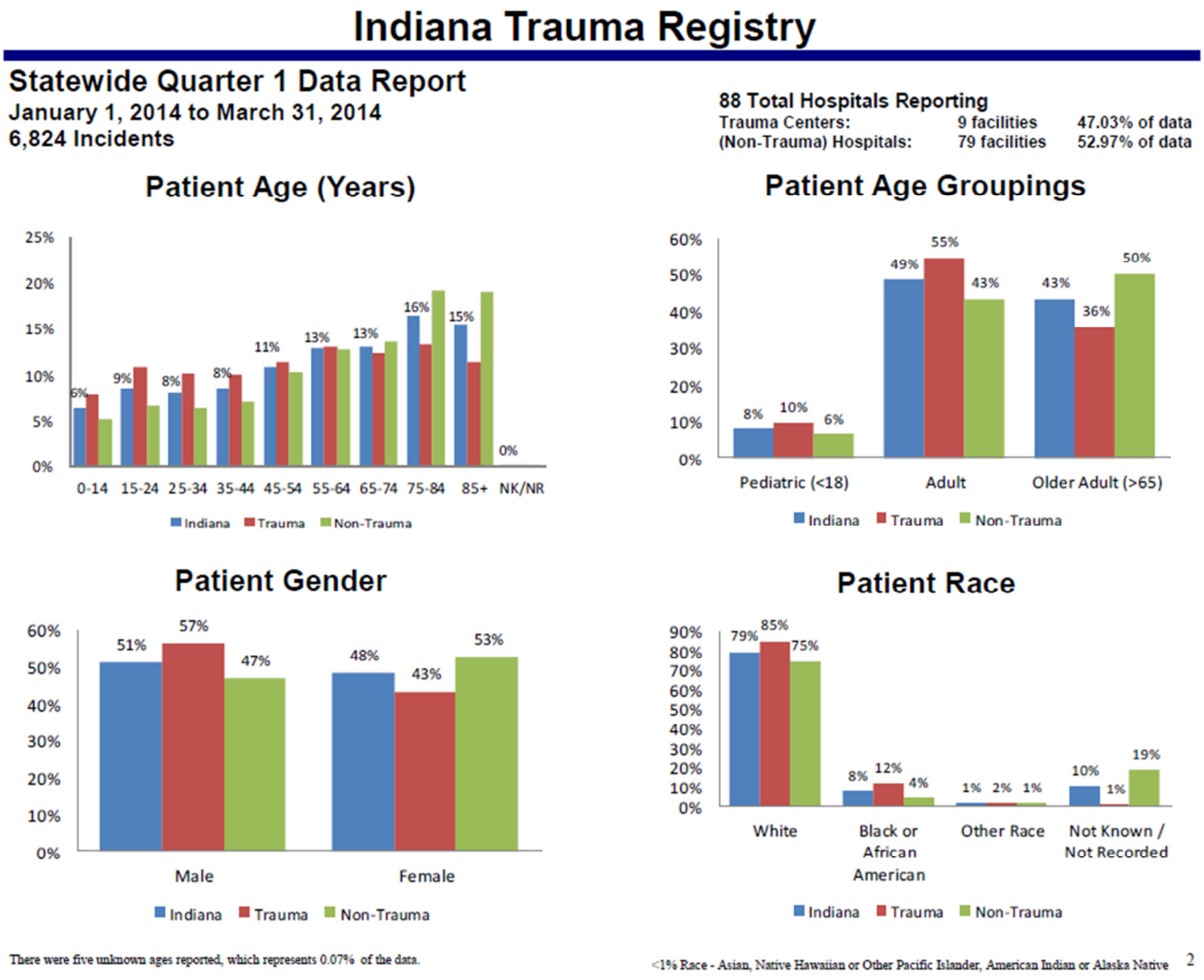
| Patient Admission Date Range | Report Due Date |
|---|---|
| April 1, 2014 - June 30, 2014 | September 30, 2014 |
| July 1, 2014 - September 30, 2014 | January 15, 2015 |
| October 1, 2014 - December 31, 2014 | May 1, 2015 |
| January 1, 2015 - March 30, 2015 | June 30, 2015 |
| April 1, 2015 - June 30, 2015 | September 30, 2015 |

  - Analyzed for statewide process improvement.
- Quarter 3 2014 Report:
  - 11 trauma centers reported.
  - Total of 95 hospitals reported.

- Includes 8,812 incidents.
- Currently 11 verified trauma centers in Indiana.

## 9.5 Trauma Registry Reports

- Reporting hospitals as of February 2015:
  - 11 trauma centers
  - 84 non-trauma centers
- 120,000 records in the Indiana trauma registry.




## 9.6 Importance of Trauma Registry Data

Trauma registries are a potentially rich source of injury surveillance data, because they are typically able to:

- Show the size of the public health and economic impact of injuries.

- Describe, compare, and monitor trends in unintentional and violence-related injuries.
- Identify new or developing injury problems.
- Identify persons at risk of injury and poor injury-related health outcomes.
- Guide development of evidence-based patient transport and clinical management guidelines.
- Provide reliable data for program and policy decisions.

Trauma registries can be the basis for much of the research and quality assessment work that informs policy makers about optimizing the care of injured patients are essential for highly functioning regional and statewide trauma systems. Development of effective trauma systems are vital, as the literature has reported that when these systems are in place mortality rates among severely injured patients are reduced by 20 to 25%[17,18].

## 9.7 Factors Influencing Data Quality

Data quality reflects the completeness and validity of the data recorded in the Indiana trauma registry. A registry can have high data quality if it has the following components:

- Extensive database:
  - State requires what is required at the national level (NTDB).
  - Collects additional, optional data elements.
- Data standard:
  - NTDB.
  - Indiana-specific, optional data elements are clearly defined and explained.
- Inclusion criteria:
  - Only include trauma cases that meet the criteria.
  - Allows us to compare “apples to apples”.
- Data validation.
  - Checks and balances for data elements captured in the registry.
  - Verifies inclusion criteria.
- Feedback.
  - ISDH provides feedback to hospitals regarding completeness of data elements.
- Ongoing training/education:
  - Registry/Registrar-specific courses.
  - ISDH-specific training:
    - New registry user.
    - Refresher training.
- Ideal world: every hospital has a designated, trained trauma registrar.

## 9.8 Data Usages

- Injury Prevention:
  - Outreach.

    - Education.
    - Program Evaluation.
- Research.
- Case management.
- Performance Improvement (PI).
- Data drives the development of the statewide trauma system:
    - Reports produced by ISDH will encompass all aspects of pre-hospital.
        - Comparison data: EMS provider and all others (aggregate).
- ISDH will link pre-hospital, hospital and rehabilitation data.
    - Result: Each entity will receive patient outcome data.

Data allows you to analytically evaluate your organization and identify areas that need to be improved—for example, procedures that your staff needs more training on. Since it's easy to find information and format it so that it's easy to understand, you may also find that it's a lot easier to provide your reports to administrative agencies, from the state to your billing company.

- Better budgeting
    - Mileage
    - Overtime
    - Vehicle maintenance
- Better inventory management
    - Medications
    - Supplies
    - Equipment
- Better understanding
    - Better patient care
    - Better operations
- Easier reporting to administrative agencies
    - Funding justification

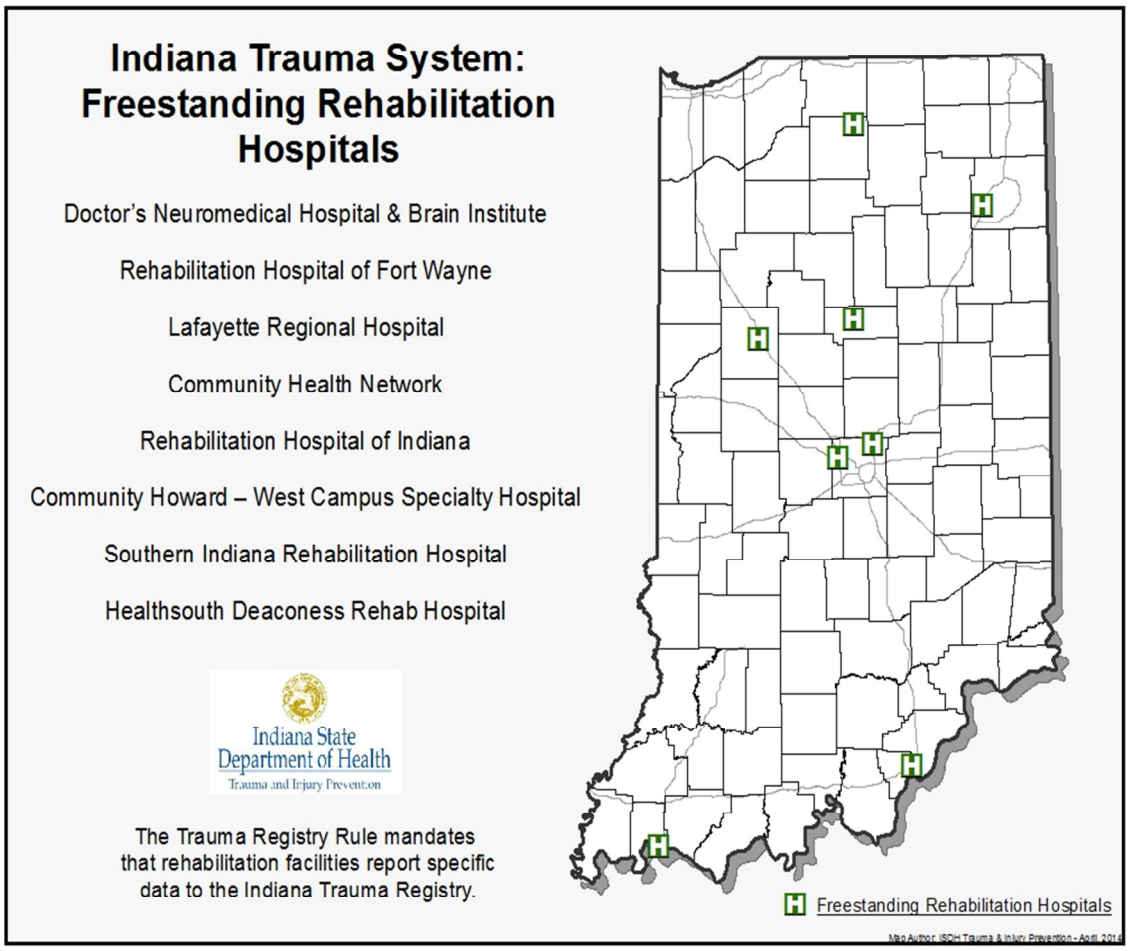
## 9.9 Linking Data to Evaluate Patient Care

- Pre-Hospital and hospital data are linked to look at patient outcomes through the continuation of patient care.
    - This aids in performance improvement.
- Linking can be done via deterministic or probabilistic matching.
    - Deterministic matching:
        - Use a unique identifier (often referred to as patient tracking) that exists in both datasets to match cases.
    - Probabilistically matching:
        - Use weights for multiple elements that exist in both datasets to link the data.
        - Steps in probabilistic matching:
            1. Define & clean the elements in both datasets
            2. Identify which elements to use for matching
            3. Apply weights
            4. Choose cut-offs
            5. Matches above upper cut-off are linked
            6. Matches below lower cut-off are not linked
            7. Matches between cut-offs manually reviewed
            8. Review links

# 10 Rehabilitation Data

## 10.1 Rehabilitation Data

- ISDH is in the pilot phase of collecting data right now.
- 8 rehabilitation hospitals around the state must report per the Trauma Registry Rule.
- The registry collects the Centers for Medicare & Medicaid Services (CMS)-required data elements for all traumatically injured patients.



# 11 Trauma Centers

## 11.1 Trauma Centers in Indiana

- **Level I American College of Surgeons (ACS) Verified Trauma Centers**
  1. Smith Level I Shock Trauma Center at Eskenazi Health
  2. Methodist Level I Trauma Center at IU Health
  3. Riley Hospital's Emergency Medicine and Trauma Center (EMTC) at IU Health Riley Hospital for Children
- **Level II ACS Verified Trauma Centers**
  1. Deaconess Regional Trauma Center at Deaconess Hospital
  2. Lutheran Trauma Center at Lutheran Hospital
  3. Memorial Leighton Trauma Center at Memorial Hospital of South Bend
  4. Parkview Trauma Centers at Parkview Regional Medical Center
  5. St. Mary's Trauma Services at St. Mary's of Evansville
  6. St. Vincent Trauma Center at St. Vincent Indianapolis Hospital
- **Level III ACS Verified Trauma Centers**
  1. IU Health Arnett
  2. IU Health Ball Memorial
- **"In the Process of ACS Verification" Level III Trauma Centers**
  1. St. Elizabeth – East
  2. St. Vincent – Anderson
  3. Community Hospital of Anderson
  4. Good Samaritan Hospital
  5. Methodist Northlake Campus
  6. Community Health – East
  7. Community Health – North
  8. Community Health – South

## 11.2 American College of Surgeons (ACS) Requirements for Verified Trauma Centers

### *Level I ACS Verified Trauma Centers*

- Capable of providing total care for every aspect of injury – prevention through rehabilitation
- Associated with a school of medicine
    - Facilitates research
    - Provides teaching opportunities to direct new advances in trauma care
- 24 hour in-house coverage by general surgeons
    - Prompt availability of care in specialties
- Receives patients from all levels of care
- Provides leadership in injury prevention
- Maintains a comprehensive Performance Improvement and Patient Safety (PIPS) program
- Program for substance abuse screening and patient intervention
- Meets minimum requirement for annual volume of severely injured patients (1200 patients / year)

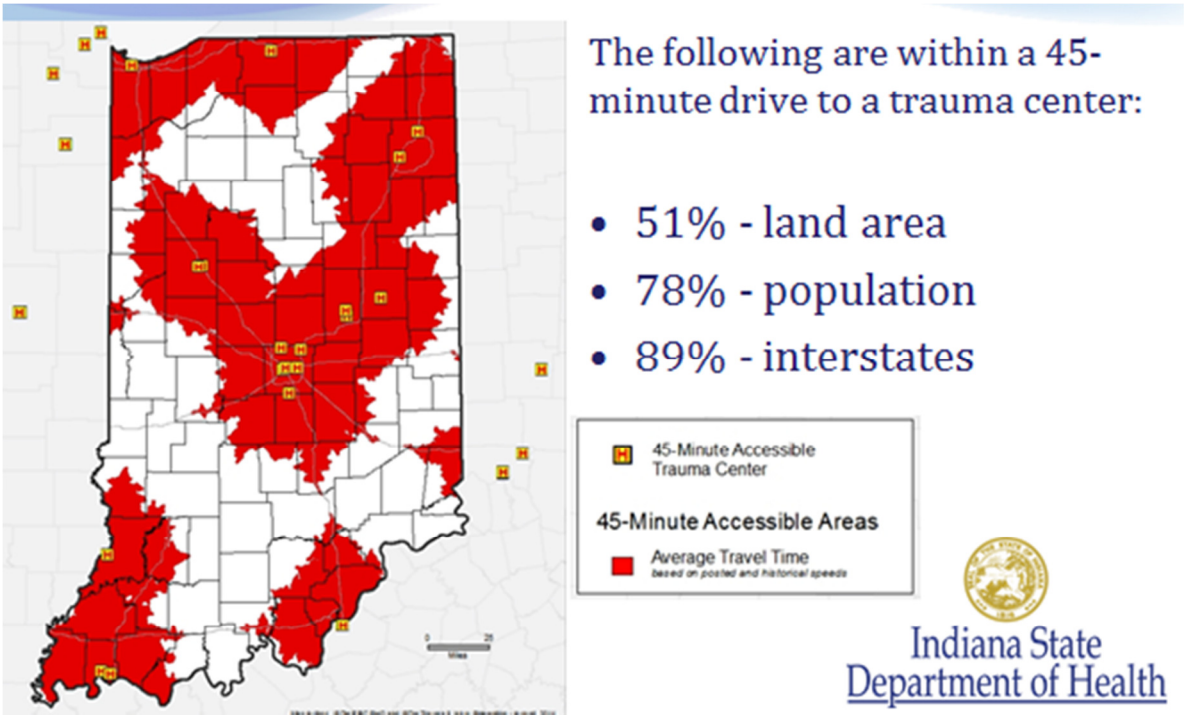
### *Level II ACS Verified Trauma Centers*

- Capable of providing total care for every aspect of injury – prevention through rehabilitation
- 24 hour in-house coverage by general surgeons
    - Prompt availability of care in specialties
- Receives patients from all levels of care
- Provides leadership in injury prevention
- Maintains a comprehensive Performance Improvement and Patient Safety (PIPS) program
- Program for substance abuse screening and patient intervention
- Meets minimum requirement for annual volume of severely injured patients (1200 patients / year)
- Same as a level I trauma center
    - EXCEPT
        - Not associated with a school of medicine
        - Does not have a general surgery residency training program
        - Does not do research

### *Level III ACS Verified Trauma Centers*

- 24 hour immediate coverage by emergency medicine physicians
    - Prompt availability of coverage by general surgeons and anesthesiologists
    - Not required to have neurosurgeons
- Transfer agreements for patients requiring more comprehensive care at a Level I or II trauma center

## 11.3 Trauma Center Access in Indiana



# 12 The Future of Indiana's Trauma System

## 12.1 Goals of the Trauma System

- Have more hospitals become ACS verified trauma centers.
- Collect and analyze data on every trauma case in Indiana.
- Link EMS runs to Trauma incidents to Rehabilitation data to evaluate continuum of trauma patient care.
- Develop a Statewide Plan that covers:
    - Trauma Registry.
    - Injury Prevention.
    - System-wide issues.
    - Miscellaneous issues.
- Promulgate a Designation Rule that will go hand-in-hand with the national verification requirements.
- Identify the role of Community paramedicine in Indiana.
- Roll out the Blue Sky project: the ability to automatically transmit trauma data between the organization's server and the ISDH's server that houses the trauma registry.
- Coordinate conference events, such as the Injury Prevention Conference and Annual EMS Medical Director's Conference, which increases the knowledge and expertise of Indiana's workforce.
- Provide and support trauma education opportunities throughout the state for prehospital, hospital, and rehabilitation workforce.
- Prevent injures in Indiana through collaborative efforts in leadership, education and policy, with a vision of an injury-free Indiana.

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