

Michigan Trauma System Development Projects 2016 Preliminary Report

Michigan has been engaged in trauma system development since the creation of the Trauma Commission by Public Act 440 in 2000. The ongoing commitment of resources is integral to ensuring the system meets the needs of the injured or potentially injured. The Bureau of EMS, Trauma and Preparedness (BETP) recognized that partners and stakeholders intimately involved in trauma system development understand where the gaps and challenges are and are best suited to design projects and programs to address those needs. This understanding was the impetus to the design of the Michigan Trauma System Development Projects (MTSDP).

The MTSDP was designed to address 4 broad categories related to system building; Injury Prevention, Trauma Education, Performance Improvement and Trauma Infrastructure. BETP approved a one-time funding amount of \$1.3M to support efforts in those system building categories. The partners and stakeholders responded enthusiastically, 160 applications were submitted by the July 22 deadline. The applications were reviewed and scored using the published guidelines and 76 projects were funded. The projects began on September 1, 2016 and will continue through August 31, 2017. Stakeholders will report periodically on the projects to the assigned Regional Trauma Coordinators and a final report on the projects, best practices and success stories will be published in FY 2018.

The table below outlines the number of projects that were awarded per category. Notable was the number of projects that were related to trauma education. An educated and trained workforce is essential to an effective, functioning system. Equally important is infrastructure, performance improvement, and effective injury prevention that can intervene and impact injury before devastating consequences can occur.

Category	# Projects Funded	Total Funding
Education	43	\$721,809
Infrastructure	13	\$215,454
Injury Prevention	17	\$277,624
Performance Improvement	3	\$74,350

These projects will be certain to inform trauma system development in the future, the identified best practices can be capitalized on, trauma training embedded, and injury prevention tailored to meet the needs of the community served. The projects were driven by the partners best placed to understand the needs and drive the actions best served to meet those needs.



|| TRAUMA EDUCATION

Organizations involved in Michigan’s trauma system development recognized that foundational to an effective trauma system was an educated, trained workforce and availed themselves of the opportunity to support education. Applications requesting support for education ranged from programs for hospital based trauma care providers to the Rural Trauma Team Development course, and included a promising web-based tool for educating prehospital providers about new protocols including trauma. Forty three education programs were awarded for a total of \$721,809 to offer trauma education and training. Once completed, more than 1,503 trauma care professionals will have had trauma care training, supporting the important goal of a continuous, competent trauma workforce.

Project Title	Description	Region
Advanced Trauma Education for Team Members	Project will provide nationally recognized trauma education programs for trauma care professionals to ensure up to date training regarding care for the injured: Trauma Care After Resuscitation (TCAR) - 50 RN's; Trauma Certified Registered Nurse (TCRN) - 20 RN's; Geriatric Emergency Nursing Education (GENE) - 20 RN's; Course in Advanced Trauma Nursing (CATN) -20 RN's	2S
Advanced Trauma Life Support (ATLS) for Region 5	Project will support implementation of the ATLS course for 32 providers region wide. ATLS is required training for specific trauma providers. It is sponsored by the American College of Surgeons Committee on Trauma and has been conducted on an ongoing basis in the US since 1980. ATLS is designed to outline a safe reliable method for the immediate management of the injured patient.	5
Advanced Trauma Life Support (ATLS)/Advanced Trauma Care for Nurses (ATCN)	Project will support ATLS for 22 rural area providers including Advanced Practice Providers and ATCN for 16 nurses. ATCN is an advanced course designed for the registered nurse interested in increasing his/her knowledge in management of the multiple trauma patient.	7
Concussion Recognition & Neurological Intervention United Management (CRANIUM)	Project will provide concussion education, training and an overview of management of student athletes in three rural school districts, including timely assessment, appropriate evaluation and an evidenced based return to play protocol.	7
Difficult Airway Course	Street Level Airway Management (SLAM) provides multidisciplinary instruction and application of basic, advanced and special airway considerations. It teaches peer-reviewed strategies for resolving the difficult airway and improving outcomes. The full day workshop features cutting edge management strategies for routine, emergent	8

	or difficult airway using state of the art equipment. Course will train 56 students in a rural area with long transport distances and frequent inclement weather.	
Field Triage Decision Scheme Education	Project will support the production of a free web-based educational program on field triage decision making scheme. This project will assist prehospital providers in defining and describing the components of the Field Triage Scheme, analyzing the impact on trauma outcomes, utilizing the Field Triage Scheme to identify injured patients who require transport to a trauma center and obtain continuing education credits in collaboration with American CME.	2N
Grand Traverse Risk Watch	Project addresses the top six traumatic injuries and deaths for children ages 1-17 in the Grand Traverse Metro area. Educational materials and programming will focus on safety awareness and injury prevention in 30 participating schools.	7
Increasing Availability of International Trauma Life Support (ITLS) Courses in Rural Michigan	ITLS courses give students the knowledge and hands-on skills to take better care of trauma patients. ITLS stresses rapid assessment, appropriate intervention and identification of immediate life threats. The ITLS framework for rapid, appropriate and effective trauma care is a global standard. This project will increase the number of active ITLS instructors in rural Michigan by utilizing an online Train-the-Trainer program.	1
McLaren Northern Michigan Trauma Education Initiative	Project will provide ATLS for 10 rural area Advanced Practice Providers, TNCC for 15 RN's and TCAR for 103 RN's	7
Munson Healthcare Grayling Hospital Education	Project will provide ATLS for 9 students and ATCN for 6 RN's	7
Pediatric Trauma Education: Pediatric Care After Resuscitation (PCAR)	The Pediatric Care After Resuscitation (PCAR) course is specifically designed for inpatient pediatric acute care, critical care, and perioperative nurses. This live, 2-day educational offering provides inpatient staff members with the foundational, evidence-based information and critical thinking skills necessary to meet regulatory requirements and provide excellent care to this challenging patient population. The project will fund PCAR training for 6 RN's and include the purchase of an electronic library of lectures to support continuous learning.	2S
Prehospital Education on Trauma (PHTLS)	Project will provide the Prehospital Life Support (PHTLS) course for 30 rural EMS providers. PHTLS is the prehospital trauma education developed by the National Association of Emergency Medical Technicians in cooperation with the American College of Surgeons Committee on Trauma to promote critical thinking in addressing multi-system trauma and provide evidenced based practices.	7

Region 2N Pediatric Care After Resuscitation (PCAR)	Project will provide for Pediatric Care After Resuscitation (PCAR) training for 50 RN's.	2N
Region 2N Trauma Care After Resuscitation (TCAR) Training	This project will support TCAR education as a regional course available to all RN's.	2N
Region 2N/2S Prehospital Trauma Life Support (PHTLS) Program	Project will support PHTLS for 72 students.	2N & 2S
Region 8 Advanced Trauma Life Support (ATLS) Program	Project will support ATLS for 50 students.	8
Region 8 International Trauma Life Support (ITLS)	Project will support ITLS for 125 students in a rural region.	8
Region 8 Prehospital Trauma Life Support (PHTLS)	Project will support PHTLS for 100 students in a rural region.	8
Region 8 Trauma Education Day	One day trauma workshop for all regional TMD's, TPM's, Registrars, & ED staff. This one day centrally located workshop will allow key stakeholders the opportunity to collaborate and identify priorities to collaborate on, share best practices and problem solve. It is anticipated that trauma staff from all 16 hospitals in Region 8 will participate in the workshop.	8
Rural Trauma Team Development Course (RTTDC) Expansion Program	Project will support the RTTDC & a train the trainer course for a multi-regional education initiative. Developed by the Rural Trauma Committee of the American College of Surgeons Committee on Trauma (ACS COT), RTTDC is based on the concept that in most situations, rural facilities can form a trauma team consisting of at least three core members. The course is offered in a single day or modular format. The objectives include: Organize a rural trauma team with defined roles and responsibilities for the members, prepare a rural facility for the appropriate care of the injured patient, identify local resources and limitations, assess and resuscitate a trauma patient, Initiate the transfer process early, establish a performance improvement process, encourage effective communication, and define the relationship between the rural trauma facility and the regional trauma system.	6
Trauma Nursing Core Course (TNCC) RN's	TNCC empowers nurses with the knowledge, critical thinking skills, and hands-on training to provide expert care for trauma patients. ENA developed the Trauma Nursing Core Course to establish a standardized body of trauma nursing knowledge and to improve the care of all trauma patients. Project provides support for TNCC for 23 RN's	8
Trauma Nursing Core Course (TNCC) Education	Project will support TNCC for 64 RN's, including 6 certified instructors	3
Trauma Care After Resuscitation (TCAR)	Project will fund TCAR for 50 students	2N

Trauma Care After Resuscitation (TCAR)	Project will support TCAR for 76 RN's	2N
Trauma Education: Trauma Nurse Core Curriculum (TNCC); Prehospital Trauma Life Support (PHTLS)	Project will provide TNCC for 20 students and PHTLS for 20 students	1
Trauma Education: Advanced Trauma Life Support (ATLS); Trauma Care After Resuscitation (TCAR)	Project will fund ATLS for 3 Physician Assistants and TCAR for 10 RN's	1
Trauma Education: Advanced Trauma Life Support (ATLS); Trauma Nurse Core Curriculum (TNCC); Advanced Trauma Care for Nurses (ATCN); Prehospital Trauma Life Support (PHTLS)	Project will fund ATLS for Advanced Practice Practitioners; TNCC for 6 RN's, ATCN for 2 RN's and PHTLS for 36 students	1
Trauma Medical Director Education	Project will support attendance to the Trauma Center Association of America national TCAA Trauma Medical Director Course. The course is targeted to current and aspiring trauma medical directors who want to learn how to improve operations in their trauma center. Each participant will leave with readily employable tactics to improve efficiency, fiscal performance and clinical management in their program.	2S
Trauma Education: Trauma Care After Resuscitation (TCAR)	Project will support TCAR for 50 RN's	2S
Trauma Education: Trauma Nurse Core Curriculum (TNCC)	Project will fund TNCC - 15 RN's	5
Trauma Education: Trauma Nurse Core Curriculum (TNCC)	Project will support TNCC - 14 RN's	6
Trauma Education: Trauma Nurse Core Curriculum (TNCC)	Project will support TNCC - 5 RN's	7
Trauma Education: Trauma First Response (TFR)	The Trauma First Response course is a two day course that teaches the principles of Prehospital Trauma Life Support (PHTLS) to non-EMS practitioners. The course teaches the core PHTLS content to those who haven't had EMT or advanced Prehospital training. The lectures and practical stations are designed for the type of care first responders can render while awaiting patient transport or when assisting paramedics and EMT's at a trauma scene. The project will fund the Trauma First Response course for 112 students	7
Trauma Education: Trauma Care After Resuscitation (TCAR)	Project will support TCAR for 40 RN's	2S

Trauma Education Nursing Classes: Trauma Care After Resuscitation (TCAR); Trauma Nurse Core Curriculum (TNCC); Advanced Trauma Life Support (ATLS)	Project will fund TCAR for ICU RN's; TNCC for surgery nurses; ATLS for the Trauma Medical Director (TMD) & ED Advanced Practice Providers (APP's)	2N
Trauma Education: Advanced Trauma Life Support (ATLS)	Project will fund ATLS for 7 providers	2S
Trauma Education: Trauma Nurse Core Curriculum (TNCC)	Project will support TNCC for 16 Emergency Department RN's and 13 medics	2S
Trauma Educational Classes for Northern Ottawa Community Health System: International Trauma Life Support (ITLS); Trauma Care After Resuscitation (TCAR); Trauma Nurse Core Curriculum (TNCC)	Project will fund ITLS for 5 students ; TCAR for 5 RN's; and TNCC for 5 RN's	6
Trauma Nurse Core Curriculum Education Project: Trauma Nurse Core Curriculum (TNCC)	Project will support TNCC for 20 RN's	1
Trauma Nursing Education: Advanced Trauma Care for Nurses (ATCN)	Project will fund ATCN for 26 RN's & 4 Supervisors	3
Trauma Preparedness Training for ED Registered Nurses: Trauma Nurse Core Curriculum (TNCC)	Project will support TNCC education for 23 RN's	7
Trauma Program Staff Education: Trauma Nurse Core Curriculum (TNCC); Trauma Care After Resuscitation (TCAR); Advanced Trauma Care for Nurses (ATCN)	TNCC - 10 RN's; TCAR - 15 RN's; ATCN - Trauma Program Manager; Registry Courses - Registrar	2S
Trauma Time Out Video	Project will support the production of two "Trauma Time Out Videos". The videos are simulations of trauma resuscitations which use evidenced based quality and safety initiatives designed to reduce error and increase reliability during trauma resuscitations. Videos will be made available online to trauma program professionals throughout Michigan.	6



|| INJURY PREVENTION

Injury is the leading cause of death for ages 1-44 in the nation and in Michigan¹. Medical costs for injury account for 12 percent of the national health care expenditures². Injury is largely preventable, however efforts to avoid injury are frequently under resourced. These initiatives are driven by identified community needs. The applications ranged in scope from bike safety equipment, distracted driving simulators, to car seats for special needs children. A total of \$277,624 was awarded to 17 injury prevention initiatives.

Project Title	Description	Region
Injury Prevention Benzie County 2016-2017	Project will support rural, countywide injury prevention initiatives: <ul style="list-style-type: none"> • Traumatic Brain Injury initiative “Play it Safe” (evaluation, education and prevention) • Water safety school education and water rescue course for first responders • Injury Prevention program for staff and residents of the local skilled nursing facility 	7
Downriver - Distracted Driving Awareness Program	Project will support a distracted driving program in collaboration with local judiciary. Area has 6.9 % of drivers ages 16-20 who represent 11.6 % of crashes. Project will involve driving simulator, materials and evaluation tools including identification of reoffenders.	2S
Buckle Up West Michigan - Child Passenger Safety	Project will focus on educating families and caregivers on child passenger safety and providing car seats to families in need. Special emphasis will be given to providing education and services to underserved communities, 270 car seats will be purchased for program use. Targeted intervention will include new parents and the creation of a car seat loaner program for low birth weight infants. Four new car seat safety technicians will be identified and trained.	6
Children's Injury Prevention Videos Part II	Project will support the development of educational injury prevention videos targeted at expectant mother and parents of children ages 0-17. Participants would be linked to an injury prevention team contact for follow-up as well. Video topics will include bike helmet fit, sport safety, water safety and proper booster seat use. The videos will be shown in medical practices in the region daily.	6
Distracted/Reckless Driving	Purchase a virtual driver simulator for community education and outreach	5
Distracted Driver Simulation	Project will support 2 driving programs; one for teens and one for senior citizens. Driving simulator will be used to educate community participants in a large population area (Detroit and surrounding east side communities) on impact of alcohol, fatigue, drugs and age related declines in vision, hearing and cognition.	2S

Distracted Driving Student Awareness Initiative	Purchase distracted driving simulator and equipment to increase community outreach to all Region 5 counties	5
Driving Safety and Education	Project will support 2 driving programs; one for teens and one for senior citizens. Driving simulator will be used to educate community participants in a large population area of Wayne county and surrounding west side communities. Project on impact of alcohol, fatigue, drugs and age related declines in vision, hearing and cognition. Project includes the purchase of a driving simulator.	2S
Special Needs Car Seats	The project will fund the purchase of five special needs car seats used to properly evaluate special needs children and their car seat requirements. Parents and children will attend an evaluation visit and 3 or more seats will be trialed and evaluated for safety, comfort, fit and patient satisfaction. Once the best seat is identified and ordered the staff will assist in proper installation and harnessing of the seat.	6
Home Safety Program	Project addresses pediatric preventable injuries using a home safety assessment tool, involving children and siblings admitted to pediatric trauma service, providing education, anticipatory guidance about home safety to parents and caregivers of infants 6 or 9 months at well-child checks and distributing Home Safety kits.	2S
Injury Prevention Kits	Project will support 9 Injury Prevention Kits to support injury prevention programs. The kits will contain the essential elements for community events and presentations in a tote: display stand, posters, products, other visual aids relevant to injury prevention. The kits will come with a curriculum and address a unique, relevant prevention topic.	2S
Trauma Designation - Injury Prevention Program	Project will support injury prevention initiatives, a dedicated coordinator to oversee all aspects of the injury prevention program, community education in the form of brochures, banners, and billboards specific to regional injury prevention. Host 3 "Matter of Balance" courses, provide car seats and car seat checks in the community, provide bicycle helmets to children admitted to ER with bike related injuries and offering bike helmet safety activities.	7
Safe Wheels & Heels: Injury Prevention for Oakland County Kids	The project will expand on an existing successful project focusing on providing free bike helmets and conducting educational assemblies for second graders. Expansion will include 1,800 second graders in southeastern school districts. Also addressed in the project will be safe driving simulation for 3,000 community members.	2N
SMART Driving Program	The purpose of the project is to provide Smart Driving Education to teens and adults in the community. The estimated number of teens and adult served is 2,500-5,000.	2N

Steady & Strong Muskegon - Falls Prevention	The project will focus on older adult falls (the region has a fatal fall rate that is 73% higher than the rest of the state). The project activities will include training community paramedics in: falls prevention and Matter of Balance (MOB) including conducting MOB classes, incorporating a standardized home falls risk assessment, and providing medication reviews.	6
Trauma System Development Injury Prevention Information Station	Project will create Injury Prevention Information Stations in high traffic areas throughout the hospital. Material will be changed seasonally and will work collaboratively with other community outreach programs such as bike safety and falls prevention.	5

¹National Vital Statistics System, National Center for Health Statistics, CDC. **Produced by:** Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC using WISQARS http://www.cdc.gov/injury/wisqars/pdf/10lcid_all_deaths_by_age_group_2010-a.pdf

²http://www.cdc.gov/injury/wisqars/overview/cost_of_injury.html. Can't find the original citation so sentence will read: The total lifetime medical and work loss cost of injuries and violence in United States was \$671 billion in 2013



INFRASTRUCTURE

The commitment of resources and infrastructure to meet the 24/7 requirements of a verified and designated trauma facility is substantial. Studies have suggested that programming and infrastructure costs to develop and maintain the required 24/7 readiness of a verified and designated trauma (Level II trauma center) can cost upwards of 2 million dollars³. Michigan’s acute care facilities are committed to caring for the injured in their community in an environment of numerous demands on resources. Providing support for trauma infrastructure frees resources to address other trauma program needs. The Michigan Trauma System Development Project awarded a total of \$215,454 to 13 Michigan facilities to support infrastructure initiatives.

Project Title	Description	Region
Building a Data Mine: Project 1 Marquette and Alger County; Project 2 Luce and West Mackinac County	The project is supporting timely, accurate, linked, data collection by leveraging technology. This rural Upper Peninsula region has limited resources, vast geography and significant distances to access healthcare. Purchasing 55 4G enabled tablets will allow access to EMS patient care reports, integrate dispatch information and allow for mapping to ensure prehospital providers can find patients in the rural area with irregular cellphone coverage.	8
Data Entry for Hospital Trauma Registry Program	Project will support the use of a (temporary) contracted registrar to assist with backlog of trauma patient records that need to be entered into the state trauma registry, thus ensuring the program will have up to date data and the region can make data driven decisions about trauma system development.	3
Distracted/Impaired Driving Risk Awareness Program	Project will support a comprehensive distracted driving course for communities in proximity to hospital system that has 91,800 ED visits/yr. Per the application, the leading mechanism of injury in the area is motor vehicle crashes. The program addresses fatal vision impairment, texting, and drug and alcohol impairment. Eight community education courses are planned.	5
Injury Prevention for ED Staff	Project will support the purchase of a Maxi Move patient lift assist device to minimize staff injury in this critical access hospital with an ED staff of 4.	7
Massive Transfusion support- Rapid Infusers	The project will support the purchase of two Level I rapid fluid infusion pumps for trauma patients requiring massive blood transfusion. The facility requesting the support states that ED visits are on the rise and that the current equipment is inadequate and over 10 years old.	5
Prehospital Anti-Shock Treatment	Prehospital Anti-Shock Treatment initiative is a 9 county project in collaboration with the Regional Trauma Network, the Regional Medical Control Authorities, and the trauma centers. The project will train EMS providers about the use of TXA and pelvic binders as interventions in selected critically injured patients. Project addresses long term sustainability if proven successful.	5

Trauma Infrastructure Support- Rapid Infuser	Project will support a rural critical access hospital (25 beds or less) in an area that sees 250 inches of snow annually, in the purchase of a Belmont rapid infuser for trauma patients, replacing equipment dated from 2003.	8
Region 7 Air Medical Application	Project will fund an application which would allow EMS provider and Dispatch Centers to alert the helicopter quickly about the need for patient transport. It would provide latitude and longitude coordinates for the aircraft, allow text capability between dispatch and the field, and rapid real time information for sharing about aircraft status and ETA. This will decrease radio traffic at the scene and decrease the number of phone calls required by dispatch centers and the flight communication center.	7
Trauma Coder	Project supports the purchase of TraumaCoder, a web-based application that decreases time and increases accuracy of trauma registry data collection, it has the capacity to migrate information into ICD-10 codes.	5
Trauma Equipment for ED	Project will support a crucial access hospital in the purchase of trauma equipment for the ED; Capnography Unit, tourniquet supplies, pelvic slings	3
Trauma Equipment: Laryngoscope	Project will support a rural hospital (19% of the population living below the poverty level) in the purchase Video Laryngoscope and supplies to assist in care of trauma patients in ED	3
Trauma Infrastructure Support - Glidescope	Project will support a rural critical access hospital in the purchase of a Ranger Glidescope. This equipment allows the facility to rapidly and safely intubate the patient with a compromised airway to ensure the best outcomes.	8

³Am J Surg. 2004 Jan; 187(1):7-13. **The cost of trauma center readiness.** Taheri PA¹, Butz DA, Lottenberg L, Clawson A, Flint LM.



|| PERFORMANCE IMPROVEMENT

Performance improvement is vital to effective system function. Monitoring, evaluating and improving performance of the trauma system and program is a responsibility of the trauma programs and partners. Performance Improvement is the hallmark of an efficient, functioning system. A total of \$74,350 was awarded to 3 performance improvement initiatives.

Project Title	Description	Region
Documentation of Attending and Consultant Surgeon Response to Trauma Resuscitation	The rapid availability of trauma surgeon response time to trauma is a vital function of trauma centers. Times are required to be documented and failure to meet published response parameters may result in a program deficiency. The project will support acquiring software that would precisely record the surgeon arrival to the trauma resuscitation bay and could then be used for process improvement in physician response and improved time to patient disposition.	2S
EMD Quality Assurance	Purchase ProQA dispatch and AQUA case review software to support comprehensive quality improvement. This proprietary software which assist dispatchers by prompting questions, assisting in decision making and suggesting instructions before responders arrive. The project will provide initial funding, the majority of the capitol will be supplied by the dispatch center.	5
Michigan Trauma System Development Performance Improvement	Purchase First Watch/First Pass software for real time quality improvement for patient care. The software will allow managers and supervisors access to real time data. The software provides continuous monitoring of data to quickly identify and provide alerts related to protocol deviations, incomplete or missing data or urgent patient care issues. The purpose is to identify data omission and key indicators for care to evaluate treatment with established evidence based trauma treatment protocols. The project will provide a percent of the overall cost of the software, the rest will be provided by the agency.	1, 5